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BEACH
Bettering the Evaluation and Care of Health

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Foreword

Chronic disease of various kinds dominates Australia's health and healthcare landscapes. Growth of chronic disease is driven mainly by population ageing, with the proportion of Australians 65 years and over (now 13%) set to reach 25% by about 2056. Population ageing is mostly caused by improving population health, to which ~70% falls in age-standardised death rates in Australian men and women from 1909 to 2010 testify. But increasing age carries with it an increasing burden of chronic disease. For example, the 2011–12 Australian National Health Survey found that 4.7% of adult Australians reported a doctor or nurse told them they had heart, stroke or vascular disease that was present at the time of the survey and had lasted, or was expected to last, 6 months or more. This proportion was 27.7% in men and women 75 years of age and over. The increasing burden of chronic disease is a major contributor to the ongoing ~4% annual increase in Australian hospitalisation rates.

In consequence, Australia's health services planners and managers focus more and more on the interface between hospitals (chiefly public, acute care hospitals) and out of hospital care, especially primary medical care. The logic is simple: the more that general practitioners, and nurses and allied health practitioners working in primary care, can contribute to preventing chronic disease and caring for chronically ill people in the community, the less the demand on hospital services.

Mechanisms for facilitating effective interaction between acute hospitals and primary medical care services were not hardwired into the Australian health system through the recent National Health Reform process. There is, however, substantial interaction and cooperation developing, at least in New South Wales, between Local Health Districts, the unit of regional management of State health (mainly hospital) services, and Medicare Locals, regional Commonwealth-funded general practice coordination and planning organisations. (Medicare Locals sometimes, but not always, have the same boundaries as Local Health Districts.) Increasingly, Local Health Districts and Medicare Locals are represented on each other's boards and are working in other ways to develop shared and interacting services. The same is happening in other States and Territories of Australia to a greater or lesser degree. It is in circumstances such as these that good information systems are needed to enable research into the issues, to provide data for policy, and planning and to evaluate the effectiveness and efficiency of new programs.

There are, at present, no Australian health information systems that can be used to examine the interaction between hospitals and primary care in providing patient care and in achieving better patient outcomes. BEACH, now releasing *General practice activity in Australia 2012–13* (the 33rd book in the University of Sydney's General Practice Series) and *A decade of Australian general practice 2003–04 to 2012–13* (the 34th), provides the nearest to a comprehensive account of single, general practice consultations, but does not have the capacity to link to other health records, or the capacity to follow patients longitudinally. Medicare Australia's medical and pharmaceutical benefits data collections record outputs from general practice consultations and can provide longitudinal data, but generally do not collect information on the problem being managed and can only imply outcomes from the nature of future medical and pharmaceutical benefits. They are, however, potentially linkable to hospital records, which are a rich source of outcome data relevant to services and programs at the hospital-general practice interface.

Clearly, there is need for a new direction in general practice data collection, which provides comprehensive information on patients' problems and care given, is collected longitudinally and is linkable to other health records. BEACH has proposed such a direction—Longitudinal BEACH. Building on BEACH experience, LongBEACH would use a modified, computerised clinical audit tool to create a longitudinal cohort of general practice patients within existing general practice electronic health record systems. This cohort would be linked at least to MBS and PBS records, hospital emergency department and separation records, and death records. It would provide a rich source of data for investigating general practice and related health care activity and measuring health outcomes.

The investment required to develop such a system might be more readily justifiable if it were to be done in close collaboration with teams building links between local health districts and Medicare Locals, and gave priority to recruitment of patients who had been recently hospitalised. Demonstrating its value as a policy, planning and evaluation tool in this context could make support for a wider investment easier to obtain.

It's time!

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Summary

This report describes clinical activity at, or associated with, general practitioner (GP) encounters, from April 2012 to March 2013, inclusive. It summarises results from the 15th year of the Bettering the Evaluation and Care of Health (BEACH) program, using a nationally representative sample of 97,800 patient encounters with 978 randomly selected GPs. After post-stratification weighting, 98,564 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 1.5 million encounters from 14,793 participants representing 9,630 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 2012–13.

The companion report highlighting major change over the most recent 10 years of BEACH, *A decade of Australian general practice activity 2003–04 to 2012–13*,[1] is available at <purl.library.usyd.edu.au/sup/9781743323793>.

The general practitioners

Of the 978 participating GPs in 2012–13:

- 57% were male, 41% were aged 55 years and over, 66% had graduated in Australia
- spent an average of 37.5 hours per week (median 38 hours) in direct patient care
- more than 55% were Fellows of the Royal Australian College of General Practitioners (RACGP), and 8% were Fellows of the Australian College of Rural and Remote Medicine (ACRRM)
- 53% had provided care in a residential aged care facility in the previous month
- 69% practised in *Major cities* (using the Australian Standard Geographical Classification)
- 51% were in practices of fewer than five full-time equivalent (FTE) GPs (a mean of 4.7 FTE GPs per practice and a median of 4 FTE GPs)
- 82% worked in a practice employing practice nursing staff
- nearly two-thirds (63%) had a co-located pathology laboratory or collection centre in, or within, 50 metres of the practice and almost half (49%) had a co-located psychologist
- 44% worked in a practice that provided their own or cooperative after-hours care
- 96% of GPs were producing prescriptions electronically, and more than two-thirds (70%) reported they used electronic medical records exclusively (that is, 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, place of graduation, state, 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 35–44 year age

group, and a slight over-representation in the 45–54 year age group, compared with the Australian sample frame.

There was no statistically significant difference in the 'activity level' of GP participants compared with GPs in the sample frame, based on comparison of the mean number of Medicare Benefits Schedule (MBS) claims over the previous year.

The encounters

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 155 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], 47 pathology tests/batteries of tests; 37 clinical treatments; 17 procedures; 15 referrals (including 9 to medical specialists and 5 to allied health services); and 10 imaging tests.
- Direct encounters (patient seen) accounted for 98% of encounters at which a payment source was recorded. Of these: 97% were claimable either through the MBS or the Department of Veterans' Affairs (DVA); 2% through workers compensation, 1% through other sources.

In a subsample of 34,928 BEACH MBS/DVA-claimable encounters at which start and finish times were recorded, mean consultation length was 15.6 minutes, median 14.0 minutes.

Who were the patients?

- Females accounted for 57% of encounters, and the greater proportion of encounters in all adult age groups. Children (aged < 15 years) accounted for 12% of encounters, those aged 15–24 (8%), 25–44 (22%), 45–64 (28%), 65–74 (14%), and 75 and over (16%).
- The patient was new to the practice at 7% of encounters, held a Commonwealth concession card at 46%, and was from a non-English-speaking background at 12%.
- At 1.5% of encounters the patient identified themselves as an Aboriginal and/or Torres Strait Islander person.

For every 100 encounters, patients gave 155 RFEs: 64 symptom and complaint RFEs, 30 diagnosis/disease RFEs, and 60 requests for processes of care (e.g. procedures, referrals).

What problems do GPs manage at patient encounters?

There were 152,517 problems managed, an average 155 per 100 encounters: one problem was managed at 62% of encounters, two or three being managed at 35%, and four at 3%. The number managed increased with the age-group of patients.

Two-thirds (67%) of problems were described as diagnoses or diseases, 19% in terms of symptoms or complaints, and 9% as diagnostic or preventive procedures (e.g. check-ups).

- The most commonly managed were: respiratory problems (20 per 100 encounters), problems of a general and unspecified nature (19), musculoskeletal problems (18), skin (17), and cardiovascular (17).

- Individual problems managed most often were hypertension (8.6 per 100 encounters), check-ups (6.4), upper respiratory tract infection (URTI) (5.8), immunisation/vaccination (5.0), and diabetes (4.2).
- 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 (15.4% of chronic conditions), non-gestational diabetes (7.6%), depressive disorder (7.3%), chronic arthritis (6.8%), lipid disorder (6.0%), oesophageal disease (4.7%), and asthma (3.9%). Extrapolation of these results to the 126.8 million Medicare GP consultation items claimed in 2012–13 suggests there were 10.9 million encounters involving non-gestational hypertension, 5.3 million involving non-gestational diabetes and 5.2 million involving depression.

What management actions were recorded for problems managed?

For an 'average' 100 problems they managed, GPs provided 54 prescriptions and 24 clinical treatments, undertook 11 procedures, made 6 referrals to medical specialists and 3 to allied health services, and placed 30 pathology test orders and 7 imaging test orders.

Medications

There were 101,065 medications, 103 per 100 encounters but only 66 per 100 problems managed: 81% were prescribed, 10% supplied by the GP and 9% recommended for OTC purchase. Extrapolation of these results suggests that, across Australia in 2012–13, GPs wrote about 106 million prescriptions, supplied 12.6 million medications directly to the patient, and advised medications for OTC purchase 11.9 million times.

- At least one medication (most prescribed) was given for 52% of problems managed.
- No repeats were given for 35% of prescriptions, and five repeats were ordered for 37%. The ordering of one repeat was also quite common (16%).
- Medication types most often prescribed were those acting on: the nervous system (23.4% of scripts), particularly opioids (7.2%) and antidepressants (4.8%); and the cardiovascular system (19.1%), particularly antihypertensives and lipid lowering agents. The most commonly prescribed individual medications were: the antibiotics amoxycillin (3.6% of all prescriptions), cephalexin (3.2%) and amoxycillin with potassium clavulanate (2.4%); the analgesics paracetamol (3.0%) and paracetamol/codeine (2.1%); the opioid oxycodone (2.0%); and the proton pump inhibitor esomeprazole (1.9%).
- Medications were GP-supplied at a rate of 6 per 100 problems managed and vaccines accounted for the vast majority of these.
- Medications were advised for OTC purchase at a rate of 6 per 100 problems managed. Paracetamol accounted for 26% of these and ibuprofen for 6%.

Other treatments

At least one other treatment was provided at 41% of encounters and 53,163 other treatments were recorded, 68% being clinical treatments (such as advice and counselling).

Clinical treatments: 36,023 clinical treatments were recorded, 37 per 100 encounters, or 24 per 100 problems managed. General advice and education (16% of clinical treatments), and counselling about the problem being managed (14%) 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 7.7 per 100 encounters).

Of all problems for which clinical treatments were provided, the top 10 accounted for 30%. The most common were URTI (6.0% of problems with clinical treatments), depression (5.1%), diabetes (3.6%) and hypertension (3.2%).

Procedural treatments: 17,140 procedural treatments were recorded, 17 per 100 encounters, or 11 per 100 problems. The most common were: excision (17% of procedural treatments), dressing (14%), local injection (13%) and rehabilitation (8%).

Practice nurse/Aboriginal health worker activity

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

- PNs/AHWs were involved in 7.4% of encounters and their action(s) recorded at 7.3% of encounters for 5% of all problems managed. In this first full BEACH year of data post-removal of many PN item numbers from the MBS, a PN/AHW Medicare item number was recorded for only 3.9% of those encounters involving a PN/AHW, the most common being for care provided to a person with chronic disease (91.8%% of PN/AHW item number claims).
- The majority (86.2%) of their activities were procedural and these procedures represented 34.0% of all procedures recorded. Clinical treatments accounted for 13.8% of PN/AHW activity, but only 3.1% of all recorded clinical treatments.
- The most common procedures done by PNs/AHWs were injections (34% of recorded procedures), dressings (19%), check-ups (9%) and INR tests (7%).

Referrals and admissions

There were a total of 14,561 referrals, 15 per 100 encounters or 10 per 100 problems managed. The most frequent were to medical specialists (9 per 100 encounters, 6 per 100 problems managed), followed by referrals to allied health services (5 per 100 encounters, 3 per 100 problems). Very few patients were referred to hospitals or emergency departments (0.6 per 100 encounters, 0.4 per 100 problems).

Referrals to specialists were most often to orthopaedic surgeons (9% of specialist referrals), surgeons (9%), dermatologists (8%) and ophthalmologists (8%). Malignant skin neoplasms, diabetes, osteoarthritis and pregnancy were the problems most often referred to specialists.

The five problems most frequently referred to each of the ten most common medical specialties are described in Section 11.3. They may represent a small or large proportion of all problems referred to a particular specialty. For example, the top five problems accounted for 25.5% of referrals to surgeons (indicative of the broad range of conditions referred to them), and for 76.2% of referrals to psychiatrists, suggesting a more defined range of problems referred.

Referrals to allied health services were most often to physiotherapists (28% of allied health referrals), psychologists (19%), podiatrists (10%) and dietitians/nutritionists (8%). Problems most likely to be referred were depression, diabetes and back complaints.

Tests and investigations

Pathology tests ordered: GPs recorded 46,398 orders for pathology tests/batteries, at a rate of 47 per 100 encounters (30 per 100 problems managed). At least one pathology test was recorded at 18% of encounters (for 14% of problems managed).

- Chemistry tests accounted for 59% of pathology test orders, the most common being: lipid tests (2.7 per 100 problems managed); electrolytes, urea and creatinine (2.0); multi-biochemical analysis (1.9); and thyroid function tests (1.8 per 100).
- Haematology tests accounted for 18% 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 13% 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, hypertension, general check-ups, and lipid disorders.

Imaging ordered: There were 10,163 imaging test orders recorded, 10 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 43%, ultrasound 41%, and computerised tomography for 12% of all imaging orders.

Patient risk factors

Overweight and obesity in adults (18 years and over): Of 31,452 adults, 61% (69% of males and 56% of females) were overweight or obese: 35% being overweight and 27% obese. After adjustment for attendance patterns by age–sex, prevalence in adults who attended general practice at least once in 2012–13 was estimated as 34% overweight and 26% obese.

Overweight and obesity in children (2–17 years): Of 3,069 children, 26% were overweight (17%) or obese (9%). Prevalence and age pattern did not differ between the sexes.

Smoking status (adults 18 years and over): Of 32,499 adults, 14% (18% of men and 12% of women) were daily smokers and this was most prevalent among 25–44 year olds (21%). Adjusted to the attending population, prevalence of daily smoking was 17%.

Alcohol consumption in adults (18 years and over): Of 31,640 adult patients, 24% (29% of men and 21% of women) reported drinking at-risk levels of alcohol. This was most prevalence among 18–24 year olds. Adjusted to the attending population, 27% reported at-risk alcohol consumption.

Adult risk profile (18 years and over): Of the 30,345 patients for whom all three risk factor data were available: 26% had no risk factors, 52% had one, 19% had two, and 3% had three. Adjusted to the attending population, one in four patients had at least two risk factors.

Management of patients with Type 2 diabetes

Chapter 14 reports changes in policy and practise in the care of patients with Type 2 diabetes over the previous decade. It demonstrates the complexity of the care required for these patients, 93% of whom have multiple chronic conditions (multimorbidity). It shows that these patients attend more often and spend longer with their GP, than other patients. They are frequently referred to other medical specialists and allied health professionals, have high rates of pathology testing and medication. The implications of these findings are discussed.

1   Introduction

This publication is the 15th annual report and the 33rd 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 2012 to March 2013 inclusive, using details of 97,800 encounters between general practitioners (GPs) and patients (almost a 0.1% sample of all general practice encounters) from a random sample of 978 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 2003–04 to 2012–13,*[1] available at <purl.library.usyd.edu.au/sup/9781743323793>. 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 1.5 million encounters from 14,793 participants representing 9,630 individual GPs.

1.1   Background

In June 2012, the population of Australia was estimated to be 22.7 million people.[2] Australia's health expenditure in 2010–11 was $130.3 billion, an average $5,796 per head of population, and accounted for 9.3% of GDP. Governments funded 69.9%, with the remainder (30.1%) being paid by the non-government sector.[3] Government expenditure on general practice services (including those of practice nurses) was almost $5.6 billion dollars in the 2011–12 financial year.[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 most of an individual's cost for a GP visit.

In Australia in 2011, there were 25,056 practising GPs (medical practitioners self-identifying as GPs), making up 25,063 full-time equivalents (FTE, based on a 40-hour week), or 109.7 FTE GPs per 100,000 people.[5]

In the April 2012 to March 2013 year, about 85% of the Australian population claimed at least one GP service from Medicare (personal communication, Department of Health and Ageing [DoHA], June 2013). In the same period, Medicare paid rebates for about 126.8 million claimed general practice service items (excluding practice nurse items),[6] at an average of about 5.59 GP visits per head of population or 6.57 visits per person who visited at least once. This equates to about 2.44 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 16th year. The BEACH database now includes records for 1,479,300 GP–patient encounters from 14,793 participating GPs. Each year we publish an annual report of BEACH results collected in the previous 12 months. This publication reports results from April 2012 to March 2013. The companion publication *A decade of Australian general practice activity 2003–04 to 2012–13,*[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, and directly linking management actions to the morbidity under management.
- The sheer size of the GP sample (1,000 per year) and the relatively small cluster of encounters around each GP provide more reliable estimates than a smaller number of GPs with large clusters of patients and/or encounters.[7] Our access to a regular random sample of recognised GPs in active practice, through DoHA, ensures that the GP sample is drawn from a very reliable sample frame of currently active GPs.
- There are sufficient details about the characteristics of all GPs in the sample frame to test the representativeness of the final sample, and to apply post-stratification weighting to correct for any under or over-representation in the sample when compared with the sample frame. The ever-changing nature of the sample (where each GP can participate only once per triennium) ensures reliable representation of what is happening in general practice across the country. The sampling methods ensure that new entrants to the profession are available for selection because the sample frame is based on the most recent Medicare 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.

- Each GP records for a set number of encounters (100), but there is wide variance among them in the number of patient consultations they conduct in any one year. DoHA therefore provides an individual count of activity level (that is, number of 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.

- 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. In contrast, systems such as electronic health records rely on the GP to complete fields of interest without guidance.

- BEACH includes all patient encounters and management activities provided at these encounters, not just those encounters and activities funded by Medicare.

- 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 advise for over-the-counter (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 link from all management actions (for example, prescribing, ordering tests) to the problem under management 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 use of an internationally standard well-structured classification system (ICPC-2)[8] designed specifically for general practice, together with the use of an extended vocabulary of terms which facilitates reliable classification of the data by trained secondary coders, removes the guesswork often applied in word searches of available records (in free text format) and in classification of a concept.

- The 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 others. This section summarises differences between BEACH and other national sources of data about general practice in Australia.

The Pharmaceutical Benefits Scheme

Prescribed medications paid under the PBS are recorded by Medicare Australia. The PBS data:

- count the prescription each time it crosses the pharmacist's counter (so that one prescription written by the GP with five repeats in BEACH would be counted by the PBS six times if the patient filled all repeats)
- count only those prescribed medications subsidised by the PBS and costing more than the minimum subsidy (and therefore covered by the PBS for all patients), or medications prescribed for those holding a Commonwealth concession card or for those who have reached the safety net threshold
- will change with each change in the PBS 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.[10-12]

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 PBS minimum subsidy level and would not be counted in the PBS data, except where patients received the medication under the PBS because they are Commonwealth concession cardholders or had reached the annual safety net threshold.[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 some patient demographics, but hold no information about the content of the consultation.
- BEACH participants were limited to recording three Medicare item numbers for each encounter. In contrast, MBS data include all Medicare item numbers claimed. In the BEACH data set this may result in a lower number of 'other' Medicare items than would be counted in the Medicare data.
- In activities of relatively low frequency with a skewed distribution across individual GPs, the relative frequency of the event in the BEACH data may not reflect that reported in the MBS data. For example, a 2002 study of early uptake of some enhanced primary care items by GPs demonstrated that almost half the enhanced primary care items claimed came from about 6% of active GPs.[13] 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 data are generated by GP orders.[14]
- 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 multi-biochemical analysis may differ between companies.
- The pathology companies can charge through the MBS only for the three most expensive items undertaken, even when more were actually done. This is called 'coning' and is part of the DoHA pathology payment system. This means that the tests recorded in the MBS include only those charged for, not all those that were done. Coning applies only to GP pathology orders, not to those generated by medical specialists.
- This means that the MBS pathology data reflect those tests billed to the MBS after interpretation of the order by the pathologist, and after selection of the three most expensive items.
- Pathology MBS items contain pathology tests that have been grouped on the basis of cost (for example, 'any two of the following … tests'). Therefore an MBS item often does not give a clear picture of the precise tests performed.

In BEACH, the pathology data:
- include details of pathology tests ordered by the participating GPs; however, the GP is limited to the recording of five tests or battery of tests at each encounter, and as the number of tests/batteries ordered on any single occasion is increasing,[15] 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:

- *Are rates of pathology test ordering higher in general practices co-located with pathology collection centres?*[16] 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.*[17]
- *Changes in pathology ordering by general practitioners in Australia 1998–2001.*[18]

Imaging data from the MBS

Some of the issues discussed regarding pathology data also apply to imaging data. Although coning is not an issue for imaging, radiologists can decide whether the test ordered by the GP is the most suitable and whether to undertake other tests of their choosing. The MBS data therefore reflect the tests that are actually undertaken by the radiologist, whereas the BEACH data reflect those ordered by the GP.

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.[19]

- 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.[19]
- 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.[20]

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,[21,22] with about 85% of Australians visiting a GP at least once in 2012–13 (personal communication, DoHA, June 2013). Disease management

rates are a product of both the prevalence of the disease/health problem in the population, and the frequency with which a patient visits a GP for the treatment of that problem. Those who are older and/or have more chronic disease, are therefore likely to visit more often, and have a greater chance of being sampled in the encounter data.

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,*[23] *Prevalence and patterns of multimorbidity in Australia,*[24] and *Prevalence of chronic conditions in Australia.*[25]

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 2013 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*[26]
- April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[27]
- August 2006 to March 2012 were published in each of the BEACH annual reports[28-33]
- April 2012 to March 2013 are included in Chapter 15 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 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 three-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 three-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 DoHA 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 DoHA.
- Over the following 10 days, the telephone numbers generated from the Medicare data are checked using the electronic white and yellow pages. This is necessary because many of the telephone numbers provided from the Medicare data are incorrect.
- The GPs are then telephoned in the order they were approached and, referring to the approach letter, asked whether they will participate.
- This initial telephone contact with the practice often indicates that the selected GP has moved elsewhere, but is still in practice. Where 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 2012–13 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 Commonwealth concession cardholder, holder of a Repatriation Health Card (from DVA), non-English-speaking background (patient self-report – a language other than English is the primary language at home), Aboriginal person (self-identification), and Torres Strait Islander person (self-identification). Space is provided for up to three patient reasons for encounter (RFEs) (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).

GP characteristics

- age and sex
- years in general practice
- country of graduation
- direct patient care hours/week
- FRACGP status (yes/no)
- FACRRM status (yes/no)
- currently a registrar (yes/no)
- clinical use of computers

Practice characteristics

- practice size (no. & FTE GPs)
- practice nurse(s) (no. & FTE)
- after-hours arrangements
- postcode
- presence of other health services

The encounter

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

The patient

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

Patient substudies (SAND)

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

Problems managed

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

Management of each problem

Medications (up to four per problem)

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

Other treatments (up to two per problem)

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

Other management

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

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 ten 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 2012 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*[26]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*[27]
- conducted between August 2006 and March 2012 have been published in each of the general practice activity annual reports[28-33]
- conducted in the 2012–13 BEACH year are provided in Chapter 15 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 2012–13 BEACH data was conducted with Statistical Analysis System (SAS) version 9.3,[34] 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 the intracluster correlation, and adjust the confidence intervals accordingly.[34]

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, but significance of differences in/for rates is judged by non-overlapping confidence intervals 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 (CIs) is a conservative measure of significance,[35-37] 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 in this and the companion publication, we believe a 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), a product 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,[38] and is the declared national standard in Australia for reporting of health data from general practice and patient self-reported health information.[39]

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[40] 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.[41] 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),[42] a comparison of country and metropolitan general practice 1990–91 (51,277 encounters),[43] the Morbidity and Therapeutic Index 1992–1998 (a clinical audit tool that was available to GPs) (approximately 400,000 encounters), and BEACH 1998–2012 (about 1.4 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: <purl.library.usyd.edu.au/sup/9781743323779>.

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[44] classified according to ICPC-2 was applied to the BEACH data set. In general reporting, both chronic and non-chronic conditions (for example, diabetes and gestational diabetes) may have been grouped together when reporting (for example, diabetes – all*). When reporting chronic morbidity, only problems regarded as chronic have been included in the analysis. Where the group used for the chronic analysis differs from that used in other analyses in this report, they are marked with a double asterisk. Codes included in the chronic groups are provided in Appendix 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 cardiovascular system; a CT scan of the lumbar spine is classified as L41 – Diagnostic radiology/imaging of the musculoskeletal system). In Australia, the MBS classifies pathology and imaging tests in groups that are

relatively well recognised. The team therefore 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)[45] classification, which is the Australian standard for classifying medications at the generic level.[39] 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 thought that because the question referred specifically to PNs, and recording of work done by AHWs was not specifically requested. These results therefore have the potential to be an underestimate of the work undertaken at GP–patient encounters by PNs and 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.[46] 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,[47] the degree to which GP-reported patient RFEs and problems managed accurately reflect those recalled by the patient,[48] and reliability of secondary coding of RFEs[49] and problems managed.[42] The validity of ICPC as a tool with which to classify the data has also been investigated in earlier work.[50]

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[51] and Barsky[52] 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.[53] 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.[54,55] 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.[51] 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).[56]

The extent to which therapeutic decisions may influence the diagnostic label selected has also been discussed. Howie[57] and Anderson[54] 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.[58] 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.[59] Differences in the way male and female GPs label problems also appear to be independent of such influences.[60]

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.[61] 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'.[54]

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.[62,63] 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.[64]

2.11 Extrapolated national estimates

A section at the end of each chapter highlights changes that have occurred over the decade 2003–04 to 2012–13. These sections summarise results published in the companion publication, *A decade of Australian general practice activity 2003–04 to 2012–13*.[1] Where the results demonstrate a significant change over time, the estimated national change across total GP Medicare services from 2003–04 to 2012–13 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 2012–13 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, 126.8 million in 2012–13 (rounded to the nearest 100,000, see Table 2.1), to give the estimated number of the selected event across Australia in 2012–13.

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

* divide the 'rate per 100 encounters' of the selected event for 2003–04 by 100, and then multiply by the total number of GP service items claimed through Medicare in that year, 96.3 million (rounded to the nearest 100,000, see Table 2.1), to give the estimated national number of events in 2003–04.
* repeat the process using data for 2012–13.

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 2003–04 to 2012–13), 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 2012–13, when compared with 2003–04.

Table 2.1 provides the rounded number of GP service items claimed from Medicare in each financial year from 2003–04 to 2012–13.

Table 2.1: Rounded number of general practice professional services claimed from Medicare Australia each financial year, 2003–04 to 2012–13 (million)

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13[a]
Rounded number of MBS GP items of service claimed	96.3	98.2	101.1	103.4	109.5	113.0	116.6	119.2	123.9	126.8

(a)   Medicare data for the 2012–13 year included data from the April 2012 to March 2013 quarters because the 2012–13 financial year data were not available at the time of preparation of this report.

Source: Medicare statistics[4,6]

Examples of extrapolation:

1. Number of GP encounters at which hypertension was managed nationally in 2012–13

Hypertension was managed at a rate of 8.6 per 100 GP encounters (95% CI: 8.1–9.1) in 2012–13 (shown in Table 7.3). How many times does this suggest that hypertension was managed in GP encounters across Australia in 2012–13?

Our best estimate is: 10.9 million times [(8.6/100) x 126.8 million], but we are 95% confident that the true number lies between 10.3 million [(8.1/100) x 126.8 million] and 11.5 million [(9.1/100) x 126.8 million].

2. National increase in the number of problems managed from 2003–04 to 2012–13

There was a statistically significant increase in the number of problems managed at encounter, from 146.3 per 100 encounters in 2003–04 to 154.7 in 2012–13 (see Table 7.2 in *A decade of Australian general practice activity 2003–04 to 2012–13*[1]). The calculation used to extrapolate the effect of this change across Australia is:

(146.3/100) x 96.3 million = 140.9 million problems managed nationally in 2003–04, and
(154.7/100) x 126.8 million = 196.2 million problems managed nationally in 2012–13.

This suggests there were 55.3 million (196.2 million minus 140.9 million) more problems managed at GP–patient encounters in Australia in 2012–13 than in 2003–04.

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.

Extrapolations are based on the unit of the encounter because the number of national encounters is quantifiable using Medicare claims data. However, the reader should be aware that where an event can occur more than once per encounter, the extrapolation represents the number of occasions at which that event occurs in general practice encounters, rather than the number of encounters where that event occurs.

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 2003–04 to 2012–13 in the companion report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

3.1   Response rate

A random sample of GPs who claimed at least 375 general practice Medicare items of service in the previous three months is regularly drawn from Medicare claims data by the Australian Government Department of Health and Ageing (DoHA) (see Chapter 2).

Contact was attempted with 4,852 GPs but 20.0% could not be contacted. More than one-third (37.3%) of these had moved (and were untraceable), or had retired or died (Table 3.1), although more than half were those with whom contact could not be established after five calls. Younger GPs were harder to contact. Of the GPs approached who were aged less than 35 years, 21.6% were no longer at that practice and could not be traced. These would largely be registrars moving through practices during training. In contrast, 5.7% of GPs aged 35 years and over were not traceable (results not shown).

The final participating sample consisted of 978 practitioners, representing 25.2% of those who were contacted and available, and 20.2% 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* = 4,852)	Per cent of contacts established (*n* = 3,874)
Letter sent and phone contact attempted	4,852	100.0	—
No contact	978	20.0	—
No phone number	33	0.7	—
Moved/retired/deceased	365	7.5	—
Unavailable (overseas, maternity leave, etc)	65	1.3	—
No contact after five calls	515	10.6	—
Telephone contact established	3,874	79.8	100.0
Declined to participate	2,626	54.1	67.8
Agreed but withdrew	270	5.6	7.0
Agreed and completed	978	20.2	25.2

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 methods 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. DoHA 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, place of graduation, state, or practice location as classified by the Australian Standard Geographical Classification. In the final BEACH GP sample, there was a slight under-representation of GPs in the 35–44 year age group, and a slight over-representation in the 45–54 year age group, compared with the Australian sample frame.

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

Variable	BEACH[(a)(b)]		Australia[(a)(c)]	
	Number	Per cent of GPs (n = 978)	Number	Per cent of GPs (n = 21,676)
Sex (χ^2 = 3.36, p = 0.067)				
Males	556	56.9	12,960	59.8
Females	422	43.1	8,716	40.2
Age (χ^2 = 9.83, p = 0.02)				
< 35 years	82	8.5	1,724	8.0
35–44 years	165	17.0	4,418	20.4
45–54 years	322	33.2	6,402	29.5
55+ years	401	41.3	9,132	42.1
Missing	8			
Place of graduation (χ^2 = 2.6, p = 0.1)				
Australia	645	66.2	13,786	63.6
Overseas	330	33.8	7,890	36.4
Missing	3			
State (χ^2 = 10.7, p = 0.15)				
New South Wales	341	34.9	7,091	32.7
Victoria	207	21.2	5,365	24.8
Queensland	203	20.8	4,350	20.1
South Australia	75	7.7	1,768	8.2
Western Australia	105	10.7	2,033	9.4
Tasmania	23	2.4	560	2.6
Australian Capital Territory	13	1.3	344	1.6
Northern Territory	11	1.1	165	0.8
ASGC (χ^2 = 8.48, p = 0.07)				
Major Cities of Australia	673	68.8	15,348	70.8
Inner Regional Australia	188	19.2	4,106	18.9
Outer Regional Australia	103	10.5	1,784	8.2
Remote Australia	10	1.0	268	1.2
Very Remote Australia	4	0.4	167	0.8

(a)   Missing data removed.

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

(c)   All GPs who claimed at least 375 MBS GP consultation services during the most recent three month Medicare Australia data period. Data provided by the Department of Health and Ageing.

Note: ASGC – Australian Standard Geographical Classification.[65]

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 DoHA 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 Australian sample frame.

When comparing GP activity level in the previous 12 months, there was a smaller proportion of GPs in the final participant sample who had claimed fewer than 1,500 services in the previous year, and a larger proportion who had claimed 1,501–3,000 services. The 3,001–6,000 and >6,000 claims categories were proportionally similar. However, comparison of the mean number of claims made by the participating GPs and those in the GP sample frame showed that the mean for the sample frame was included in the confidence intervals around the participant mean, indicating no significant different between the two measures (Table 3.3).

The similarity of the BEACH participants to the national sample frame in terms of age, sex, place of graduation, state and practice location, and the marginal difference in activity level (equating to about half of one consultation per day), shows a final BEACH participant sample that is highly representative of GPs in the Australian sample frame.

Table 3.3: Annual activity level of participating GPs and GPs in the sample frame

Variable	Participants[a] (*n* = 978)		Australia (*n* = 21,676)	
	Number of GPs	Per cent	Number of GPs	Per cent
Activity (χ^2 = 22.76, *p* < 0.0001)				
1–1,500 services in previous year	59	6.0	1,901	9.0
1,501–3,000 services in previous year	236	24.1	4,105	19.4
3,001–6,000 services in previous year	400	40.9	8,361	39.6
> 6,000 services in previous year	283	28.9	6,739	31.9
	Number of claims	95% CI	Number of claims	
Mean activity level	4,947.6	4,762.6–5,132.5	5,103.4	—
Standard deviation	2,947.5	—	—	—
Median activity level	4,357.5	—	—	—

(a)   Missing data removed.

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. The BEACH participants were representative in all age and sex categories, but because there are always marginal (even if not statistically significant) differences, post-stratification weighting was applied for consistency over recording years.

Activity weights

In BEACH, each GP provides details of 100 consecutive 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. 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 DoHA).

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 2012–13 study period (data provided by DoHA).

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 precision ratios all within the 0.91–1.09 range. Even prior to the weightings, the range of raw precision ratios (0.90–1.14) indicates that the BEACH sample is a good representation of Australian GP–patient encounters, as only one age–sex category varied by more than 10% from the population distribution.

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* = 81,099)	Number	Per cent (*n* = 82,015)	Per cent (*n* = 108,487,877)	Raw[a]	Weighted[c]
All							
< 1 year	1,723	2.1	1,607	2.0	2.0	1.08	1.00
1–4 years	4,039	5.0	3,998	4.9	5.0	0.99	0.97
5–14 years	4,523	5.6	4,567	5.6	6.1	0.91	0.91
15–24 years	6,937	8.6	6,891	8.4	8.7	0.99	0.97
25–44 years	18,200	22.4	18,350	22.4	22.8	0.98	0.98
45–64 years	22,206	27.4	22,635	27.6	27.0	1.02	1.02
65–74 years	11,389	14.0	11,681	14.2	13.3	1.05	1.07
75+ years	12,082	14.9	12,286	15.0	15.1	0.99	0.99
Male							
< 1 year	907	1.1	864	1.1	1.1	1.06	1.00
1–4 years	2,137	2.6	2,129	2.6	2.7	0.99	0.97
5–14 years	2,310	2.8	2,357	2.9	3.1	0.91	0.92
15–24 years	2,314	2.9	2,492	3.0	3.2	0.90	0.96
25–44 years	6,344	7.8	7,079	8.6	8.6	0.91	1.00
45–64 years	8,865	10.9	9,835	12.0	11.6	0.94	1.03
65–74 years	4,758	5.9	5,269	6.4	6.2	0.95	1.04
75+ years	4,777	5.9	5,198	6.3	6.3	0.94	1.01
Female							
< 1 year	816	1.0	743	0.9	0.9	1.11	1.00
1–4 years	1,902	2.3	1,869	2.3	2.4	1.00	0.97
5–14 years	2,213	2.7	2,210	2.7	3.0	0.92	0.91
15–24 years	4,623	5.7	4,399	5.4	5.5	1.04	0.97
25–44 years	11,856	14.6	11,271	13.7	14.3	1.03	0.96
45–64 years	13,341	16.5	12,800	15.6	15.3	1.07	1.02
65–74 years	6,631	8.2	6,412	7.8	7.2	1.14	1.09
75+ years	7,305	9.0	7,089	8.6	8.8	1.02	0.98

(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 and Ageing.

Note: GP consultation Medicare services – see 'Glossary'. Only encounters with a valid age and sex are included in the comparison.
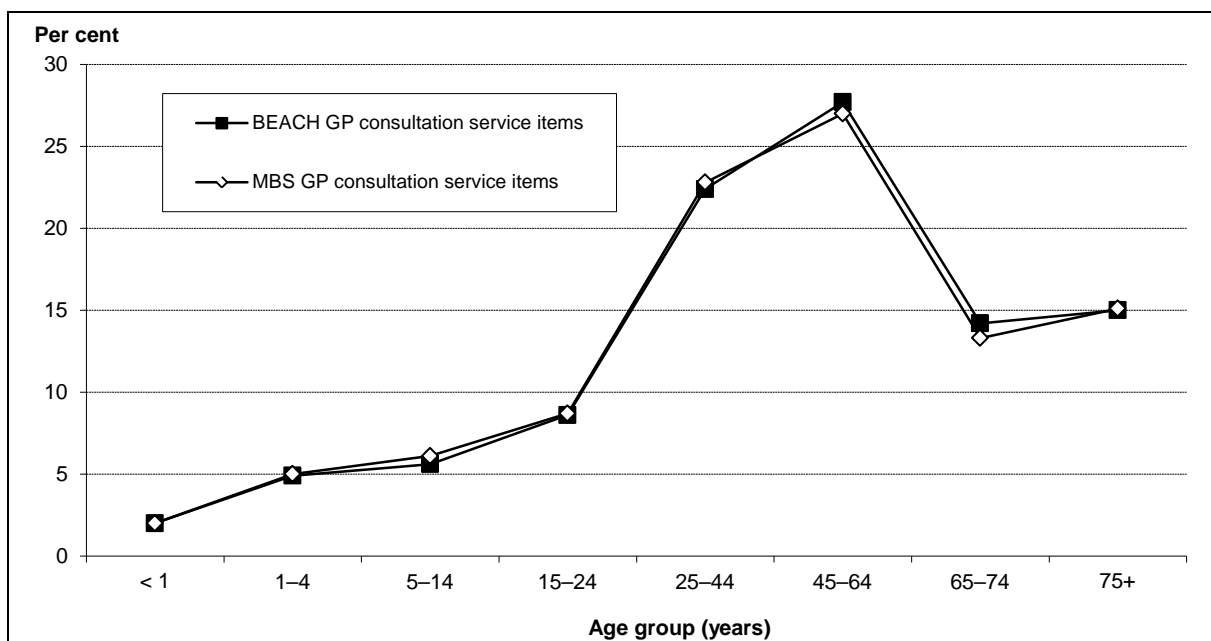
Figure 3.1: Age distribution of all patients at BEACH and MBS GP consultation service,s 2012–13
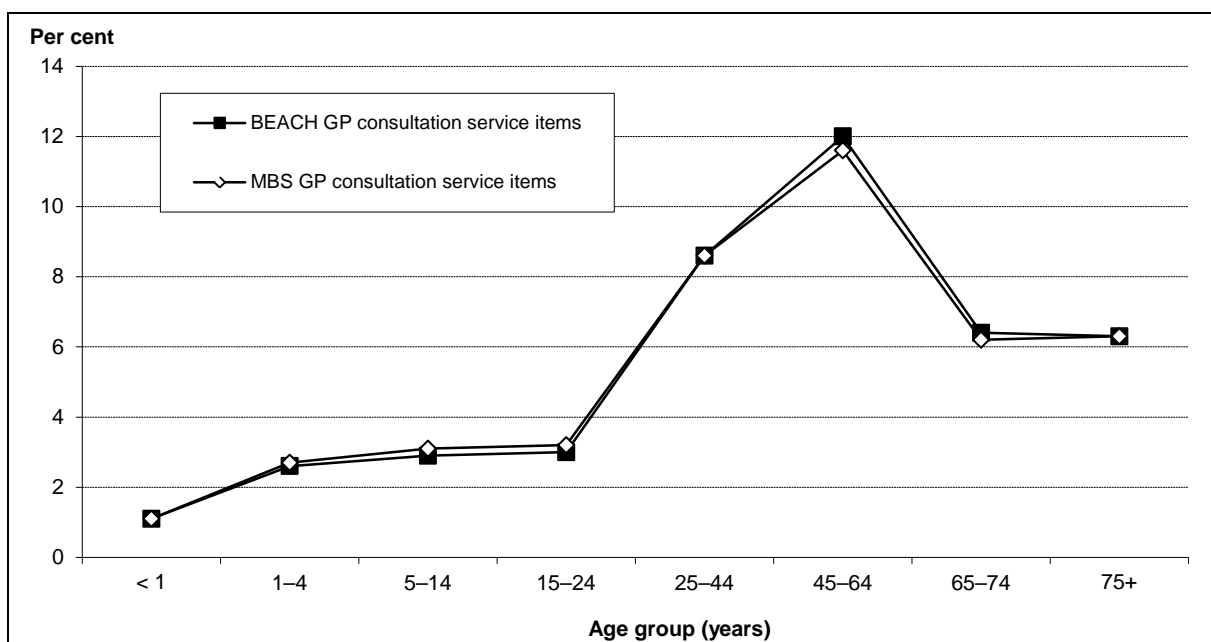
Figure 3.2: Age distribution of male patients at BEACH and MBS GP consultation services, 2012–13

Figure 3.3: Age distribution of female patients at BEACH and MBS GP consultation services, 2012–13
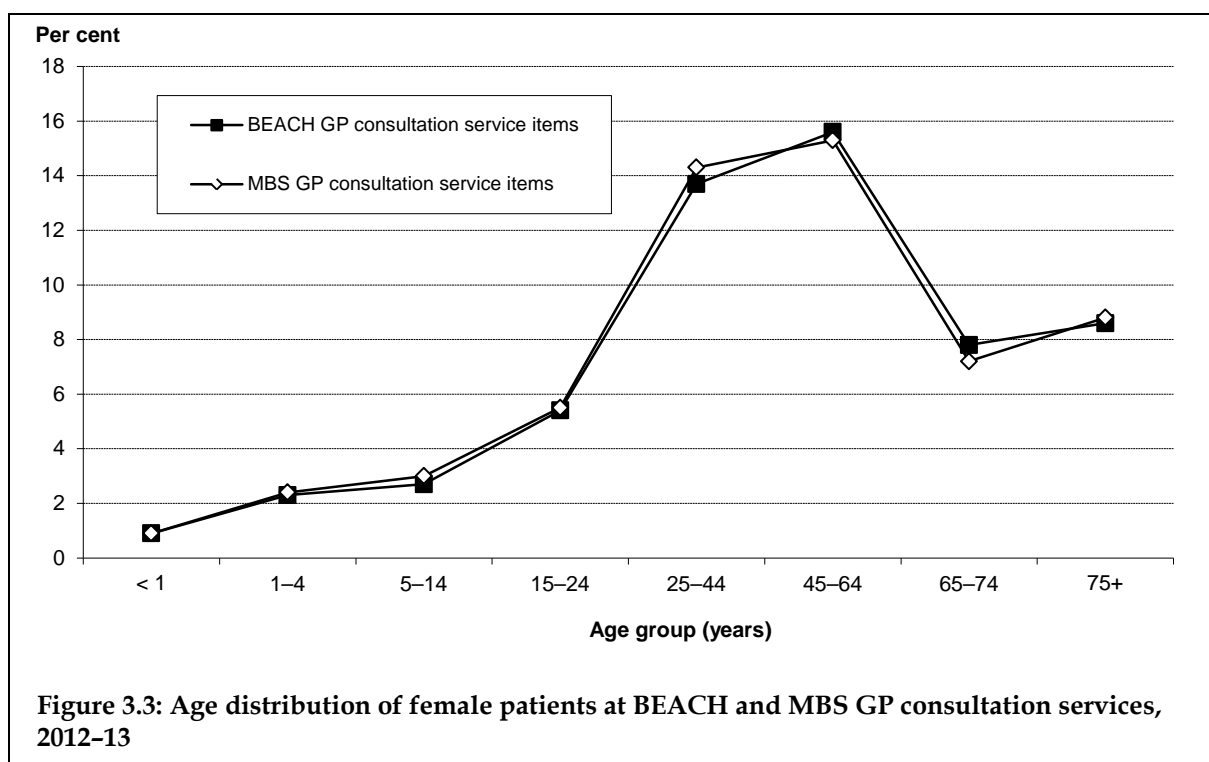
3.5 The weighted data set

The final unweighted data set from the 15th 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, 2012–13

Variable	Raw	Weighted
General practitioners	978	978
Encounters	97,800	98,564
Reasons for encounter	152,319	152,278
Problems managed	155,212	152,517
Medications	99,439	101,065
Other treatments[a]	55,636	53,163
Referrals and admissions	16,491	15,417
Pathology	50,442	46,398
Imaging	10,432	10,163
Other investigations	893	856

(a) Other treatments excludes injections for immunisations/vaccinations (raw *n* = 3,844, weighted
      n = 3,636) (see Chapter 10).

4 The participating GPs

This chapter reports data collected between April 2012 and March 2013 about the participating GPs and their practices from the 15th year of the BEACH program. Details of GP and practice characteristics are reported for each year from 2003–04 to 2012–13 in the ten-year summary report *A decade of Australian general practice activity 2003–04 to 2012–13.*[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. Of the 978 participants:

- 56.9% were male, and 41.3% were aged 55 years and over (mean age 51.5 years)
- 59.5% had been in general practice for more than 20 years
- 66.2% had graduated in Australia and 11.7% in Asia
- 33.0% spent more than 40 hours each week on direct patient care services (mean hours worked was 37.5; median was 38.0 hours)
- 36.2% expected to decrease their hours spent on direct patient care in the next 5 years
- more than 55% were Fellows of the RACGP, and 8.4% were Fellows of the ACRRM
- 52.5% had provided care in a residential aged care facility in the previous month
- 68.8% practised in *Major cities* (using Australian Standard Geographical Classification)[65]
- 73.9% worked at only one practice location in a regular week, and 21.1% worked in two
- 33.1% were in practices of fewer than five individual GPs, and 21% were in practices of ten or more individual GPs. On average, there were 6.5 individual GPs per practice, with a median of 6 per practice
- 50.8% were in practices of fewer than five full-time equivalent (FTE) GPs. On average, there were 4.7 FTE GPs per practice, with a median of 4 FTE GPs per practice
- 81.6% of the GPs worked in a practice that employed practice nursing staff—for more than one-third of these (35.3%) 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 two-thirds (63.0%) had a co-located pathology laboratory or collection centre in or within 50 metres of the practice, and almost half (48.5%) a co-located psychologist
- 43.5% worked in a practice that provided their own or cooperative after-hours care, and 53.3% 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.*[66] 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.*[67] For more information about the effect of the sex of the GP on clinical practice see Harrison et al. (2011) *Sex of the GP.*[68]

Table 4.1: Characteristics of participating GPs and their practices

GP characteristic	Number[a]	Per cent of GPs[a] (n = 978)
Sex (missing n = 0)		
Male	556	56.9
Female	422	43.1
Age (missing n = 8)		
< 35 years	82	8.5
35–44 years	165	17.0
45–54 years	322	33.2
55+ years	401	41.3
Years in general practice (missing n = 11)		
< 2 years	25	2.6
2–5 years	105	10.9
6–10 years	96	9.9
11–19 years	166	17.2
20+ years	575	59.5
Place of graduation (missing n = 3)		
Australia	645	66.2
Overseas	330	33.8
Asia	114	11.7
United Kingdom/Ireland	90	9.2
Africa and Middle East	62	6.4
Europe	29	3.0
New Zealand	21	2.2
Other	14	1.4
Direct patient care hours (worked) per week (missing n = 12)		
≤ 10 hours	14	1.5
11–20 hours	98	10.1
21–40 hours	535	55.4
41–60 hours	301	31.2
61+ hours	18	1.9
Expectations for providing direct patient care in 5 yrs time (missing n = 13)		
Increase number of working hours	98	10.2
No change to number of working hours	413	42.8
Decrease number of working hours	348	36.1
Stop working as a GP	72	7.5
Unsure about future work as a GP	34	3.5
Currently in general practice training program (missing n = 8)	59	3.1
Fellow of RACGP (missing n = 6)	541	55.7
Fellow of ACRRM (missing n = 35)	79	8.4

(continued)

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

GP characteristic	Number[a]	Per cent of GPs[a] (n = 978)
Patient care provided in previous month[b]		
In a residential aged care facility (missing n = 6)	510	52.5
As a salaried/sessional hospital medical officer (missing n = 7)	123	12.7
Practice location by RRMA (missing n = 0)		
Capital	617	63.1
Other metropolitan	76	7.8
Large rural	76	7.8
Small rural	63	6.4
Other rural	132	13.5
Remote central	7	0.7
Other remote, offshore	7	0.7
Practice location by ASGC remoteness structure (missing n = 0)		
Major cities	673	68.8
Inner regional	188	19.2
Outer regional	103	10.5
Remote	10	1.0
Very remote	4	0.4
Number of practice locations worked at in a regular week (missing n = 12)		
1	713	73.8
2	203	21.0
3	44	4.6
4	4	0.4
5	2	0.2
Size of practice – number of individual GPs (missing n = 28)		
Solo	93	9.8
2–4	221	23.3
5–9	367	38.6
10–14	192	20.2
15+	77	8.1
Size of practice – full-time equivalent GPs (missing n = 136)		
< 1	1	0.1
1.0– <2	99	11.8
2.0– <3	93	11.1
3.0– <4	105	12.5
4.0– <5	130	15.4
5.0– <10	322	38.2
10.0– <15	67	8.0
15+	25	3.0

(continued)

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

GP characteristic	Number[a]	Per cent of GPs[a] (n = 978)
Practice nurse at major practice address (missing n = 10)	790	81.6
Number of individual practice nurses (missing n = 30)		
0	178	18.8
1	127	13.4
2	202	21.3
3	141	14.9
4–5	192	20.1
6+	108	11.4
Number of full-time equivalent practice nurses (missing n = 168)		
0	178	22.0
< 1	58	7.2
1.0– <2	228	28.2
2.0– <3	169	20.9
3.0– <4	100	12.4
4.0+	77	9.5
Co-located services[c] (missing n = 9)		
Pathology laboratory/collection centre	610	63.0
Psychologist	470	48.5
Physiotherapist	337	34.8
Medical specialist	203	21.0
Imaging/radiology services	157	16.2
After-hours arrangements[b] (missing n = 5)		
Practice does own and/or cooperative with other practices	423	43.5
Practice does its own	299	30.7
Cooperative with other practices	145	14.9
Deputising service	519	53.3
Other arrangement	89	9.2

(a) Missing data removed.
(b) Multiple responses allowed.
(c) Services located/available on the same premises, in the same building or within 50 metres, available on a daily or regular basis.
Note: RRMA – Rural, Remote and Metropolitan Areas classification; 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 = 978)	95% LCL	95% UCL
Mean age of participating GPs (missing n = 8)	51.5	50.8	52.2
Mean hours worked per week on direct patient care (missing n = 12)	37.6	36.7	38.4
Mean number of individual GPs at major practice address (missing n = 16)	6.5	6.2	6.7
Mean number of FTE GPs at major practice address (missing n = 108)	4.7	4.5	4.9
FTE Practice nurse: FTE GP (missing n = 225)	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 2012–13 so that more comprehensive information could be gained 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 practice was completely paperless in this regard.

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

- Only 3.8% of GPs did not use a computer at all for clinical purposes.
- 95.7% of GPs were producing prescriptions electronically.
- More than two-thirds (70.4%) reported they had electronic medical records exclusively (that is, were paperless).
- More than one-quarter (25.8%) 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 = 978)
Computer not used for any clinical purposes (missing *n* = 4)	37	3.8
Not available	21	2.2
Available, not used	8	0.8
Internet/email only	8	0.8
Clinical use		
Prescribing[a] (missing *n* = 24)		
Electronic (ePrescribing online)	276	28.9
(*Electronic + print scripts)*	*(62)*	*(6.5)*
Print scripts only	637	66.8
Paper only (handwritten)	41	4.3
Internet (missing *n* = 4)	750	77.0
Email (missing *n* = 4)	592	60.8
Medical records (missing *n* = 10)		
Complete (paperless)	681	70.4
Partial/hybrid records	250	25.8
Paper records only	37	3.8

(a)   Multiple responses allowed.

*   Sub-set 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*.[69]

4.3   Changes in characteristics of the GPs over the decade 2003–04 to 2012–13

Changes over the decade 2003–04 to 2012–13 are described in detail in the accompanying report *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 GPs who graduated from their primary medical degree in Australia decreased over the decade
- 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 more than 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
- 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 2012–13 BEACH year. Data about the encounters are reported for each year from 2003–04 to 2012–13 in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

5.1   Content of the encounters

In 2012–13, details of 98,564 encounters (weighted data) were available for 978 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 155 problems per 100 encounters.
- Chronic problems accounted for 36.0% of all problems managed, and an average of 55.7 chronic problems were managed per 100 encounters.
- New problems accounted for 37.0% of all problems, and on average 57.3 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 (102.5 per 100 encounters), most of these being prescribed (83.3 per 100), rather than supplied by the GP (9.9 per 100) or advised for over-the-counter purchase (9.4 per 100).
- For an 'average' 100 GP–patient encounters, GPs provided 103 medications and 37 clinical treatments (such as advice and counselling), undertook 17 procedures, made 9 referrals to medical specialists and 5 to allied health services, and placed 47 pathology test orders and 10 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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
General practitioners	978	—	—	—	—	—	—
Encounters	98,564	—	—	—	—	—	—
Reasons for encounter	152,278	154.5	152.7	156.3	—	—	—
Problems managed	152,517	154.7	152.5	157.0	—	—	—
New problems	56,454	57.3	55.7	58.8	37.0	36.0	38.0
Chronic problems	54,944	55.7	53.7	57.8	36.0	35.0	37.0
Work-related	2,319	2.4	2.2	2.5	1.5	1.4	1.6
Medications	101,065	102.5	100.2	104.9	66.3	64.9	67.6
Prescribed	82,079	83.3	81.0	85.5	53.8	52.5	55.1
GP-supplied	9,728	9.9	9.1	10.7	6.4	5.9	6.9
Advised OTC	9,258	9.4	8.4	10.3	6.1	5.5	6.7
Other treatments[a]	53,163	53.9	51.2	56.7	34.9	33.2	36.5
Clinical*	36,023	36.5	34.2	38.9	23.6	22.2	25.1
Procedural*	17,140	17.4	16.5	18.3	11.2	10.7	11.8
Referrals	14,561	14.8	14.2	15.4	9.5	9.2	9.9
Medical specialist*	8,750	8.9	8.5	9.3	5.7	5.5	6.0
Allied health services*	4,616	4.7	4.4	5.0	3.0	2.8	3.2
Hospital*	354	0.4	0.3	0.4	0.2	0.2	0.3
Emergency department*	270	0.3	0.2	0.3	0.2	0.1	0.2
Other referrals*	571	0.6	0.5	0.7	0.4	0.3	0.4
Pathology	46,398	47.1	45.1	49.0	30.4	29.3	31.5
Imaging	10,163	10.3	9.9	10.8	6.7	6.4	6.9
Other investigations[b]	856	0.9	0.8	1.0	0.6	0.5	0.6

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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, 5.4 and 5.5 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 5.6 provides a breakdown of service item numbers recorded by the GPs.

Table 5.2 provides an overview of the MBS/DVA item numbers recorded in BEACH in 2012–13. At least one MBS/DVA item number was recorded at 85,885 encounters (87.1% of all BEACH encounters). A single item number was recorded at 96.3% 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 = 85,885)
Encounters at which one MBS item was recorded	82,666	96.3
Encounters at which two MBS items were recorded	2,927	3.4
Encounters at which three MBS items were recorded	291	0.3
Total encounters at which at least one item was recorded	**85,885**	**100.00**

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

In previous years we have reported the breakdown of MBS/DVA services into groups for GPs and practice nurses in Table 5.3. The MBS expanded, with some services provided by Aboriginal health workers and other allied health services (e.g. physiotherapists and speech pathologists) claimable through the MBS/DVA. To account for these changes, we modified Table 5.3 last year to group MBS/DVA items according to whether the service was provided by a GP or an 'other health professional'. The group for other health professionals includes practice nurses, Aboriginal health workers and allied health services. Further changes in the MBS items available to other health professionals during the last year have significantly reduced the claimable items.

Of the 90,077 encounters where a payment source was recorded (counting only one item number per encounter), 95.3% related to MBS/DVA GP items of service. Items with other health professionals not accompanied by a GP item of service were recorded at a negligible number of encounters as a result of changes to the practice nurse consultations items in the MBS. Direct encounters are defined as those where the patient was physically seen by the GP. At indirect encounters, the patient was not physically seen by the GP (Table 5.3). More detail about item numbers recorded for practice nurse items is given in Chapter 10.

Table 5.3: Breakdown of MBS/DVA items of service according to provider (counting one item number per encounter)

Type of encounter	Number	Per cent of encounters[a] (n = 90,077)	95% LCL	95% UCL
MBS/DVA GP item of service	85,881	95.3	94.9	95.8
MBS/DVA item of service with other health professional[b] (no related GP item)	4	0.0$^{\mathrm{Ŧ}}$	0.0	0.0
Direct encounters	2	0.0$^{\mathrm{Ŧ}}$	0.0	0.0
Indirect encounters	1	0.0$^{\mathrm{Ŧ}}$	0.0	0.0
Unspecified as direct or indirect	2	0.0$^{\mathrm{Ŧ}}$	0.0	0.0
MBS/DVA item of service (all encounters)[c]	**85,885**	**95.3**	**94.9**	**95.8**

(a) Missing data removed from analysis (n = 8,487).
(b) 'Other health professional' includes practice nurses, allied health services and Aboriginal health workers.
(c) Includes direct encounters at which either a GP or a practice nurse item 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 – Department of Veterans' Affairs.

Table 5.4 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 98.3% of encounters at which a payment source was recorded.
- The vast majority of all direct encounters (95.3%) 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 1.8% of encounters.
- Encounters claimable through other sources (e.g. hospital-paid encounters) accounted for 0.9% of encounters.

Table 5.4: 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* = 90,077)	95% LCL	95% UCL	Per cent of direct encounters (*n* = 88,586)
Indirect encounters[b]	1,506	1.7	1.4	1.9	
Direct encounters	88,568	98.3	98.1	98.6	100.0
MBS/DVA items of service (direct encounters only)[c]	85,870	95.3	94.9	95.8	96.9
Workers compensation	1,580	1.8	1.6	1.9	1.8
Other paid (hospital, state, etc)	785	0.9	0.6	1.2	0.9
No charge	334	0.4	0.3	0.4	0.4
Other health professional only items (unspecified as direct or indirect)	2	0.0Ŧ	0.0	0.0	—
Total	**90,077**	**100.0**	—	—	—

(a) Missing data removed from analysis (*n* = 8,487).

(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 – Department of Veterans' Affairs.

Table 5.5 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 80.6% of MBS/DVA-claimable GP consultations, and for 76.9% of all encounters for which a payment source was recorded.
- 10.0% 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 2.7% 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, 0.4% as health assessments and case conference items were rare.

Table 5.5: Summary of GP only MBS/DVA items recorded (counting one item number per encounter)

MBS/DVA item	Number	Rate per 100 encounters[a] (*n* = 90,077)	95% LCL	95% UCL	Per cent of MBS/DVA recorded GP items (*n* = 85,881)
Short surgery consultations	1,502	1.7	1.4	1.9	1.7
Standard surgery consultations	69,260	76.9	75.8	78.0	80.6
Long surgery consultations	8,071	9.0	8.4	9.6	9.4
Prolonged surgery consultations	491	0.6	0.4	0.6	0.6
Residential aged care facility (RACF) visits	1,490	1.7	1.2	2.1	1.7
Home or institution visits (excluding RACF)	829	0.9	0.7	1.1	1.0
GP mental health care	1,258	1.4	1.2	1.5	1.5
Chronic disease management items	1,232	1.4	1.2	1.5	1.4
Health assessments	346	0.4	0.3	0.4	0.4
Case conferences	11	0.0ᵀ	0.0	0.0	0.0
Attendances associated with Practice Incentives Program payments	187	0.2	0.2	0.3	0.2
Other items	1,203	1.3	1.1	1.6	1.4
Therapeutic procedures	432	0.5	0.3	0.6	0.5
Surgical operations	307	0.3	0.3	0.4	0.4
Acupuncture	262	0.3	0.1	0.4	0.3
Other items	203	0.2	0.1	0.3	0.2
Total MBS/DVA items of service (GPs only)	**85,881**	**95.3**	**94.9**	**95.8**	**100.0**

(a)   Encounters with missing payment source were removed from analysis (*n* = 8,487). Denominator used for analysis *n* = 90.077.

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 – Department of Veterans' Affairs; GP – general practitioner; RACF – residential aged care facility.

Table 5.6 provides the distribution of all Medicare 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 89,394 MBS item numbers recorded at 85,885 Medicare/DVA claimable encounters in 2012–13, an average of 1.0 items per encounter claimable through Medicare/DVA.

Surgery consultations (including short, standard, long and prolonged) were the most commonly recorded type of item number, accounting for 88.7% of all MBS items, one of these items being recorded at 92.4% 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 0.3% of all MBS items, and were recorded at 0.3% of claimable encounters at which at least one MBS item was recorded. A more detailed breakdown of practice nurse item numbers and related data on practice nurse activity is provided in Section 10.4.

Table 5.6: Distribution of MBS/DVA service item numbers recorded, across item number groups and encounters

Items/encounters	All MBS/DVA items[a] (*n* = 89,394)		Encounters with at least one item recorded[b] (*n* = 85,885)			
	Number	Per cent	Number	Per cent	95% LCL	95% UCL
Surgery consultations	79,328	88.7	79,325	92.4	91.7	93.0
Home, institution and residential aged care visits	2,319	2.6	2,319	2.7	2.2	3.2
Chronic disease management items (including case conferences)	2,371	2.7	1,693	2.0	1.7	2.2
Other practice nurse/Aboriginal health worker/allied health worker services	287	0.3	287	0.3	0.1	0.5
GP mental health care items	1,530	1.7	1,530	1.8	1.6	2.0
Surgical operations	1,166	1.3	1,105	1.3	1.1	1.5
Diagnostic procedures and investigations	473	0.5	465	0.5	0.5	0.6
Health assessments	488	0.5	488	0.6	0.5	0.7
Therapeutic procedures	538	0.6	531	0.6	0.5	0.8
Acupuncture	269	0.3	269	0.3	0.1	0.5
Pathology services	148	0.2	144	0.2	0.1	0.2
Attendances associated with Practice Incentives Program payments	236	0.3	236	0.3	0.2	0.3
Diagnostic imaging services	4	0.0[Ŧ]	4	0.0[Ŧ]	0.0	0.0
Other items	238	0.3	238	0.3	0.2	0.4
Total items	**89,394**	**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.

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.

5.3 Consultation length

In a subsample of 34,928 BEACH MBS/DVA-claimable encounters at which start and finish times had been recorded by the GP, the mean length of consultation in 2012–13 was 15.6 minutes (95% CI: 15.3–15.8). The median length was 14.0 minutes (results not tabled).

For A1 MBS/DVA-claimable encounters, the mean length of consultation in 2012–13 was 15.1 minutes (95% CI: 14.9–15.4), 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.

The determinants of consultation length were investigated by Britt et al. (2004) in *Determinants of GP billing in Australia: content and time*[70] and Britt et al. (2005) in *Determinants of consultation length in Australian general practice.*[71]

5.4   Changes in the encounters over the decade 2003–04 to 2012–13

The companion report *A decade of Australian general practice activity 2003–04 to 2012–13*,[1] provides an overview of changes in general practice encounters over the past decade. The major changes between 2003–04 and 2012–13 are summarised below.

- There was an increase in the average number of problems managed at encounter, from 146 per 100 encounters in 2003–04 to 155 in 2012–13. This change was reflected in a marginal increase in the number of chronic problems managed per 100 encounters. However these changes did not result in an increase in the average length of GP–patient encounters which remained static over the decade.
- The number of work-related problems managed significantly decreased over the past 9 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 changes in management actions described below are measured 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 as described in Section 8.1.

- The number of procedures undertaken per 100 encounters rose significantly from 14.7 to 17.4 per 100 encounters.
- There was an increased rate of referrals, which was reflected in referrals to allied health services and (to a lesser degree) to medical specialists.
- Pathology test/battery order rates increased by 34%. Orders for imaging tests also increased.

5.5   Discussion

The number of GP encounters with patients, measured by MBS attendance items for both GPs and other medical practitioners claiming primary care attendance items, increased from 96.3 million in 2003–04 to 126.8 million in 2012–13 (see Section 2.11), an increase of 31.7% over the past decade. This is a great deal more than the increase in the Australian population during this period and may be driven by an ageing population with an increased number of chronic diseases requiring more frequent encounters. This is also reflected in the increase in the number of problems managed at encounter, from 146 to 155 per 100 encounters, and the increase in chronic problems managed from 51.9 to 55.7 per 100 encounters between 2003–04 and 2012–13.

A significant decrease in long surgery consultations occurred in 2008–09 and the rate has remained relatively low since. This coincided with concern being expressed by the Medicare Professional Services Review regarding the number of longer GP consultations being claimed from Medicare. A significant rise in chronic disease management items occurred in 2008–09, (including GP management plans and team care arrangements) and these may be a partial substitute for long consultations for this group of patients.

The significant drop in clinical treatments given at GP encounters in 2005–06 coincided with the introduction of the MBS practice nurse items. This may represent a shift of some of this activity from GPs to practice nurses but undertaken by the nurse outside the encounter and therefore not recorded on the BEACH form. The rate of GP clinical treatments steadily increased since and is now back to 2003–04 levels. The recent removal of practice nurse Medicare items may alter this pattern further in the future.

There was a decrease in home visits in the decade to 2010[72] 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 has been altered from the 2012–13 BEACH data year onwards to ensure we can identify home visits in the future and provide information regarding this important aspect of GP care.

6 The patients

This chapter reports data collected between April 2012 and March 2013 about the characteristics of patients at GP encounters and their reasons for encounter, from the 15th year of the BEACH program. Data on patient characteristics and reasons for encounter are reported for each year from 2003–04 to 2012–13 in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13.*[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 (56.7%) 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 19.7% of encounters, those aged 25–44 years for 22.2%, those aged 45–64 years accounted for 27.6% and those aged 65 years and over for 30.5% of encounters (Table 6.1).

Per cent of encounters

Age group (years)	<1	1–4	5–14	15–24	25–44	45–64	65–74	75+
□ Female	0.8	2.1	2.5	5.2	13.6	15.4	7.6	9.4
■ Male	1.0	2.4	2.7	3.0	8.6	12.2	6.5	6.9

Age group (years)

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, 2012–13
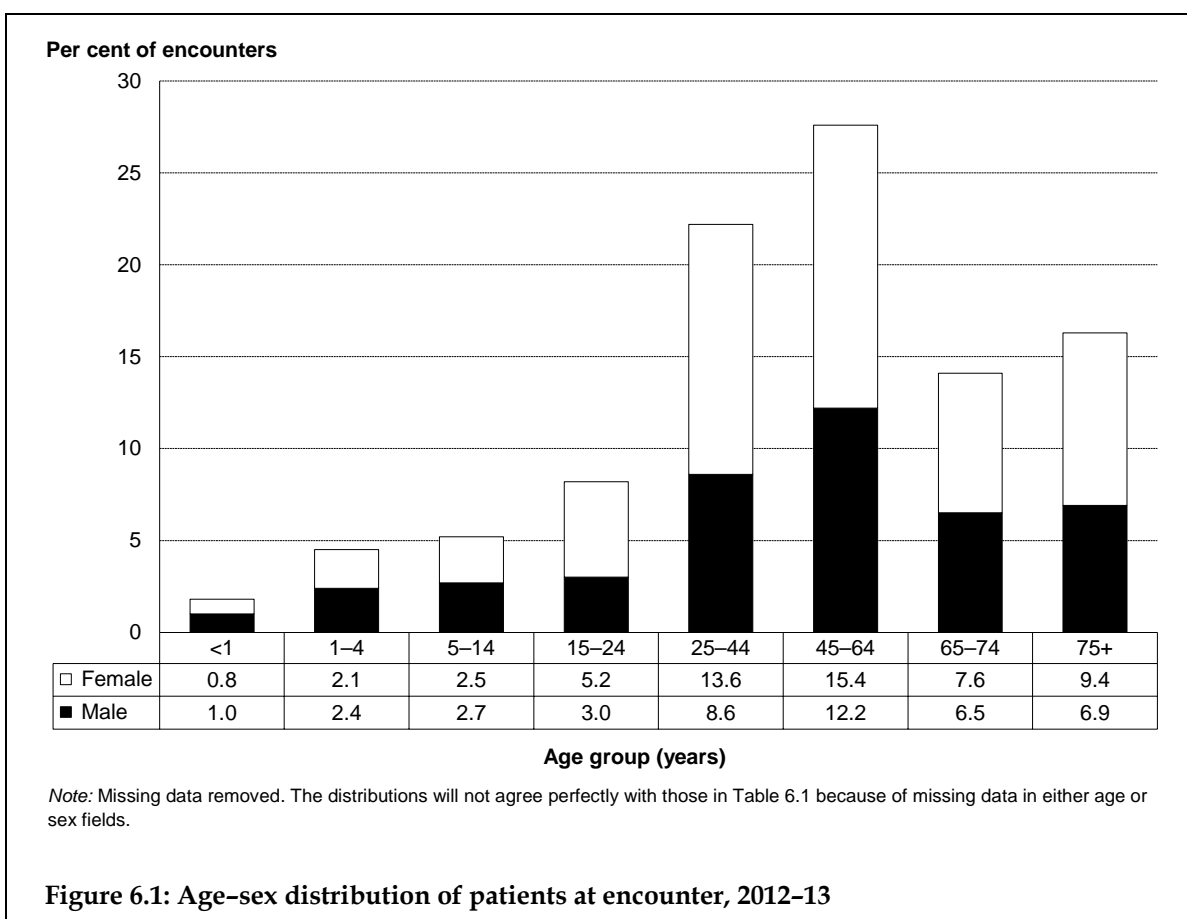
The relationship between patient age, patient general practice attendance rates and the age distribution of the Australian population was reported in *General practice activity in Australia, health priorities and policies 1998 to 2008.*[73]

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 7.2% of encounters
- nearly half of the encounters were with patients who held a Commonwealth concession card (46.0%) and/or a Repatriation Health Card (2.3%)
- at 12.0% of encounters the patient was from a non-English-speaking background
- at 1.5% 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* = 98,564)	95% LCL	95% UCL
Sex (missing)[a]	(823)			
Males	42,314	43.3	42.5	44.1
Females	55,427	56.7	55.9	57.5
Age group (missing)[a]	(825)			
< 1 year	1,769	1.8	1.7	1.9
1–4 years	4,402	4.5	4.2	4.8
5–14 years	5,104	5.2	4.9	5.5
15–24 years	7,975	8.2	7.7	8.6
25–44 years	21,734	22.2	21.4	23.1
45–64 years	26,971	27.6	27.0	28.2
65–74 years	13,839	14.2	13.6	14.7
75+ years	15,946	16.3	15.4	17.3
New patient to practice (missing)[a]	(1,432)			
New patient to practice	7,018	7.2	6.6	7.9
Patient seen previously	90,114	92.8	92.1	93.4
Commonwealth concession card status (missing)[a]	(7,935)			
Has a Commonwealth concession card	42,624	46.0	44.4	47.6
No Commonwealth concession card	50,000	54.0	52.4	55.6
Repatriation Health Card status (missing)[a]	(9,996)			
Has a Repatriation Health Card	2,095	2.3	2.1	2.5
No Repatriation Health Card	89,126	97.7	97.5	97.9
Language status (missing)[a]	(10,001)			
Non-English-speaking background[b]	10,606	12.0	10.0	14.0
English-speaking background	77,956	88.0	86.0	90.0
Indigenous status (missing)[a]	(9,681)			
Aboriginal and/or Torres Strait Islander[c]	1,373	1.5	1.2	1.9
Non-Indigenous	87,510	98.5	98.1	98.8

(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.[74]

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 152,278 RFEs recorded at 98,564 encounters in 2012–13 (Table 6.3). At 58.0% of encounters only one RFE was recorded, at 29.4% two RFEs were recorded and at 12.5% of encounters three RFEs were recorded (Table 6.2). On average patients presented with 154.5 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 = 98,564)	Per cent of encounters	95% LCL	95% UCL
One RFE	57,209	58.0	56.8	59.3
Two RFEs	28,996	29.4	28.7	30.1
Three RFEs	12,359	12.5	11.9	13.2
Total	**98,564**	**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 (41.6%) 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 19.3% of RFEs. The remaining 39.1% 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 64.3 'symptom or complaint' RFEs, described 29.9 diagnosis/disease RFEs, made 24.6 requests for a procedure and made 15.4 requests for treatment.

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

ICPC-2 component	Number	Per cent of total RFEs (n = 152,278)	Rate per 100 encounters (n = 98,564)	95% LCL	95% UCL
Symptoms and complaints	63,341	41.6	64.3	62.4	66.2
Diagnosis, diseases	29,442	19.3	29.9	28.4	31.4
Infections	7,473	4.9	7.6	7.1	8.1
Injuries	4,168	2.7	4.2	4.0	4.4
Neoplasms	1,021	0.7	1.0	0.9	1.2
Congenital anomalies	226	0.1	0.2	0.2	0.3
Other diagnoses, diseases	16,554	10.9	16.8	15.7	17.9
Diagnostic and preventive procedures	24,293	16.0	24.6	23.7	25.6
Medications, treatments and therapeutics	15,212	10.0	15.4	14.7	16.2
Results	8,929	5.9	9.1	8.6	9.5
Referrals and other RFEs	7,937	5.2	8.1	7.5	8.6
Administrative	3,124	2.1	3.2	2.9	3.4
Total RFEs	**152,278**	**100.0**	**154.5**	**152.7**	**156.3**

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 44.4 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 20.8 per 100 encounters, those related to the musculoskeletal system at a rate of 15.8 per 100, and those relating to skin at a rate of 15.0 per 100 encounters (Table 6.4).

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* = 152,278)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL
General and unspecified	**43,809**	**28.8**	**44.4**	**43.2**	**45.7**
Prescription NOS	9,336	6.1	9.5	8.9	10.1
General check-up*	4,584	3.0	4.7	4.3	5.0
Results tests/procedures NOS	7,627	5.0	7.7	7.3	8.2
Administrative procedure NOS	2,812	1.8	2.9	2.6	3.1
Immunisation/vaccination NOS	2,002	1.3	2.0	1.9	2.2
Fever	1,891	1.2	1.9	1.7	2.1
Weakness/tiredness	1,394	0.9	1.4	1.3	1.5
Other referrals NEC	1,310	0.9	1.3	1.2	1.5
Blood test NOS	1,195	0.8	1.2	1.0	1.4
Other reason for encounter NEC	1,005	0.7	1.0	0.7	1.3
Observation/health education/advice/diet NOS	977	0.6	1.0	0.9	1.1
Follow-up encounter unspecified	976	0.6	1.0	0.9	1.1
Chest pain NOS	880	0.6	0.9	0.8	1.0
Trauma/injury NOS	787	0.5	0.8	0.7	0.9
Clarify or discuss patient's RFE	761	0.5	0.8	0.7	0.9
Respiratory	**20,492**	**13.5**	**20.8**	**19.9**	**21.7**
Cough	6,201	4.1	6.3	5.8	6.8
Throat symptom/complaint	2,476	1.6	2.5	2.3	2.7
Immunisation/vaccination – respiratory	2,346	1.5	2.4	2.0	2.8
Upper respiratory tract infection	2,257	1.5	2.3	2.0	2.5
Sneezing/nasal congestion	1,229	0.8	1.2	1.1	1.4
Shortness of breath/dyspnoea	771	0.5	0.8	0.7	0.9
Asthma	730	0.5	0.7	0.7	0.8
Musculoskeletal	**15,547**	**10.2**	**15.8**	**15.2**	**16.3**
Back complaint*	3,138	2.1	3.2	3.0	3.4
Knee symptom/complaint	1,439	0.9	1.5	1.4	1.6
Shoulder symptom/complaint	1,281	0.8	1.3	1.2	1.4
Foot/toe symptom/complaint	1,144	0.8	1.2	1.1	1.3
Leg/thigh symptom/complaint	975	0.6	1.0	0.9	1.1
Neck symptom/complaint	826	0.5	0.8	0.7	0.9
Musculoskeletal injury NOS	744	0.5	0.8	0.7	0.8
Skin	**14,822**	**9.7**	**15.0**	**14.4**	**15.6**
Rash*	2,550	1.7	2.6	2.4	2.8
Skin symptom/complaint, other	1,510	1.0	1.5	1.4	1.7
Skin check-up*	1,477	1.0	1.5	1.2	1.8
Swelling (skin)*	1,032	0.7	1.0	1.0	1.1
Laceration/cut	686	0.5	0.7	0.6	0.8

(continued)

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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* = 152,278)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL
Digestive	**9,361**	**6.1**	**9.5**	**9.1**	**9.9**
Abdominal pain*	2,002	1.3	2.0	1.9	2.2
Diarrhoea	1,165	0.8	1.2	1.1	1.3
Vomiting	727	0.5	0.7	0.7	0.8
Psychological	**9,180**	**6.0**	**9.3**	**8.8**	**9.8**
Depression*	2,248	1.5	2.3	2.1	2.5
Anxiety*	1,340	0.9	1.4	1.2	1.5
Sleep disturbance	1,071	0.7	1.1	1.0	1.2
Acute stress reaction	700	0.5	0.7	0.6	0.8
Cardiovascular	**9,012**	**5.9**	**9.1**	**8.7**	**9.6**
Cardiovascular check-up*	3,580	2.4	3.6	3.3	3.9
Hypertension/high blood pressure*	1,885	1.2	1.9	1.7	2.2
Prescription – cardiovascular	703	0.5	0.7	0.6	0.8
Endocrine and metabolic	**6,142**	**4.0**	**6.2**	**5.9**	**6.6**
Diabetes (non-gestational)*	1,396	0.9	1.4	1.3	1.6
Prescription – endocrine/metabolic	935	0.6	0.9	0.8	1.1
Neurological	**4,325**	**2.8**	**4.4**	**4.2**	**4.6**
Headache*	1,652	1.1	1.7	1.5	1.8
Vertigo/dizziness	1,002	0.7	1.0	0.9	1.1
Female genital system	**4,298**	**2.8**	**4.4**	**4.0**	**4.7**
Female genital check-up/Pap smear*	1,556	1.0	1.6	1.4	1.8
Ear	**3,518**	**2.3**	**3.6**	**3.4**	**3.7**
Ear pain/earache	1,290	0.8	1.3	1.2	1.4
Pregnancy and family planning	**3,216**	**2.1**	**3.3**	**3.0**	**3.5**
Pre/post natal check-up*	708	0.5	0.7	0.6	0.8
Urology	**2,701**	**1.8**	**2.7**	**2.6**	**2.9**
Eye	**1,998**	**1.3**	**2.0**	**1.9**	**2.2**
Blood and blood forming organs	**1,673**	**1.1**	**1.7**	**1.5**	**1.9**
Blood test – blood and blood forming organs	1,086	0.7	1.1	0.9	1.3
Male genital system	**1,144**	**0.8**	**1.2**	**1.1**	**1.3**
Social	**1,041**	**0.7**	**1.1**	**1.0**	**1.2**
Total RFEs	**152,278**	**100.0**	**154.5**	**152.7**	**156.3**

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

*   Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781743323779>).

Note: RFEs – reasons for encounter; LCL – lower confidence limit; UCL – upper confidence limit; 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 (58.6%) 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.

Table 6.5: Thirty most frequent patient reasons for encounter

Patient reason for encounter	Number	Per cent of total RFEs (*n* = 152,278)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL
Check-up – all*	12,899	8.5	13.1	12.4	13.7
Prescription – all*	12,545	8.2	12.7	12.0	13.4
Test results*	8,929	5.9	9.1	8.6	9.5
Cough	6,201	4.1	6.3	5.8	6.8
Immunisation/vaccination – all*	4,486	2.9	4.6	4.1	5.0
Back complaint*	3,138	2.1	3.2	3.0	3.4
Administrative procedure – all*	3,124	2.1	3.2	2.9	3.4
Blood test – all*	2,811	1.8	2.9	2.6	3.1
Rash*	2,550	1.7	2.6	2.4	2.8
Throat symptom/complaint	2,476	1.6	2.5	2.3	2.7
Upper respiratory tract infection	2,257	1.5	2.3	2.0	2.5
Depression*	2,248	1.5	2.3	2.1	2.5
Abdominal pain*	2,002	1.3	2.0	1.9	2.2
Fever	1,891	1.2	1.9	1.7	2.1
Hypertension/high blood pressure*	1,885	1.2	1.9	1.7	2.2
Headache*	1,652	1.1	1.7	1.5	1.8
Observation/health education/advice/diet – all*	1,591	1.0	1.6	1.5	1.8
Skin symptom/complaint, other	1,510	1.0	1.5	1.4	1.7
Knee symptom/complaint	1,439	0.9	1.5	1.4	1.6
Diabetes – all*	1,406	0.9	1.4	1.3	1.6
Weakness/tiredness	1,394	0.9	1.4	1.3	1.5
Anxiety*	1,340	0.9	1.4	1.2	1.5
Other referrals NEC	1,310	0.9	1.3	1.2	1.5
Ear pain/earache	1,290	0.8	1.3	1.2	1.4
Shoulder symptom/complaint	1,281	0.8	1.3	1.2	1.4
Sneezing/nasal congestion	1,229	0.8	1.2	1.1	1.4
Diarrhoea	1,165	0.8	1.2	1.1	1.3
Foot/toe symptom/complaint	1,144	0.8	1.2	1.1	1.3
Sleep disturbance	1,071	0.7	1.1	1.0	1.2
Swelling (skin)*	1,032	0.7	1.0	1.0	1.1
Subtotal	*89,298*	*58.6*	—	—	—
Total RFEs	**152,278**	**100.0**	**154.5**	**152.7**	**156.3**

*   Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781743323779>).

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

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 (25.5%)

6.4 Changes in patients and their reasons for encounter over the decade 2003–04 to 2012–13

An overview of changes in the characteristics of patients at encounters and their reasons for encounter over the decade 2003–04 to 2012–13 can be found in Chapter 6 of the companion report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1] Major changes are summarised below.

With the ageing of the Australian population, the proportion of the Australian population that was aged 45 years and over increased from 36.6% in 2003 to 39.0% in 2012.[2] Over the same period the proportion of BEACH encounters with patients aged 45 years and over increased from 54.0% to 58.1%. When extrapolated, this change (in combination with the increased number of encounters nationally) means that in 2012–13 there were only about 8.8 million more encounters with younger patients, but about 21.7 million more 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.[75] 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 (see Section 7.1), more chronic conditions managed and are more likely to have multimorbidity.[24]

There was a significant decrease in the proportion of encounters with patients who were new to the practice (from 9.3% in 2003–04 to 7.2% in 2012–13). 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 was relatively stable through the decade, but the proportion with patients holding a Repatriation Health Card decreased by over one-third, from 3.9% in 2003–04 to 2.3% in 2012–13. 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 150.2 in 2003–04 to 154.5 in 2012–13, 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 (see Chapter 12). 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 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. As GPs were instructed to record each problem at the most specific level possible from the information available, the problem managed may at times be limited to the level of a presenting symptom.

At each patient encounter, up to four problems could be recorded by the GP. A minimum of one problem was compulsory. The status of each problem to the patient – new (first presentation to a medical practitioner) or old (follow-up of previous problem) – was also indicated. The concept of a principal diagnosis, which is often used in hospital statistics, is not adopted in studies of general practice where multiple problem management is the norm rather than the exception. Further, the range of problems managed at the encounter often crosses multiple body systems and may include undiagnosed symptoms, psychosocial problems or chronic disease, which makes the designation of a principal diagnosis difficult. Thus, the order in which the problems were recorded by the GP is not significant. All problems managed in general practice are included in this section, including those that involved management by a practice nurse at the recorded encounter. Problems that included management by a practice nurse are reported specifically 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, cardiovascular problems) it must be remembered that more than one of that type of problem (such as hypertension and heart failure) may have been managed at a single encounter. In considering these results, the reader must be mindful that although a rate per 100 encounters for a single ungrouped problem, for example, 'asthma, 2.0 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).

Data on problems managed in Australian general practice from the BEACH study are reported for each year from 2003–04 to 2012–13 in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

7.1　Number of problems managed at encounter

In 2012–13 there were 152,517 problems managed, at a rate of 154.7 per 100 encounters (Table 7.2, total row). Table 7.1 shows the number of problems managed at each encounter. As described in Chapter 2, up to 4 problems managed can be recorded at each BEACH encounter. One problem was managed at 61.5% of encounters and two problems managed at one-quarter of encounters (25.7%). Nearly 10% of encounters involved the management of three problems (9.5%), and four problems were managed at only 3.3% of encounters.

Table 7.1: Number of problems managed at an encounter

Number of problems managed at encounter	Number of encounters	Per cent	95% LCL	95% UCL
One problem	60,572	61.5	60.2	62.8
Two problems	25,331	25.7	25.0	26.4
Three problems	9,359	9.5	9.0	10.0
Four problems	3,301	3.3	3.0	3.7
Total	**98,564**	**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 onward.

Significantly more problems were managed overall at encounters with female patients (157.5 per 100 encounters, 95% CI: 155.1–159.9) than at those with male patients (151.4 per 100 encounters, 95% CI: 148.9–153.8) (results not tabled). Figure 7.1 demonstrates that this difference was particularly evident in the 15–24 and 25–44 year age groups. The number of problems managed at encounters significantly increased with each step in adult age, then levelled out in the oldest age groups (65–74 and 75 years and over).

Rate per 100 encounters

	<1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Male	121.2	115.8	117.5	122.4	134.2	158.5	175.9	178.9
Female	120.6	116.0	118.2	137.0	143.4	164.4	183.2	180.4

Age group (years)

Note: Missing data removed.

Figure 7.1: Age–sex-specific rates of problems managed per 100 encounters with 95% CI, 2012–13
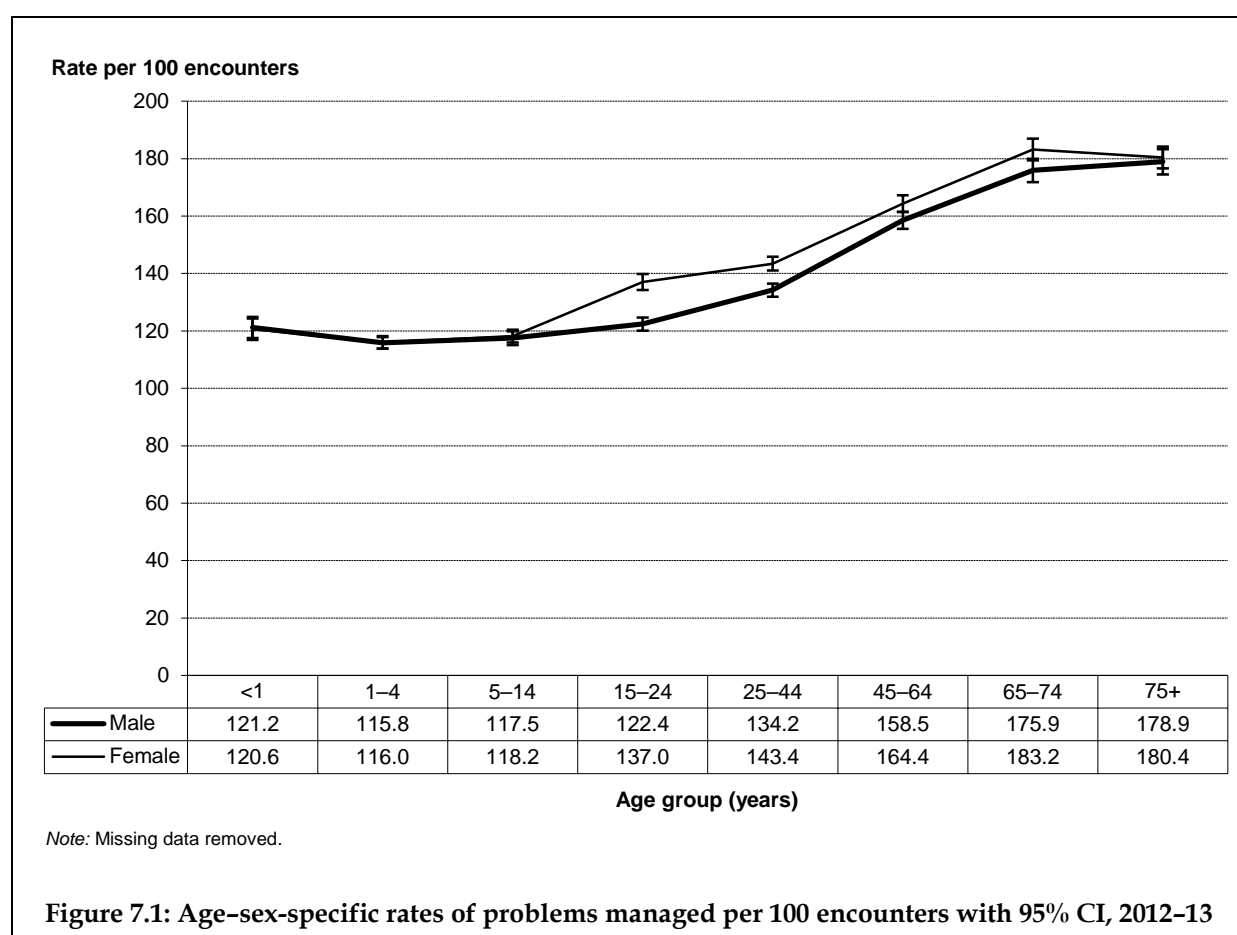
7.2 Problems managed by ICPC-2 component

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.

Two-thirds (66.5%) of problems were expressed as diagnoses or diseases. Of these, the majority were 'other diagnoses' (accounting for 43.1% of all problems managed), followed by infections (15.3%), injuries (4.7%) and neoplasms (3.0%).

Nearly 1 in 5 problems (18.5%) were 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 9.3% of problems managed.

At an 'average' 100 encounters GPs managed 103 diagnoses/diseases: 24 infections; 7 injuries; and 5 neoplasms. They also managed 29 symptoms and complaints, and described the problem in terms of diagnostic and preventive procedures at 15 encounters.

Table 7.2: Problems managed by ICPC-2 component

ICPC-2 component	Number	Per cent of total problems (*n* = 152,517)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL
Diagnosis, diseases	101,388	66.5	102.9	100.9	104.9
Infections	23,318	15.3	23.7	22.8	24.5
Injuries	7,146	4.7	7.2	7.0	7.5
Neoplasms	4,581	3.0	4.6	4.3	5.0
Congenital anomalies	646	0.4	0.7	0.6	0.7
Other diagnoses	65,696	43.1	66.7	64.6	68.7
Symptoms and complaints	28,280	18.5	28.7	27.8	29.6
Diagnostic and preventive procedures	14,247	9.3	14.5	13.7	15.2
Medications, treatments and therapeutics	3,866	2.5	3.9	3.6	4.3
Results	2,019	1.3	2.0	1.8	2.2
Referrals and other RFEs	1,303	0.9	1.3	1.2	1.5
Administrative	1,414	0.9	1.4	1.3	1.6
Total problems	**152,517**	**100.0**	**154.7**	**152.5**	**157.0**

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, by ICPC-2 chapter, are presented in Table 7.3. Rates per 100 encounters and the proportion of total problems are provided at the ICPC-2 chapter level, and for frequent individual problems within each chapter. Only those individual problems accounting for at least 0.5% of all problems managed are listed in the table, in decreasing order of frequency.

The most common problems managed were:

- those classified to the respiratory system (20.1 per 100 encounters), in particular upper respiratory tract infection, respiratory immunisations, acute bronchitis and asthma
- problems of a general and unspecified nature (19.3 per 100 encounters), particularly general check-ups, general immunisations and prescriptions
- musculoskeletal problems (17.7 per 100 encounters), such as arthritis and back complaint
- skin problems (16.9 per 100 encounters), contact dermatitis and malignant skin neoplasm being the most common
- cardiovascular problems (16.5 per 100 encounters), led by hypertension and atrial fibrillation (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 (*n* = 152,517)	Rate per 100 encounters[a] (*n* = 98,564)	95% LCL	95% UCL
Respiratory	**19,774**	**13.0**	**20.1**	**19.4**	**20.8**
Upper respiratory tract infection	5,716	3.7	5.8	5.3	6.3
Immunisation/vaccination – respiratory	2,730	1.8	2.8	2.3	3.2
Acute bronchitis/bronchiolitis	2,306	1.5	2.3	2.1	2.5
Asthma	2,124	1.4	2.2	2.0	2.3
Sinusitis acute/chronic	1,209	0.8	1.2	1.1	1.3
Chronic obstructive pulmonary disease	921	0.6	0.9	0.8	1.0
General and unspecified	**19,052**	**12.5**	**19.3**	**18.6**	**20.1**
General check-up*	2,869	1.9	2.9	2.7	3.1
Immunisation/vaccination NOS	1,948	1.3	2.0	1.8	2.1
Prescription NOS	1,621	1.1	1.6	1.4	1.9
Results tests/procedures NOS	1,532	1.0	1.6	1.4	1.7
Administrative procedure NOS	1,243	0.8	1.3	1.1	1.4
Abnormal result/investigation NOS	1,043	0.7	1.1	1.0	1.2
Viral disease, other/NOS	971	0.6	1.0	0.9	1.1

(continued)

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

Problem managed	Number	Per cent total problems (n = 152,517)	Rate per 100 encounters[a] (n = 98,564)	95% LCL	95% UCL
Musculoskeletal	**17,462**	**11.5**	**17.7**	**17.2**	**18.3**
Arthritis – all*	3,225	2.1	3.3	3.1	3.5
Osteoarthritis*	2,789	1.8	2.8	2.6	3.0
Back complaint*	2,906	1.9	2.9	2.8	3.1
Sprain/strain*	1,357	0.9	1.4	1.2	1.5
Fracture*	896	0.6	0.9	0.8	1.0
Injury musculoskeletal NOS	880	0.6	0.9	0.8	1.0
Osteoporosis	834	0.5	0.8	0.7	0.9
Skin	**16,644**	**10.9**	**16.9**	**16.3**	**17.5**
Contact dermatitis	1,764	1.2	1.8	1.7	1.9
Malignant neoplasm, skin	1,169	0.8	1.2	1.0	1.3
Solar keratosis/sunburn	1,102	0.7	1.1	1.0	1.3
Laceration/cut	961	0.6	1.0	0.9	1.1
Skin disease, other	802	0.5	0.8	0.7	0.9
Skin symptom/complaint, other	691	0.5	0.7	0.6	0.8
Cardiovascular	**16,271**	**10.7**	**16.5**	**15.8**	**17.3**
Hypertension*	8,482	5.6	8.6	8.1	9.1
Atrial fibrillation/flutter	1,405	0.9	1.4	1.3	1.6
Ischaemic heart disease*	1,058	0.7	1.1	0.9	1.2
Cardiovascular check-up*	779	0.5	0.8	0.7	0.9
Endocrine and metabolic	**13,558**	**8.9**	**13.8**	**13.1**	**14.4**
Diabetes (non-gestational)*	4,157	2.7	4.2	3.9	4.5
Lipid disorder	3,292	2.2	3.3	3.1	3.6
Vitamin/nutritional deficiency	1,466	1.0	1.5	1.3	1.6
Hypothyroidism/myxoedema	923	0.6	0.9	0.8	1.0
Psychological	**12,870**	**8.4**	**13.1**	**12.4**	**13.7**
Depression*	4,084	2.7	4.1	3.9	4.4
Anxiety*	2,085	1.4	2.1	1.9	2.3
Sleep disturbance	1,534	1.0	1.6	1.4	1.7
Acute stress reaction	725	0.5	0.7	0.7	0.8
Digestive	**10,779**	**7.1**	**10.9**	**10.6**	**11.3**
Oesophageal disease	2,538	1.7	2.6	2.4	2.8
Gastroenteritis*	1,294	0.8	1.3	1.2	1.4
Female genital system	**5,191**	**3.4**	**5.3**	**4.9**	**5.6**
Female genital check-up/Pap smear*	1,546	1.0	1.6	1.4	1.7

(continued)

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

Problem managed	Number	Per cent total problems (*n* = 152,517)	Rate per 100 encounters[a] (*n* = 98,564)	95% LCL	95% UCL
Ear	**3,740**	**2.5**	**3.8**	**3.6**	**4.0**
Acute otitis media/myringitis	1,059	0.7	1.1	1.0	1.2
Excessive ear wax	733	0.5	0.7	0.7	0.8
Pregnancy and family planning	**3,629**	**2.4**	**3.7**	**3.4**	**4.0**
Pregnancy*	1,281	0.8	1.3	1.1	1.5
Oral contraception*	1,045	0.7	1.1	1.0	1.2
Neurological	**3,594**	**2.4**	**3.7**	**3.5**	**3.8**
Urology	**3,416**	**2.2**	**3.5**	**3.3**	**3.6**
Urinary tract infection*	1,678	1.1	1.7	1.6	1.8
Eye	**2,226**	**1.5**	**2.3**	**2.1**	**2.4**
Male genital system	**1,809**	**1.2**	**1.8**	**1.7**	**2.0**
Blood and blood forming organs	**1,613**	**1.1**	**1.6**	**1.5**	**1.8**
Social	**888**	**0.6**	**0.9**	**0.8**	**1.0**
Total problems	**152,517**	**100.0**	**154.7**	**152.5**	**157.0**

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

*   Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1 <purl.library.usyd.edu.au/sup/9781743323779>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; 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 problems accounted for 52.9% of all problems managed, and the top 10 problems accounted for 30.4%.

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.

The most common problems managed were hypertension (8.6 per 100 encounters), check-ups (6.4 per 100), upper respiratory tract infection (URTI) (5.8 per 100), immunisation/vaccination (5.0 per 100), and diabetes (4.2 per 100) (Table 7.4).

The far right-hand column in Table 7.4 lists the percentage of each problem that was new to the patient. The problem is considered new if it is a new problem or a new episode of a recurrent problem, and the patient has not been treated for that problem or episode by any medical practitioner before. This can provide a measure of general practice incidence. For example, only 5.3% of all contacts with diabetes were new diagnoses. In contrast, 77.4% of URTI problems were new to the patient, suggesting that the majority of people attend the GP for URTI only once per episode.

Table 7.4: Most frequently managed problems

Problem managed	Number	Per cent of total problems (*n* = 152,517)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	New as per cent of all problems[a]
Hypertension*	8,482	5.6	8.6	8.1	9.1	5.0
Check-up – all*	6,304	4.1	6.4	6.0	6.8	45.1
Upper respiratory tract infection	5,716	3.7	5.8	5.3	6.3	77.4
Immunisation/vaccination – all*	4,922	3.2	5.0	4.5	5.5	61.3
Diabetes – all*	4,186	2.7	4.2	4.0	4.5	5.3
Depression*	4,084	2.7	4.1	3.9	4.4	14.6
Arthritis – all*	3,743	2.5	3.8	3.6	4.0	18.2
Lipid disorder	3,292	2.2	3.3	3.1	3.6	10.9
Back complaint*	2,906	1.9	2.9	2.8	3.1	23.3
Prescription – all*	2,677	1.8	2.7	2.4	3.0	5.8
Gastro-oesophageal reflux disease*	2,538	1.7	2.6	2.4	2.8	15.8
Acute bronchitis/bronchiolitis	2,306	1.5	2.3	2.1	2.5	70.9
Asthma	2,124	1.4	2.2	2.0	2.3	17.1
Anxiety*	2,085	1.4	2.1	1.9	2.3	16.3
Test results*	2,019	1.3	2.0	1.8	2.2	29.4
Contact dermatitis	1,764	1.2	1.8	1.7	1.9	48.0
Urinary tract infection*	1,678	1.1	1.7	1.6	1.8	63.7
Sleep disturbance	1,534	1.0	1.6	1.4	1.7	18.8
Vitamin/nutritional deficiency	1,466	1.0	1.5	1.3	1.6	32.5
Administrative procedure – all*	1,414	0.9	1.4	1.3	1.6	42.2
Atrial fibrillation/flutter	1,405	0.9	1.4	1.3	1.6	6.6
Sprain/strain*	1,357	0.9	1.4	1.2	1.5	59.6
Gastroenteritis*	1,294	0.8	1.3	1.2	1.4	75.9
Pregnancy*	1,281	0.8	1.3	1.1	1.5	36.4
Abnormal test results*	1,265	0.8	1.3	1.2	1.4	45.8
Sinusitis acute/chronic	1,209	0.8	1.2	1.1	1.3	64.4
Malignant neoplasm, skin	1,169	0.8	1.2	1.0	1.3	54.9
Bursitis/tendonitis/synovitis NOS	1,110	0.7	1.1	1.0	1.2	56.2
Solar keratosis/sunburn	1,102	0.7	1.1	1.0	1.3	48.3
Headache*	1,073	0.7	1.1	1.0	1.2	34.3
Acute otitis media/myringitis	1,059	0.7	1.1	1.0	1.2	71.7
Ischaemic heart disease*	1,058	0.7	1.1	0.9	1.2	7.2
Oral contraception*	1,045	0.7	1.1	1.0	1.2	17.6
Subtotal	*80,667*	*52.9*	—	—	—	—
Total problems	**152,517**	**100.0**	**154.7**	**152.5**	**157.0**	**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 <purl.library.usyd.edu.au/sup/9781743323779>).

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, 56,454 problems (37.0% of all problems) were specified as being new, being managed at a rate of 57.3 per 100 encounters.

New problems were often acute in nature, such as upper respiratory tract infections (4.5 per 100 encounters), acute bronchitis/bronchiolitis (1.7 per 100) and urinary tract infection (1.1 per 100). Preventive activities were also frequently recorded, including immunisation/ vaccination (3.1 per 100 encounters) and check-ups (2.9 per 100) (Table 7.5).

The far right-hand 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 681 new cases of arthritis represented only 18% of all GP contacts with diagnosed arthritis, suggesting that by far the majority of contacts for arthritis were for ongoing management. In contrast, 71% of acute bronchitis contacts were first consultations to a medical practitioner for this episode, the balance (29%) 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 acute bronchitis.

Table 7.5: Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (n = 56,454)	Rate per 100 encounters (n = 98,564)	95% LCL	95% UCL	New as per cent of all problems[a]
Upper respiratory tract infection	4,424	7.8	4.5	4.1	4.9	77.4
Immunisation/vaccination – all*	3,016	5.3	3.1	2.7	3.4	61.3
Check-up – all*	2,843	5.0	2.9	2.7	3.1	45.1
Acute bronchitis/bronchiolitis	1,635	2.9	1.7	1.5	1.8	70.9
Urinary tract infection*	1,069	1.9	1.1	1.0	1.2	63.7
Gastroenteritis*	982	1.7	1.0	0.9	1.1	75.9
Contact dermatitis	846	1.5	0.9	0.8	0.9	48.0
Sprain/strain*	809	1.4	0.8	0.7	0.9	59.6
Sinusitis acute/chronic	778	1.4	0.8	0.7	0.9	64.4
Acute otitis media/myringitis	759	1.3	0.8	0.7	0.9	71.7
Viral disease, other/NOS	743	1.3	0.8	0.6	0.9	76.5
Arthritis – all*	681	1.2	0.7	0.6	0.8	18.2
Back complaint*	676	1.2	0.7	0.6	0.8	23.3
Malignant neoplasm, skin	641	1.1	0.7	0.6	0.7	54.9
Bursitis/tendonitis/synovitis NOS	624	1.1	0.6	0.6	0.7	56.2
Depression*	598	1.1	0.6	0.5	0.7	14.6
Administrative procedure – all*	596	1.1	0.6	0.5	0.7	42.2
Test results*	594	1.1	0.6	0.5	0.7	29.4
Tonsillitis*	590	1.0	0.6	0.5	0.7	73.2
Abnormal test results*	580	1.0	0.6	0.5	0.7	45.8

(continued)

Table 7.5 (continued): Most frequently managed new problems

New problem managed	Number	Per cent of total new problems (*n* = 56,454)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	New as per cent of all problems[a]
Solar keratosis/sunburn	532	0.9	0.5	0.5	0.6	48.3
Vitamin/nutritional deficiency	476	0.8	0.5	0.4	0.6	32.5
Pregnancy*	466	0.8	0.5	0.4	0.5	36.4
Laceration/cut	461	0.8	0.5	0.4	0.5	48.0
Excessive ear wax	437	0.8	0.4	0.4	0.5	59.7
Fracture*	427	0.8	0.4	0.4	0.5	47.7
Hypertension*	427	0.8	0.4	0.4	0.5	5.0
Observation/health education/ advice/diet – all*	426	0.8	0.4	0.4	0.5	53.1
Subtotal	*27,136*	*47.9*	—	—	—	—
Total new problems	**56,454**	**100.0**	**57.3**	**55.7**	**58.8**	—

(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 <purl.library.usyd.edu.au/sup/9781743323779>).

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[44] and regularly updated by O'Halloran (see 'Chronic conditions' grouper G84 <sydney.edu.au/medicine/fmrc/icpc-2-plus/ demonstrator>), was applied to the BEACH data set. More than one-third (36.0%) of the problems managed in general practice were chronic. At least one chronic problem was managed at 41.8% of encounters (95% CI: 40.7–42.9) (results not tabled), and chronic problems were managed at an average rate of 55.7 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, they are marked with a double asterisk (for example, Diabetes [non-gestational]**). Codes included can be found in Appendix 4, Table A4.2.

Table 7.6 shows the most frequently managed chronic problems in decreasing order of frequency. Together, these 30 chronic problems accounted for 79.1% of all chronic problems managed, and for 28.5% of all problems managed. Just over half (51.7%) of all chronic problems managed were accounted for by the top seven chronic problems: non-gestational hypertension (15.4% of chronic conditions), non-gestational diabetes (7.6%), depressive disorder (7.3%), chronic arthritis (6.8%), lipid disorder (6.0%), oesophageal disease (4.7%) and asthma (3.9%) (Table 7.6).

Extrapolation of these results suggests that, across Australia in 2012–13, there were 10.9 million encounters involving non-gestational hypertension, 5.3 million involving non-gestational diabetes and 5.2 million involving depression.

Table 7.6: Most frequently managed chronic problems

Chronic problem managed	Number	Per cent of total chronic problems (*n* = 54,944)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL
Hypertension (non-gestational)**	8,474	15.4	8.6	8.1	9.1
Diabetes (non-gestational)**	4,157	7.6	4.2	3.9	4.5
Depressive disorder**	4,038	7.3	4.1	3.9	4.3
Chronic arthritis**	3,728	6.8	3.8	3.5	4.0
Lipid disorder	3,292	6.0	3.3	3.1	3.6
Oesophageal disease	2,568	4.7	2.6	2.4	2.8
Asthma	2,124	3.9	2.2	2.0	2.3
Atrial fibrillation/flutter	1,405	2.6	1.4	1.3	1.6
Malignant neoplasm, skin	1,169	2.1	1.2	1.0	1.3
Ischaemic heart disease**	1,058	1.9	1.1	0.9	1.2
Back syndrome with radiating pain**	936	1.7	0.9	0.8	1.1
Hypothyroidism/myxoedema	923	1.7	0.9	0.8	1.0
Chronic obstructive pulmonary disease	921	1.7	0.9	0.8	1.0
Osteoporosis	834	1.5	0.8	0.7	0.9
Shoulder syndrome (excluding arthritis)**	616	1.1	0.6	0.5	0.7
Migraine	604	1.1	0.6	0.5	0.7
Dementia (including senile, Alzheimer's)	592	1.1	0.6	0.5	0.7
Obesity (BMI > 30)	584	1.1	0.6	0.5	0.7
Chronic skin ulcer (including varicose ulcer)	581	1.1	0.6	0.5	0.7
Gout	578	1.1	0.6	0.5	0.7
Heart failure	571	1.0	0.6	0.5	0.7
Chronic pain NOS	497	0.9	0.5	0.4	0.6
Anxiety disorder**	474	0.9	0.5	0.4	0.6
Schizophrenia	450	0.8	0.5	0.4	0.5
Chronic back pain**	448	0.8	0.5	0.4	0.5
Chronic kidney disease**	441	0.8	0.4	0.4	0.5
Chronic acne**	392	0.7	0.4	0.3	0.4
Malignant neoplasm prostate	364	0.7	0.4	0.3	0.4
Vertiginous syndrome	338	0.6	0.3	0.3	0.4
Back syndrome without radiating pain (excluding arthritis, sprains and strains)**	326	0.6	0.3	0.3	0.4
Subtotal	*43,483*	*79.1*	—	—	—
Total chronic problems	**54,944**	**100.0**	**55.7**	**53.7**	**57.8**

** 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 <purl.library.usyd.edu.au/sup/9781743323779>).

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 2012–13 (Table 7.7). This suggests that nationally 3 million problems managed in general practice were likely to be work related.

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* = 2,319)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	WR as per cent of all problems[a]
Musculoskeletal problems	**1,272**	**54.9**	**1.3**	**1.2**	**1.4**	**7.3**
Back complaint*	319	13.8	0.3	0.3	0.4	11.0
Injury musculoskeletal NOS	203	8.8	0.2	0.2	0.3	23.1
Sprain/strain*	202	8.7	0.2	0.2	0.2	14.9
Bursitis/tendonitis/synovitis NOS	47	2.0	0.0	0.0	0.1	4.2
Fracture*	61	2.6	0.1	0.0	0.1	6.8
Shoulder syndrome	58	2.5	0.1	0.0	0.1	9.4
Acute internal knee damage	57	2.4	0.1	0.0	0.1	18.2
Shoulder symptom/complaint	43	1.8	0.0	0.0	0.1	15.7
Neck syndrome	39	1.7	0.0	0.0	0.1	12.3
Psychological problems	**291**	**12.5**	**0.3**	**0.2**	**0.3**	**2.3**
Depression*	97	4.2	0.1	0.1	0.1	2.4
Acute stress reaction	76	3.3	0.1	0.1	0.1	10.4
Anxiety*	53	2.3	0.1	0.0	0.1	2.5
Post traumatic stress disorder	45	1.9	0.0	0.0	0.1	32.7
Other work-related problems	**756**	**32.6**	**0.8**	**0.7**	**0.9**	**0.6**
General check-up*	109	4.7	0.1	0.1	0.2	1.7
Injury skin, other	82	3.5	0.1	0.1	0.1	14.4
Administrative procedure – all*	58	2.5	0.1	0.0	0.1	4.1
Pain, general/multiple sites	41	1.8	0.0	0.0	0.1	8.0
Total work-related problems	**2,319**	**100.0**	**2.4**	**2.2**	**2.5**	**—**

(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 <purl.library.usyd.edu.au/sup/9781743323779>).

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.

The most common work-related problems were musculoskeletal problems, accounting for 54.9% 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 (13.8% of work-related problems), unspecified musculoskeletal injury (8.8%), sprain and strain (8.7%), and bursitis/tendonitis/synovitis (2.0%).

Work-related psychological problems accounted for 12.5% of total work-related problems, and were managed at a rate of 0.3 per 100 encounters. The most common were depression (4.2% of work-related problems), acute stress reaction (3.3%), anxiety (2.3%) and post-traumatic stress disorder (1.9%). Psychological work-related problems accounted for only 2.3% of total psychological problems managed in general practice.

7.8 Changes in problems managed over the decade 2003–04 to 2012–13

Data about the problems managed in general practice from each of the past 10 years of the BEACH study, 2003–04 to 2012–13 are reported in the companion report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1] Major changes that occurred over the decade are summarised below.

Overall, the number of problems managed at general practice encounters increased from 146.3 per 100 encounters in 2003–04 to 154.7 per 100 encounters in 2012–13. When this result is extrapolated to estimate national figures this represents an additional 55.3 million problems managed at general practice encounters in 2012–13 than in 2003-04. A rise in GP attendances over the decade (see Chapter 2 Methods) also contributed to this increase. This was reflected in a significant increase in the management of chronic conditions (from 51.9 to 55.7 per 100 encounters) over the decade.

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

- The management rate of diabetes increased significantly from 3.3 per 100 encounters in 2003–04 to 4.2 per 100 encounters in 2012–13, an estimated 2.1 million more occasions of diabetes management in 2012–13 than in 2003–04.

- The management rate of gastro-oesophageal reflux disease increased from 2.2 per 100 encounters to 2.6 per 100 between 2003–04 and 2012–13, suggesting about 1.2 million more occasions where oesophageal disease was managed in 2012–13 than in 2003–04.

- Vitamin/nutritional deficiency was managed more often in 2012–13 than in 2003–04, increasing from 0.5 per 100 encounters in 2003–04 to 1.5 per 100 encounters in 2012–13. This represents an additional 1.4 million occasions at which vitamin/nutritional deficiency was managed in 2012–13 than in 2003–04.

- The management of asthma decreased from 2.6 per 100 encounters in 2003–04 to 2.2 per 100 encounters in 2012–13. However, due to a rise in the number of general practice attendances nationally, there was an estimated national increase of 290,000 occasions of asthma management in 2012–13 compared with 2003–04.

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 2003–04 to 2012–13 is reported for each year in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

At the 98,564 encounters, GPs undertook 226,206 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 54 prescriptions and 24 clinical treatments, undertook 11 procedures, made 6 referrals to medical specialists and 3 to allied health services, and placed 30 pathology test orders and 7 imaging test orders.

Table 8.1: Summary of management

Management type	Number	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Medications	101,065	102.5	100.2	104.9	66.3	64.9	67.6
Prescribed	82,079	83.2	81.0	85.5	53.8	52.5	55.1
GP-supplied	9,728	9.9	9.1	10.7	6.4	5.9	6.9
Advised OTC	9,258	9.4	8.4	10.3	6.1	5.5	6.7
Other treatments	53,163	53.9	51.2	56.7	34.9	33.2	36.5
Clinical*	36,023	36.5	34.2	38.9	23.6	22.2	25.1
Procedural*	17,140	17.4	16.5	18.3	11.2	10.7	11.8
Referrals and admissions	14,561	14.8	14.2	15.4	9.5	9.2	9.9
Medical specialist*	8,750	8.9	8.5	9.3	5.7	5.5	6.0
Allied health services*	4,616	4.7	4.4	5.0	3.0	2.8	3.2
Hospital*	354	0.4	0.3	0.4	0.2	0.2	0.3
Emergency department*	270	0.3	0.2	0.3	0.2	0.1	0.2
Other referrals*	571	0.6	0.5	0.7	0.4	0.3	0.4
Pathology	46,398	47.1	45.1	49.0	30.4	29.3	31.5
Imaging	10,163	10.3	9.9	10.8	6.7	6.4	6.9
Other investigations[(a)]	856	0.9	0.8	1.0	0.6	0.5	0.6
Total management activities	**226,206**	**229.5**	—	—	**148.4**	—	—

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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 90.7% of encounters, for 85.1% of problems managed.

- At least one medication or other treatment was given for nearly three-quarters (71.2%) of the problems managed.
- At least one medication (most commonly prescribed) was prescribed, supplied or advised for more than half (52.2%) of the problems managed.
- At least one other treatment (most commonly clinical) was provided for nearly one-third (30.6%) of problems managed.
- At least one referral (most commonly to a medical specialist) was made for 9.5% of problems managed.
- At least one investigation (most commonly pathology) was requested for 18.6% of problems managed (Table 8.2).

Table 8.2: Encounters and problems for which management was recorded

Management type	Number of encounters	Per cent of all encounters (n = 98,564)	Number of problems	Per cent of all problems (n = 152,517)
At least one management type	89,393	90.7	129,789	85.1
At least one medication or other treatment	79,308	80.5	108,658	71.2
At least one medication	61,912	62.8	79,620	52.2
At least one prescription	51,994	52.8	66,077	43.3
At least one GP-supplied	7,567	7.7	7.807	5.1
At least one OTC advised	8,128	8.2	8,335	5.5
At least one other treatment	40,098	40.7	46,684	30.6
At least one clinical treatment	27,940	28.3	32,089	21.0
At least one procedural treatment	15,349	15.6	16,034	10.5
At least one referral or admission	13,331	13.5	14,431	9.5
At least one referral to a medical specialist	8,346	8.5	8,855	5.8
At least one referral to allied health services	4,270	4.3	4,587	3.0
At least one referral to hospital	354	0.4	371	0.2
At least one referral to emergency department	270	0.3	287	0.2
At least one other referral	570	0.6	597	0.4
At least one investigation	24,371	24.7	28,381	18.6
At least one pathology order	17,821	18.1	20,655	13.5
At least one imaging order	8,678	8.8	20,655	13.5
At least one other investigation[a]	811	0.8	837	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: 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 (61.1%) of the problems managed
- as a double component for 19.2% of problems managed (Table 8.3)
- less often (18.9%) with more than two components (results not tabled).

Table 8.3 lists the most common management combinations. Medication alone was the most common management, followed by 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 the 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 = 152,517)	Per cent of total encounters (n = 98,564)
No recorded management						**14.9**	**9.3**
1+ management recorded						**85.1**	**90.7**
✓						34.6	28.6
	✓					9.4	6.8
✓	✓					6.5	10.3
					✓	5.1	3.0
			✓			4.8	3.5
		✓				4.5	3.9
✓					✓	2.9	4.4
✓		✓				2.7	4.4
				✓		2.4	1.8
✓			✓			1.3	3.0
	✓				✓	1.2	1.3
		✓			✓	1.2	1.2
✓				✓		1.1	1.9
	✓		✓			1.0	1.3
✓	✓				✓	0.6	1.8
				✓	✓	0.6	0.7
	✓	✓				0.4	1.2
✓	✓		✓			0.4	0.0
			✓		✓	0.3	1.1
✓	✓	✓				0.3	1.0
✓		✓			✓	0.0	0.0

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

8.1 Changes in management over the decade 2003–04 to 2012–13

Changes in management over the decade 2003–04 to 2012–13 are described in detail in the accompanying report *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 2012–13 are summarised below.

- There was a significant decrease in the rate of medications being prescribed/supplied by the GP/advised for over-the-counter purchase, from 71.3 per 100 problems in 2003–04 to 66.3 per 100 problems in 2012–13.

- The major contributor to the above change was a significant decrease in the rate of prescribed medications over the time period, from 58.8 to 53.8 per 100 problems. GP supplied medications had significantly increased in 2008–09 and 2009–10, but decreased again in 2010–11 to a rate not significantly different to the 2003–04 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, since then, the rate of GP-provided clinical treatments gradually increased again such that there was no significant difference between the start and end of the decade. The original impact of practice nurses on this area of GP workload was no longer observed, suggesting that by 2012–13 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 10.1 per 100 problems managed in 2003–04 to 11.2 per 100 problems in 2012–13.

- The rate of referrals to other health providers significantly increased, from 8.0 to 9.5 per 100 problems between 2003–04 and 2012–13, influenced by referrals to allied health services, which almost doubled over the period (1.8 to 3.0 per 100 problems managed). It was further influenced by a marginal increase in referrals to emergency departments (0.1 to 0.2), and in 'other referrals' (0.3 to 0.4 per 100 problems managed). Conversely, the rate of referrals to hospital halved between 2003–04 and 2012–13.

- The rate at which pathology tests/batteries of tests were ordered significantly increased by 26%, from 24.1 tests/batteries of tests per 100 problems managed in 2003–04, to 30.4 in 2012–13.

- The rate at which imaging was ordered increased significantly, from 5.6 imaging orders per 100 problems managed in 2003–04 to 6.7 per 100 in 2012–13.

9 Medications

GPs could record up to four medications for each of four problems – a maximum of 16 medications per encounter. Each medication could be recorded as prescribed (the default), supplied by the GP, or recommended for over-the-counter (OTC) purchase. 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) which is able to capture details of products at the brand and generic 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 (the equivalent of ATC level 5) because ATC does not include many 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 2003–04 to 2012–13 in the 10-year summary report, *A decade of Australian general practice activity 2003–04 to 2012–13.*[1]

Readers interested in adverse drug events will find more detailed information from the BEACH program in Miller et al. (2006) *Adverse drug events in general practice patients in Australia.*[77]

9.1 Source of medications

As reported in Chapter 8, a total of 101,065 medications were recorded, at rates of 103 per 100 encounters and 66 per 100 problems managed. We can derive from Table 8.1 that:

- 4 out of 5 medications (81.2%) were prescribed
- less than 1 in 10 (9.6%) medications was supplied to the patient by the GP
- 9.2% of medications were recommended by the GP for over-the-counter purchase.

When medication rates per 100 encounters are extrapolated to the 126.8 million general practice Medicare-claimed encounters in Australia April 2012 – March 2013, we estimate that GPs in Australia:

- wrote a prescription (with/without repeats) for more than 105.5 million medications
- supplied 12.6 million medications directly to the patient
- recommended medications for OTC purchase 11.9 million times.

9.2   Prescribed medications

There were 82,079 prescriptions recorded, at rates of 83 per 100 encounters and
54 per 100 problems managed (Table 8.1). GPs recorded 82.4% of prescribed medications by
brand (proprietary) name and 17.6% by their generic (non-proprietary) name. Some of the
medications most likely to be recorded as a generic were amoxycillin, warfarin and
prednisolone (results not tabled).

On a per problem basis:

* no prescription was given for 56.7% of all problems managed
* one prescription was given for 35.4% of problems managed
* two prescriptions were given for 6.0% of problems managed
* three or four prescriptions were given for 1.9% of problems managed (Figure 9.1).

Per cent of problems

Number of medications prescribed	Nil	One	Two	Three	Four
	56.7	35.4	6.0	1.3	0.6

Figure 9.1: Number of medications prescribed per problem, 2012–13
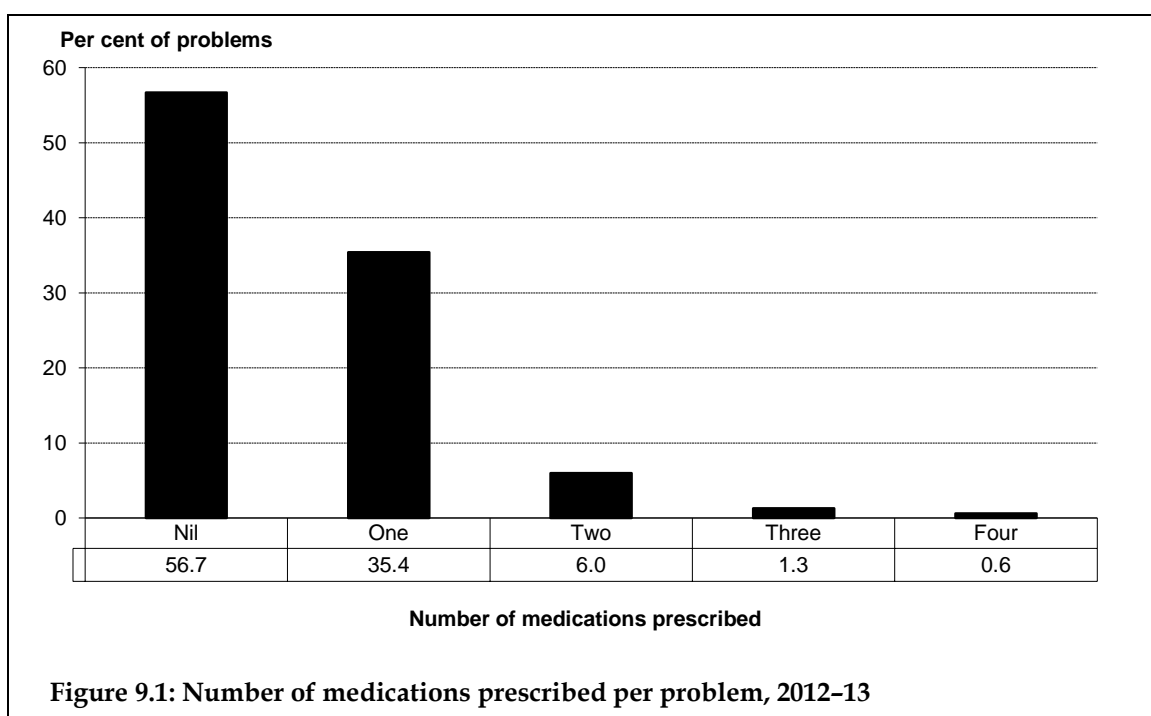
Number of repeats

For 63,538 prescriptions (77.4% of all prescriptions) the GPs recorded 'number of repeats'.
The distribution of the specified number of repeats (from nil to more than five) is provided in
Figure 9.2. For 34.5% of these prescriptions, the GP specified that no repeats had been
prescribed, and for 36.6% five repeats were ordered. The latter proportion reflects the PBS
provision of one month's supply and five repeats for many medications used for chronic
conditions such as hypertension. The ordering of one repeat was also quite common (15.8%).

Per cent of prescriptions

	Nil	One	Two	Three	Four	Five	> Five
	34.5	15.8	9.2	3.0	0.7	36.6	0.2

Number of repeats ordered

Figure 9.2: Number of repeats ordered per prescription, 2012–13
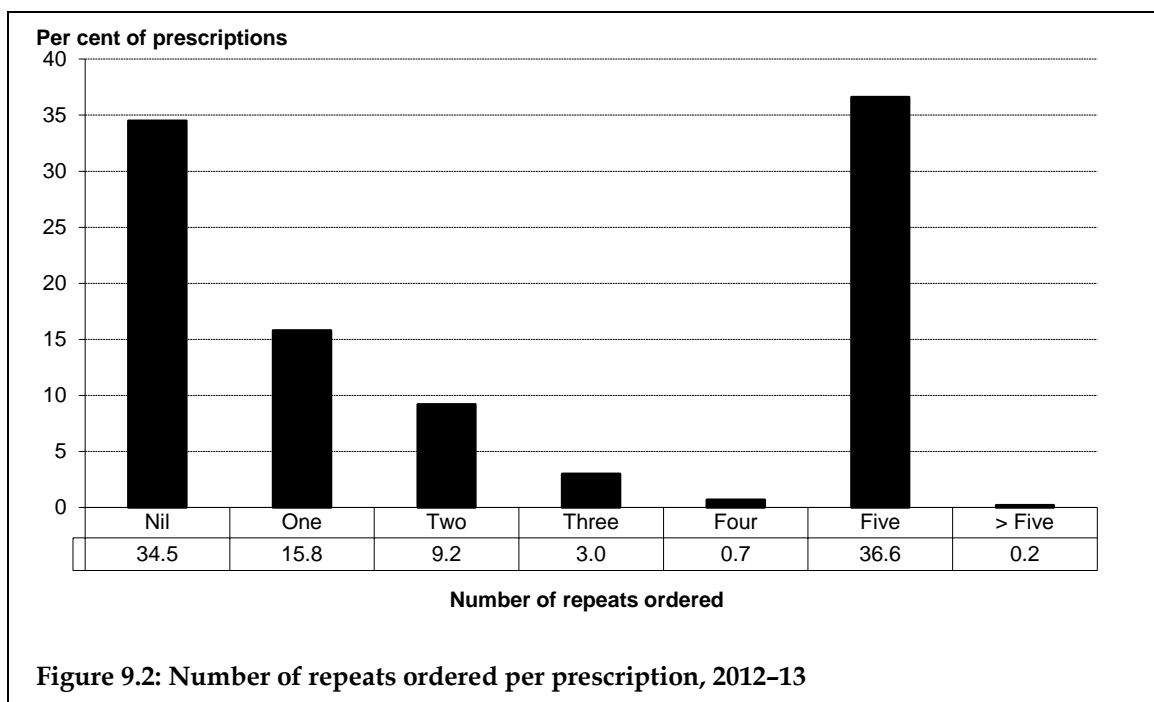
Age–sex-specific rates of prescribed medications

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 94 per 100 encounters for patients aged 65 years and over (results not tabled).

Rate per 100 problems

	< 1	1–4	5–14	15–24	25–44	45–64	65–74	75+
Male	29.1	45.9	44.6	44.5	53.5	59.1	61.1	57.2
Female	25.9	44.2	43.7	47.0	46.0	54.1	60.6	57.8

Age group (years)

Figure 9.3: Age–sex-specific prescription rates per 100 problems managed, 2012–13
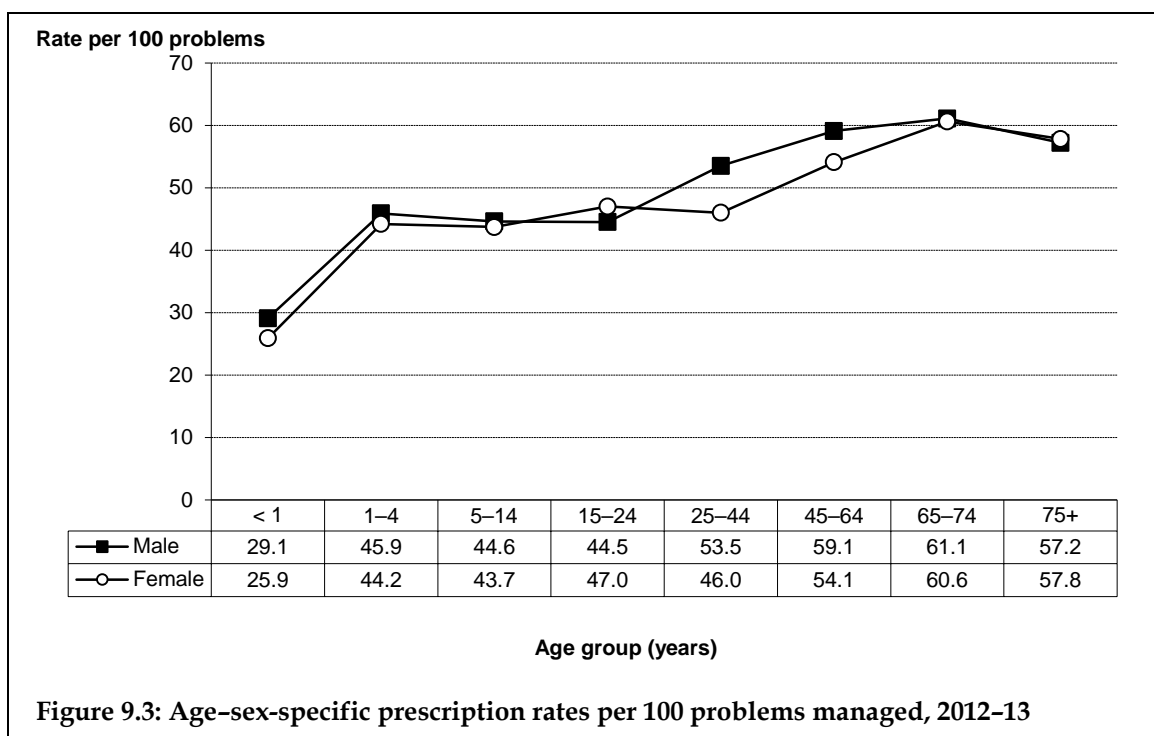
However, Figure 9.3 demonstrates that this age-based increase lessens if the prescription rate is considered in terms of the number of problems being managed in each age group. This suggests that a substantial part of the higher prescription rate for older patients is due to the increased number of health 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 rate of chronic problem management increases with patient age.[78]

Types of medications prescribed

Table 9.1 shows the distribution of prescribed medications using the WHO ATC classification index.[76] This allows comparison with other data sources such as those produced by Medicare Australia for PBS data. The table lists medications in frequency order within ATC levels 1, 3 and 5. Prescriptions are presented as a percentage of total prescriptions, 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 re-classification 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 which 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 2003–04 to 2012–13*,[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* = 82,079)	Rate per 100 encounters (95% CI) (*n* = 98,564)	Rate per 100 problems (95% CI) (*n* = 152,517)
1	**3**	**5**				
Nervous system			**19,170**	**23.4**	**19.4 (18.5–20.4)**	**12.6 (12.0–13.1)**
	Opioids		5,870	7.2	6.0 (5.6–6.3)	3.8 (3.6–4.1)
		Codeine, combinations excluding psycholeptics	1,760	2.1	1.8 (1.6–1.9)	1.2 (1.1–1.3)
		Oxycodone	1,607	2.0	1.6 (1.5–1.8)	1.1 (1.0–1.1)
		Tramadol	863	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
		Buprenorphine	537	0.7	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	Antidepressants		3,923	4.8	4.0 (3.8–4.2)	2.6 (2.4–2.7)
		Sertraline	547	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
		Escitalopram	536	0.7	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	Other analgesics and antipyretics		2,548	3.1	2.6 (2.3–2.9)	1.7 (1.5–1.8)
		Paracetamol, plain	2,423	3.0	2.5 (2.2–2.7)	1.6 (1.4–1.8)
	Anxiolytics		2,036	2.5	2.1 (1.8–2.3)	1.3 (1.2–1.5)
		Diazepam	1,244	1.5	1.3 (1.1–1.4)	0.8 (0.7–0.9)
	Hypnotics and sedatives		1,507	1.8	1.5 (1.4–1.7)	1.0 (0.9–1.1)
		Temazepam	994	1.2	1.0 (0.9–1.1)	0.7 (0.6–0.7)
	Antipsychotics		1,090	1.3	1.1 (1.0–1.2)	0.7 (0.6–0.8)
	Drugs used in addictive disorders		799	1.0	0.8 (0.6–1.0)	0.5 (0.4–0.7)
	Antiepileptics		714	0.9	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Cardiovascular system			**15,675**	**19.1**	**15.9 (15.9–16.8)**	**10.3 (9.8–10.8)**
	Lipid modifying agents, plain		3,508	4.3	3.6 (3.3–3.8)	2.3 (2.2–2.4)
		Atorvastatin	1,440	1.8	1.5 (1.3–1.6)	0.9 (0.9–1.0)
		Rosuvastatin	1,195	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.9)
	Angiotensin II antagonists, plain		2,211	2.7	2.2 (2.1–2.4)	1.4 (1.3–1.6)
		Irbesartan	817	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Telmisartan	664	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
		Candesartan	540	0.7	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	ACE inhibitors, plain		1,922	2.3	2.0 (1.8–2.1)	1.3 (1.2–1.4)
		Perindopril	1,065	1.3	1.1 (1.0–1.2)	0.7 (0.6–0.8)
		Ramipril	545	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Beta blocking agents		1,651	2.0	1.7 (1.5–1.8)	1.1 (1.0–1.2)
		Atenolol	653	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
	Angiotensin II antagonists, combinations		1,524	1.9	1.5 (1.4–1.7)	1.0 (0.9–1.1)
		Irbesartan and diuretics	549	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Selective calcium channel blockers with mainly vascular effects		1,272	1.6	1.3 (1.2–1.4)	0.8 (0.8–0.9)
		Amlodipine	541	0.7	0.5 (0.5–0.6)	0.4 (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* = 82,079)	Rate per 100 encounters (95% CI) (*n* = 98,564)	Rate per 100 problems (95% CI) (*n* = 152,517)
ACE inhibitors, combinations	715	0.9	0.7 (0.6–0.8)	0.5 (0.4–0.5)
High-ceiling diuretics	614	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.5)
Frusemide	612	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.5)
Anti-infective for systemic use	**15,156**	**18.5**	**15.4 (14.8–16.0)**	**9.9 (9.5–10.4)**
Beta-lactam antibacterials, penicillins	5,823	7.1	5.9 (5.6–6.2)	3.8 (3.6–4.1)
Amoxycillin	2,993	3.6	3.0 (2.8–3.3)	2.0 (1.8–2.1)
Amoxycillin and enzyme inhibitor	1,931	2.4	2.0 (1.8–2.1)	1.3 (1.1–1.4)
Other beta-lactam antibacterials	3,069	3.7	3.1 (2.9–3.3)	2.0 (1.9–2.2)
Cephalexin	2,597	3.2	2.6 (2.4–2.8)	1.7 (1.6–1.8)
Macrolides, lincosamides and streptogramins	1,030	1.3	1.0 (2.2–2.6)	1.5 (1.4–1.7)
Roxithromycin	639	0.8	0.6 (0.9–1.2)	0.7 (0.6–0.8)
Clarithromycin	1,030	1.3	1.0 (0.5–0.8)	0.4 (0.3–0.5)
Tetracyclines	831	1.0	0.8 (0.8–0.9)	0.5 (0.5–0.6)
Doxycycline	758	0.9	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Sulfonamides and trimethoprim	711	0.9	0.7 (0.6–0.8)	0.5 (0.4–0.5)
Viral vaccines	624	0.8	0.6 (0.5–0.7)	0.4 (0.3–0.5)
Alimentary tract and metabolism	**8,440**	**10.3**	**8.6 (8.1–9.0)**	**5.5 (5.3–5.8)**
Drugs for peptic ulcer and gastro-oesophageal reflux	3,374	4.1	3.4 (3.2–3.6)	2.2 (2.1–2.3)
Esomeprazole	1,566	1.9	1.6 (1.5–1.7)	1.0 (1.0–1.1)
Pantoprazole	681	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
Blood glucose lowering drugs, excluding insulins	2,189	2.7	2.2 (2.0–2.4)	1.4 (1.3–1.6)
Metformin	1,280	1.6	1.3 (1.2–1.4)	0.8 (0.8–0.9)
Propulsives	584	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Insulins and analogues	498	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Respiratory system	**4,972**	**6.1**	**5.0 (4.8–5.3)**	**3.3 (3.1–3.4)**
Adrenergics, inhalants	2,663	3.2	2.7 (2.5–2.9)	1.7 (1.6–1.9)
Salbutamol	1,283	1.6	1.3 (1.2–1.4)	0.8 (0.8–0.9)
Salmeterol and other drugs for obstructive airways disease	770	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Formoterol and other drugs for obstructive airways disease	500	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Decongestants and other nasal preparations for topical use	873	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Other drugs for obstructive airway diseases, inhalants	816	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)

(continued)

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

ATC Classification level			Number	Per cent of prescribed medications (n = 82,079)	Rate per 100 encounters (95% CI) (n = 98,564)	Rate per 100 problems (95% CI) (n = 152,517)
1	3	5				
Musculoskeletal system			**4,092**	**5.0**	**4.2 (3.9–4.4)**	**2.7 (2.5–2.8)**
	Anti-inflammatory and antirheumatic products, non-steroid		2,908	3.5	3.0 (2.8–3.1)	1.9 (1.8–2.0)
		Meloxicam	826	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Diclofenac	558	0.7	0.6 (0.5–0.7)	0.4 (0.3–0.4)
		Celecoxib	545	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
	Antigout preparations		534	0.7	0.5 (0.5–0.6)	0.4 (0.3–0.4)
	Drugs affecting bone structure and mineralization		504	0.6	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Dermatologicals			**3,553**	**4.3**	**3.6 (3.4–3.8)**	**2.3 (2.2–2.4)**
	Corticosteroids, plain		2,128	2.6	2.2 (2.0–2.3)	1.4 (1.3–1.5)
		Betamethasone	744	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
		Mometasone	598	0.7	0.6 (0.5–0.7)	0.4 (0.4–0.4)
Genitourinary system and sex hormones			**2,951**	**3.6**	**3.0 (2.8–3.2)**	**1.9 (1.8–2.0)**
	Hormonal contraceptives for systemic use		1,306	1.6	1.3 (1.2–1.4)	0.9 (0.8–0.9)
		Levonorgestrel and ethinyloestradiol	742	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
Blood and blood forming organs			**2,625**	**3.2**	**2.7 (2.5–2.9)**	**1.7 (1.6–1.8)**
	Antithrombotic agents		2,079	2.5	2.1 (1.9–2.3)	1.4 (1.3–1.5)
		Warfarin	1,134	1.4	1.2 (1.0–1.3)	0.7 (0.7–0.8)
Systemic hormonal preparations, excluding sex hormones			**2,570**	**3.1**	**2.6 (2.4–2.8)**	**1.7 (1.6–1.8)**
	Corticosteroids for systemic use, plain		1,513	1.8	1.5 (1.4–1.7)	1.0 (0.9–1.1)
		Prednisolone	954	1.2	1.0 (0.9–1.1)	0.6 (0.6–0.7)
	Thyroid preparations		827	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
		Levothyroxine sodium	818	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Sensory organs			**2,062**	**2.5**	**2.1 (1.9–2.2)**	**1.4 (1.3–1.4)**
	Anti-infectives ophthalmological		742	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
		Chloramphenicol ophthalmological	665	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
	Corticosteroids and anti-infective in combination otological		557	0.7	0.6 (0.5–0.6)	0.4 (0.3–0.4)
Antineoplastic and immunomodulating agents			**397**	**0.5**	**0.4 (0.3–0.5)**	**0.3 (0.2–0.3)**
Various			**189**	**0.2**	**0.2 (0.2–0.2)**	**0.1 (0.1–0.1)**
Antiparasitic products, insecticides and repellent			**226**	**0.3**	**0.2 (0.2–0.3)**	**0.1 (0.1–0.2)**
Total prescribed medications			**82,079**	**100.0**	**83.3 (81.0–85.5)**	**53.8 (52.5–55.1)**

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 43.6% of all prescribed medications.

Table 9.2: Most frequently prescribed medications

Generic medication	Number	Per cent of prescribed medications (*n* = 82,079)	Rate per 100 encounters (95% CI) (*n* = 98,564)	Rate per 100 problems (95% CI) (*n* = 152,517)
Amoxycillin	**2,993**	3.6	3.0 (2.8–3.3)	2.0 (1.8–2.1)
Cephalexin	2,597	3.2	2.6 (2.4–2.8)	1.7 (1.6–1.8)
Paracetamol	2,423	3.0	2.5 (2.2–2.7)	1.6 (1.4–1.8)
Amoxycillin/potassium clavulanate	1,931	2.4	2.0 (1.8–2.1)	1.3 (1.1–1.4)
Paracetamol/codeine	1,730	2.1	1.8 (1.6–1.9)	1.1 (1.0–1.2)
Oxycodone	1,607	2.0	1.6(1.5–1.8)	1.1 (1.0–1.1)
Esomeprazole	1,566	1.9	1.6 (1.5–1.7)	1.0 (1.0–1.1)
Atorvastatin	1,440	1.8	1.5 (1.3–1.6)	0.9 (0.9–1.0)
Salbutamol	1,290	1.6	1.3 (1.2–1.4)	0.8 (0.8–0.9)
Metformin	1,280	1.6	1.3 (1.2–1.4)	0.8 (0.8–0.9)
Diazepam	1,244	1.5	1.3 (1.1–1.4)	0.8 (0.7–0.9)
Rosuvastatin	1,195	1.5	1.2 (1.1–1.3)	0.8 (0.7–0.9)
Warfarin sodium	1,134	1.4	1.2 (1.0–1.3)	0.7 (0.7–0.8)
Perindopril	1,065	1.3	1.1 (1.0–1.2)	0.7 (0.6–0.8)
Roxithromycin	1,030	1.3	1.0 (0.9–1.2)	0.7 (0.6–0.8)
Temazepam	994	1.2	1.0 (0.9–1.1)	0.7 (0.6–0.7)
Tramadol	863	1.1	0.9 (0.8–1.0)	0.6 (0.5–0.6)
Meloxicam	826	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Thyroxine	818	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Irbesartan	817	1.0	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Fluticasone/salmeterol	770	0.9	0.8 (0.7–0.9)	0.5 (0.5–0.6)
Doxycycline	758	0.9	0.8 (0.7–0.9)	0.5 (0.4–0.6)
Betamethasone topical	744	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
Levonorgestrel/ethinyloestradiol	741	0.9	0.8 (0.7–0.8)	0.5 (0.4–0.5)
Pantoprazole	681	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
Chloramphenicol eye	665	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
Telmisartan	664	0.8	0.7 (0.6–0.8)	0.4 (0.4–0.5)
Atenolol	653	0.8	0.7 (0.6–0.7)	0.4 (0.4–0.5)
Clarithromycin	639	0.8	0.6 (0.5–0.8)	0.4 (0.3–0.5)
Prednisolone	623	0.8	0.6 (0.5–0.7)	0.4 (0.4–0.5)
Subtotal	*35,778*	*43.6*	—	—
Total prescribed medications	**82,079**	**100.0**	**83.3 (81.0–85.5)**	**53.8 (52.5–55.1)**

Note: CI – confidence interval.

9.3 Medications supplied by GPs

GPs supplied 9,728 medications in 2012–13, at a rate of 9.9 medications per 100 encounters. At least one medication was supplied at 7.7% of encounters for 5.1% of problems (Table 8.2). Table 9.3 shows the top medications supplied at CAPS generic level (ATC level 5).

Table 9.3: Medications most frequently supplied by GPs

Generic medication	Number	Per cent of GP supplied medications (*n* = 9,728)	Rate per 100 encounters (95% CI) (*n* = 98,564)	Rate per 100 problems (95% CI) (*n* = 152,517)
Influenza virus vaccine	2,308	23.7	2.3 (1.9–2.7)	1.5 (1.3–1.8)
Pneumococcal vaccine	570	5.9	0.6 (0.5–0.6)	0.4 (0.3–0.4)
Vitamin B12 (cobalamin)	464	4.8	0.5 (0.4–0.6)	0.3 (0.3–0.4)
Diphtheria/pertussis/tetanus/hepatitis B/polio/Hib vaccine	423	4.3	0.4 (0.4–0.5)	0.3 (0.2–0.3)
Mumps/measles/rubella vaccine	316	3.2	0.3 (0.3–0.4)	0.2 (0.2–0.2)
Rotavirus vaccine	306	3.2	0.3 (0.3–0.4)	0.2 (0.2–0.2)
Triple antigen (diphtheria/pertussis/tetanus)	238	2.4	0.2 (0.2–0.3)	0.2 (0.1–0.2)
Chickenpox (varicella zoster) vaccine	157	1.6	0.2 (0.1–0.2)	0.1 (0.1–0.1)
ADT/CDT (diphtheria/tetanus) vaccine	146	1.5	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Meningitis vaccine	145	1.5	0.1 0.1–0.2)	0.1 (0.1–0.1)
Haemophilus B vaccine	141	1.5	0.1 (0.1–0.2)	0.1 (0.1–0.1)
Methylprednisolone	123	1.3	0.1 (0.0–0.3)	0.1 (0.0–0.2)
Betamethasone systemic	121	1.2	0.1 (0.0–0.3)	0.1 (0.0–0.2)
Allergen treatment	112	1.1	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Diphtheria/pertussis/tetanus/polio vaccine	108	1.1	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Hepatitis B vaccine	106	1.1	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Lignocaine	104	1.1	0.1 (0.0–0.3)	0.1 (0.0–0.2)
Typhoid vaccine (*Salmonella typhi*)	98	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hepatitis A vaccine	94	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hepatitis A/typhoid vaccine (*Salmonella typhi*)	90	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Esomeprazole	84	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Celecoxib	79	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Medroxyprogesterone	79	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Metoclopramide	76	0.8	0.1 (0.1–0.1)	0.0 (0.0–0.1)
Steroid injection NEC	76	0.8	0.1 (0.1–0.1)	0.0 (0.0–0.1)
Salbutamol	75	0.8	0.1 (0.1–0.1)	0.0 (0.0–0.1)
Meloxicam	72	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Local anaesthetic injection	61	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Immunisation NEC	58	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Budesonide/eformoterol	53	0.5	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Subtotal	*6,885*	*70.8*	—	—
Total supplied medications	**9,728**	**100.0**	**9.9 (9.1–10.7)**	**6.4 (5.9–6.9)**

Note: CI – confidence interval; NEC – not elsewhere classified.

9.4 Medications advised for over-the-counter purchase

The GPs recorded 9,258 medications as recommended for OTC purchase, at rates of 9.4 per 100 encounters and 6.1 per 100 problems managed. At least one OTC medication was advised at 8.2% of encounters and for 5.5% 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 26.3% 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 = 9,258)	Rate per 100 encounters (95% CI) (n = 98,564)	Rate per 100 problems (95% CI) (n = 152,517)
Paracetamol, plain	2,437	26.3	2.5 (2.0–3.0)	1.6 (1.3–1.9)
Ibuprofen	580	6.3	0.6 (0.5–0.7)	0.4 (0.3–0.4)
Saline bath/solution/gargle	272	2.9	0.3 (0.2–0.4)	0.2 (0.1–0.2)
Vitamin D3 (cholecalciferol)	267	2.9	0.3 (0.2–0.3)	0.2 (0.1–0.2)
Simple analgesics NEC	210	2.3	0.2 (0.1–0.3)	0.1 (0.1–0.2)
Sodium chloride topical nasal	206	2.2	0.2 (0.2–0.3)	0.1 (0.1–0.2)
Diclofenac topical	161	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Cream/ointment/lotion NEC	161	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Sodium/potassium/citric acid/glucose	156	1.7	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Loratadine	145	1.6	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Hydrocortisone/clotrimazole	120	1.3	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Fexofenadine	115	1.2	0.2 (0.1–0.2)	0.1 (0.1–0.1)
Vitamin D NEC	108	1.2	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Clotrimazole topical	103	1.1	0.1 (0.1–0.1)	0.1 (0.1–0.1)
Cetirizine	102	1.1	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Paracetamol/codeine	101	1.1	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hydrocortisone topical	96	1.0	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Hyoscine butylbromide	80	0.9	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Bromhexine	76	0.8	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Fish oil	74	0.8	0.1 (0.1–0.1)	0.1 (0.0–0.1)
Docusate otic	69	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Loperamide	69	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Cold and flu medication NEC	69	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Sorbolene/glycerol/cetomacrogol	68	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Sodium bicarbonate/citrate/tartrate	66	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Clotrimazole vaginal	65	0.7	0.1 (0.0–0.1)	0.1 (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* = 9,258)	Rate per 100 encounters (95% CI) (*n* = 98,564)	Rate per 100 problems (95% CI) (*n* = 152,517)
Multivitamins with minerals	64	0.7	0.1 (0.0–0.1)	0.1 (0.0–0.1)
Aspirin analgesic	61	0.7	0.1 (0.0–0.1)	0.0 (0.0–0.1)
Psyllium hydrophilic mucilloid (ispaghula)	57	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Aspirin cardiovascular	55	0.6	0.1 (0.0–0.1)	0.0 (0.0–0.0)
Subtotal	*6,211*	*67.1*	—	—
Total advised medications	**9,258**	**100.0**	**9.4 (8.4–10.3)**	**6.1 (5.5–6.7)**

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

9.5 Changes in medications over the decade 2003–04 to 2012–13

Data on medications are reported for each year from 2003–04 to 2012–13 in Chapter 9 of the companion report entitled *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 2012–13 (see Section 7.9).

The rate at which medications were prescribed decreased significantly from 2003–04 (58.8 per 100 problems; 95% CI: 57.3–60.3) to 2012–13 (53.8 per 100; 95% CI: 52.5–55.1). Among the prescribed drug groups that decreased significantly were drugs for obstructive airways disease, systemic anti-inflammatory medications, corticosteroid dermatological preparations and sex hormones. At the same time, prescribing rates of several drug groups increased significantly, including agents acting on the renin-angiotensin system, psychoanaleptics, lipid modifying agents, and corticosteroids for systemic use.

At the individual generic level, significant increases were found in the prescribing rates of a number of medications. Among them were cephalexin, oxycodone, esomeprazole, rosuvastatin and meloxicam. On the other hand, salbutamol, 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 two, three or four repeats were recorded. There was a significant increase in the rate of vaccines 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 in 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 2003–04 to 2012–13 in the 10-year report, *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

10.1 Number of other treatments

In 2012–13, a total of 53,163 other treatments were recorded, at a rate of 53.9 per 100 encounters (Table 10.1). More than two-thirds (67.7%) of these were clinical treatments. At least one other treatment was provided at 40.7% of all encounters, and for 30.6% of all problems managed. For every 100 problems managed, 24 clinical treatments and 11 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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
At least one other treatment	40,098	40.7	39.0	42.3	30.6	29.3	31.9
Other treatments	53,163	53.9	51.2	56.7	34.9	33.2	36.5
Clinical treatments	36,023	36.5	34.2	38.9	23.6	22.2	25.1
Procedural treatments	17,140	17.4	16.5	18.3	11.2	10.7	11.8

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 62.2% of the problems that were managed with an 'other treatment', no medication was prescribed, supplied or advised for that problem at that encounter.
- 1 in 5 problems (21.0%) were managed with at least one clinical treatment. For 60.8% of these problems, no concurrent pharmacological treatment was provided.
- 1 in 10 problems (10.5%) 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* = 152,517)	95% LCL	95% UCL
At least one other treatment	46,684	100.0	30.6	29.3	31.9
Without pharmacological treatment	29,039	62.2	19.0	18.3	19.8
At least one clinical treatment	32,089	100.0	21.0	19.8	22.2
Without pharmacological treatment	19,523	60.8	12.8	12.1	13.5
At least one procedural treatment	16,034	100.0	10.5	10.0	11.0
Without pharmacological treatment	10,331	64.4	6.8	6.4	7.1

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

10.2 Clinical treatments

Clinical treatments include general and specific advice, counselling or education, and administrative processes. During 2012–13, there were 36,023 clinical treatments recorded, at a rate of 36.5 per 100 encounters, or 23.6 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 with 95% confidence limits.

General advice and education was the most frequently recorded clinical treatment in 2012–13 (5.8 per 100 encounters), accounting for 15.8% of all clinical treatments, followed by counselling about the problem under management (5.0 per 100 encounters) (Table 10.3). The 10 most commonly provided clinical treatments accounted for 85.9% of all clinical treatments.

Several recorded clinical treatments related to preventive activities. The most common was counselling and advice about nutrition and weight (3.8 per 100 encounters), followed by counselling/advice for: exercise; lifestyle; smoking; prevention; and alcohol. Together, these preventive treatments accounted for 19.2% of clinical treatments, provided at a rate of 7.7 per 100 encounters (Table 10.3).

Table 10.3: Most frequent clinical treatments

Clinical treatment	Number	Per cent of clinical treatments (n = 36,023)	Rate per 100 encounters (n = 98,564)	95% LCL	95% UCL	Rate per 100 problems (n = 152,517)	95% LCL	95% UCL
Advice/education NEC*	5,706	15.8	5.8	4.9	6.6	3.7	3.2	4.3
Counselling – problem*	4,905	13.6	5.0	4.3	5.7	3.2	2.8	3.7
Counselling/advice – nutrition/weight*	3,730	10.4	3.8	3.3	4.2	2.4	2.2	2.7
Advice/education – treatment*	3,675	10.2	3.7	3.3	4.1	2.4	2.2	2.7
Advice/education – medication*	3,146	8.7	3.2	2.9	3.5	2.1	1.9	2.3
Counselling – psychological*	3,103	8.6	3.1	2.9	3.4	2.0	1.9	2.2
Other administrative procedure/ document (excluding sickness certificate)*	2,433	6.8	2.5	2.2	2.7	1.6	1.5	1.7
Sickness certificate*	1,792	5.0	1.8	1.5	2.1	1.2	1.0	1.4
Reassurance, support*	1,314	3.6	1.3	1.1	1.5	0.9	0.7	1.0
Counselling/advice – exercise*	1,130	3.1	1.1	0.9	1.3	0.7	0.6	0.9
Counselling/advice – lifestyle*	651	1.8	0.7	0.5	0.8	0.4	0.3	0.5
Counselling/advice – smoking*	649	1.8	0.7	0.6	0.7	0.4	0.4	0.5
Counselling/advice – health/body*	460	1.3	0.5	0.3	0.6	0.3	0.2	0.4
Counselling/advice – prevention*	406	1.1	0.4	0.3	0.5	0.3	0.2	0.3
Counselling/advice – alcohol*	346	1.0	0.4	0.3	0.4	0.2	0.2	0.3
Family planning*	313	0.9	0.3	0.3	0.4	0.2	0.2	0.2
Consultation with primary care provider*	239	0.7	0.2	0.2	0.3	0.2	0.1	0.2
Observe/wait*	234	0.6	0.2	0.2	0.3	0.2	0.1	0.2
Counselling/advice – pregnancy*	228	0.6	0.2	0.2	0.3	0.1	0.1	0.2
Counselling/advice – relaxation*	202	0.6	0.2	0.2	0.2	0.1	0.1	0.2
Advice/education – sun protection	201	0.6	0.2	0.0	0.4	0.1	0.0	0.3
Counselling/advice – other*	197	0.5	0.2	0.2	0.3	0.1	0.1	0.2
Subtotal	*33,761*	*97.3*	—	—	—	—	—	—
Total clinical treatments	**36,023**	**100.0**	**36.5**	**34.2**	**38.9**	**23.6**	**22.2**	**25.1**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.4 <purl.library.usyd.edu.au/sup/9781743323779>).

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 32,089 problems (21.0% of all problems) involved one or more clinical treatments in their management (Table 8.2).
- 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.

- Upper respiratory tract infection represented the largest proportion of problems managed with a clinical treatment (6.0%), followed by depression (5.1%).
- A clinical treatment was provided at one-third (33.9%) of contacts with upper respiratory tract infection, with no concurrent pharmacological treatment provided for half (50.3%) 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 70.6% of contacts). Of the contacts with acute stress reaction where a clinical treatment was provided, 87.6% 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 = 32,089)	Rate per 100 encounters[a] (n = 98,564)	95% LCL	95% UCL	Per cent of this problem[b]	Per cent of treated problems no medications[c]
Upper respiratory tract infection	1,937	6.0	2.0	1.6	2.3	33.9	50.3
Depression*	1,648	5.1	1.7	1.5	1.8	40.3	50.9
Diabetes – all*	1,156	3.6	1.2	1.0	1.3	27.6	64.3
Hypertension*	1,028	3.2	1.0	0.9	1.2	12.1	44.4
Anxiety*	853	2.7	0.9	0.8	1.0	40.9	62.0
Lipid disorder	800	2.5	0.8	0.7	0.9	24.3	66.8
Gastroenteritis*	592	1.8	0.6	0.5	0.7	45.8	57.8
Back complaint*	564	1.8	0.6	0.5	0.6	19.4	47.4
Test results*	541	1.7	0.5	0.5	0.6	26.8	94.1
Acute stress reaction	512	1.6	0.5	0.5	0.6	70.6	87.6
Subtotal	*9,631*	*30.0*	—	—	—	—	—
Total problems with clinical treatments	**32,089**	**100.0**	**32.6**	**30.6**	**34.5**	—	—

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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

10.3 Procedural treatments

Procedural treatments include therapeutic actions and diagnostic procedures undertaken at the encounter. Injections for immunisations (n = 3,636) are not counted here as these have been counted as medications (see Chapter 9). There were 17,140 other procedures recorded at a rate of 17.4 per 100 encounters, and 11.2 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. These results 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 Table 12.6.

The most frequently recorded group of procedures was excision/removal tissue/biopsy/ destruction/debridement/cauterisation (3.0 per 100 encounters), accounting for 17.4% of recorded procedures, followed by dressing/pressure/compression/tamponade (2.4 per 100 encounters). The top five procedural treatments, accounting for almost 60% of all procedural treatments, were provided at a rate of 10.3 per 100 encounters.

Table 10.5: Most frequent procedural treatments

Procedural treatment	Number	Per cent of procedural treatments (*n* = 17,140)	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Excision/removal tissue/biopsy/ destruction/debridement/cauterisation*	2,983	17.4	3.0	2.7	3.3	2.0	1.8	2.1
Dressing/pressure/compression/ tamponade*	2,370	13.8	2.4	2.2	2.6	1.6	1.4	1.7
Local injection/infiltration*(a)	2,302	13.4	2.3	2.1	2.6	1.5	1.4	1.7
Physical medicine/rehabilitation – all*	1,422	8.3	1.4	1.2	1.7	0.9	0.8	1.1
Incision/drainage/flushing/aspiration/ removal body fluid*	1,105	6.4	1.1	1.0	1.2	0.7	0.6	0.8
Other therapeutic procedures/minor surgery*	889	5.2	0.9	0.7	1.1	0.6	0.5	0.7
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	854	5.0	0.9	0.8	1.0	0.6	0.5	0.6
Pap smear*	818	4.8	0.8	0.7	0.9	0.5	0.5	0.6
INR test*	744	4.3	0.8	0.6	0.9	0.5	0.4	0.6
Other preventive procedures/high-risk medication*	719	4.2	0.7	0.6	0.8	0.5	0.4	0.5
Check-up – PN/AHW*	647	3.8	0.7	0.5	0.8	0.4	0.3	0.5
Electrical tracings*	544	3.2	0.6	0.5	0.6	0.4	0.3	0.4
Physical function test*	474	2.8	0.5	0.4	0.6	0.3	0.3	0.4
Subtotal	*16,984*	*99.1*	—	—	—	—	—	—
Total procedural treatments	**17,140**	**100.0**	**17.4**	**16.5**	**18.3**	**11.2**	**10.7**	**11.8**

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

*   Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Tables A4.5 and A4.6, <purl.library.usyd.edu.au/sup/9781743323779>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; NEC – not elsewhere classified; INR – international normalised ratio; PN/AHW – practice nurse/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 was managed with a procedure, and the proportion of problems managed with a procedure without medication given concurrently.

- One or more procedural treatments were provided in the management of 16,034 problems (10.5% of all problems) (Table 8.2).
- The top 10 problems accounted for more than one-third (34.1%) of all problems for which a procedure was used.

- Female genital check-up/Pap smear accounted for 5.0% of all problems managed with procedures, followed by laceration/cut (4.7%).
- Of the top 10 problems, warts was the problem most likely to be managed with a procedural treatment with a procedure being undertaken at 4 out of 5 (79.1%) 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* = 16,034)	Rate per 100 encounters[a] (*n* = 98,564)	95% LCL	95% UCL	Per cent of this problem[b]	Per cent of treated problems no medications[c]
Female genital check-up/ Pap smear*	802	5.0	0.8	0.7	0.9	51.9	98.0
Laceration/cut	758	4.7	0.8	0.7	0.9	78.9	79.9
Solar keratosis/sunburn	745	4.6	0.8	0.6	0.9	67.6	96.4
Excessive ear wax	518	3.2	0.5	0.5	0.6	70.7	93.0
Malignant neoplasm, skin	503	3.1	0.5	0.4	0.6	43.1	94.4
Warts	495	3.1	0.5	0.4	0.6	79.1	96.0
General check-up*	483	3.0	0.5	0.4	0.6	16.8	82.4
Chronic ulcer skin (including varicose ulcer)	415	2.6	0.4	0.4	0.5	71.3	79.3
Atrial fibrillation/flutter	405	2.5	0.4	0.3	0.5	28.8	70.8
Vitamin/nutritional deficiency	336	2.1	0.3	0.3	0.4	22.9	1.0
Subtotal	*5,461*	*34.1*	—	—	—	—	—
Total problems with procedural treatments	**16,034**	**100.0**	**16.3**	**15.5**	**17.0**	—	—

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

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

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

*   Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.1, <purl.library.usyd.edu.au/sup/9781743323779>).

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 this information.

- GPs were allowed to record up to three Medicare item numbers where appropriate, rather than be limited to one item number as had been the case prior to 2005–06.
- 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 the years 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 practice nurse 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". Six of the Medicare Benefits Schedule (MBS) PN/AHW items were removed and the funds redirected into a single payment to eligible general practices.[82]

The following section investigates: the proportion of encounters involving the PN/AHW; the proportion of encounters claimable with a Medicare item number; the distribution of the PN/AHW items recorded; treatments provided by PNs/AHWs in association with the GP-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 (for example, dietary advice on a one-to-one basis, or in a group situation).

Practice nurse/Aboriginal health worker Medicare claims

There were 7,318 GP–patient encounters (7.4% of all encounters) for which at least one practice nurse item and/or nurse activity was recorded. However, for 84 of these their activity was not described. At the remaining 7,234 encounters a PN/AHW was involved in the management of 7,607 problems (5.0% of all problems managed at all encounters) (Table 10.7). Extrapolation of these results suggests that during 2012–13 practice nurses were involved in about 9 million GP–patient consultations across Australia.

A PN/AHW Medicare item was recorded at only 287 encounters: 0.3% of the 85,885 with one or more MBS item number(s) (Table 5.2) and 3.9% of the 7,234 encounters involving a PN/AHW (Table 10.7).

Table 10.7: Summary of PN or AHW involvement at encounters

Variable	Number
Total encounters	98,564
Encounters involving PN/AHW	7,318
Encounters at which PN/AHW activity described	7,234
Encounters with PN/AHW item number(s) recorded but activity not described	84
Encounters at which one or more MBS PN/AHW item numbers were recorded as claimable	287
Total problems managed	152,517
Problems managed with PN/AHW involvement	7,607
	Per cent (95% CI)
Encounters involving the PN/AHW as a proportion of total encounters	7.4 (6.8–8.0)
PN/AHW claimable encounters as a proportion of total encounters	0.3 (0.1–0.5)
Proportion of PN/AHW involved encounters for which one or more PN/AHW item numbers were claimed from Medicare	3.9 (1.7–6.1)
Problems involving the PN/AHW as a proportion of total problems (95% CI)	5.0 (4.6–5.4)

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

Distribution of practice nurse/Aboriginal health worker items claimed

Only 287 PN/AHW item numbers were recorded, one at each of 287 encounters. The vast majority (91.8%) were item 10997—practice nurse services to a person with chronic disease. These were followed by item 10986 (4.7%) and 10987 (3.5%) (Table 10.8).

The distribution of recorded PN/AHW item numbers and that of the (approximately) 0.8 million claims made for such items from Medicare demonstrated a relatively good fit.

Table 10.8: Distribution of PN/AHW worker item numbers recorded

Medicare item number	Short descriptor	Number	Per cent of total (95% CI)	Per cent of Medicare PN/AHW item claims[a] (*n* = 0.8 million)
10997	Service provided to a person with a chronic disease by a practice PN or registered AHW	264	91.8 (85.8–97.7)	89.3
10986	Provision of a health assessment for a patient who is receiving or has received their 4-year-old immunisation by a PN or AHW	14	4.7 (0.1–9.4)	3.4
10987	Follow up service provided by a PN/AHW for an Indigenous person who has received a health assessment	10	3.5 (0.3–6.6)	7.0
10988	Immunisation provided to a person by an AHW	0	0.1 (0.0–0.2)	0.6
Total	**All Medicare practice nurse item numbers**	**287**	**100.0**	—

(a) Total Medicare claims for practice nurse and AHW activities July 2012 – June 2013.
    Source: https://www.medicareaustralia.gov.au/statistics/mbs_item.shtml

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

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

As shown in Section 10.1, GPs reported 53,163 other treatments at encounters. A further 1,649 local injections in administration of vaccine were given by a PN/AHW and 1,987 by the recording GP (these were not reported in Section 10.2). So, in total 56,799 other treatments were recorded, PNs/AHWs accounting for 8,188 of these (representing 14.4% of all other treatments recorded at BEACH encounters) at a rate of 8.3 per 100 recorded encounters.

By far the majority (86.2%) of the PN/AHW recorded activity was procedural, and these procedures represented 34.0% of all procedures recorded. In contrast, clinical treatments accounted for 13.8% of PN/AHW recorded activity at encounters, but PNs/AHWs provided only 3.1% of all recorded clinical treatments. PNs/AHWs did 45.4% of the recorded immunisation injections at GPs encounters (Table 10.9).

Table 10.9: Summary of treatments given by GPs, and by PN or AHW at GP–patient encounters

Treatment	Performed/assisted by PN/AHW		Performed by the GP		Total number recorded[a]
	Number	Row per cent of total	Number	Row per cent of total	
Procedures[a]	7,060	34.0	13,716	66.0	20,776
(Immunisation injections)	*(1,649)*	*(45.4)*	*(1,987)*	*(54.6)*	*(3,636)*
Clinical treatments	1,127	3.1	34,896	96.9	36,023
All other treatments	**8,188**	**14.4**	**48,611**	**85.6**	**56,799**

(a)   Procedural treatments here include all injections given by a PN/AHW or the GP for immunisations/vaccinations (*n* = 3,636). 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.

Of the 7,060 procedures performed by a PN/AHW 33.9% were injections (Table 10.10) and 69.0% of these were for immunisations (Table 10.9). A further 18.8% were dressing/pressure/compression/tamponade. Together these accounted for 52.6% of all procedures undertaken by PNs/AHWs in association with the recorded GP–patient encounters. Check-ups made up 9.2% of the procedures undertaken by a PN/AHW followed by INR tests (7.4%), and incision/drainage/aspirations (6.0%). PNs/AHWs also undertook a wide range of other procedural activities in association with the GP–patient encounters (Table 10.10).

Other administrative procedure (which includes administrative/documentation work but excludes provision of sickness certificates) was the most frequently recorded clinical activity, accounting for more than one-third (36.9%) of the 1,127 clinical treatments provided by PNs/AHWs, followed by counselling/advice about nutrition/weight (9.1%), advice/education about medication (8.2%) and about treatment (7.7%) (Table 10.10).

Table 10.10: Most frequent activities done by a PN or AHW at GP encounters

Activity	Number	Per cent of group[a]	Rate per 100 encounters where PN/AHW activity described[a] (*n* = 7,234)	95% LCL	95% UCL
Procedural treatments	**7,060**	**100.0**	**97.6**	**95.7**	**99.5**
Local injection/infiltration*	2,391	33.9	33.0	30.2	35.7
Dressing/pressure/compression/tamponade*	1,324	18.8	18.3	16.4	20.2
Check-up – PN/AHW*	647	9.2	9.2	7.6	10.3
INR test*	522	7.4	7.4	5.9	8.5
Incision/drainage/flushing/aspiration/removal body fluid*	424	6.0	6.0	4.5	7.2
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	352	5.0	5.0	4.2	5.6
Electrical tracings*	331	4.7	4.7	3.9	5.2
Excision/removal tissue/biopsy/destruction/debridement/cauterisation*	257	3.6	3.6	2.8	4.3
Physical function test*	185	2.6	2.6	2.0	3.1
Urine test*	166	2.4	2.4	1.6	3.0
Glucose test*	84	0.9	0.9	0.4	1.3
Assist at operation	62	0.9	0.8	0.6	1.1
Other diagnostic procedures*	61	0.6	0.6	0.2	1.0
Pap smear*	44	0.5	0.5	0.2	0.7
Clinical treatments	**1,127**	**100.0**	**15.6**	**13.3**	**17.9**
Other administrative procedure/document (excluding sickness certificate)*	416	36.9	5.8	4.6	7.0
Counselling/advice – nutrition/weight*	103	9.1	1.4	0.8	2.0
Advice/education – medication*	92	8.2	1.3	0.9	1.7
Advice/education – treatment*	87	7.7	1.2	0.7	1.7
Advice/education NEC*	83	7.4	1.2	0.7	1.6
Counselling – problem*	80	7.1	1.1	0.7	1.5
Consultation with primary care provider*	73	6.5	1.0	0.7	1.4
Counselling/advice – lifestyle*	34	3.0	0.5	0.2	0.7

(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 purl.library.usyd.edu.au/sup/9781743323779>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; INR – international normalised ratio; PN/AHW – practice nurse/Aboriginal health worker; 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 managed most often were immunisation/vaccination (22.0% of all problems managed with the involvement of a PN or AHW), check-ups (6.5%), laceration/cut (6.0%) and diabetes (4.4%). Other common problems for which PNs or AHWs were involved at the GP–patient consultations are listed in Table 10.11.

Table 10.11: The most common problems managed with involvement of PNs or AHWs at GP–patient encounters

Problem managed	Number	Per cent of problems involving PN/AHW[a] (n = 7,607)	Rate per 100 encounters with recorded PN/AHW activity[b] (n = 7,234)	95% LCL	95% UCL
Immunisation/vaccination – all*	1,671	22.0	23.1	20.4	25.8
Check-up – all*	497	6.5	6.9	5.9	7.8
Laceration/cut	453	6.0	6.3	5.4	7.2
Diabetes – all*	334	4.4	4.6	3.8	5.4
Chronic ulcer skin (including varicose ulcer)	303	4.0	4.2	3.5	4.9
Atrial fibrillation/flutter	301	4.0	4.2	3.2	5.1
Excessive ear wax	186	2.4	2.6	2.1	3.1
Malignant neoplasm, skin	167	2.2	2.3	1.8	2.8
Blood test – all*	144	1.9	2.0	1.0	3.0
Administrative procedure – all*	119	1.6	1.7	1.1	2.2
Vitamin/nutritional deficiency	112	1.5	1.5	1.2	1.9
Repair/fixation – suture/cast/prosthetic device (apply/remove)*	107	1.4	1.5	1.2	1.8
Hypertension*	103	1.4	1.4	1.0	1.8
Asthma	98	1.3	1.3	1.0	1.7
Skin symptom/complaint, other	83	1.1	1.1	0.8	1.5
Prescription – all*	82	1.1	1.1	0.8	1.5
Skin infection, other	76	1.0	1.1	0.8	1.3
Pregnancy*	75	1.0	1.0	0.5	1.5
Contraception, other	61	0.8	0.8	0.6	1.1
Burns/scalds	58	0.8	0.8	0.5	1.1
Other preventive procedures/high risk medication*	55	0.7	0.8	0.4	1.1
Subtotal	*5,350*	*70.3*	—	—	—
Total problems involving practice nurse	**7,607**	**100.0**	**105.2**	**104.4**	**105.9**

(a)   Only those problems accounting for >0.5% of all problems managed at GP–patient encounters with involvement of a PN or AHW are included in this table.

(b)   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, <purl.library.usyd.edu.au/sup/9781743323779>).

Note: LCL – lower confidence limit; UCL – upper confidence limit; PN/AHW – practice nurse/Aboriginal health worker.

10.5 Changes in other treatments over the decade 2003–04 to 2012–13

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 2003–04 to 2012–13*.[1] A summary of the results is provided below.

Clinical treatments

There was no statistically significant difference in the rate at which clinical treatments were provided in the management of patient problems in 2003–04 and 2012–13, but there were major changes within the decade.

The rate at which clinical treatments were provided remained steady from 2003–04 to 2004–05. 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 in 2005–06. From 2006–07 onwards, rates slowly increased to reach 23.6 clinical treatments per 100 problems in 2012–13, nearing the level provided 10 years earlier.

There were significant changes in some specific types of clinical treatments.

- The rate at which other administrative procedure/document and sick certificates were provided significantly increased from 2003–04 to 2012–13, however the changes were not linear.
- The rate at which counselling/advice about nutrition/weight was provided significantly decreased over the decade. 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 practice nurses.

Based on the rate at which clinical treatments were provided per 100 encounters, we estimate that 11 million more clinical treatments were provided at GP–patient encounters nationally in 2012–13 than 10 years earlier.

Procedural treatments

The rate at which procedures were performed per 100 encounters increased significantly from 14.7 per 100 encounters in 2003–04 to 17.4 per 100 in 2012–13. The extrapolated effect of this change is that nationally in 2012–13 there were an estimated 7.9 million more procedures undertaken than a decade earlier.

This increase was reflected in some specific types of procedures.

- The provision of local injections/infiltration (excluding local injection performed for immunisations) significantly increased over the decade. When extrapolated, the increase from 1.6 per 100 encounters in 2003–04 to 2.3 per 100 encounters in 2012–13 equates to provision of 1.4 million more local injections/infiltrations nationally in 2012–13 than in 2003–04.
- There were also significant increases in the provision of the INR test, other preventive procedures/high risk medication and PN/AHW check-ups per 100 problems managed.

There was an overall increase in the proportion of problems that were managed with a procedure, rising from 13.7 per 100 encounters in 2003–04 to 16.3 per 100 in 2012–13.

Practice nurse/Aboriginal health worker activity

A comparison of PN/AHW activity from 2005–06 to 2012–13 is provided in Chapter 10 of the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13.*[1] Changes over the decade are summarised below.

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 significantly decreased to 7.4% in 2011–12, and remained steady in 2012–13. The proportion of problems managed with a PN/AHW involvement also increased from 2.8% in 2005–06 to 6.1% in 2009–10, with no change by 2012–13 (5.0%).

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 2012–12. In 2012–13, after the change in practice nurse funding structure, the PN/AHW item number was claimed at only 4%.

The change in practice nurse funding structure had a huge impact on the distribution of PN/AHW item claims in 2012–13 for their activity associated with GP-encounters: 91% of items claimed were for PN/AHW management of chronic diseases, compared with only 3.6% the previous year.

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 decreased in 2011–12 to 7.2 per 100 encounters, remaining steady in 2012–13. PNs/AHWs also took over an increasing proportion of the procedural work, increasing from 23% in 2005–06 to 38% in 2010–11, and remaining steady in 2012–13.

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 2012–13.

With the removal of a rebate for injections for immunisation, the rate at which PNs/AHWs provided injections in association with GP–patient encounters dropped to its lowest level (33.0 per 100 PN/AHW involved encounters), since first recorded in 2005–06. Check-ups by PNs/AHWs at GP–patient encounters doubled over the study period. INR blood testing frequency more than tripled.

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 5.8 per 100 in 2012–13. Most of this growth occurred over the last two years. Their provision of advice/education about medication also increased.

There were significant increases in the rate at which PNs/AHWs were involved in management of check-ups, diabetes, and atrial fibrillation/flutter. 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 2003–04 to 2012–13 in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 13.5% of all encounters, for 9.5% of all problems managed.

There were 14,561 referrals made at a rate of 14.8 per 100 encounters, most often to medical specialists (8.9 per 100 encounters, 5.7 per 100 problems managed), followed by referrals to allied health services (4.7 per 100 encounters, 3.0 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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
At least one referral[a]	13,331	13.5	13.0	14.1	9.5	9.1	9.8
Referrals	14,561	14.8	14.2	15.4	9.5	9.2	9.9
Medical specialist*	8,750	8.9	8.5	9.3	5.7	5.5	6.0
Allied health services*	4,616	4.7	4.4	5.0	3.0	2.8	3.2
Hospital*	354	0.4	0.3	0.4	0.2	0.2	0.3
Emergency department*	270	0.3	0.2	0.3	0.2	0.1	0.2
Other referrals*	571	0.6	0.5	0.7	0.4	0.3	0.4
Total referrals	**14,561**	**14.8**	**14.2**	**15.4**	**9.5**	**9.2**	**9.9**

(a)   At least one referral was given in the management of 14,431 problems at the 13,331 encounters.

*   Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <purl.library.usyd.edu.au/sup/9781743323779>).

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 (8.7%), and dermatologists (7.8%). The top 10 specialists accounted for 64.9% of specialist referrals and for 42.5% of all referrals.

Referrals to allied health services were most often to physiotherapists (25.9% of allied health services referrals), psychologists (21.6%), podiatrists/chiropodists (12.1%), dietitians/nutritionists (7.3%) and dentists (5.8%). The top 10 allied health services accounted for 83.1% of allied health referrals and 28.7% 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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Medical specialist*	**8,750**	**65.5**	**100.0**	**8.9**	**8.5**	**9.3**	**5.7**	**5.5**	**6.0**
Orthopaedic surgeon	813	6.1	9.3	0.8	0.7	0.9	0.5	0.5	0.6
Surgeon	759	5.7	8.7	0.8	0.7	0.9	0.5	0.4	0.5
Dermatologist	679	5.1	7.8	0.7	0.6	0.8	0.4	0.4	0.5
Ophthalmologist	668	5.0	7.6	0.7	0.6	0.8	0.4	0.4	0.5
Cardiologist	634	4.7	7.2	0.6	0.6	0.7	0.4	0.4	0.5
Gastroenterologist	578	4.3	6.6	0.6	0.5	0.7	0.4	0.3	0.4
Ear, nose and throat	528	4.0	6.0	0.5	0.5	0.6	0.3	0.3	0.4
Gynaecologist	461	3.4	5.3	0.5	0.4	0.5	0.3	0.3	0.3
Urologist	305	2.3	3.5	0.3	0.3	0.4	0.2	0.2	0.2
Psychiatrist	255	1.9	2.9	0.3	0.2	0.3	0.2	0.1	0.2
Subtotal: top 10 medical specialist referrals	*5,681*	*42.5*	*64.9*	—	—	—	—	—	—
Allied health services*	**4,616**	**34.5**	**100.0**	**4.7**	**4.4**	**5.0**	**3.0**	**2.8**	**3.2**
Physiotherapist	1,197	9.0	25.9	1.2	1.1	1.3	0.8	0.7	0.9
Psychologist	999	7.5	21.6	1.0	0.9	1.1	0.7	0.6	0.7
Podiatrist/chiropodist	557	4.2	12.1	0.6	0.5	0.6	0.4	0.3	0.4
Dietitian/nutritionist	339	2.5	7.3	0.3	0.3	0.4	0.2	0.2	0.3
Dentist	266	2.0	5.8	0.3	0.2	0.3	0.2	0.1	0.2
Optometrist	116	0.9	2.5	0.1	0.1	0.1	0.1	0.1	0.1
Audiologist	113	0.8	2.4	0.1	0.1	0.1	0.1	0.1	0.1
Diabetes educator	104	0.8	2.2	0.1	0.1	0.1	0.1	0.1	0.1
Exercise physiologist	74	0.6	1.6	0.1	0.1	0.1	0.0	0.0	0.1
Nurse	69	0.5	1.5	0.1	0.1	0.1	0.0	0.0	0.1
Subtotal: top 10 allied health referrals	*3,834*	*28.7*	*83.1*	—	—	—	—	—	—
Subtotal: all referrals listed	*9,515*	*71.2*	—	—	—	—	—	—	—
Total allied health and medical specialist referrals	**13,366**	**100.0**	**—**	**13.6**	**13.0**	**14.2**	**8.8**	**8.4**	**9.1**

*   Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.7, <purl.library.usyd.edu.au/sup/9781743323779>).

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 8,750 referrals to a medical specialist were provided in management of 8,968 problems. The 10 problems most often referred to a specialist accounted for only 18.8% of all problem–referral links, reflecting the breadth of problems referred to specialists. Malignant skin neoplasm accounted for 2.5% of problem-referral links, diabetes 2.4%, osteoarthritis 2.3% and pregnancy 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 (19.0%) GP contacts with this problem. This was followed by pregnancy (14.3%) and ischaemic heart disease (12.9%).

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

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	Rate per 100 contacts with this problem[a]
Malignant neoplasm, skin	222	2.5	0.2	0.2	0.3	19.0
Diabetes – all*	211	2.4	0.2	0.2	0.3	5.0
Osteoarthritis*	203	2.3	0.2	0.2	0.2	7.3
Pregnancy*	184	2.0	0.2	0.2	0.2	14.3
Sleep disturbance	176	2.0	0.2	0.1	0.2	11.5
Back complaint*	173	1.9	0.2	0.1	0.2	5.9
Depression*	138	1.5	0.1	0.1	0.2	3.4
Ischaemic heart disease*	136	1.5	0.1	0.1	0.2	12.9
Gastro-oesophageal reflux disease*	125	1.4	0.1	0.1	0.2	4.9
Abnormal test results*	117	1.3	0.1	0.1	0.1	9.3
Subtotal: top 10 problems referred to a medical specialist	*1,686*	*18.8*	—	—	—	—
Total problems referred to medical specialist	**8,968**	**100.0**	**9.1**	**8.7**	**9.5**	—

(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 <purl.library.usyd.edu.au/sup/9781743323779>).

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

At a meeting of senior academic researchers at the 2011 North American Primary Care Research Group meeting in Canada, we identified an international paucity of information about what problems are referred by GPs to particular types of specialists. The following analyses go some way to redressing this deficiency.

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 25.5% of all referrals to general/unspecified surgeons

(indicative of the broad range of conditions referred to them), and for 76.2% of all referrals to psychiatrists, consistent with a more defined range.

Orthopaedic surgeon: The two problems accounting for the most referrals were osteoarthritis (21.5% of orthopaedic surgeon referrals) and acute internal knee damage (11.9%). 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 31.5% of contacts) and knee symptom/complaint (15.5%).

General/unspecified surgeon: The two problems accounting for the most referrals were inguinal hernia (7.3% of referrals) and malignant skin neoplasm (5.7%). Of the five problems most frequently referred, those most likely to be referred were inguinal hernia (referred at 45.1% of GP contacts) and other abdominal hernia (23.7%).

Dermatologist: The two problems accounting for the most referrals were malignant neoplasm of skin (14.4% of referrals) and solar keratosis/sunburn (9.9%). Of the five problems most frequently referred to a dermatologist, those most likely to be referred were acne (referred at 14.3% of GP contacts) and malignant skin neoplasm (8.5%).

Ophthalmologist: The two problems accounting for the most referrals were diabetes (14.8% of referrals) and cataract (12.4%). Of the five problems most frequently referred to an ophthalmologist, those most likely to be referred were cataract (referred at 54.6% of GP contacts) and glaucoma (30.1%) (apart from GP contact specifically for referral).

Cardiologist: The two problems accounting for the most referrals were ischaemic heart disease (19.0% of referrals) and atrial fibrillation/flutter (10.1%). Of the five problems most frequently referred, those most likely to be referred were palpitations (referred at 22.2% of GP contacts) and chest pain (not otherwise specified) (15.4%).

Gastroenterologist: The two problems accounting for the most referrals were gastro-oesophageal reflux disease (14.2% of referrals) and abdominal pain (7.1%). Of the five problems most frequently referred to a gastroenterologist, those most likely to be referred were rectal bleeding (referred at 22.4% of GP contacts) and digestive neoplasm (benign or uncertain) (20.8%).

Ear, nose, and throat (ENT) specialist: The two problems accounting for the most referrals were acute otitis media/myringitis (8.3% of referrals) and tonsillitis (7.4%). Of the five problems most frequently referred to an ENT specialist, those most likely to be referred were tinnitus (referred at 29.4% of GP contacts) and tonsillitis (5.0%).

Gynaecologist: The two problems accounting for the most referrals were menstrual problems (14.5% of referrals) and 'other' female genital disease (8.7%). Of the five problems most frequently referred to a gynaecologist, those most likely to be referred were uterovaginal prolapse (referred at 42.3% of GP contacts) and female infertility/subfertility (26.5%).

Urologist: The two problems accounting for the most referrals were benign prostatic hypertrophy (17.5% of referrals) and abnormal test results (13.8%). Of the five problems most frequently referred, those most likely to be referred were benign prostatic hypertrophy (referred at 20.2% of GP contacts) and malignant neoplasm of prostate (11.7%).

Psychiatrist: The two problems accounting for the most referrals were depression (44.1% of referrals) and affective psychosis (11.3%). Of the five problems most frequently referred to a psychiatrist, those most likely to be referred at each GP contact with that problem were hyperkinetic disorder (referred at 15.0% of GP contacts) and affective psychosis (9.3%) (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	Rate per 100 contacts with this problem[a]
Orthopaedic surgeon	**Total**	**824**	**100.0**	—
	Osteoarthritis*	177	21.5	6.3
	Acute internal knee damage	98	11.9	31.5
	Injury musculoskeletal NOS	64	7.8	7.3
	Fracture*	51	6.2	5.7
	Knee symptom/complaint	46	5.6	15.5
	Subtotal: top five problems	*436*	*52.9*	—
General/unspecified surgeon	**Total**	**776**	**100.0**	—
	Inguinal hernia	56	7.3	45.1
	Malignant neoplasm, skin	44	5.7	3.8
	Cholecystitis/cholelithiasis	38	5.0	19.4
	Haemorrhoids	31	4.0	12.3
	Abdominal hernia, other	29	3.7	23.7
	Subtotal: top five problems	*198*	*25.5*	—
Dermatologist	**Total**	**693**	**100.0**	—
	Malignant neoplasm, skin	100	14.4	8.5
	Solar keratosis/sunburn	69	9.9	6.2
	Contact dermatitis	68	9.9	3.9
	Acne	58	8.4	14.3
	Skin symptom/complaint, other	51	7.4	7.4
	Subtotal: top five problems	*346*	*49.9*	—
Ophthalmologist	**Total**	**678**	**100.0**	—
	Diabetes – all*	101	14.8	2.4
	Cataract	84	12.4	54.6
	Glaucoma	57	8.4	30.1
	Eye/adnexa disease, other	55	8.1	29.2
	Refer physician/specialist/clinic/hospital eye	36	5.3	80.4
	Subtotal: top five problems	*333*	*49.1*	—
Cardiologist	**Total**	**656**	**100.0**	—
	Ischaemic heart disease*	124	19.0	11.8
	Atrial fibrillation/flutter	66	10.1	4.7
	Hypertension*	55	8.4	0.7
	Palpitations/awareness of heart	49	7.5	22.2
	Chest pain NOS	48	7.2	15.4
	Subtotal: top five problems	*342*	*52.1*	—

(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	Rate per 100 contacts with this problem[a]
Gastroenterologist	**Total**	**595**	**100.0**	—
	Gastro-oesophageal reflux disease*	85	14.2	3.3
	Abdominal pain*	42	7.1	5.9
	Chronic enteritis/ulcerative colitis	34	5.7	20.6
	Rectal bleeding	33	5.5	22.4
	Benign/uncertain neoplasm, digestive	32	5.4	20.8
	Subtotal: top five problems	*226*	*38.0*	—
Ear, nose, and throat (ENT) specialist	**Total**	**538**	**100.0**	—
	Acute otitis media/myringitis	45	8.3	4.2
	Tonsillitis*	40	7.4	5.0
	Sinusitis acute/chronic	28	5.2	2.3
	Tinnitus, ringing/buzzing ear	28	5.2	29.4
	Otitis externa	24	4.5	4.8
	Subtotal: top five problems	*165*	*30.7*	—
Gynaecologist	**Total**	**473**	**100.0**	—
	Menstrual problems*	69	14.5	11.5
	Genital disease, other (female)	41	8.7	19.9
	Uterovaginal prolapse	35	7.4	42.3
	Abnormal test results*	27	5.6	2.1
	Infertility/subfertility (female)	19	4.0	26.5
	Subtotal: top five problems	*191*	*40.4*	—
Urologist	**Total**	**311**	**100.0**	—
	Benign prostatic hypertrophy	54	17.5	20.2
	Abnormal test results*	43	13.8	3.4
	Malignant neoplasm prostate	42	13.6	11.7
	Urinary tract infection*	16	5.2	1.0
	Haematuria	11	3.7	7.0
	Subtotal: top five problems	*166*	*53.4*	—
Psychiatrist	**Total**	**265**	**100.0**	—
	Depression*	117	44.1	2.9
	Affective psychosis	30	11.3	9.3
	Anxiety*	25	9.5	1.2
	Hyperkinetic disorder	16	6.1	15.0
	Schizophrenia	14	5.1	3.0
	Subtotal: top five problems	*202*	*76.2*	—

(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 <purl.library.usyd.edu.au/sup/9781743323779>).

Note: NOS – not otherwise specified.

11.4 Problems most frequently referred to allied health services and hospitals

The 4,616 referrals to an allied health service were provided in the management of 4,844 problems. The 10 most commonly referred problems accounted for 45.6% of all problem–referral links. Depression was the problem accounting for the largest proportion of allied health referrals (12.0%), followed by diabetes (8.7%), back complaints (6.0%) and anxiety (4.4%). However, of the 10 most commonly referred problems, the most likely to be referred to an allied health service was teeth/gum disease, referred at 27.9% of all GP contacts with this problem (Table 11.5).

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

Problem managed	Number	Per cent of problem–referral links	Rate per 100 encounters (n = 98,564)	95% LCL	95% UCL	Rate per 100 contacts with this problem[a]
Depression*	582	12.0	0.6	0.5	0.7	14.3
Diabetes – all*	420	8.7	0.4	0.4	0.5	10.0
Back complaint*	291	6.0	0.3	0.2	0.3	10.0
Anxiety*	214	4.4	0.2	0.2	0.3	10.3
Osteoarthritis*	161	3.3	0.2	0.1	0.2	5.8
Sprain/strain*	126	2.6	0.1	0.1	0.2	9.3
Teeth/gum disease	123	2.5	0.1	0.1	0.2	27.9
Administrative procedure NOS	119	2.5	0.1	0.1	0.2	9.6
Bursitis/tendonitis/synovitis NOS	97	2.0	0.1	0.1	0.1	8.7
Acute stress reaction	76	1.6	0.1	0.1	0.1	10.4
Subtotal: top 10 problems referred to AHS	*2,211*	*45.6*	—	—	—	—
Total problems referred to AHS	**4,844**	**100.0**	**4.9**	**4.6**	**5.2**	—

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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

The 354 referrals to a hospital were provided in the management of 371 problems. The 10 problems most frequently referred to hospital are shown in Table 11.6. Pregnancy accounted for the highest proportion (9.1%) of these referrals, but dehydration was the problem most likely to be referred (26.3%).

The 270 referrals to an emergency department were associated with the management of 287 problems. The 10 problems most frequently referred to an emergency department are shown in Table 11.7. Abdominal pain accounted for the highest proportion (4.5%) of these referrals, but appendicitis was the problem most likely to be referred (24.4%).

Table 11.6: The 10 problems most frequently referred to hospital

Problem managed	Number	Per cent of problems referred	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	Rate per 100 contacts with this problem[a]
Pregnancy*	34	9.1	0.03	0.02	0.05	2.6
Fracture*	12	3.3	0.01	0.01	0.02	1.4
Anaemia*	11	3.0	0.01	0.00	0.02	2.0
Acute bronchitis/bronchiolitis	10	2.7	0.01	0.00	0.02	0.4
Dehydration	9	2.4	0.01	0.00	0.02	26.3
Chest pain NOS	9	2.4	0.01	0.00	0.02	2.8
Skin infection, other	8	2.2	0.01	0.00	0.02	2.5
Pneumonia	8	2.0	0.01	0.00	0.01	3.1
Gastroenteritis*	8	2.0	0.01	0.00	0.02	0.6
Appendicitis	7	1.9	0.01	0.00	0.01	16.3
Subtotal: top 10 problems referred for admission	*115*	*31.0*	—	—	—	—
Total problems referred to hospital	**371**	**100.0**	**0.38**	**0.32**	**0.43**	—

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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	Number	Per cent of problems referred	Rate per 100 encounters (*n* = 98,564)	95% LCL	95% UCL	Rate per 100 contacts with this problem[a]
Abdominal pain*	13	4.5	0.01	0.01	0.02	1.8
Ischaemic heart disease*	11	4.0	0.01	0.00	0.02	1.1
Pneumonia	11	3.7	0.01	0.00	0.02	4.4
Appendicitis	11	3.7	0.01	0.00	0.02	24.4
Atrial fibrillation/flutter	10	3.6	0.01	0.00	0.02	0.7
Fracture*	10	3.5	0.01	0.00	0.02	1.1
Chest pain NOS	10	3.3	0.01	0.00	0.02	3.1
Acute bronchitis/bronchiolitis	8	2.9	0.01	0.00	0.02	0.4
Skin infection, other	8	2.8	0.01	0.00	0.02	2.4
Boil/carbuncle	7	2.5	0.01	0.00	0.01	1.2
Subtotal: top 10 problems referred to emergency department	*99*	*34.5*	—	—	—	—
Total problems referred to emergency department	**287**	**100.0**	**0.29**	**0.24**	**0.34**	—

(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, <purl.library.usyd.edu.au/sup/9781743323779>).

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

11.5 Changes in referrals over the decade 2003–04 to 2012–13

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 2003–04 to 2012–13*.[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 (see Section 7.9).

In summary, over the 10 years there was a significant increase in the proportion of problems that were referred: in 2003–04 at least one referral was made in the management of 8.0% of problems and this increased to 9.5% of problems managed in 2012–13.

The overall rate of referral per 100 problems managed increased from 7.9 in 2003–04 to 9.5 in 2012–13, and per 100 encounters from 11.6 to 14.8. This suggests that there were 7.6 million more referrals nationally in 2012–13 than a decade earlier.

Referrals to medical specialists remained almost stable across the decade. However, 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. In contrast, referrals to allied health services increased from 1.8 per 100 problems managed in 2003–04 to 3.0 in 2012–13. This was reflected in significant increases in referral rates per 100 problems to psychologists and podiatrists/chiropodists, and a marginally significant increase in referral rates to 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 2003–04 to 2012–13 in the 10-year report *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 (75.7%) of encounters.

At least one pathology test order was recorded at 18.1% of encounters (for 13.5% of problems managed), and at least one imaging test was ordered at 8.8% of encounters (for 5.9% 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* = 98,564)	95% LCL	95% UCL	Number of problems	Per cent of problems (*n* = 152,517)	95% LCL	95% UCL
Pathology and imaging ordered	2,553	2.6	2.4	2.8	1,829	1.2	1.1	1.3
Pathology only ordered	15,268	15.5	14.9	16.0	18,825	12.3	11.9	12.8
Imaging only ordered	6,125	6.2	6.0	6.5	7,208	4.7	4.5	4.9
No pathology or imaging tests ordered	74,618	75.7	75.0	76.5	124,655	81.7	81.2	82.3
At least one pathology ordered	17,821	18.1	17.4	18.7	20,655	13.5	13.1	14.0
At least one imaging ordered	8,678	8.8	8.4	9.2	9,037	5.9	5.7	6.2
At least one other investigation ordered	811	0.8	0.7	0.9	837	0.5	0.5	0.6
At least one other investigation performed in the practice	1,381	1.4	1.2	1.6	1,387	0.9	0.8	1.1
At least one other investigation ordered or performed	2,146	2.2	1.9	2.4	2,183	1.4	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.[18] 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*.[15] 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.[17] Readers may wish to consider those reports in conjunction with the information presented below.

Nature of pathology orders at encounter

The GPs recorded 46,398 orders for pathology tests/batteries of tests, at a rate of 47.1 per 100 encounters or 30.4 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.

Test orders classed as chemistry accounted for more than half the pathology test orders (58.9%), the most common being: lipid tests, for which there were 4.2 orders per 100 encounters and 2.7 per 100 problems; electrolytes, urea and creatinine (3.0; 2.0); multi-biochemical analysis (2.9; 1.9); and thyroid function tests (2.8; 1.8). Haematology tests accounted for 17.8% of all pathology including the most frequently ordered individual pathology test, full blood count (FBC). FBC tests accounted for 14.0% of all pathology, there being 6.6 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 in the group at 2.0 tests 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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Chemistry*	**27,324**	**58.9**	**100.0**	**27.7**	**26.4**	**29.0**	**17.9**	**17.2**	**18.6**
Lipids*	4,113	8.9	15.1	4.2	3.9	4.4	2.7	2.5	2.9
Electrolytes, urea and creatinine*	2,987	6.4	10.9	3.0	2.8	3.3	2.0	1.8	2.1
Multi-biochemical analysis*	2,846	6.1	10.4	2.9	2.6	3.2	1.9	1.7	2.0
Thyroid function*	2,795	6.0	10.2	2.8	2.6	3.0	1.8	1.7	1.9
Liver function*	2,526	5.4	9.2	2.6	2.4	2.8	1.7	1.5	1.8
Glucose/glucose tolerance*	2,445	5.3	8.9	2.5	2.3	2.7	1.6	1.5	1.7
Ferritin*	1,432	3.1	5.2	1.5	1.3	1.6	0.9	0.9	1.0
HbA1c*	1,229	2.6	4.5	1.2	1.1	1.4	0.8	0.7	0.9
Chemistry; other*	1,023	2.2	3.7	1.0	0.9	1.2	0.7	0.6	0.8

(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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Prostate specific antigen*	959	2.1	3.5	1.0	0.9	1.1	0.6	0.6	0.7
C reactive protein	912	2.0	3.3	0.9	0.8	1.0	0.6	0.5	0.7
Vitamin D	822	1.8	3.0	0.8	0.7	0.9	0.5	0.5	0.6
Hormone assay*	741	1.6	2.7	0.8	0.7	0.8	0.5	0.4	0.5
Vitamin B12	638	1.4	2.3	0.6	0.6	0.7	0.4	0.4	0.5
Albumin/creatinine, urine*	600	1.3	2.2	0.6	0.5	0.7	0.4	0.3	0.4
Calcium/phosphate/magnesium*	305	0.7	1.1	0.3	0.3	0.4	0.2	0.2	0.2
Haematology*	**8,278**	**17.8**	**100.0**	**8.4**	**8.0**	**8.8**	**5.4**	**5.2**	**5.7**
Full blood count	6,512	14.0	78.7	6.6	6.3	6.9	4.3	4.1	4.5
ESR	910	2.0	11.0	0.9	0.8	1.0	0.6	0.5	0.7
Coagulation*	627	1.4	7.6	0.6	0.6	0.7	0.4	0.4	0.5
Microbiology*	**6,244**	**13.5**	**100.0**	**6.3**	**5.9**	**6.7**	**4.1**	**3.8**	**4.3**
Urine M,C&S*	1,932	4.2	30.9	2.0	1.8	2.1	1.3	1.2	1.4
Microbiology; other*	944	2.0	15.1	1.0	0.9	1.1	0.6	0.6	0.7
Hepatitis serology*	500	1.1	8.0	0.5	0.4	0.6	0.3	0.3	0.4
Faeces M,C&S*	412	0.9	6.6	0.4	0.4	0.5	0.3	0.2	0.3
Chlamydia*	408	0.9	6.5	0.4	0.4	0.5	0.3	0.2	0.3
Vaginal swab M,C&S*	313	0.7	5.0	0.3	0.3	0.4	0.2	0.2	0.2
Venereal disease*	284	0.6	4.5	0.3	0.2	0.3	0.2	0.2	0.2
HIV*	238	0.5	3.8	0.2	0.2	0.3	0.2	0.1	0.2
H Pylori*	189	0.4	3.0	0.2	0.2	0.2	0.1	0.1	0.1
Cytopathology*	**1,524**	**3.3**	**100.0**	**1.5**	**1.4**	**1.7**	**1.0**	**0.9**	**1.1**
Pap smear*	1,491	3.2	97.8	1.5	1.3	1.7	1.0	0.9	1.1
Immunology*	**883**	**1.9**	**100.0**	**0.9**	**0.8**	**1.0**	**0.6**	**0.5**	**0.6**
Immunology, other*	487	1.1	55.2	0.5	0.4	0.6	0.3	0.3	0.4
Anti-nuclear antibodies	162	0.3	18.3	0.2	0.1	0.2	0.1	0.1	0.1
Rheumatoid factor	106	0.2	12.0	0.1	0.1	0.1	0.1	0.1	0.1
Other NEC*	**869**	**1.9**	**100.0**	**0.9**	**0.7**	**1.0**	**0.6**	**0.5**	**0.7**
Blood test	456	1.0	52.5	0.5	0.3	0.6	0.3	0.2	0.4
Other test NEC	235	0.5	27.0	0.2	0.2	0.3	0.2	0.1	0.2
Tissue pathology*	**789**	**1.7**	**100.0**	**0.8**	**0.7**	**0.9**	**0.5**	**0.4**	**0.6**
Histology; skin	718	1.5	91.0	0.7	0.6	0.9	0.5	0.4	0.6
Simple tests*	**231**	**0.5**	**100.0**	**0.2**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Infertility/pregnancy*	**256**	**0.6**	**100.0**	**0.3**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
Total pathology tests	**46,398**	**100.0**	**—**	**47.1**	**45.1**	**49.0**	**30.4**	**29.3**	**31.5**

*   Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.8, <purl.library.usyd.edu.au/sup/9781743323779>).

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 7.5% of all problem–pathology combinations), followed by hypertension, general check-ups and lipid disorder were the most common problems for which pathology tests were ordered.

The two right-hand columns show the proportion of each problem that resulted in a pathology order, and the rate of pathology tests/batteries of tests per 100 specified problems when at least one test was ordered. For example, 29.4% of contacts with diabetes resulted in pathology orders, and when pathology was ordered for diabetes, the GPs ordered an average of 298 tests/batteries of tests per 100 'tested' diabetes contacts. In contrast, only 12.0% of contacts with hypertension problems resulted in a pathology test, but the resulting test orders accounted for almost as many tests (6.0%) as did diabetes (7.5%). This is because hypertension is managed far more frequently in general practice (8.6 per 100 encounters) than diabetes (4.2 per 100 encounters) (see Chapter 7, 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*	4,186	3,663	7.5	29.4	297.8
Hypertension*	8,482	2,926	6.0	12.0	287.7
General check-up*	2,869	2,813	5.8	27.3	358.8
Lipid disorder	3,292	2,114	4.3	26.9	238.8
Weakness/tiredness	668	1,768	3.6	66.2	400.0
Female genital check-up/ Pap smear*	1,546	1,476	3.0	78.2	122.1
Blood test NOS	389	1,169	2.4	81.3	369.3
Abnormal test results*	1,265	1,096	2.3	49.6	174.6
Urinary tract infection*	1,678	1,085	2.2	53.1	121.7
Pregnancy*	1,281	965	2.0	37.0	203.8
Subtotal	*25,657*	*19,076*	*39.2*	—	—
Total problems	**152,517**	**48,642**	**100.0**	**13.5**	**235.5**

(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 46,398 pathology test orders and 48,642 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, <purl.library.usyd.edu.au/sup/9781743323779>).

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 further detailed study of this subject is currently being conducted by the FMRC for the Australian Government Department of Health and Ageing, Diagnostic Imaging Quality Program.

Nature of imaging orders at encounter

There were 10,163 imaging test orders recorded, at a rate of 10.3 per 100 encounters and 6.7 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 43.3% of all imaging test orders, and ultrasound accounted for 40.8%.

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 = 98,564)	95% LCL	95% UCL	Rate per 100 problems (n = 152,517)	95% LCL	95% UCL
Diagnostic radiology*	**4,405**	**43.3**	**100.0**	**4.5**	**4.2**	**4.7**	**2.9**	**2.7**	**3.0**
X-ray; chest	939	9.2	21.3	1.0	0.9	1.0	0.6	0.6	0.7
X-ray; knee	484	4.8	11.0	0.5	0.4	0.5	0.3	0.3	0.4
Mammography; female	318	3.1	7.2	0.3	0.3	0.4	0.2	0.2	0.2
Test; densitometry	292	2.9	6.6	0.3	0.3	0.3	0.2	0.2	0.2
X-ray; shoulder	256	2.5	5.8	0.3	0.2	0.3	0.2	0.1	0.2
X-ray; foot/feet	255	2.5	5.8	0.3	0.2	0.3	0.2	0.1	0.2
X-ray; hip	242	2.4	5.5	0.2	0.2	0.3	0.2	0.1	0.2
X-ray; ankle	170	1.7	3.9	0.2	0.1	0.2	0.1	0.1	0.1
X-ray; wrist	157	1.5	3.6	0.2	0.1	0.2	0.1	0.1	0.1
X-ray; hand	121	1.2	2.7	0.1	0.1	0.1	0.1	0.1	0.1
X-ray; spine; lumbosacral	108	1.1	2.5	0.1	0.1	0.1	0.1	0.1	0.1
X-ray; finger(s)/thumb	103	1.0	2.3	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; lumbar	102	1.0	2.3	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; abdomen	93	0.9	2.1	0.1	0.1	0.1	0.1	0.0	0.1
X-ray; spine; cervical	89	0.9	2.0	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound*	**4,147**	**40.8**	**100.0**	**4.2**	**4.0**	**4.4**	**2.7**	**2.6**	**2.9**
Ultrasound; pelvis	590	5.8	14.2	0.6	0.5	0.7	0.4	0.3	0.4
Ultrasound; shoulder	517	5.1	12.5	0.5	0.4	0.6	0.3	0.3	0.4
Ultrasound; abdomen	397	3.9	9.6	0.4	0.3	0.5	0.3	0.2	0.3
Ultrasound; breast; female	318	3.1	7.7	0.3	0.3	0.4	0.2	0.2	0.2

(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* = 98,564)	95% LCL	95% UCL	Rate per 100 problems (*n* = 152,517)	95% LCL	95% UCL
Ultrasound; obstetric	311	3.1	7.5	0.3	0.3	0.4	0.2	0.2	0.2
Test; Doppler	139	1.4	3.4	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; kidney	124	1.2	3.0	0.1	0.1	0.2	0.1	0.1	0.1
Echocardiography	122	1.2	2.9	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; hip	120	1.2	2.9	0.1	0.1	0.2	0.1	0.1	0.1
Ultrasound; leg	111	1.1	2.7	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; thyroid	107	1.1	2.6	0.1	0.1	0.1	0.1	0.1	0.1
Ultrasound; neck	88	0.9	2.1	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; foot/toe(s)	88	0.9	2.1	0.1	0.1	0.1	0.1	0.0	0.1
Ultrasound; kidney/ureter/ bladder	88	0.9	2.1	0.1	0.1	0.1	0.1	0.0	0.1
Computerised tomography*	**1,261**	**12.4**	**100.0**	**1.3**	**1.2**	**1.4**	**0.8**	**0.8**	**0.9**
CT scan; spine; lumbar	168	1.6	13.3	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; abdomen	165	1.6	13.1	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; brain	164	1.6	13.0	0.2	0.1	0.2	0.1	0.1	0.1
CT scan; head	112	1.1	8.9	0.1	0.1	0.1	0.1	0.1	0.1
CT scan; chest	108	1.1	8.6	0.1	0.1	0.1	0.1	0.1	0.1
CT scan; spine; lumbosacral	80	0.8	6.3	0.1	0.1	0.1	0.1	0.0	0.1
Magnetic resonance imaging*	**232**	**2.3**	**100.0**	**0.2**	**0.2**	**0.3**	**0.2**	**0.1**	**0.2**
MRI; knee	78	0.8	33.6	0.1	0.1	0.1	0.1	0.0	0.1
Nuclear medicine*	**119**	**1.2**	**100.0**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Total imaging tests	**10,163**	**100.0**	**—**	**10.3**	**9.9**	**10.8**	**6.7**	**6.4**	**6.9**

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 4, Table A4.9 <purl.library.usyd.edu.au/sup/9781743323779>).

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

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. Back complaint accounted for 5.1% of all orders, followed by osteoarthritis (4.9%), and sprain/strain (3.9%).

The two right-hand columns show the proportion of each problem that resulted in an imaging test, and the rate of imaging tests per 100 specified problems when at least one test was ordered. For example, 16.0% of contacts with osteoarthritis resulted in an imaging test, and 112.1 tests were ordered per 100 osteoarthritis contacts when at least one test was ordered.

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

Problem managed	Number of problems	Number of problem–imaging combinations[a]	Per cent of problem–imaging combinations	Per cent of problems with test[b]	Rate of imaging orders per 100 problems with imaging[c]
Back complaint*	2,906	520	5.1	15.5	115.1
Osteoarthritis*	2,789	500	4.9	16.0	112.1
Sprain/strain*	1,357	402	3.9	23.5	126.0
Pregnancy*	1,281	383	3.7	29.3	102.2
Fracture*	896	376	3.7	37.5	112.0
Bursitis/tendonitis/synovitis NOS	1,110	362	3.5	27.6	118.2
Shoulder syndrome	616	308	3.0	40.1	124.4
Abdominal pain*	720	303	2.9	36.3	115.8
Injury musculoskeletal NOS	880	302	2.9	29.3	117.1
Breast lump/mass (female)	178	182	1.8	72.0	142.5
Subtotal	*12,732*	*3,637*	*35.4*	—	—
Total problems	**152,517**	**10,263**	**100.0**	**5.9**	**113.6**

(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 10,163 imaging test orders and 10,263 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 <purl.library.usyd.edu.au/sup/9781743323779>).

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 856 other investigations during the study year, and GPs or practice staff undertook 1,421 other investigations. There were, in total, 2,278 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 43.8% of other investigations, followed by physical function test (28.8%).

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

Investigation	Investigations ordered by the GP				Investigations undertaken in the practice				All investigations (ordered or undertaken)			
	Number	Per cent	Rate per 100 encounters (95% CI) (n = 98,564)	Rate per 100 problems (95% CI) (n = 152,517)	Number	Per cent	Rate per 100 encounters (95% CI) (n = 98,564)	Rate per 100 problems (95% CI) (n = 152,517)	Number	Per cent	Rate per 100 encounters (95% CI) (n = 98,564)	Rate per 100 problems (95% CI) (n = 152,517)
Electrical tracings*	454	53.1	0.46 (0.40–0.52)	0.3 (0.26–0.34)	544	38.3	0.55 (0.48–0.63)	0.36 (0.31–0.41)	998	43.8	1.01 (0.91–1.11)	0.65 (0.59–0.72)
Diagnostic endoscopy*	212	24.8	0.22 (0.17–0.26)	0.14 (0.11–0.17)	26	1.8	0.03 (0.01–0.04)	0.02 (0.01–0.03)	238	10.5	0.24 (0.20–0.29)	0.16 (0.13–0.19)
Physical function test*	183	21.4	0.19 (0.15–0.22)	0.12 (0.10–0.14)	474	33.3	0.48 (0.40–0.56)	0.31 (0.26–0.36)	657	28.8	0.67 (0.58–0.76)	0.43 (0.37–0.49)
Other diagnostic procedures*	6	0.7	0.01 (0.00–0.01)	0.00 (0.00–0.01)	378	26.6	0.38 (0.18–0.59)	0.25 (0.11–0.38)	384	16.9	0.39 (0.18–0.60)	0.25 (0.12–0.39)
Total other investigations	**856**	**100.0**	**0.87 (0.78–0.96)**	**0.56 (0.51–0.62)**	**1,421**	**100.0**	**1.44 (1.20–1.68)**	**0.93 (0.78–1.09)**	**2,278**	**100.0**	**2.31 (2.05–2.57)**	**1.49 (1.33–1.66)**

* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 4, Table A4.6 <purl.library.usyd.edu.au/sup/9781743323779>).

Note: CI – confidence interval.

12.5 Changes in investigations over the decade 2003–04 to 2012–13

Data on investigations are reported for each year from 2003–04 to 2012–13 in Chapter 12 of the companion report *A decade of Australian general practice activity 2003–04 to 2012–13*.[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 (see Section 7.8). The major changes are highlighted below.

- At least one pathology test was ordered for 11.9% of problems managed in 2003–04 rising to 13.5% of problems in 2012–13. The number of pathology tests ordered increased from 24.1 tests (or battery of tests) per 100 problems managed in 2003–04 to 30.4 per 100 problems in 2012–13. The largest increase was in orders for chemical pathology, which increased from 13.0 per 100 problems in 2003–04 to 17.9 per 100 problems in 2012–13. Haematology increased at a slower rate, from 4.6 per 100 problems in 2003–04 to 5.4 in 2012–13.

- Between 2003–04 and 2012–13 the number of problems managed per 100 encounters rose from 146.3 to 154.7 (Table 5.1). 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 15.5% of encounters in 2003–04 to 18.1% in 2012–13, which suggests that in 2012–13 one or more pathology tests were ordered at about 8 million more encounters nationally than in 2003–04.

- The rate of pathology tests ordered per 100 encounters increased from 35.2 per 100 encounters in 2003–04 to 47.1 in 2012–13, which extrapolates to approximately 25.8 million more tests (or batteries of tests) ordered in 2012–13 than a decade earlier.

- At least one imaging test was ordered for 5.1% of all problems managed in 2003–04, rising to 5.9% of all problems in 2012–13. The proportion of encounters generating imaging orders increased from 7.2% in 2003–04 to 8.8% in 2012–13. This resulted in an estimated 4.2 million more encounters nationally at which imaging was ordered in 2012–13 than in 2003–04.

- The number of imaging tests ordered increased from 5.6 tests per 100 problems managed in 2003–04 to 6.7 per 100 problems in 2012–13. Total imaging orders per 100 encounters increased significantly from 8.2 per 100 encounters in 2003–04 to 10.3 in 2012–13, suggesting that nationally there were 5.2 million more imaging orders in 2012–13 than in 2003–04.

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 2012–13, 85% of Australians visited a GP at least once (personal communication, DoHA, June 2013). 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.

Data on patient risk factors measured in SAND are reported for each of the 10 most recent years in the companion report *A decade of Australian general practice activity 2003–04 to 2012–13*.[1]

Abstracts of results and the research tools used in other SAND substudies from April 1998 to March 2013 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*.[26]
- from April 1999 to July 2006 were published in *Patient-based substudies from BEACH: abstracts and research tools 1999–2006*.[27]
- since August 2006 have been published in each general practice annual reports[28-33]
- in the 2012–13 BEACH year are provided in Chapter 15 of this publication.

13.1 Body mass index

From the most recent publicly available 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]

In 2013, the Organisation for Economic Co-operation and Development (OECD) reported that Australia's adult obesity rates in 1987, 1999, 2006 and 2011 were among the highest in the world (10.8%, 21.7%, 24.6% and 28.3% of adults respectively), with Australia's adult obesity rate equal third globally, behind only the United States and Mexico and on par with New Zealand.[87] In 2007 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 4% to 28.3%, New Zealand increased 2% to 28.4%).[87] In the same 5-year period, obesity rates in the United Kingdom and United States increased by about 1% to 36.5%, and Mexico increased by 2% to 32.4%.[87]

Australia's obesity rate of 28.3% in 2011 is much higher than the average for the 15 OECD countries with recent measured data (22.8%). 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.[88]

The Australian Health Survey results (2011–12), based on 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).[89]

The Australian Health Survey also reported that 25% of children aged 2–17 years were classified as overweight or obese (18% overweight, 7% obese).[89]

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.[90]

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[91] 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.[92] 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.[93,94] 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.[92,95] 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 31,452 patients aged 18 years and over at encounters with 975 GPs.

- Over half (61.2%) of these adults were overweight (34.6%) or obese (26.6%) (Table 13.1).
- Just over one-third (36.2%) of adult patients had a BMI in the normal range, and 2.6% of adults were underweight (Table 13.1). Underweight was more prevalent among females than males.
- Males were more likely to be overweight or obese (69.2%, 95% CI: 68.1–70.2) than females (56.1%, 95% CI: 55.0–57.2) (results not tabulated).
- Overweight/obesity was most prevalent among male patients aged 65–74 years (76.9%) and 45–64 years (75.7%) (Figure 13.1).
- This pattern was also noted in female patients, with overweight/obesity most prevalent in those aged 65–74 years (68.7%) and 45–64 years (63.5%) (Figure 13.1).
- Underweight was most prevalent among patients aged 18–24 years (7.3%, 95% CI: 6.2–8.4) (results not tabulated).
- Of young adults (aged 18–24 years), 9.1% of females and 3.4% of males were underweight, and among those aged 75 years and over, 4.6% of females and 1.3% of males were underweight (Figure 13.2).

Our overall and sex-specific prevalence estimates of overweight/obesity among patients at general practice encounters (61% of adults, 69% of males and 56% 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.[19]

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*.[96]

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 2012–13 BEACH sample was weighted to estimate the BMI of the GP–patient attending population (that is, the 15.1 million adult patients who attended a GP at least once in 2012–13 (personal communication, DoHA, June 2013), using the method described by Knox et al. (2008).[23] This statistical adjustment had little effect on the resulting proportions.

The estimates for the adult GP–patient attending population (after adjusting for age–sex attendance patterns) suggest that 26.0% of the adult patient population were obese, 34.4% were overweight, 37.0% were normal weight and 2.5% were underweight (Table 13.1).
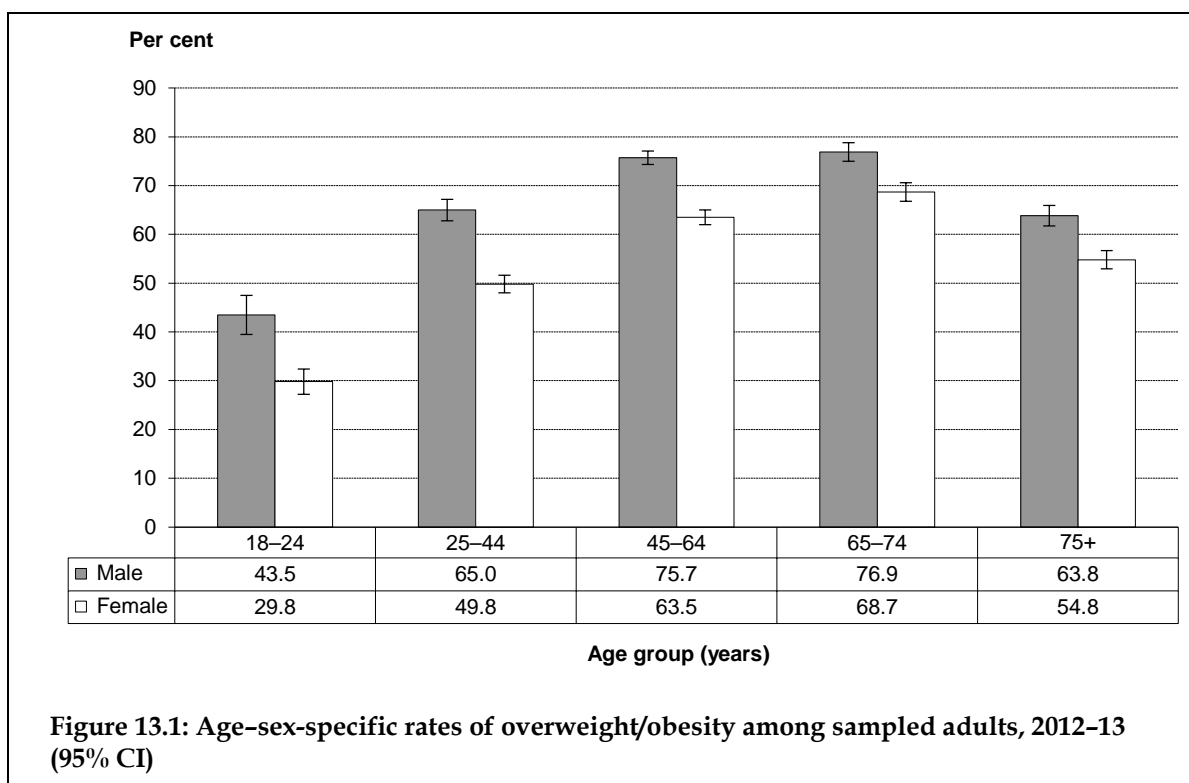
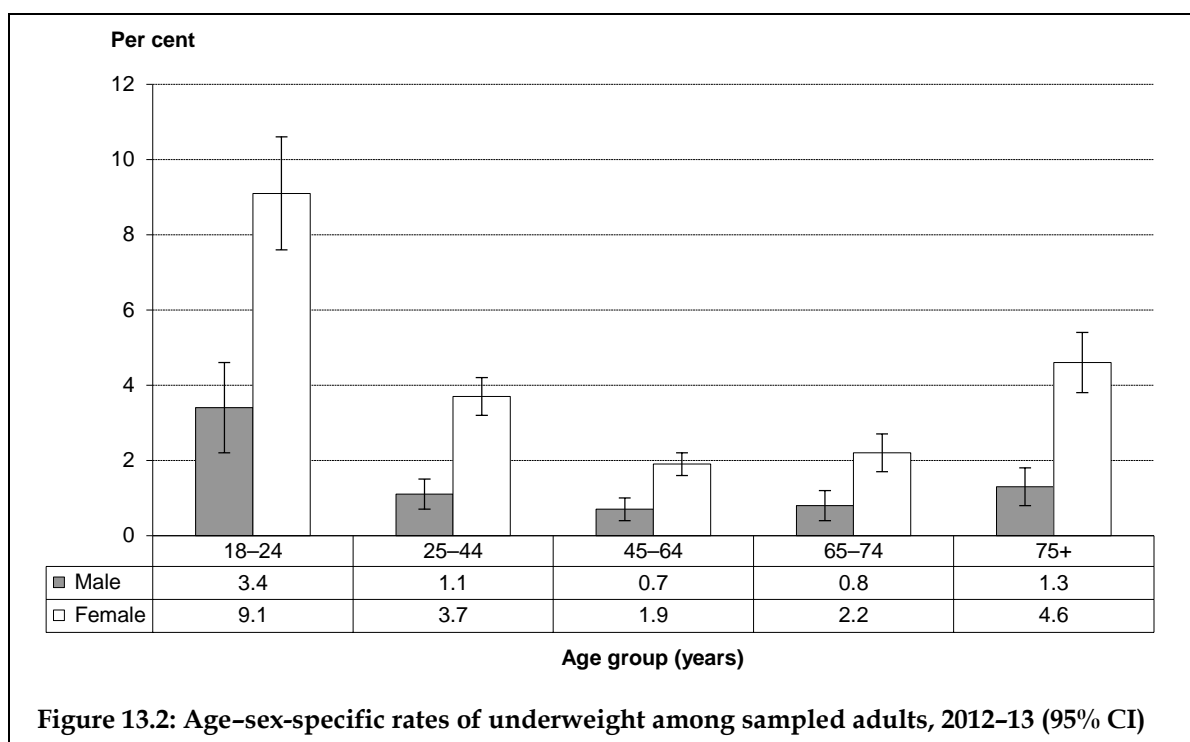**Table 13.1: Patient body mass index (aged 18 years and over)**

BMI class	Male[a] Per cent in BEACH sample (95% CI) (*n* = 12,171)	Per cent in patient population (95% CI)[b]	Female[a] Per cent in BEACH sample (95% CI) (*n* = 19,064)	Per cent in patient population (95% CI)[b]	Total respondents Per cent in BEACH sample (95% CI) (*n* = 31,452)	Per cent in patient population (95% CI)[b]
Obese	26.7 (25.7–27.7))	26.1 (25.0–27.2)	26.6 (25.7–27.5)	26.0 (25.1–27.0)	26.6 (25.8–27.4)	26.0 (25.2–26.9)
Overweight	42.5 (41.5–43.4)	41.4 (40.3–42.5)	29.5 (28.8–30.2)	28.4 (27.6–29.1)	34.6 (34.0–35.2)	34.4 (33.7–35.1)
Normal	29.8 (28.7–30.8)	31.4 (30.2–32.5)	40.4 (39.4–41.4)	41.9 (40.9–43.0)	36.2 (35.4–37.0)	37.0 (36.1–37.9)
Underweight	1.1 (0.9–1.3)	1.2 (1.0–1.4)	3.5 (3.2–3.8)	3.6 (3.3–4.0)	2.6 (2.4–2.8)	2.5 (2.3–2.7)

(a) Patient sex was not recorded for 217 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 2012–13). *Source:* Unpublished Medicare data, personal communication, DoHA, June 2013 (*n* = 15.1 million).

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

Age group (years)	18–24	25–44	45–64	65–74	75+
Male	43.5	65.0	75.7	76.9	63.8
Female	29.8	49.8	63.5	68.7	54.8

Figure 13.1: Age–sex-specific rates of overweight/obesity among sampled adults, 2012–13 (95% CI)

Figure 13.2: Age–sex-specific rates of underweight among sampled adults, 2012–13 (95% CI)

	18–24	25–44	45–64	65–74	75+
■ Male	3.4	1.1	0.7	0.8	1.3
□ Female	9.1	3.7	1.9	2.2	4.6

Age group (years)

Body mass index of children

BMI was calculated for 3,069 patients aged 2–17 years at encounters with 806 GPs.

- Just over one-quarter of children (26.4%, 95% CI: 24.6–28.1) were classed as overweight or obese, including 9.0% (95% CI: 7.9–10.2) obese and 17.3% (95% CI: 15.9–18.7) overweight (results not tabulated).
- There was no difference in the prevalence of overweight/obesity among male (27.5%, 95% CI: 25.1–29.9) and female children (25.3%, 95% CI: 23.0–27.7) (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*.[97]

Per cent

Age group (years)	2–4	5–8	9–12	13–17
Male obese	12.1	9.5	10.1	8.5
Male overweight	14.4	11.5	20.6	23.2
Male normal weight	56.4	67.4	62.6	61.8
Male underweight	17.1	11.5	6.6	6.5

Age group (years)
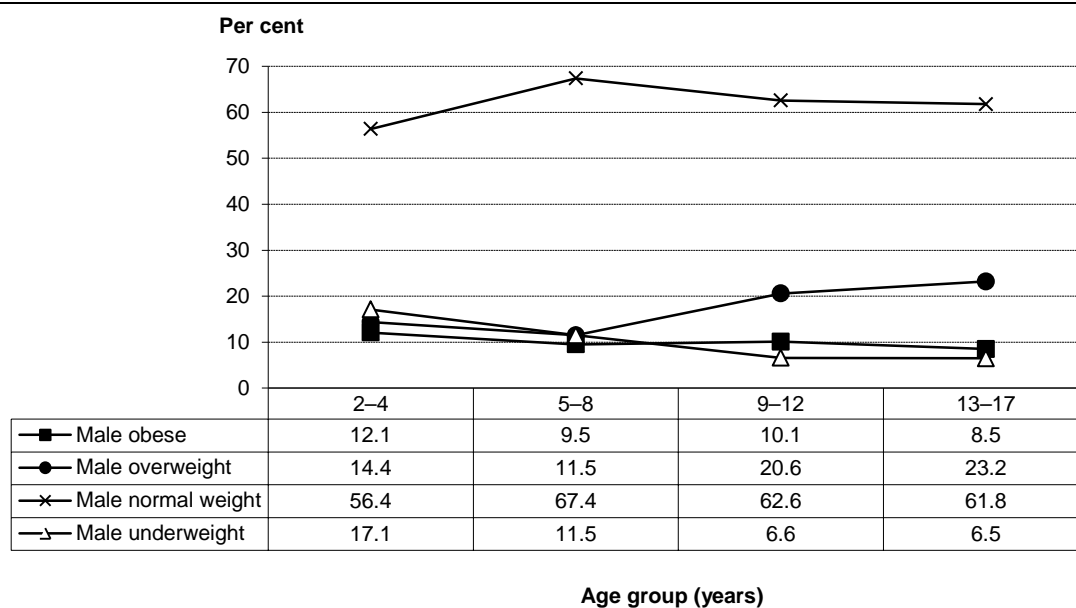
Figure 13.3: Age-specific rates of obesity, overweight, normal weight and underweight among sampled male children, 2012–13
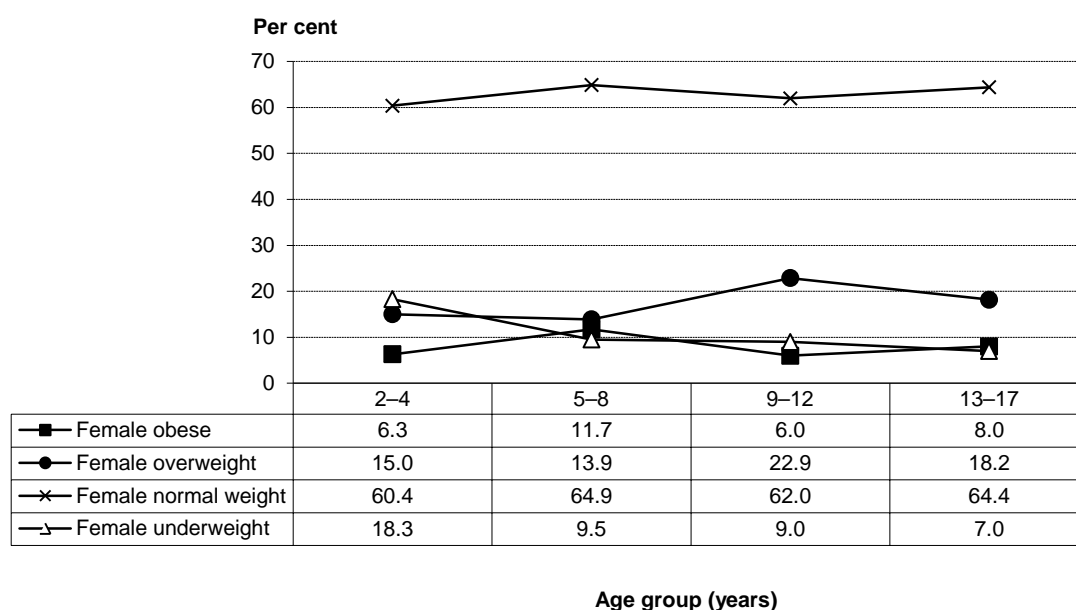
Per cent

Age group (years)	2–4	5–8	9–12	13–17
Female obese	6.3	11.7	6.0	8.0
Female overweight	15.0	13.9	22.9	18.2
Female normal weight	60.4	64.9	62.0	64.4
Female underweight	18.3	9.5	9.0	7.0

Age group (years)

Figure 13.4: Age-specific rates of obesity, overweight, normal weight and underweight among sampled female children, 2012–13

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.[98] It is a major risk factor for coronary heart disease, stroke, peripheral vascular disease, several cancers, respiratory disorders and other diseases.[99] The most recent publicly available data has 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]

In 2013, 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. They surmised that most of the decline could be attributed to 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.[87,88]

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.[100] 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.[89]

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 32,499 adult patients was established at encounters with 976 GPs. Table 13.2 shows that:

- 14.4% of sampled adult patients were daily smokers
- significantly more male (17.6%) than female patients (12.4%) were daily smokers (results not tabulated)
- only 2.6% of sampled adult patients were occasional smokers
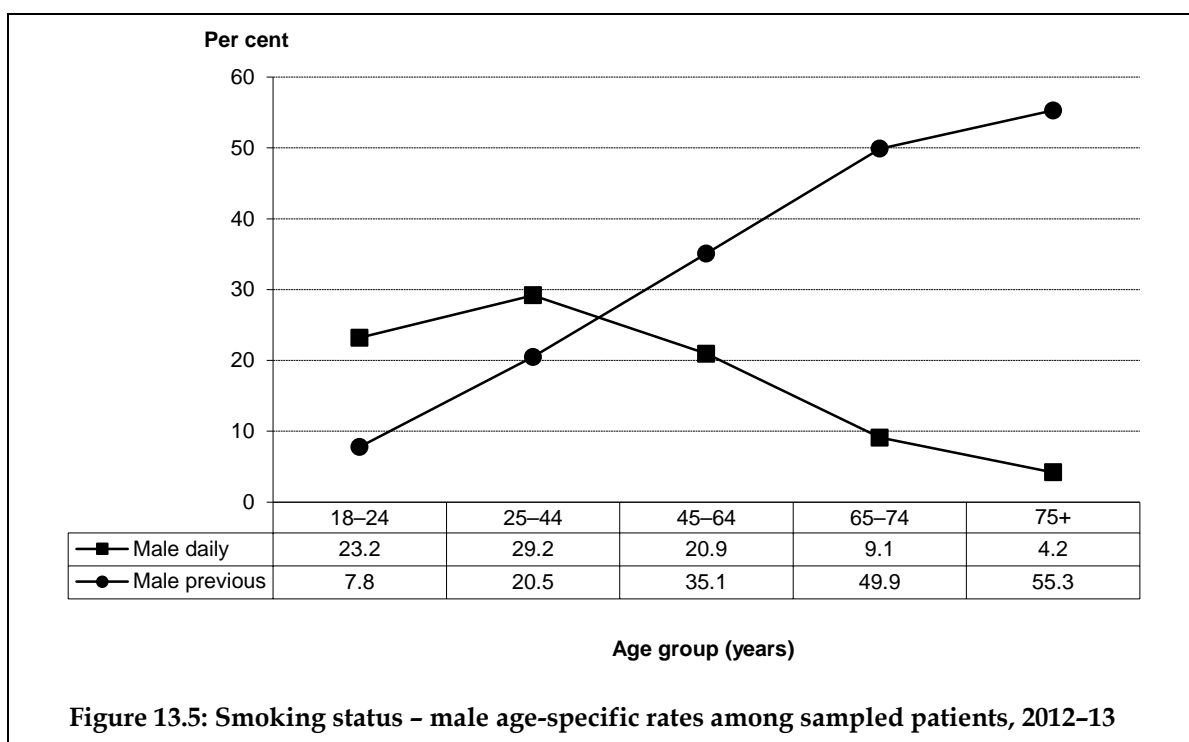- more than one-quarter of sampled adults (27.7%) were previous smokers.

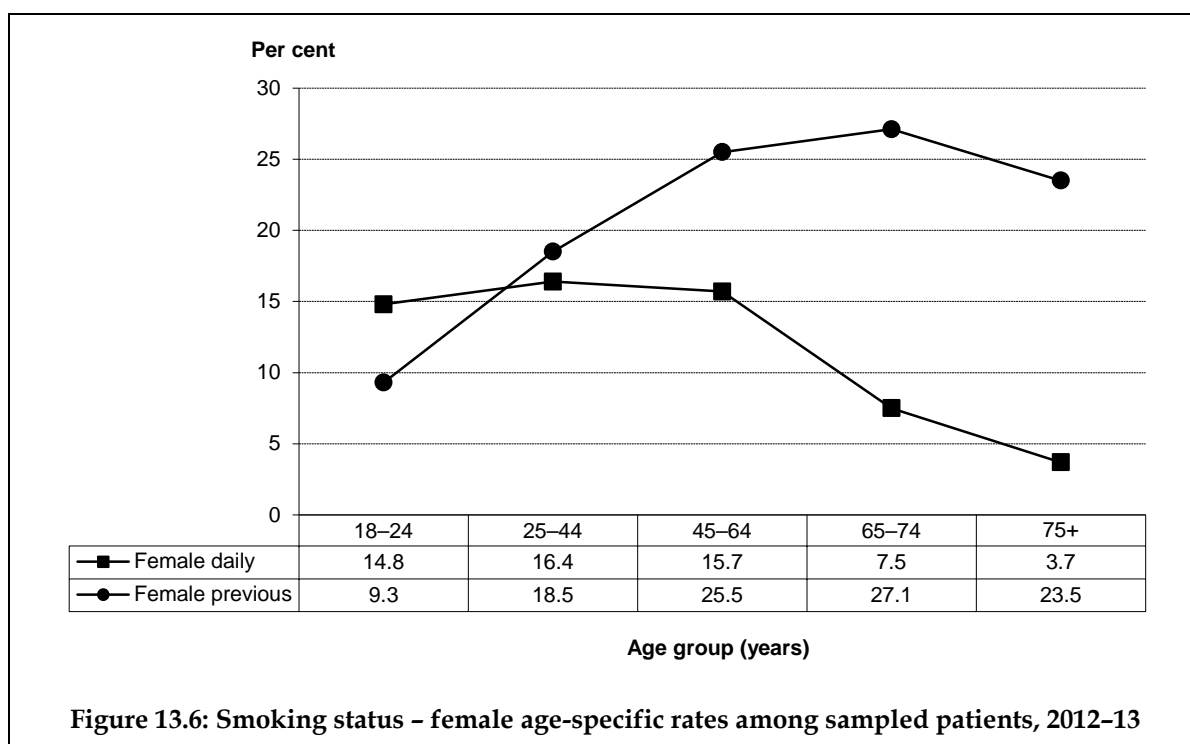**Table 13.2: Patient smoking status (aged 18 years and over)**

Smoking status	Male		Female		Total respondents	
	Per cent in BEACH sample (95% CI) (*n* = 12,518)	Per cent in patient population (95% CI)[a]	Per cent in BEACH sample (95% CI) (*n* = 19,758)	Per cent in patient population (95% CI)[a]	Per cent in BEACH sample (95% CI) (*n* = 32,499)	Per cent in patient population (95% CI)[a]
Daily	17.6 (16.6–18.6)	21.3 (20.1–22.4)	12.4 (11.7–13.0)	13.8 (13.1–14.6)	14.4 (13.7–15.1)	17.3 (16.4–18.1)
Occasional	3.2 (2.8–3.6)	4.2 (3.6–4.7)	2.1 (1.9–2.4)	2.5 (2.2–2.8)	2.6 (2.3–2.8)	3.3 (2.9–3.6)
Previous	36.6 (35.4–37.8)	30.5 (29.4–31.6)	22.1 (21.3–22.9)	21.2 (20.4–21.9)	27.7 (27.0–28.5)	25.5 (24.7–26.2)
Never	42.6 (41.4–43.8)	44.1 (42.8–45.4)	63.4 (62.4–64.5)	62.5 (61.4–63.6)	55.3 (54.4–56.3)	54.0 (53.0–55.0)

(a)   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 2012–13). *Source:* Unpublished Medicare data, personal communication, DoHA, June 2013 (*n* = 15.1 million).

Note: Missing data removed (patient sex missing for 223 respondents). CI – confidence interval.

Daily smoking was least prevalent among older adults aged 65–74 and 75 years or more (8.2% and 3.8% respectively) and most prevalent among adult patients aged 25–44 years (20.9%) (results not tabulated). Over half (55.3%) of the male and 23.5% of the female patients aged 75 years and over were previous smokers, but only 4.2% of males and 3.7% of females in this age group were daily smokers (Figures 13.5 and 13.6).

	18–24	25–44	45–64	65–74	75+
Male daily	23.2	29.2	20.9	9.1	4.2
Male previous	7.8	20.5	35.1	49.9	55.3

Figure 13.5: Smoking status – male age-specific rates among sampled patients, 2012–13

	18–24	25–44	45–64	65–74	75+
■ Female daily	14.8	16.4	15.7	7.5	3.7
● Female previous	9.3	18.5	25.5	27.1	23.5

Age group (years)

Figure 13.6: Smoking status – female age-specific rates among sampled patients, 2012–13

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 2012–13 BEACH sample was weighted to estimate the smoking status of the GP–patient attending population (that is, the 15.1 million adult patients who attended a GP at least once in 2012–13 [personal communication, DoHA, June 2013]), using the method described by Knox et al. (2008).[23]

After adjusting for age–sex attendance patterns, we estimated that 17.3% of the patient population aged 18 or more were daily smokers, 3.3% were occasional smokers, 25.5% were previous smokers and 54.0% had never smoked. Male patients in the total general practice population were significantly more likely to be daily (21.3%), occasional (4.2%) and previous smokers (30.5%), than females patients (13.8%, 2.5% and 21.2%, 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.[101] 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.[102] From the most recent publicly available 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 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.[19] 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).[19]

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 older (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.[100] These alcohol consumption risk levels were based on the NHMRC 2009 guidelines.[102]

For consistency over time, this report uses the definitions of alcohol-related risk developed by WHO (see 'Method' below).[103] This differs from the definition in the NHMRC guidelines.

Method

To measure alcohol consumption, BEACH uses AUDIT-C,[104] which is the first three items from the WHO Alcohol Use Disorders Identification Test (AUDIT),[103] with scoring for an Australian setting.[105] The AUDIT-C has demonstrated validity and internal consistency and performs as well as the full AUDIT tool.[106] 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).[104] 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.[105]

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 31,640 adult patients (18 years and over) at encounters with 975 GPs.

- About one-quarter of sampled adults reported drinking alcohol at at-risk levels (24.1%) (Table 13.3).
- At-risk drinking was more prevalent among male (29.3%) than female patients (20.8%) (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 and one-third of females 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[19] or the 2010 NDSHS[100]. 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*.[107]

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

Alcohol consumption	Male		Female		Total respondents	
	Per cent in BEACH sample (95% CI) (*n* = 12,274)	Per cent in patient population (95% CI)[a]	Per cent in BEACH sample (95% CI) (*n* = 19,366)	Per cent in patient population (95% CI)[a]	Per cent in BEACH sample (95% CI) (*n* = 31,640)	Per cent in patient population (95% CI)[a]
At-risk drinker	29.3 (28.2–30.5)	33.1 (31.8–34.4)	20.8 (19.9–21.7)	22.3 (21.3–23.2)	24.1 (23.3–24.9)	27.3 (26.3–28.2)
Responsible drinker	47.6 (46.4–48.8)	45.3 (44.0–46.5)	42.1 (41.0–43.1)	43.0 (41.9–44.1)	44.2 (43.3–45.1)	44.1 (43.1–45.0)
Non-drinker	23.1 (22.0–24.2)	21.7 (20.5–22.8)	37.2 (35.9–38.5)	34.7 (33.4–36.0)	31.7 (30.6–32.8)	28.7 (27.6–29.7)

(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 2012–13). *Source:* Unpublished Medicare data, personal communication, DoHA, June 2013 (*n* = 15.1 million).

Note: CI – confidence interval.

	18–24	25–44	45–64	65–74	75+
Male at-risk	42.3	37.8	33.4	25.4	11.5
Female at-risk	33.4	22.7	22.1	17.2	12.8

Age group (years)

Figure 13.7: Age–sex-specific rates of at-risk alcohol consumption in sampled patients, 2012–13
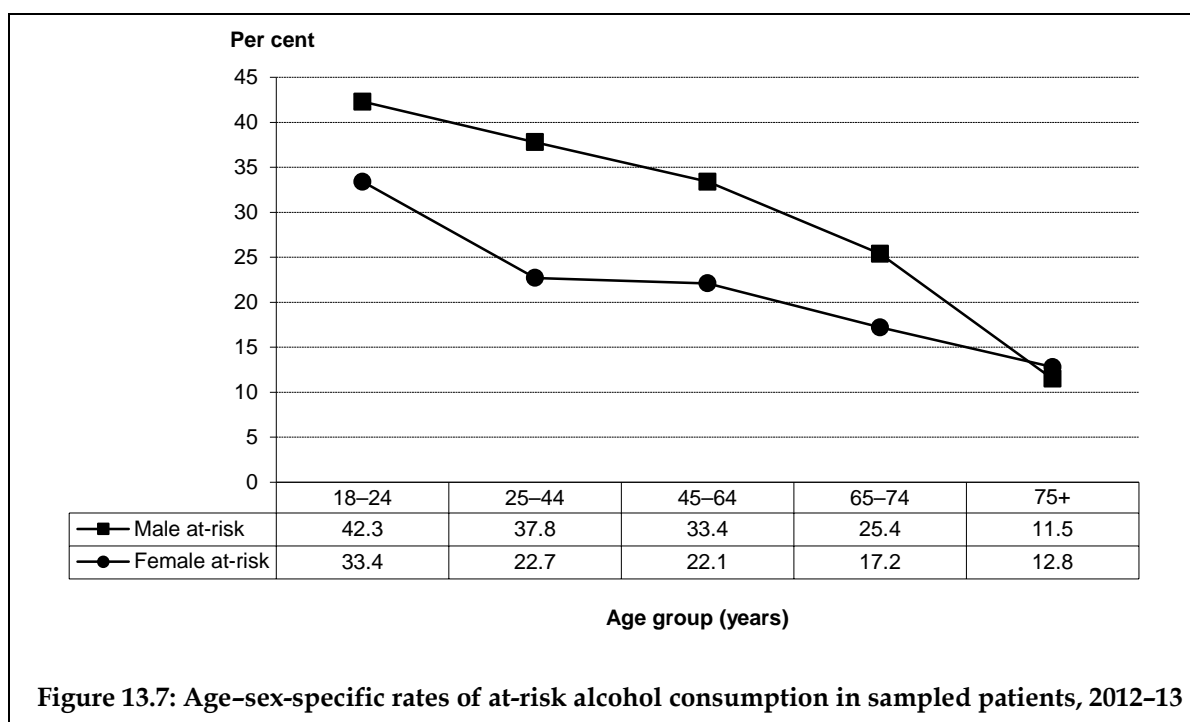
Estimation of alcohol consumption levels in the adult general practice patient population

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 2012–13 BEACH sample was weighted to estimate the prevalence of at-risk alcohol consumption among the GP–patient attending population (that is, the 15.1 million adult patients who attended a GP at least once in 2012–13 (personal communication, DoHA, June 2013), using the method described by Knox et al. (2008).[23]

After adjusting for age–sex attendance patterns we estimated that 27.3% of the patient population were at-risk drinkers, 44.1% were responsible drinkers and 28.7% were non-drinkers. Males in the general practice attending population were significantly more likely to be at-risk drinkers (33.1%) than females (22.3%) (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 30,345 adult patients from 974 GPs, for whom data were available in all three elements. (Table 13.4).

- About half (52.0%) the sampled adult respondents had one risk factor. The most common was overweight (23.2% of adults) followed by obesity (18.5%).
- Almost 1 in 5 patients (18.8%) had two risk factors, the most common combinations being:

- overweight and at-risk alcohol consumption – 6.7% of patients
- obesity and at-risk alcohol consumption – 4.5% of patients
- daily smoking and at-risk alcohol consumption – 2.7% of patients.
- A small group of patients (3.4%) 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 (30.2%) than males (18.9%).
- Females were significantly less likely to have two or three risk factors (15.1% and 2.2% respectively) than males (24.5% and 5.3%).

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

The 2012–13 BEACH sample was weighted to estimate the risk profile of the GP–patient attending population; that is, the 15.1 million adult patients who attended a GP at least once in 2012–13.

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

- one-quarter of patients had no risk factors (24.8%)
- half of the adult patients had one risk factor (49.9%), the most common being overweight (21.5% of adults) followed by obesity (17.0%)
- 1 in 5 patients had two risk factors (20.9%), the most common combinations being overweight and at-risk alcohol consumption (7.3%), followed by obesity and at-risk alcohol consumption (4.7%)
- 4.4% of patients who attend general practice had three risk factors (Table 13.4)
- significantly more female than male patients had no risk factors (30.6% and 18.0% respectively). Male patients were also more likely to have two and three risk factors (26.7% and 6.5%) than females (15.9% and 2.5%) (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* = 30,345)	95% LCL	95% UCL	Per cent in patient population[a]	95% LCL	95% UCL
No risk factors	**7,836**	**25.8**	**25.0**	**26.6**	**24.8**	**23.9**	**25.7**
One risk factor	**15,779**	**52.0**	**51.3**	**52.7**	**49.9**	**49.2**	**50.7**
Overweight only	7,027	23.2	22.5	23.8	21.5	20.9	22.1
Obese only	5,611	18.5	17.8	19.1	17.0	16.4	17.6
At-risk alcohol level only	2,148	7.1	6.7	7.5	7.7	7.2	8.2
Current daily smoker only	993	3.3	3.0	3.5	3.8	3.5	4.1
Two risk factors	**5,695**	**18.8**	**18.1**	**19.4**	**20.9**	**20.2**	**21.6**
Overweight and at-risk alcohol level	2,046	6.7	6.4	7.1	7.3	6.9	7.7
Obese and at-risk alcohol level	1,351	4.5	4.2	4.7	4.7	4.4	5.0
Daily smoker and at-risk alcohol level	813	2.7	2.5	2.9	3.4	3.1	3.6
Overweight and current daily smoker	787	2.6	2.4	2.8	3.0	2.7	3.2
Obese and current daily smoker	698	2.3	2.1	2.5	2.6	2.3	2.8
Three risk factors	**1,035**	**3.4**	**3.1**	**3.7**	**4.4**	**4.0**	**4.7**
Overweight and current daily smoker and at-risk alcohol level	601	2.0	1.8	2.2	2.6	2.3	2.8
Obese and current daily smoker and at-risk alcohol level	434	1.4	1.3	1.6	1.8	1.6	2.0

(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 2012–13). *Source:* Unpublished Medicare data, personal communication, DoHA, June 2013 (*n* = 15.1 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* = 11,827)	Per cent in patient population (95% CI)[a]	Per cent in BEACH sample (95% CI) (*n* = 18,518)	Per cent in patient population (95% CI)[a]
No risk factors	18.9 (18.0–19.8)	18.0 (17.0–19.0)	30.2 (29.3–31.2)	30.6 (29.6–31.7)
One risk factor	51.3 (50.2–52.3)	48.8 (47.7–50.0)	52.5 (51.6–53.3)	50.9 (50.0–51.8)
Two risk factors	24.5 (23.5–25.4)	26.7 (25.6–27.7)	15.1 (14.5–15.8)	15.9 (15.2–16.6)
Three risk factors	5.3 (4.9–5.8)	6.5 (5.9–7.1)	2.2 (1.9–2.4)	2.5 (2.3–2.8)

(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 2012–13). *Source:* Unpublished Medicare data, personal communication, DoHA, June 2013 (*n* = 15.1 million).

Note: CI – confidence interval.

13.5 Changes in patient risk factors over the decade 2003–04 to 2012–13

To investigate changes over time in prevalence of these patient risk factors, results are reported from the BEACH sample data for each year from 2003–04 to 2012–13 in the companion report *A decade of Australian general practice activity 2003–04 to 2012–13.*[1]

The major changes between 2003–04 and 2012–13 are summarised below.

- The prevalence of obesity in adults attending general practice increased significantly, from 22.1% to 26.6%, an increase apparent in both male and female patients. In parallel, the prevalence of normal weight in adults attending general practice decreased significantly, from 40.7% to 36.2%.

- The prevalence of obesity in sampled children aged 2–17 years decreased from 11.8% to 9.0%; a decrease noted only for male children. A corresponding increase in the prevalence of normal weight was noted from 57.9% to 62.5%; and was apparent for both male children and female children (56.0% to 61.8% and 59.4% to 63.2% respectively).

- Prevalence of daily and occasional smoking decreased significantly among sampled adults aged 18 years and over, from 17.6% and 4.3%, respectively, to 14.5% and 2.6%.

- The prevalence of at-risk alcohol consumption among sampled adults aged 18 years and over attending general practice decreased significantly from 26.7% to 24.1%

- The proportion of sampled adults aged 18 years and over with one risk factor (overweight/obesity, at-risk drinking, daily smoker) increased significantly from 49.0% to 52.0%; the increase was noted for both male and female patients.

14 FEATURE—Type 2 diabetes

14.1 Background

Patients with Type 2 diabetes constitute almost 10% of the patients presenting to GPs in Australia (Table 14.1). Most of these patients have additional co-morbidities, some related and others unrelated to their diabetes. Many policies and initiatives have been developed to address the increasing prevalence of Type 2 diabetes; however the prevalence continues to rise, along with the associated complications and disability. General practice has the major role in caring for patients with Type 2 diabetes and associated multimorbidity, and this section of the report highlights the care given by GPs to these patients. Some problem and concept labels in this chapter include grouped ICPC-2 and ICPC-2 PLUS codes (see Chapter 2). A full list of code groups is provided in Appendix 4.

Specific policies and initiatives regarding Type 2 diabetes and associated risk factors

Many specific policy changes and funding initiatives are detailed in a 'History of key MBS primary care initiatives 1999–2010' on the Australian Government Department of Health and Ageing website.[108]

- 1999: The Australian Government introduced the Enhanced Primary Care package (EPC) which included remuneration to GPs for their participation in the multidisciplinary care of patients with chronic or complex conditions such as diabetes.[109]
- 2000: In June, the World Health Organization lowered the diagnostic value for fasting plasma/blood glucose concentrations, which had the effect of raising the potential number of patients diagnosed with diabetes.[110]
- 2000: An initiative by the Queensland Government, 'Diabetes mellitus 2000–04', was followed by similar initiatives in all other states and territories.
- 2001: The Australian Government introduced a $76 million program that included incentives to GPs and GP Divisions for programs aiming to improve diabetes care in general practice.[111] The National Integrated Diabetes Program included a Medicare item number for Diabetes Annual Cycle of Care, which also attracted Practice Incentive Program (PIP) funding points. New National Health and Medical Research Council (NHMRC) Guidelines for the detection and management of Type 2 diabetes were released.[112]
- 2004: The EPC multidisciplinary care plan for chronic disease management was superseded by the Allied Health and Dental Care Initiative, allowing patients with a care plan to access Medicare rebates for five allied health or dental services a year. This led to a doubling in the number of claims for care plan items from the MBS. At the same time the Australian Government launched its Action Plan on diabetes. [113]
- 2004: The Australian Primary Care Collaboratives (previously the National Primary Care Collaboratives), (initially a $14.6 million, 3-year program to help GPs improve patient clinical outcomes) was launched in 2004 and a second phase was funded in 2007. One major subject of the Collaboratives quality improvement program was diabetes.[114]
- 2005: GP Management Plans (GPMP) and team care arrangements replaced the EPC.

- 2007: The criteria for PBS coverage of prescriptions for lipid lowering agents was widened allowing many more patients with Type 2 diabetes to be prescribed these drugs.[115]
- 2008: Type 2 Diabetes Risk Evaluation (item 713) was introduced to the MBS.
- 2011: The Diabetes Care Project (DCP) is a 3-year pilot that is part of the Australian Government's response to the growing incidence and prevalence of chronic disease in Australia. The pilot will test new ways of providing more flexible, better coordinated care, to improve the management of care for people with diabetes.
- 2011: The Australian National Preventive Health Agency (ANPHA) was established to focus on alcohol and tobacco use and on obesity.

14.2 Prevalence of Type 2 diabetes in general practice patients

The prevalence of Type 2 diabetes in BEACH samples of patients attending general practice has been studied in a number of BEACH SAND studies (see Chapter 2 for SAND methods). SAND studies that use an initial 'filter' question regarding the presence of a diagnosis have been shown to result in higher prevalence estimates than studies that investigate the prevalence of multiple conditions using multiple tick boxes.[27] The results of SAND studies of Type 2 diabetes that used filter questions are set out in Table 14.1.

Table 14.1: Prevalence of Type 2 diabetes in SAND studies[27-33]

SAND study abstract number	Study year	Patients in study	Prevalence (per cent)	95% LCL	95% UCL
Abstract 86	2005–06	3,099	7.7	6.4	9.0
Abstract 94	2006	2,713	8.3	6.7	9.8
Abstract 107	2006–07	2,331	8.8	7.1	10.4
Abstract 108	2007	2,832	7.5	6.1	8.9
Abstract 115	2007	2,784	7.7	6.6	8.9
Abstract 119	2007–08	5,989	8.5	7.4	9.5
Abstract 135	2008	2,921	11.2	9.4	13.1
Abstract 148	2009	3,021	9.0	7.5	10.5
Abstract 153	2009	3,087	7.4	6.1	8.6
Abstract 164	2010	2,579	11.3	9.6	13.1
Abstract 166	2010	2,789	8.0	6.5	9.4
Abstract 172	2010	2,839	6.6	5.4	7.7
Abstract 173	2010–11	4,626	7.6	6.5	8.6
Abstract 185	2011–12	5,730	8.1	7.1	9.1
Abstract 193	2012	2,825	9.8	8.2	11.4

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

Using BEACH SAND data from 2005, Knox et al. estimated the prevalence of Type 2 diabetes in a BEACH sample of over 9000 patients to be 7.2% (95% CI: 6.5–7.9); 5.7% (95% CI: 5.1–6.3) in the GP attending population and 5.0% (95% CI: 4.5–5.5) in the general population.[23] This is higher than the National Health Survey 2004–05 estimate of 3.5% in the general population,[116] but less than the estimated 7.1% of the population 25 years and older reported

from the AusDiab study of 1999–2000, as this figure included previously undiagnosed patients with Type 2 diabetes identified during the survey and was limited to persons aged at least 25 years.[117]

Using BEACH SAND data from 2008–09, Harrison et al. estimated the prevalence of Type 2 diabetes in a BEACH sample of over 8,700 patients to be 8.3% (95% CI: 7.5–9.1); 6.2% (95% CI: 5.6–6.9) in the GP attending population and 5.5% (95% CI: 4.9–6.0) in the general population.[25] This is higher than the National Health Survey 2007–08 estimate of 3.5% in the general population[118], but similar to the 4.2% of patients with diagnosed diabetes (Type 1 and 2) in adults aged 18 years and over found in the 2011–12 National Health Measures Survey.[119] A further 0.9% of patients in this survey had biometric measures diagnostic of diabetes.[119] These results suggest that estimates based on person self-report alone are an underestimate of the true prevalence of Type 2 diabetes.

14.3 Multimorbidity occurring with Type 2 diabetes

Using the methods developed by Harrison et al., we investigated the population prevalence of co-morbidity in patients with Type 2 diabetes using data from a BEACH SAND substudy in 2008–09.[25] As stated above, the prevalence of Type 2 diabetes in the sample of patients was estimated as 8.3%.

Nearly all (95.6%) the sampled Type 2 diabetes patients had at least one other diagnosed chronic condition, 87.1% had two or more, 72.4% had three or more, about half (53.9%) had four or more and 38.6% had five or more diagnosed chronic co-morbidities.

For patients with Type 2 diabetes at GP encounters, the most common co-morbidities were: hypertension (71.5%), hyperlipidaemia (48.9%), osteoarthritis (43.2%), IHD (28.4%), GORD (22.2%) and depression (17.7%).

After adjustment for population attendance rates by age-sex we estimated that the population level prevalence of people with both Type 2 diabetes and: hypertension was 3.7%; hyperlipidaemia was 2.7%; osteoarthritis was 2.1%; IHD was 1.4%; GORD was 1.1%; depression was 1.0%. Extrapolation of these proportions to the June 2008 ABS population estimate (21.5 million) suggested that people with both Type 2 diabetes and: hypertension numbered 800,000 people; hyperlipidaemia 575,000, osteoarthritis 450,000; IHD 300,000; GORD 250,000; and depression 200,000.

14.4 Pathology test ordering for Type 2 diabetes at encounter

Between 2003–04 and 2012–13, there was no significant increase in the likelihood of GPs ordering at least one pathology test for Type 2 diabetes at encounters where this was managed. At least one pathology test was ordered at 29% of Type 2 diabetes contacts in 2013–13.

The number of pathology tests ordered per 100 Type 2 diabetes problems managed increased from 72.1 (95% CI: 65.0–79.1) in 2003–04 to 87.6 (95% CI: 80.0–95.6) per 100 Type 2 diabetes contacts in 2006–07, however there has been no significant increase since that time. The rate at which HbA1c tests were ordered for Type 2 diabetes did not change significantly over the past decade (Figure 14.1).

Rate per 100 Type 2 diabetes contacts

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
■ 1+ path test	28.8	30.2	30.6	31.4	30.0	33.3	32.4	31.4	33.4	29.6
▨ Path test rate	72.1	78.4	80.9	87.6	85.1	93.1	92.7	91.6	100.8	88.5
□ HbA1c rate	22.7	23.3	24.4	25.6	23.4	27.0	26.3	26.7	27.9	25.2

BEACH year
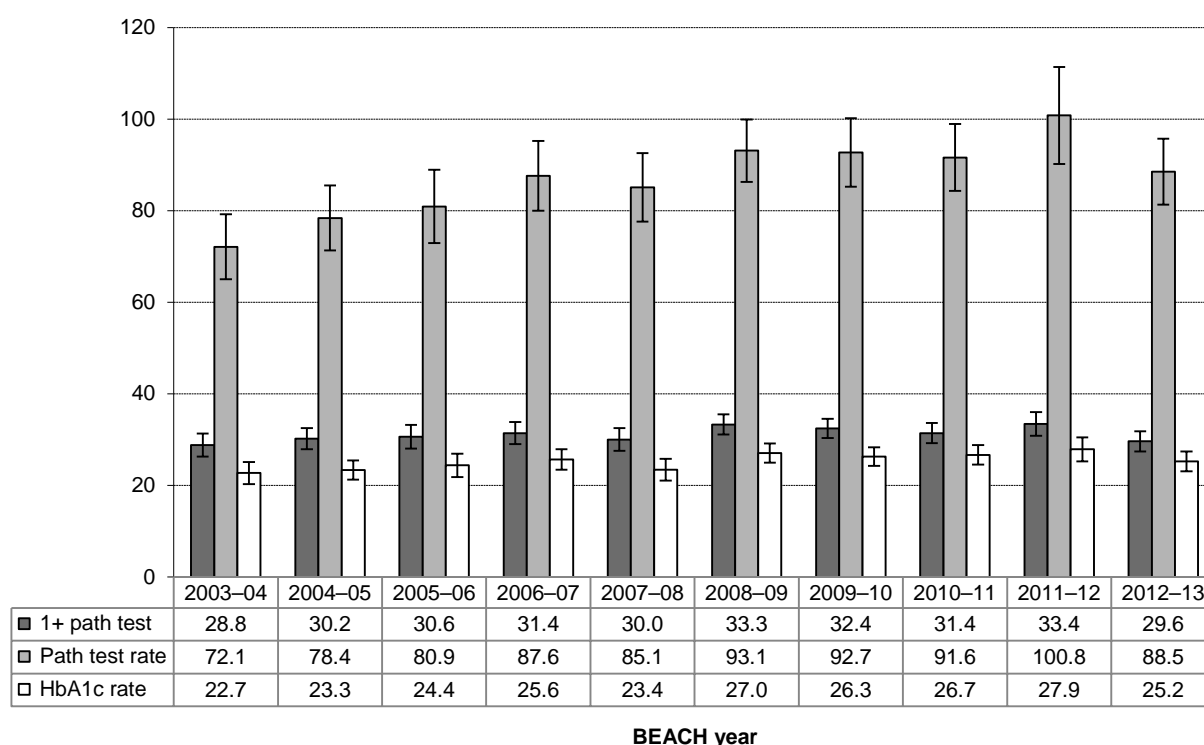
Note: 1+ path – at least one pathology test (per cent of Type 2 diabetes contacts); path – pathology.

Figure 14.1: Pathology test—likelihood of order; test order rate, and HbA1c test order rate per 100 Type 2 diabetes contacts, 2003–04 to 2012–13 (95% CI)

14.5 Referrals given for Type 2 diabetes at encounter

There was a significant increase in the rate at which patients were referred for Type 2 diabetes, from 10.1 (95% CI: 8.6–11.6) per 100 contacts in 2003–04 to 15.4 (95% CI: 13.3–17.5) per 100 contacts in 2012–13.

The rate of referrals to specialists did not change significantly between 2003–04 and 2012–13 (Figure 14.2).

The rate of referrals to allied health professionals more than doubled from 4.2 (95% CI: 3.2–5.3) per 100 Type 2 diabetes problems in 2003–04 to 10.2 (95% CI: 8.5–11.8) per 100 in 2012–13 with a major change between 2007–08 and 2012–13, perhaps in response to the national program changes (Figure 14.2).

This increase may have been due to the introduction of the National Integrated Diabetes Program (2001),[111] which encouraged partnerships with other health care professionals and gave support for the Divisions of General Practice to work with GPs and other health professionals to improve access to better care for people with diabetes.

Rate per 100 Type 2 diabetes contacts

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
■ Specialist	5.5	6.2	6.2	4.9	5.9	5.5	4.3	5.1	5.8	4.7
■ Allied health	4.2	4.4	5.1	5.1	5.4	6.9	7.5	8.1	8.6	10.2
□ Total	10.1	10.8	11.4	10.3	11.8	12.7	12.3	13.9	14.9	15.4

BEACH year
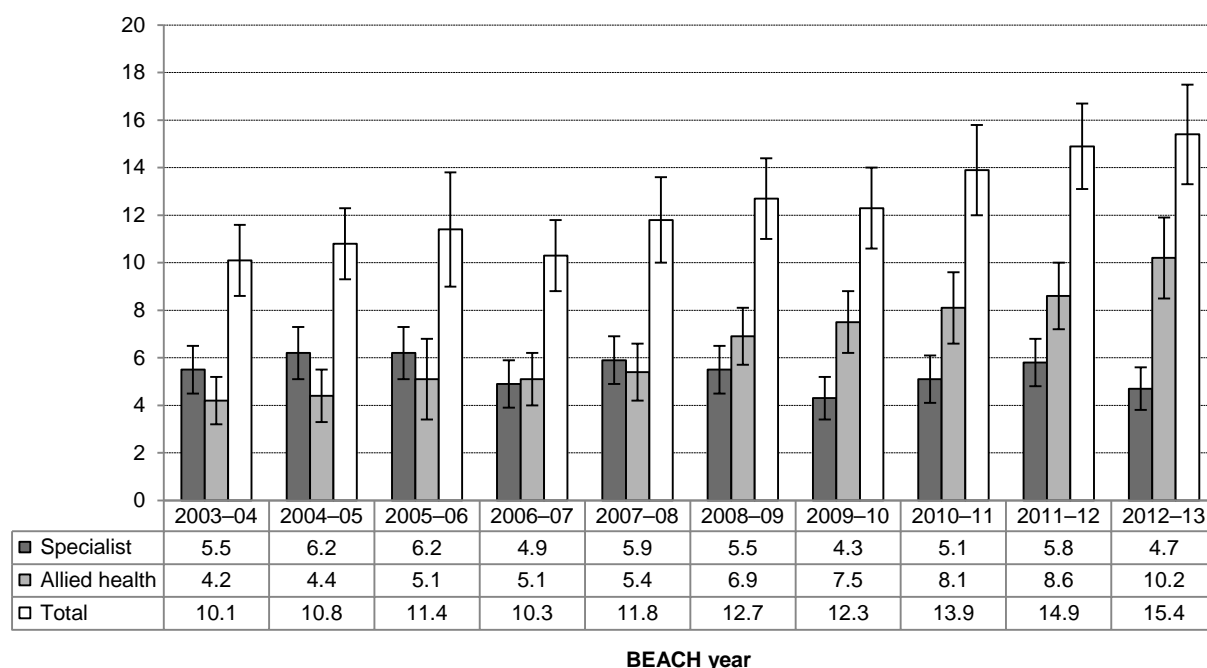
Figure 14.2: Referral rates per 100 Type 2 diabetes contacts, 2003–04 to 2012–13 (95% CI)

14.6 Management rate

As shown in Figure 14.3 there was a 33% increase in the management rate of Type 2 diabetes in general practice, from 3.0 per 100 encounters in 2003–04 (95% CI: 2.8–3.2) to 4.0 per 100 encounters in 2012–13 (95% CI: 3.7–4.3). There was no significant increase in the rate of new diagnoses of Type 2 diabetes which has stayed constant at a rate of around 0.2 new cases per 100 encounters.

The patients

The rate at which Type 2 diabetes was managed increased over the study period for all age groups of patients aged 45 years and older. There was no change for patients younger than 45 years of age. The significant increase in the rate of management of Type 2 diabetes applied to both male and female patients (Figure 14.4).

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
◆ T2D (all)	3.0	2.9	3.3	3.4	3.6	3.8	3.5	3.7	3.9	4.0
■ New T2D	0.18	0.18	0.20	0.18	0.23	0.22	0.19	0.20	0.18	0.21

BEACH year
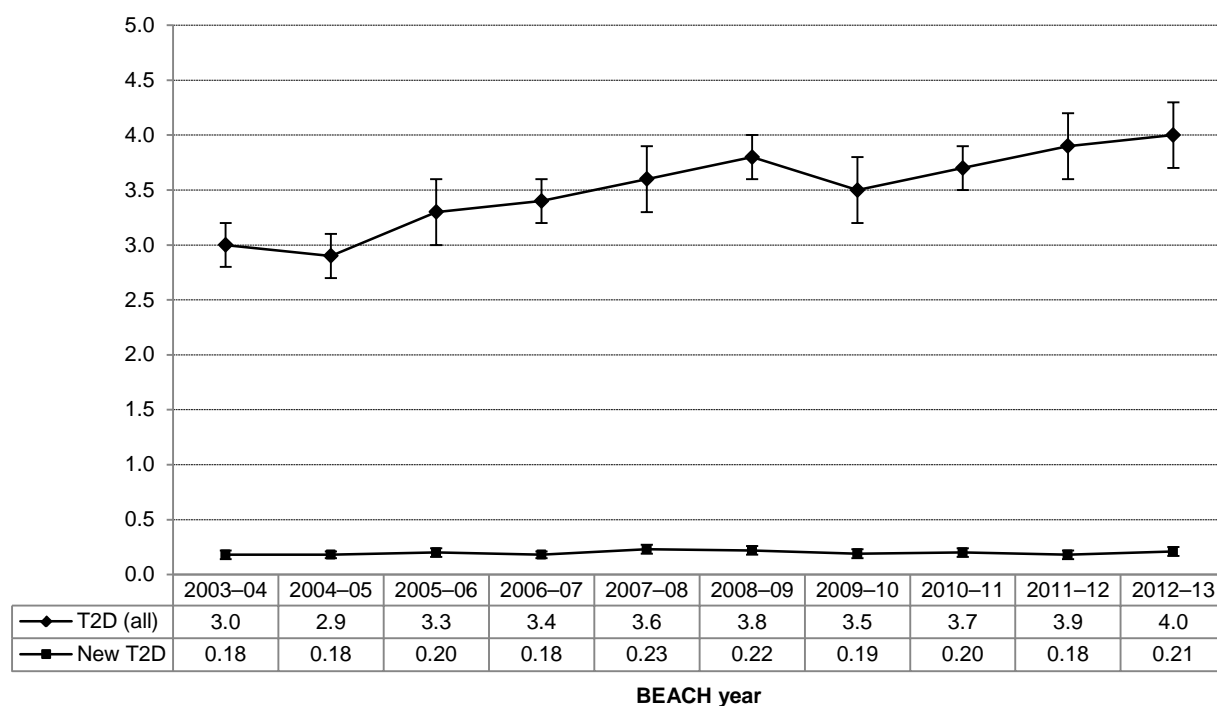
Note: T2D (all) includes all patients with Type 2 diabetes; New T2D includes Type 2 diabetes patients newly diagnosed at the encounter

Figure 14.3: Type 2 diabetes management rate and new cases per 100 encounters, 2003–04 to 2012–13 (95% CI)

Age-specific and sex-specific rate per 100 encounters

	0–24	25–44	45–64	65–74	75+	Male	Female
■ 2003–04	0.1	1.0	4.4	6.6	5.0	3.7	2.4
■ 2008–09	0.1	0.9	5.2	8.5	5.9	4.8	3.1
□ 2012–13	0.1	1.1	5.3	8.5	6.5	5.0	3.3

Patient age (years) and sex
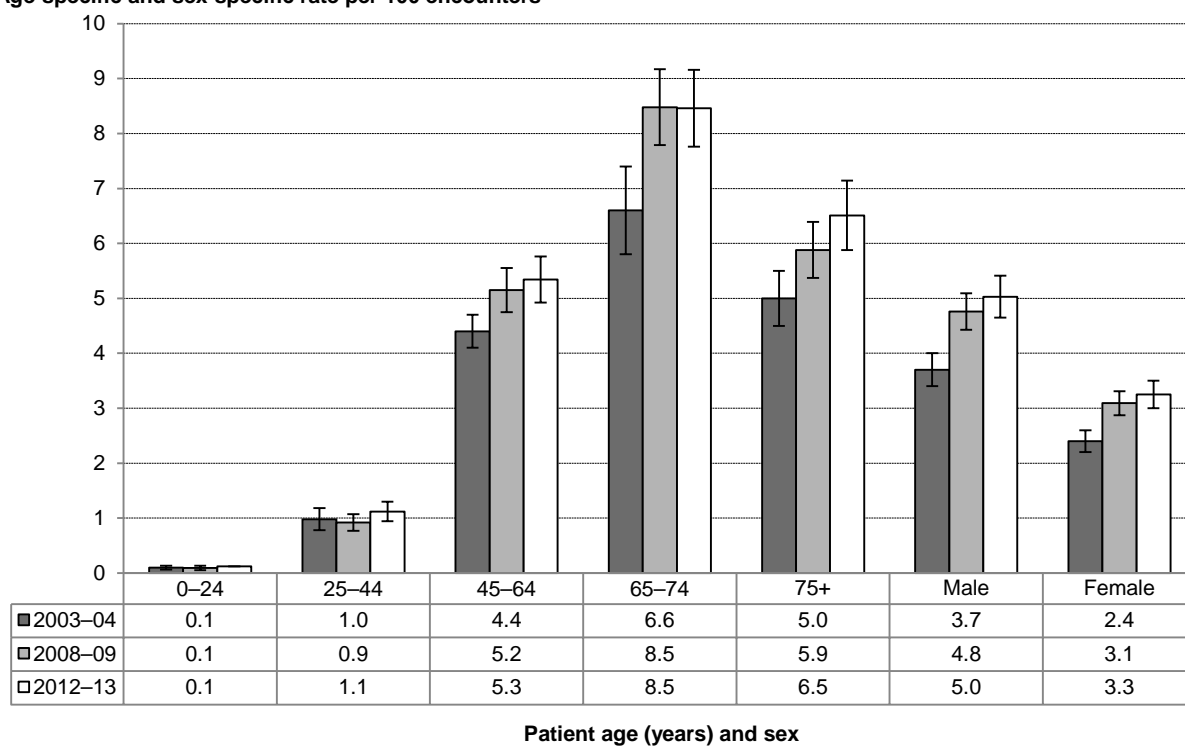
Figure 14.4: Age-specific and sex-specific management rates of Type 2 diabetes (95% CI)

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Medications prescribed, supplied, advised

There was no change in total medication rates per 100 Type 2 diabetes problem contacts from 2003–04 (72.0, 95% CI: 67.3–76.8) to 2012–13 (71.5, 95% CI: 66.3–76.6). The majority of medications recorded for management of patients' Type 2 diabetes were oral blood glucose lowering agents whose ordering rate did not change significantly during the study period. Insulin medication rates per 100 Type 2 diabetes problems managed increased from 5.4 (95% CI: 4.3–6.5) per 100 Type 2 diabetes problems in 2003–04 to 8.3 (95% CI: 6.9–9.7) in 2012–13 and 'other medications' significantly increased from 9.3 (95% CI: 7.7–10.9) per 100 Type 2 diabetes problems managed in 2003–04 to 13.1 (95% CI: 11.1–15.0) in 2012–13 (Figure 14.5).

Rate per 100 Type 2 diabetes contacts

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
■ Blood glucose lowering	57.3	52.3	58.7	56.6	54.6	59.4	55.2	54.1	53.9	50.1
▨ Insulin	5.4	5.8	5.9	6.8	6.7	7.2	8.9	7.8	8.6	8.3
□ Other	9.3	11.5	11.9	13.4	13.6	14.1	15.0	15.8	14.1	13.1

BEACH year

Figure 14.5: Medication rates per 100 Type 2 diabetes contacts, 2003–04 to 2012–13 (95% CI)
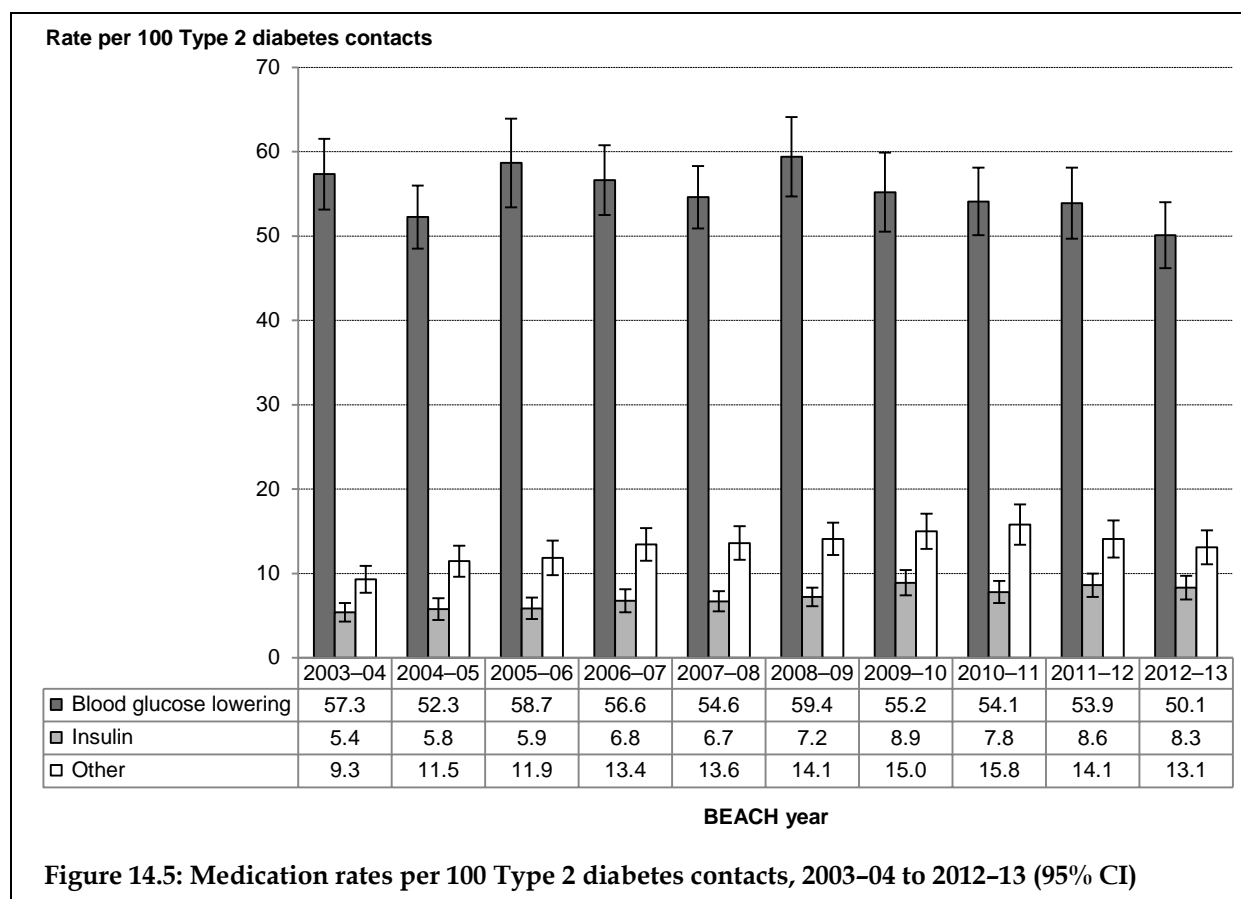
A breakdown of changes over time in the 'other medication' group is shown in Figure 14.6.

- While rates of anti-thrombotic agents, mainly aspirin antiplatelet therapy, showed some variability from year to year, there was no significant difference in the rate in 2012–13 from that of 2003–04.
- The rate of anti-hypertensive prescription/supply for Type 2 diabetes also fluctuated during the study period, however the rate in 2012–13 did not differ from that of 2003–04.
- Lipid lowering agent prescription/supply for Type 2 diabetes showed a steady increase over the 10 years. In 2003–04, lipid medication was prescribed/supplied at a rate of 2.1 (95% CI: 1.5–2.8) per 100 Type 2 diabetes problems managed, while in 2012–13 the rate had more than doubled to 5.5 (95% CI 4.6–6.5).
- The miscellaneous group includes a wide range of therapeutic agents. Prescription/ supply rates did not change significantly over the study period.

Rate per 100 Type 2 diabetes contacts

BEACH year	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
Anti-thrombotic	1.0	1.8	1.2	2.4	1.7	1.8	2.4	1.5	1.8	1.0
Anti-hypertensive	2.2	2.8	3.0	3.6	3.9	3.4	4.0	5.2	4.0	3.6
Lipid lowering	2.1	2.9	2.9	4.3	4.2	5.7	5.5	6.0	5.6	5.5
Miscellaneous	4.0	3.9	4.8	3.2	3.8	3.2	3.1	3.1	2.7	3.0
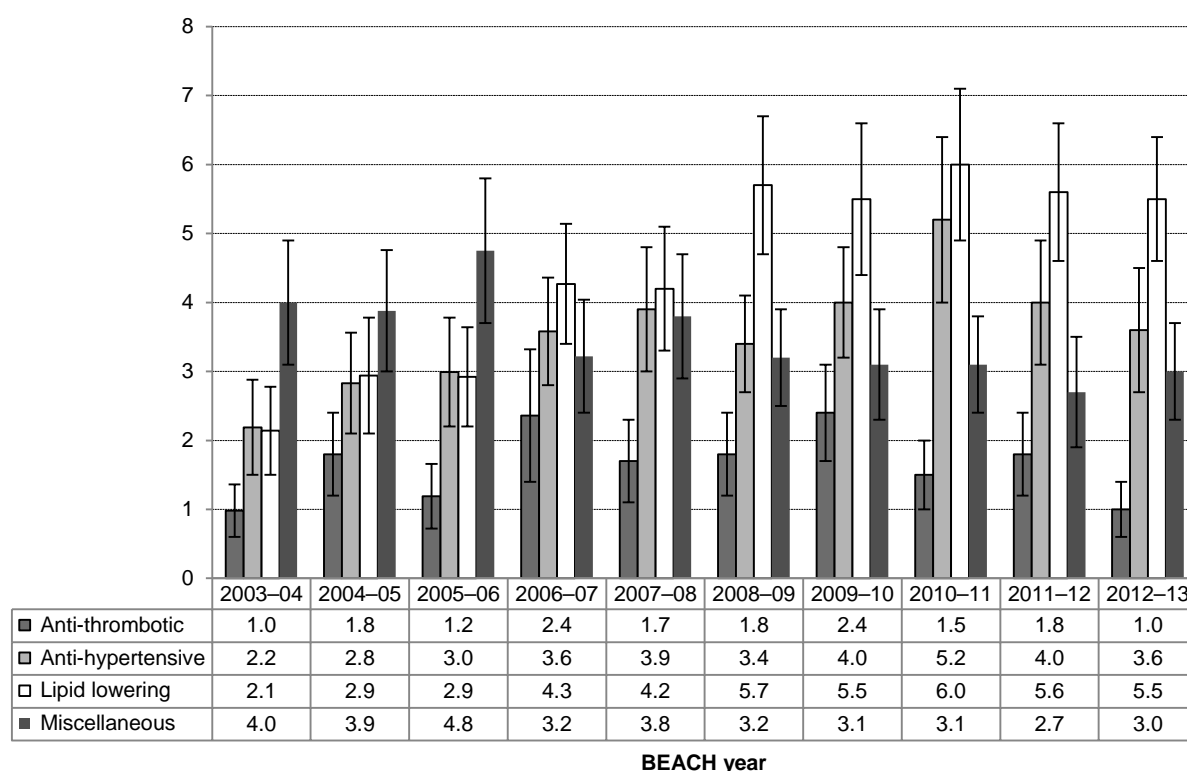
Figure 14.6: Other medication rates per 100 Type 2 diabetes contacts, 2003–04 to 2012–13 (95% CI)

Other treatments

The rate at which other treatments (including procedures, and clinical treatments such as advice, education and counselling) were recorded for the management of Type 2 diabetes remained fairly constant from 2003–04 to 2004–05. Between 2004–05 and 2005–06 the rate decreased significantly from 43.9 (95% CI: 40.1–47.7) per 100 Type 2 diabetes problems to 32.4 (95% CI: 29.0–35.9) and then remained at the lower level for 2 years. It then increased and by 2012–13 was back to 2003–04 levels (Figure 14.7).

- Clinical treatments followed a similar pattern to total other treatments, dropping significantly from 38.5 (95% CI: 34.9–42.0) per 100 Type 2 diabetes problems managed in 2004–05 to 26.8 (95% CI: 23.7–29.9) in 2006–07, then increasing steadily to be marginally higher at 33.3 (95% CI: 29.9–36.8) per 100 Type 2 diabetes problems by 2012–13.
- The rate of at which procedures were used in the management of Type 2 diabetes stayed relatively stable (Figure 14.7).

While the sudden decrease in other treatments between 2004–05 and 2005–06 coincided with several new major diabetes initiatives, GPs overall were recording fewer other treatments. The research team believes that the decrease may reflect the increasing use of practice nurses to provide advice and education, and to undertake procedures (such as treating leg ulcers) independent of the GP–patient encounter. The subsequent increase in other treatments by GPs could have been influenced by the changes in practice nurse rebates from the MBS.

Rate per 100 Type 2 diabetes contacts

	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13
▣ Procedural	6.9	5.5	4.7	4.7	6.5	5.3	5.2	6.6	6.2	5.5
▨ Clinical	33.6	38.5	27.7	26.8	28.9	31.5	32.6	33.1	34.8	33.3
☐ Total	40.5	43.9	32.4	31.5	35.4	36.8	37.8	39.7	41.0	38.8

BEACH year
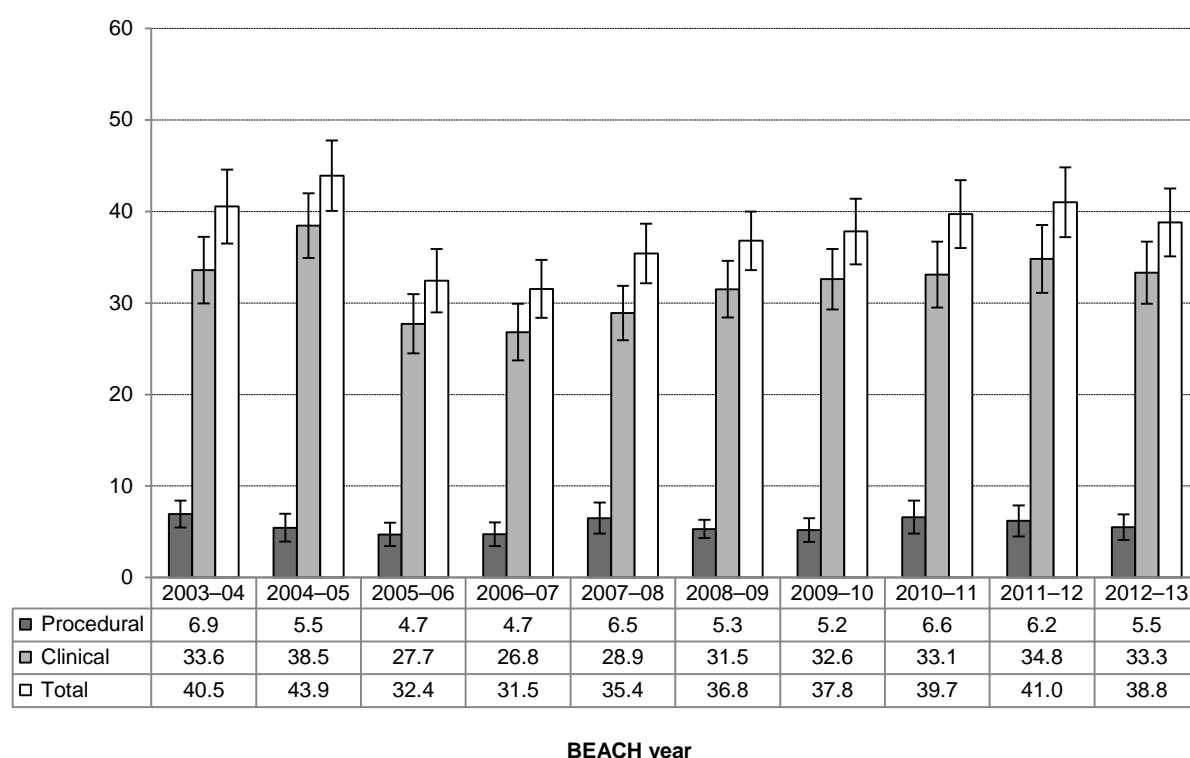
Figure 14.7: Other treatment rates per 100 Type 2 diabetes contacts, 2003–04 to 2012–13 (95% CI)

14.7 Time utilisation of patients with Type 2 diabetes

Length of consultation

Measured length of consultation (recorded finish time minus recorded start time in minutes) was introduced to BEACH in 2000–01 for a subsample of 40% of the GP–patient encounters. These analyses include all timed encounters for which Medicare/DVA item numbers were recorded. Over the 10 years 2003–04 to 2012–13, encounters at which Type 2 diabetes was managed were significantly longer (by about 2.5 minutes) than encounters where Type 2 diabetes was not managed. This difference was apparent in each individual year with encounters where Type 2 diabetes was managed between 1.7 and 3.0 minutes longer than encounters where Type 2 diabetes was not managed. The average length of consultations involving Type 2 diabetes management also significantly increased by 2 minutes, from 16.8 (95% CI: 16.1–17.5) minutes in 2003–04 to 18.4 (95% CI: 17.7–19.1) minutes in 2012–12. In contrast the average length of other consultations did not change significantly (Figure 14.8).

Encounter frequency per year

In 2008–09 we estimated that: 5.5% of the Australian population had diagnosed Type 2 diabetes, equating to 1.2 million people; 8.3% of patients sampled at encounters had diagnosed Type 2 diabetes, equating to about 9.4 million encounters with patients with

Type 2 diabetes; and Type 2 diabetes was managed at a rate of 3.8 per 100 encounters, equating to it being managed 4.3 million times in general practice in 2008–09.[25] This would mean that the average person with Type 2 diabetes attended general practice about 7.8 times in 2008–09 and had their Type 2 diabetes managed 3.6 times a year.

We examined this result by doing another SAND substudy on resource use by Type 2 diabetes patients in 2010–11. The mean number of annual GP encounters reported by sampled Type 2 diabetes patients at encounters was 13.5 (95% CI: 12.2–14.8). The mean number of GP visits at which Type 2 diabetes was managed was 5.0 (5% CI: 4.5–5.6).

However, samples drawn from encounter data will always somewhat over-represent patients who are more frequent attenders. We therefore adjusted the 2010–11 result by applying statistical weights which accounted for the chance of someone being in our sample based on the number of times they attended general practice. With this weighted data we estimated that patients with diagnosed Type 2 diabetes attended a GP 8.4 times per year on average (95% CI: 7.4–9.5) in 2010–11. We also estimated that patients with Type 2 diabetes who attended general practice have their diabetes managed by a GP 3.9 times per year on average (95% CI: 3.5–4.3).

From these two independent methods of estimating the number of times people with Type 2 diabetes attend general practice and have their Type 2 diabetes managed, we get two sets of similar results (7.8 and 8.4 visits a year including 3.6 and 3.9 Type 2 diabetes managements per year). In contrast the average consultation rate for all patients attending general practice at least once was about 6.3 per year in each sample.[32]

GP time utilisation per year

General practitioner time utilisation per year can be estimated as the product of the consultation length and the frequency of encounters and is expressed in hours per year. While these results give some indication of the disease burden of Type 2 diabetes, unpublished research by the Centre has shown that co-morbidity in patients with Type 2 diabetes is the major contributor to this increased resource utilisation.

Annual GP time utilisation in 2008–09 was about 2.2 hours per patient with Type 2 diabetes attending general practices, compared with about 1.6 hours for all patients attending general practices. Just 2 years later, in 2010–11, GP annual time utilisation by patients with Type 2 diabetes, was about 2.6 hours and about 1.6 hours for all patients attending general practices.
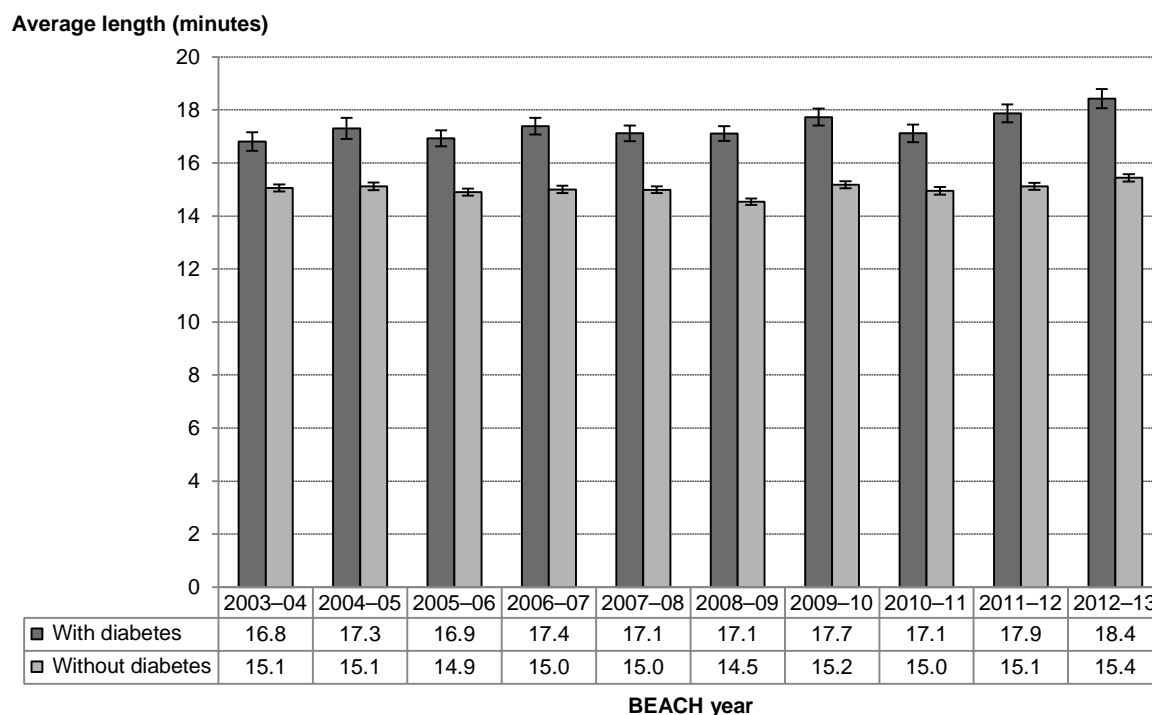
Figure 14.8: Mean length (minutes) of consultations: encounters claimable from Medicare/DVA with and without management of Type 2 diabetes, 2003–04 to 2012–13 (95% CI) (unweighted sample data)

14.8 Management of Type 2 diabetes in 2012–13

Figure 14.9 provides an overview of the management of Type 2 diabetes at GP encounters during 2012–13.

Type 2 diabetes was managed in BEACH 3,948 times in the year from April 2012 to March 2013, at a rate of 4.0 per 100 general practice encounters (Figure 14.9). This extrapolates to more than 5 million encounters at which Type 2 diabetes was managed in general practice across Australia in that year.

Sex and age of patients

Females accounted for 46% of encounters at which Type 2 diabetes was managed (Type 2 diabetes encounters), a significantly smaller proportion than average for all encounters in BEACH. The sex-specific rates showed Type 2 diabetes management rates of 5.0 per 100 total encounters with males and 3.3 per 100 encounters with females.

The age distribution for Type 2 diabetes encounters showed significant differences from the total BEACH data. There were higher than average proportions with patients aged: 45–64 years (36.8%), aged 65–74 years (29.9%) and aged 75 years and over (26.5%). Age-specific rates of Type 2 diabetes management were highest among those age groups.

Reasons for encounter

Diabetes was the most common reason for encounter stated by patients (30.7 per 100 Type 2 diabetes encounters). Request for prescription was a reason given by patients at 23.7 per 100 Type 2 diabetes encounters.

Other problems managed

Hypertension was the most commonly managed other problem with Type 2 diabetes, managed at a rate of 24.5 per 100 Type 2 diabetes encounters. This was followed by lipid disorders at 9.2 per 100 Type 2 diabetes encounters and immunisation/vaccination at 5.2 per 100 of these encounters. Osteoarthritis and ischaemic heart disease (at 4.3 and 3.6 per 100 Type 2 diabetes encounters respectively) were managed at significantly higher than average rates for BEACH. The pattern of other problems managed with Type 2 diabetes is consistent with the older age of Type 2 diabetes patients, the known consequences of the disease and the measured prevalence of co-morbidities (reported above).

Medications

The rate of medications prescribed/advised/supplied, 72 per 100 Type 2 diabetes problems managed, was above the BEACH average of 66 per 100 problems managed at. Metformin was the medication most frequently prescribed, at a rate of 28.5 per 100 Type 2 diabetes problems managed and at 2.9 per 100 of these encounters when combined with sitagliptin. Gliclazide was prescribed at the rate of 10.1 per 100 problems. Insulins in the top 10 medications were together prescribed at a rate of 6.6 per 100 Type 2 diabetes problems.

Other treatments

The rate of other treatments provided, 39 per 100 of these problems, was above the average 35 per 100 problems for BEACH. Most commonly the other treatment was counselling/advice – nutrition/weight (provided at a rate of 7.9 per 100 Type 2 diabetes problems managed) followed by counselling about the diabetes, and counselling/education about its treatment.

Referrals

The average referral rate for BEACH is 9.5 per 100 problems managed. Patients were referred for their Type 2 diabetes at a rate of 15.4 per 100 Type 2 diabetes problems managed. Referrals were made most frequently to podiatrists (4.2 per 100 Type 2 diabetes problems), ophthalmologists (2.5 per 100 Type 2 diabetes problems) and dietician/nutritionists (2.2 per 100 Type 2 diabetes problems).

Pathology and imaging orders

The pathology ordering rate of 89 per 100 Type 2 diabetes problems managed was three times the average for BEACH. HbA1c test was the test most commonly ordered, at a rate of 25.3 per 100 of these problems. A lipid profile was ordered for 13.1 per 100 Type 2 diabetes problems.

The patients

Sex	Per cent	Rate[a]
Males	54.1	5.0
Females	45.9	3.3

Age group		
25–44 years	6.2	1.1
45–64 years	36.8	5.3
65–74 years	29.9	8.5
75+ years	26.5	6.5

Medications (prescribed and supplied)
n = 2,823 (72 per 100 diabetes[†] problems)
Rate per 100 diabetes[†] problems[c]

Metformin	28.5
Gliclazide	10.1
Insulin glargine	3.9
Metformin/sitagliptin	2.9
Insulin aspart	2.7
Rosuvastatin	2.0
Atorvastatin	2.0
Sitagliptin	1.5
Glimepiride	1.2
Pioglitazone	1.1

Type 2 diabetes[†] 2012–13
n = 3,948 (4.0 per 100 encounters)

Reasons for encounter
n = 7,141 (181 per 100 diabetes[†] encounters)
Rate per 100 diabetes[†] encounters[b]

Diabetes – all *	30.7
Prescription – all*	23.7
Test results*	16.6
General check-up*	8.0
Administrative procedure NOS	7.7
Endocrine check-up*	6.8
Cardiovascular check-up*	5.2
Hypertension*	4.1
Immunisation/vaccination – all*	4.1
Follow-up encounter endocrine	4.0

Other treatments
n = 1,532 (39 per 100 diabetes[†] problems)
Rate per 100 diabetes[†] problems[c]

Counselling/advice – nutrition/weight*	7.9
Counselling – problem*	5.3
Advice/education – treatment*	5.2
Other administrative procedure/document (excluding sickness certificate)*	4.9
Advice/education – medication*	3.4

Referrals
n = 609 (15 per 100 diabetes[†] problems)
Rate per 100 diabetes[†] problems[c]

Podiatrist/chiropodist	4.2
Ophthalmologist	2.5
Dietitian/nutritionist	2.2
Diabetes educator	2.1
Endocrinologist	1.1

Other problems managed
n = 5,385 (136 per 100 diabetes[†] encounters)
Rate per 100 diabetes[†] encounters[b]

Hypertension*	24.5
Lipid disorder	9.2
Immunisation/vaccination – all*	5.2
Osteoarthritis*	4.3
Ischaemic heart disease*	3.6
Gastro-oesophageal reflux disease *	3.2
Depression*	3.1
Back complaint*	2.6
General check-up*	2.1
Vitamin/nutritional deficiency	2.0

Pathology
n = 3,495 (89 per 100 diabetes[†] problems)
Rate per 100 diabetes[†] problems[c]

HbA1c*	25.3
Lipids*	13.1
Albumin/creatinine, urine*	8.9
Full blood count	8.3
Multi-biochemical analysis*	7.4
Electrolytes, urea and creatinine*	6.5

(a) Specific rate per 100 encounters in each gender or age group
(b) Expressed as a rate per 100 encounters at which Type 2 diabetes was managed
(c) Expressed as a rate per 100 Type 2 diabetes problems managed
* Includes multiple ICPC-2 and ICPC-2 PLUS codes
† Type 2 diabetes is defined as ICPC-2 code T90, and includes non-insulin dependent diabetes, diabetes mellitus, adult onset diabetes and insulin-treated Type 2 diabetes.

Figure 14.9: Management of Type 2 diabetes, 2012–13

14.9 Discussion

Type 2 diabetes is one of the most significant chronic diseases besetting the Australian population. It has a high prevalence and a significant pool of undiagnosed patients, which may increase its prevalence in coming years as programs to improve detection rates are implemented.

Type 2 diabetes causes morbidity in its own right, and produces significant consequent morbidity in the form of ischaemic heart disease, renal disease, obesity and secondary osteoarthritis. Patients with Type 2 diabetes also have significant levels of other multimorbidity such as gastro-oesophageal reflux disease and depression. Patients with Type 2 diabetes therefore present a complex management challenge for patients, clinicians and clinical teams.

Managing patients with Type 2 diabetes and co-morbidity requires careful monitoring of their clinical state and this is reflected in the high levels of pathology ordering for these patients. Many patients also self-monitor their blood glucose levels in addition to referred pathology testing.[120]

Complexity of management is also reflected in a high level of referrals of Type 2 diabetes patients, particularly to allied health professionals. This 'team care' is encouraged by guidelines and MBS incentives for care planning and team care arrangements.

As a consequence of more intensive management, the management rate of diabetes increased 33% over the 10 years from 2003–04 to 2012–13, despite no change in the incidence of new cases. The management rate of 4 per 100 patient encounters (Figure 14.3) reflects only the management of patients with Type 2 diabetes for that problem. The management of patients with Type 2 diabetes for all their problems is more than double that rate.

The age-specific management rate increased in all age groups 45 years and older during the decade to 2012–13, and in both male and female patients. The ageing population is also contributing to the increasing management rate.

As a consequence of the complexity of managing Type 2 diabetes, the availability of new treatment modalities, management of risk factors for consequent morbidity and other co-morbidity, medication management presents difficulties for both clinician and patient. This is reflected not only in the use of blood lowering drugs and insulin, but also in the use of anti-thrombotic drugs, anti-hypertensives and particularly lipid lowering drugs. These patients are also on a wide variety of other medications for a multitude of other morbidities. While the resulting poly-pharmacy reduces the risk of disease progression it results in a significant risk of adverse drug reactions.[77] Concerns about the medical management of diabetes and self monitoring of blood glucose have led to a review of products used in the management of diabetes by the Pharmaceutical Benefits Advisory Committee.[121]

General practices provide clinical treatments (such as counselling, advice and education about diabetes and its treatment) at a rate of 33.3 per 100 Type 2 diabetes contacts. This may be provided by the GPs, by practice nurses or by co-located allied health professionals.

GPs provide care to patients with Type 2 diabetes at significantly higher levels than to other patients. Both the length of consultation with patients with Type 2 diabetes and the frequency with which they are seen, is significantly higher than for all patients seen in general practice. The average time currently allocated by GPs to patients with Type 2 diabetes is 2.6 hours per year. In contrast the average time spent with all patients attending general practice is 1.6 hours per year. Additional unquantified time is allocated by practice nurses and, as indicated by the referral rate, by allied health professionals. We can conclude

that the management of Type 2 diabetes in primary care is very resource intensive and that the resource utilisation is bound to increase in the future.

14.10 Conclusion

In the past decade, the management of Type 2 diabetes has changed in line with changes to guidelines for treatment and in response to many government initiatives to improve clinical practice in regard to patients with Type 2 diabetes. General practice has responded with increased management time devoted to these patients both for the management of Type 2 diabetes and the management of patient co-morbidity.

Patients with Type 2 diabetes will require increased primary care resources in the future and the main resource provision in Australia will continue to be by general practices and associated allied health professionals.

15 SAND abstracts and research tools

Since BEACH began in April 1998, a section on the bottom of each encounter form has been used to investigate aspects of patient health or 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 size of the sample and its statistical power.

This chapter includes the abstracts and research tools for SAND substudies conducted from April 2012 to March 2013. The subjects covered in the abstracts in this chapter are listed in Table 15.1, with the sample size for each topic.

Table 15.1: SAND abstracts for 2012–13 and sample size for each

Abstract number	Subject	Number of respondents	Number of GPs
195	Nocturnal leg cramps among general practice patients	2681	91
196	Travel advice and vaccination	2,955	102
197	Chronic kidney disease and dyslipidaemia in general practice patients – 2012	3,121	101
198	Influenza and pneumococcal vaccination in general practice patients aged 15 years or over[a]	2,545	101
199	Anticoagulant and antiplatelet use by general practice patients	2,860	100
200	Overactive bladder and influenza/pneumococcal vaccination in older patients[b]	1,436	87
201	Asthma control in general practice patients – 2012[c]	2,536	102
202	Diagnosis of chronic obstructive pulmonary disease in general practice patients – 2012	2,911	100
203	Neuropathic pain in general practice patients	2,654	90
204	Care provided to general practice patients by medical and/or surgical specialists	5,732	193
205	Private prescriptions and generic substitution of medications in general practice patients	2,978	102
206	Asthma, chronic obstructive pulmonary disease and respiratory symptoms in general practice patients	2,589	91
207	Management of allergic asthma in general practice patients	2,522	85
208	Lifestyle risk factors	2,838	98
209	Patient use of the internet for health information	2,944	100
210	Management of hypertension in general practice patients	2,820	95

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

(b)   Substudy limited to patients aged 45 years and over.

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

SAND abstract number 195: Nocturnal leg cramps among general practice patients

Organisation collaborating for this study: Family Medicine Research Centre

Issues: The proportion of patients attending general practice who (currently or in the past), had nocturnal leg cramps (NLC); oral treatment of NLC; the relationship of NLC with the use of diuretics, long-acting beta agonists (LABA) and/or statins, including timing of initiation relative to onset of NLC, and cessation of medication due to NLC.

Sample: 2,681 patients from 91 GPs; data collection period: 05/06/2012 – 09/07/2012

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: Initiation time was placed into one of four categories: (i) <1 year before the onset of NLC; (ii) 1+ years before the onset; (iii) after the onset; or (iv) at a time not known. Medication which had been ceased because of NLC was presumed to belong to category (i).

Summary of results

There were no significant differences between the age or sex distributions of patients in this study and those of patients at all BEACH encounters in 2011–12. Of 2,681 respondents, 267 (10.0%, 95% CI: 7.8–12.1) were currently experiencing NLC and 166 (6.2%, 95% CI: 4.7–7.7) had previously experienced NLC, a total of 433 patients (16.2%, 95% CI: 13.3–19.0). The prevalence of NLC increased with age (>24 years old), but did not differ by sex.

Of 418 respondents with current/previous NLC, 32.5% (95% CI: 26.4–38.6) reported at least one oral treatment for NLC. The top three treatments were: magnesium (Mg) (not elsewhere classified) (40.5% of all treatments); quinine sulphate/bisulphate (11.5%); and rutin/bioflavinoids/Mg/vitamin B6 (10.8%). Of those with current/previous NLC: 4.1% were currently taking quinine, and 0.7% tonic water; 20.2% were currently taking a diuretic and 11.3% ceased a diuretic due to NLC; 14.2% were taking a LABA and 11.5% ceased a LABA due to NLC; and 34.8% were taking a statin and 8.6% ceased a statin due to NLC.

Of the 84 diuretics (currently taken by 79 patients), the most common were frusemide (39.3%), irbesartan/hydrochlorothiazide (15.5%) and indapamide (13.1%). Of 52 LABAs (52 patients), the most common were fluticasone/salmeterol (53.8%), budesonide/eformoterol (30.8%) and salmeterol (9.6%). Of 122 statins (122 patients), the most common were atorvastatin (48.4%), rosuvastatin (32.8%) and simvastatin (13.9%).

In each medication class, the proportion of reports that were in category (i) provided an approximate indication of the strength of evidence for a causal association between that medication and NLC. For diuretics, 44.4% of 124 reports were in category (i), which was significantly greater than both the 19.4% in category (ii) and the 13.7% in category (iii). This implies a causal association between diuretics and the onset of NLC. Similarly for the 102 reports of LABAs, 54.9% were in (i), which was significantly greater than both the 13.7% in (ii) and the 18.6% in (iii), implying a causal association between LABAs and the onset of NLC. However, for the 178 reports of statins, there were no significant differences between the proportions in each category, 29.2%, 23.0% and 26.4% respectively, although these figures were not adjusted for the longer durations of categories (ii) and (iii), compared with (i).

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

INSTRUCTIONS

In collaboration with the patient, 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.

Recent research has suggested a possible connection between nocturnal leg cramps and selected diuretics, statins and respiratory medications.[1] The purpose of this study is to investigate this relationship.

1 *Garrison SR, Dormuth CR, Morrow RL, Carney GA, Khan KM 2011. Nocturnal Leg Cramps and Prescription Use That Precedes Them: A Sequence Symmetry Analysis. Archives of Internal Medicine epub 2011.*

Nocturnal leg cramps

Please use the tick boxes to advise whether this patient has **experienced nocturnal leg cramps**. If 'yes' please indicate whether the patient:

- **currently** has nocturnal leg cramps or is being treated for them
- **previously** has had nocturnal leg cramps.

The purpose of this study is to describe nocturnal leg cramps regardless of whether they are treated by a health care professional.

If the patient **has not** experienced nocturnal leg cramps please **end the questions here.**

Oral treatment for leg cramps

Please write the **name of any oral treatment/s** currently being used to **manage nocturnal leg cramps.**
Please **ask the patient** as these may include over-the-counter medications (such as magnesium, zinc, vitamins B1, B6 and B12) as well as prescribed medications.
Include all oral treatments regardless of who initiated them.

If **no oral treatment** is currently used please tick the box labelled '**NONE**'.

Diuretic use

Please use the tick boxes to advise whether the patient **currently** takes a **diuretic or diuretic combination.**

If 'yes' please write the **name of the diuretic / diuretic combination** and whether it was **initiated prior to or after** the commencement of nocturnal leg cramps.

If 'no' please indicate whether the medication was **ceased due to nocturnal leg cramps.**

Long-acting beta agonist (LABA) use

Please use the tick boxes to advise whether the patient **currently** takes a **LABA or LABA-steroid combination.**

If 'yes' please write the **name of the LABA/LABA combination** medication and whether it was **initiated prior to or after** the commencement of **nocturnal leg cramps.**

If 'no' please indicate whether the medication was **ceased due to nocturnal leg cramps.**

Statin use

Please use the tick boxes to advise whether the patient **currently** takes a **statin.**

If '**yes**' please write the **name of the statin** medication and whether it was **initiated prior to or after the** commencement of **nocturnal leg cramps.**

If '**no**' please indicate whether the statin was **ceased due to nocturnal leg cramps.**

Has the patient had or been treated for nocturnal leg cramps?	Current oral treatment (prescribed or OTC) for leg cramps is:	Does the patient currently take a diuretic/ diuretic combination?	If 'yes' was this diuretic initiated:	Is a long-acting beta agonist (LABA) or LABA combination currently taken?	If 'yes' was this LABA initiated:	Is a statin currently taken?	If 'yes' was this statin initiated:
☐ Yes - currently ☐ Yes - previously ☐ No → **End** questions	1. ___ 2. ___ 3. ___ ☐ **NONE**	☐ Yes *please specify:* ___ ☐ No - ceased due to leg cramps ☐ No ☐ Don't know	☐ <1 yr before cramps ☐ ≥1 yr before cramps ☐ After cramps ☐ Don't know	☐ Yes *please specify:* ___ ☐ No - ceased due to leg cramps ☐ No ☐ Don't know	☐ <1 yr before cramps ☐ ≥1 yr before cramps ☐ After cramps ☐ Don't know	☐ Yes *please specify:* ___ ☐ No - ceased due to leg cramps ☐ No ☐ Don't know	☐ <1 yr before cramps ☐ ≥1 yr before cramps ☐ After cramps ☐ Don't know

BL143B

SAND abstract number 196: Travel advice and vaccination

Organisation collaborating for this study: CSL Biotherapies Pty Ltd

Issues: Proportion of patients who travelled overseas in previous 2 years; for most recent trip – main reason, countries visited (multiple), whether stayed overnight in rural area; whether travel advice sought and from whom; for which diseases was patient fully vaccinated and was the risk of infection discussed; proportion who had recommended vaccination/prophylaxis prior to most recent trip, and reasons if not.

Sample: 2,955 patients from 102 GPs; data collection period: 02/05/2012 – 04/06/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.
Methods for this substudy: Countries for which vaccination should be considered were sourced from the Center of Disease Control's yellow book and the World Health Organization's geoserver.
Summary of results

The age and sex distributions of the patients in the sample was similar to those at all 2011–12 BEACH encounters, except there were fewer 0–14 year olds. Of 2,955 respondents, 690 (23.0%, 95% CI: 19.8–26.3) had travelled overseas in the previous 2 years. Main reason for most recent trip was given by 671 patients, of these: 65.7% cited 'holiday'; 29.5% 'visit friends/relatives', and 6.4% 'business'. Countries most frequently visited were the United Kingdom (10.0% of destinations), United States of America (8.9%), New Zealand (8.8%), Thailand (6.4%) and Bali (5.0%). Most frequent countries where patients stayed overnight in a rural area were the United Kingdom (11.3% of destinations), New Zealand (10.9%), Italy (5.7%) and Thailand (5.2%).

Of 670 respondents, 36.1% sought travel advice before their trip: 29.9% (n = 200) from their GP, 3.7% (n = 25) from a travel clinic and 1.5% (n = 10) from the internet. The number of respondents to each vaccine question varied. The proportion vaccinated ranged from 40.5% for hepatitis A and 36.0% for hepatitis B to the lowest rates of 0.7% for Japanese encephalitis and 1.8% for rabies. Malaria prophylaxis had been arranged for 11.8% of travellers.

Two-thirds (66.1%, n = 448) of patients travelled to destinations where vaccination should have been considered. The most common risk diseases were typhoid (60.1% of trips), hepatitis A (55.9%) and hepatitis B (64.2%), and rabies (50.1%). Of 423 patients travelling to a country with infection risk who answered the travel advice question, only 42.7% sought advice before their trip. Of those travelling to a country with a risk of infection risk, the proportion fully vaccinated against the risk varied from 50.9% for hepatitis A and 44.6% for typhoid, to 3.2% for rabies and 1.5% for Japanese encephalitis. Patients who sought advice from a GP before travelling were significantly more likely to have been fully vaccinated against common diseases in their destination before they travelled than those who sought no advice.

Of the 345 patients who were not fully vaccinated for infection risks associated with their destinations, only 110 patients gave reasons. The most common were: patient objection (31.8%); the GP did not think it was needed/required (22.7%); patient did not raise travel plans with their GP (13.6%); they raised the issue but left it too late (7.3%); the patient did not realise they were at risk of infection in their country of destination (2.7%).

We conclude that patients travelling overseas can reduce unnecessary risk by seeing their GP well in advance.

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 <u>next 30 PATIENTS</u> the following questions **in the order in which the patients are seen.**

Please <u>**DO NOT**</u> **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.

Reason for travel

Please use the tick boxes to indicate the **main reason** for the patient's **most recent overseas trip.**

Destination country and rurality

Please **specify the country where the patient spent the most time during** the <u>most recent</u> overseas trip.

Please also record details of **other countries** visited in the same trip.

For **each country** please use the tick box to indicate whether the patient **stayed overnight in a rural area.**

Infectious diseases

For **each of the specified infectious diseases**, please indicate whether the patient was **fully vaccinated** <u>prior to the most recent trip</u>, regardless of whether the vaccination was specifically given for this trip.

If the patient was not fully vaccinated please indicate whether the **risk** of each **disease was OR was not discussed** with the patient in regard to the travel destination, <u>prior to the most recent trip.</u>

Please tick a maximum of one response per disease.

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.

Malaria prophylaxis

Please advise whether **malaria prophylaxis** was given, prior to the most recent trip.

Has the patient travelled overseas in the past 2 years?
☐ Yes - please specify how many trips: _____
☐ No → **End questions** BL142C

The remaining Qs relate to the most recent overseas trip

Main reason for most recent trip?
☐ Holiday
☐ Visiting friends/ relatives
☐ Business
☐ Conference
☐ Other

Country where most time was spent:
_____

Other countries visited: *(in the same trip)*

	Stayed overnight in rural area?
_____	☐
_____	☐
_____	☐

PRIOR TO TRAVEL:
Was travel vaccinat'n/ prophylaxis advice sought by patient?
☐ Yes - GP
☐ Yes - travel clinic
☐ Yes - internet
☐ Yes - other
☐ No

For each disease, was:

	Patient fully vaccinated?	Risk discussed?	Risk not discussed?
Rabies	→ ☐	☐	☐
Typhoid	→ ☐	☐	☐
Japanese encephalitis	→ ☐	☐	☐
Meningococcal encephalitis	☐	☐	☐
Cholera	→ ☐	☐	☐
Hepatitis A	→ ☐	☐	☐
Hepatitis B	→ ☐	☐	☐

Was malaria prophylaxis given?
☐ Yes
☐ No

If vaccine / prophylaxis med'n advised for the destination wasn't given, why not?
☐ Not enough time prior to travel
☐ Patient refusal
☐ Other: *(please specify)*

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SAND abstract number 197: Chronic kidney disease and dyslipidaemia in general practice patients – 2012

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

Issues: The proportion of patients attending general practice who: had kidney function assessed in the past 12 months; had one or more of eight listed conditions; had been diagnosed with chronic kidney disease (CKD) by GP or specialist. For those with CKD: stage of disease; proportion on dialysis; lipid, and urine albumin, albumin/creatinine ratio levels; and lipid medications.

Sample: 3,121 patients from 101 GPs; data collection period: 27/03/2012 – 01/05/2012

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 age and sex distributions of patients did not significantly differ from those of all patients at 2011–12 BEACH encounters. Of 3,119 respondents: 36.5% had not had a kidney function test in the previous 12 months; 3.4% had had all three kidney function tests (i.e. serum creatinine, urine albumin, and albumin/creatinine ratio]; 45.6% serum creatinine only; 3.7% serum creatinine and urine albumin; 2.0% serum creatinine and albumin/creatinine ratio; and for 7.8% test status was not known.

Among 3,089 respondents: 27.4% had hypertension; 20.1% dyslipidaemia; 10.1% diabetes; 5.1% coronary heart disease; 4.7% other cardiovascular disease; 2.2% albuminuria; 1.9% previous myocardial infarction; and 1.5% had peripheral vascular disease. Among all 3,089 patients, 38.6% (95% CI: 35.2–41.9) had at least one of the morbidities/risk factors listed above, while 93.0% (95% CI: 90.1–95.9) of 228 CKD patients had one or more.

Of 3,080 respondents, 232 (7.5%, 95% CI: 5.7–9.4) had diagnosed CKD, which (after adjustment) suggests a CKD prevalence of 4.4% (95% CI: 3.3–5.5) in the Australian population. Age-specific CKD prevalence in the sample was: 5.5% for 45–64 year-olds; 14.0% for 65–74; and 25.2% for 75 or over. Prevalence did not significantly differ between males and females. Of the 232 CKD respondents, 80.2% had been diagnosed by a GP, 15.1% by a specialist and 4.7% by both.

The stage of CKD was known for 228 patients: 14.0% were at stage 1; 28.1% were at stage 2; 50.9% were at stage 3; 2.2% were at stage 4; and 1.8% were at stage 5. Only three patients were on dialysis.

The mean lipid levels were: total cholesterol, 4.7 mmol/L (*n* = 213 respondents); low density lipoprotein cholesterol, 2.5 mmol/L (*n* = 191 respondents); high density lipoprotein cholesterol, 1.4 mmol/L (*n* = 195 respondents); and triglyceride, 1.7 mmol/L (*n* = 204). Of 87 CKD patients, mean albumin/creatinine ratio was 14.0 mg/mmol.

Of 215 CKD patients, 32.6% were currently not taking any lipid medication, 62.3% were taking one lipid medication and 4.7% were taking two. A total of 145 CKD patients were taking 157 lipid-lowering medications. Atorvastatin accounted for 40.1% of these, rosuvastatin for 25.5% and simvastatin for 15.9%.

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 **CHRONIC KIDNEY DISEASE AND DYSLIPIDAEMIA.**
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.

Assessment of renal function

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

Please tick as many as apply.

Note: ACR = albumin:creatinine ratio.

Risk factors and comorbidities

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

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

Note: CHD = coronary heart disease,
PVD = peripheral vascular disease,
MI = myocardial infarction.

In the past 12 mths has kidney function / damage *(tick all that apply)* **been assessed?**

- ☐ Yes - serum creatinine level
- ☐ Yes - urine test for micro / macroalbuminuria
- ☐ Yes - urine test for ACR
- ☐ No
- ☐ Don't know   BL141B

Does the patient have: *(tick all that apply)*

- ☐ Diabetes   ☐ CHD
- ☐ Dyslipidaemia   ☐ PVD
- ☐ Hypertension   ☐ Previous MI
- ☐ Other cardiovascular disease
- ☐ Micro / macroalbuminuria
- ☐ None of the above

Stage of disease*

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

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

Dialysis: please indicate whether this patient is **currently on dialysis.**

Stage*	Description	GFR (mL/min/1.73m2)
1	Kidney damage with normal or ↑ GFR	>= 90
2	Kidney damage with mild ↓ GFR	60 - 89
3A	Moderate ↓ GFR	45 - 59
3B	Moderate ↓ GFR	30 - 44
4	Severe ↓ GFR	15 - 29
5	Kidney failure	<15 (or dialysis)

*Modified from the National Kidney Foundation Guidelines. Part 4 - 'Definition and Stages of Chronic Kidney Disease'. GFR = glomerular filtration rate.

CKD diagnosis

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

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

Has the patient been diagnosed with Chronic Kidney Disease (CKD)?

- ☐ Yes - by you or another GP
- ☐ Yes - by a specialist
- ☐ No → **End Qs**

If 'yes' what is their Stage* *(see definitions on green sheet)* **of disease?**

- ☐ Stage 1   ☐ Stage 4
- ☐ Stage 2   ☐ Stage 5
- ☐ Stage 3A   ☐ Don't know
- ☐ Stage 3B

Is the patient on dialysis?

☐ Yes   ☐ No

Test levels

Please advise the patient's **levels** at the **most recent** testing of: **Total cholesterol, HDL cholesterol, LDL cholesterol, and Triglycerides, albumin:creatinine ratio (ACR).**

If you **do not know** one of these levels, or if the patient has **never had** one or more of these **levels measured**, please tick the box labelled '**don't know / never tested**'.

What are the patient's most recent levels of...

		Don't know / never tested
Total chol	_____ mmol/L	☐
LDL-C	_____ mmol/L	☐
HDL-C	_____ mmol/L	☐
Triglycerides	_____ mmol/L	☐
ACR	_____ mg/mmol	☐

Lipid lowering medication

Please write the **name and form** of the **current lipid lowering medication/s** taken by the patient, including the regimen (i.e. **strength, dose and frequency**) of the medication.

If **no lipid medication** is currently taken, please tick the box labelled '**no current lipid medication**'.

The patient's current lipid med'n is:

Name & Form	Strength	Dose	Freq
_____	_____	____	____
_____	_____	____	____

☐ No current lipid medication

SAND abstract number 198: Influenza and pneumococcal vaccination in general practice patients aged 15 years or over

Organisation collaborating for this study: CSL Biotherapies Pty Ltd

Issues: Among patients aged 15 years or over attending general practice: the proportion with indications for influenza or pneumococcal vaccination; proportion who had received influenza and/or pneumococcal vaccine; payment mode of supply; reason(s) vaccine not given; proportion aware of the influenza and pneumococcal disease campaign; and whether the campaign prompted patients to see their GP about vaccination.

Sample: 2,545 patients (aged 15 years or over) from 101 GPs; data collection period: 27/03/2012 – 01/05/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: Risk factors for influenza and pneumococcal infection were adapted from the Australian Immunisation Handbook (9th Edition, 2008, NHMRC) and listed on the SAND form with tick-boxes.

Summary of results

Compared with patients aged 15 years or over at all 2011–12 BEACH encounters, this SAND sample had a smaller proportion of patients aged 15–24 years and 75 or over, and more aged 45–64 years, but the sex distributions did not differ.

The prevalence of at least one risk factor for influenza was 53.6% (95% CI: 49.3–57.9) and for pneumococcal disease was 57.7% (95% CI: 53.7–61.6). The most common risk factors were: age 65 years or over (32.3%), unspecified chronic disease (26.1%), chronic heart disease (11.9%), chronic lung disease (11.1%), diabetes (10.0%) and tobacco smoking (9.8%). Of the 2,545 respondents, 24.9% had one risk factor for influenza, 18.7% had two and 7.6% had three. For pneumococcal disease, the figures were 27.1%, 20.0% and 7.9% respectively.

Proportion vaccinated: Of 2,522 respondents, the proportion vaccinated against influenza was 47.3% (95% CI: 43.7–51.0), comprising 70.6% of those with at least one risk factor, and 20.2% of those with no risk factors. For pneumococcal disease, of 2,443 respondents, 25.7% (95% CI: 22.5–28.9) were vaccinated, (42.9% of those at risk and 1.6% of not at risk patients).

Mode of Supply: For 78.9% of 1,162 respondents the influenza vaccine had been free; for 4.5% it was subsidised by government; and for 16.6% it was privately funded. Parallel proportions among 593 patients who had received pneumococcal vaccine were 93.6%, 4.4% and 2.0%.

Reasons vaccine had not been given: For influenza, among 362 unvaccinated patients at risk, 36.7% had not been vaccinated because of patient objection, 30.4% for an 'other' reason and 19.1% were not considered at risk by the GP. For pneumococcal disease, among 680 unvaccinated patients at risk, the results for these reasons were 20.7%, 36.6% and 31.3%.

Campaign awareness and response: Of 2,420 patients, 36.0% had seen a consumer awareness campaign about vaccination. Among patients with at least one risk factor, there was no significant difference in campaign awareness between age groups, or between vaccinated and unvaccinated groups. Of those 839 who had seen the campaign, 34.7% had been prompted to speak with their GP.

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.

Consumer disease awareness campaign

Please indicate whether, during 2012, 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 aged 15+ years, does the patient have: *(tick all that apply)*	Is the patient currently vaccinated for influenza (in past 12 mths) or pneumococcal (in past 5 yrs)?			If patient IS VACCINATED, how was the vaccine(s) supplied?			If patient IS NOT VACCINATED, the reason(s) was:			In 2012, 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?
		Influ	**Pneum**		**Influ**	**Pneum**		**Influ**	**Pneum**		
☐ Chronic heart disease	Yes	☐	☐	Free to patient *(i.e. Govt supplied)*	☐	☐	Patient not at risk	☐	☐		
☐ Chronic lung disease	No	☐	☐				Patient objection	☐	☐		
☐ Diabetes	Don't know	☐	☐	PBS subsidised	☐	☐	Cost to patient	☐	☐	☐ Yes	☐ Yes
☐ Other chronic disease				Fully privately funded	☐	☐	Patient does not agree with risk assessment	☐	☐	☐ No	☐ No
☐ Immune deficiency (e.g. HIV infection)							Other reason	☐	☐		
☐ Pregnancy ☐ None of the above											
☐ Tobacco smoker				BL141C							

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SAND abstract number 199: Anticoagulant and antiplatelet use by general practice patients

Organisation collaborating for this study: Pfizer Australia Pty Ltd

Issues: The prevalence among patients attending general practice, of diagnosed: atrial fibrillation (AF), deep vein thrombosis, pulmonary embolism, heart valve disease and/or acute coronary syndrome; anticoagulant and antiplatelet medications taken for these conditions and duration of current use; for patients on warfarin, availability of INR results from previous six months, proportion of these reflecting uncontrolled INR; for patients with AF, CHADS score for risk of stroke compared with GP's perception of risk, glomerular function testing, and level of renal function.

Sample: 2,860 patients from 100 GPs; data collection period: 02/05/2012 – 04/06/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: CHADS score for estimating risk of stroke;[a] Kidney Health Australia categories.[b]

Summary of results

The age and sex distributions of the patient sample did not differ from those of all patients at 2011–12 BEACH encounters. At least one listed condition was reported for 324 patients (11.3%, 95% CI: 9.5–13.1). Prevalence of: AF was 5.5%; acute coronary syndrome 3.7%; heart valve disease 1.7%; deep vein thrombosis 1.4%; and pulmonary embolism 0.7%. After adjustment for attendance rates, in the attending population prevalence of: at least one listed condition was 6.6%; AF 2.9%; acute coronary syndrome 2.2%; heart valve disease 0.9%; deep vein thrombosis 1.0%; and pulmonary embolism 0.5%. Among 320 respondents to medication use: 40.0% ($n = 128$) were on warfarin—mean duration 54 months ($n = 103$); 28.1% ($n = 90$) were taking prescribed aspirin—mean duration 60 months ($n = 55$); 15.9% ($n = 51$) were on clopidogrel—mean duration 43 months ($n = 36$); 12.2% ($n = 39$) were on over-the-counter aspirin—mean duration 56 months ($n = 25$); 1.3% ($n = 4$) were on dabigatran—mean duration 10 months ($n = 4$).

Of 122 respondents on warfarin, 32.0% had 6–8 INR results, and a further 32.0% had 12–23 INR results available from the previous 6 months. Of 110 respondents on warfarin, 82.7% had at least half of their INR results in the normal range (i.e. between 2.0 and 3.0).

CHADS score is a clinical prediction rule for estimating the risk of stroke in patients with AF. For 148 AF respondents, CHADS score suggested 7.4% were at low risk, 48.0% were at moderate risk, and 44.6% were at high risk of stroke. For 144 AF respondents, according to GP opinion 18.1% were at low risk, 46.5% were at moderate risk and 35.4% were at high risk. Of patients grouped as high risk using the CHADS score, 55.4% were also grouped as high risk by the GP, while 35.4% were considered moderate, and 9.2% were considered low risk.

Of 150 respondents with AF, 138 (92.0%) had glomerular filtration rates (GFR) from the previous 12 months, the majority (78.7% of the 150 AF patients) having estimated GFR (eGFR). Using Kidney Health Australia categories, of the 138, 5.8% had normal results, 51.4% had mild kidney damage, 40.6% had moderate damage, and 2.2% had severe damage.

(a)   Gage BF, van Walraven C, Pearce L, Hart RG, Koudstaal PJ, Boode BS et al. Selecting patients with atrial fibrillation for anticoagulation: stroke risk stratification in patients taking aspirin. Circulation 2004;110(16):2287–92

(b)   Kidney Health Australia. Chronic Kidney Disease (CKD) Management in General Practice. Kidney Health Australia, Melbourne, 2007

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 **ANTICOAGULANT AND ANTIPLATELET MEDICATION USE.**
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.

Patient conditions

Please use the tick boxes to advise whether the patient **currently has**, or has a **history of, any of the listed conditions**.

Tick as many as apply.

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

Anticoagulant and antiplatelet medication

Please use the tick boxes to indicate whether the patient is **currently** taking any of the listed **anticoagulant or antiplatelet medications.** Please tick all that apply.

If the patient is taking aspirin please indicate whether the patient purchases the aspirin with a prescription (i.e. PBS subsidised) or as an over-the-counter (OTC) medication.

For each medication, please specify the **duration of current use.**

INR stability for patients on warfarin

If the patient is currently taking warfarin, please specify approximately **how many** of the patient's **INR results** were available in the **past 6 months**. Of these, please specify how many were **less than 2.0**, and how many were **more than 3.0**.

If the answer to any question is **'none'** please write **'0'** in the space provided.

Atrial fibrillation patients

The following questions are for patients with atrial fibrillation.

Risk of stroke: please indicate whether, in your clinical opinion, the patient has a low, moderate or high risk of future stroke.

Comorbidities: please use the tick boxes to advise whether the patient has any of the listed conditions. *(Note: TIA=transient ischaemic attack.)*

Glomerular filtration rate (GFR): please use the tick boxes to advise whether the patient's **creatinine clearance** has been tested/estimated in the **past 12 months** to determine the GFR.

Please indicate whether the GFR was **estimated** (i.e. eGFR automatically generated by the laboratory using serum creatinine) or **calculated** (e.g. using the Cockcroft-Gault formula), and the **result of the most recent GFR test.**

Does the patient have (or have a history of) any of the following:	Current antiplatelet/anticoagulant medication/s:	Duration of use:
☐ Atrial fibrillation	☐ Warfarin	_____ mths
☐ Deep vein thrombosis	☐ Aspirin (prescription)	_____ mths
☐ Pulmonary embolism	☐ Aspirin (OTC)	_____ mths
☐ Heart valve disease	☐ Clopidogrel	_____ mths
☐ Acute coronary syndrome	☐ Dabigatran	_____ mths
☐ None of the above → **End Qs**	☐ None of the above	

If taking WARFARIN:

In the past 6 mths, approx. how many INR results were available: _____
(please specify)

Of these INR results, how many were... less than 2.0: _____
more than 3.0: _____

BL142B

For patients with ATRIAL FIBRILLATION:

In your clinical opinion, what is the patient's stroke risk?

☐ Low
☐ Moderate
☐ High

Does the patient have:

☐ Diabetes
☐ Hypertension
☐ Congestive heart failure
☐ Previous stroke / TIA
☐ None of the above

In the past 12 months, has the patient had their glomerular filtration rate (GFR) tested?

☐ Estimated GFR: _____ mL/min /1.73m²
(please specify)

☐ Calculated GFR: _____ mL/min
(please specify)

☐ No   ☐ Don't know

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SAND abstract number 200: Overactive bladder and influenza/pneumococcal vaccination in older patients

Organisation collaborating for this study: CSL Biotherapies Pty Ltd

Issues: In this SAND, we report two separate issues affecting patients aged 45 and over attending general practice: **(part 1)** proportion with a diagnosed overactive bladder and/or bladder symptoms, and if so, the severity of problems, and management; **(part 2)** proportion that had discussed influenza and/or pneumococcal vaccination with any health professional in the previous 12 months, and if so, what had prompted this.

Sample: 1,436 patients (aged 45 years and older) from 87 GPs; data collection period: 05/06/2012 – 09/07/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Summary of results

(Part 1) There were no significant differences between the age and sex distributions of these patients and patients aged 45 years and older at all BEACH encounters in 2011–12.

Of 1,337 respondents, 165 (12.3%, 95% CI: 8.7–16.0) had been diagnosed with overactive bladder. Compared with all 1,337 respondents, these overactive bladder patients were significantly more likely to be aged 75 or over. Sex-specific rates showed significantly higher prevalence among females (16.0%, 95% CI: 11.1–20.9) than males (7.5%, 95% CI: 4.7–10.2).

Of the 165 overactive bladder patients, 49.7% indicated they had urgency, 47.3% frequency, 44.9% nocturia and 39.4% urge incontinence, and 36 (21.8%) did not report any current symptoms suggesting that their overactive bladder is being satisfactorily managed.

Of the 1,172 respondents without overactive bladder, 288 (24.6%) had at least one symptom, including: 9.6% (of 1,172) with urgency; 8.6% frequency; 13.9% nocturia; and 7.8% urge incontinence.

Of 1,337 respondents, 453 (33.9%) had overactive bladder and/or at least one bladder symptom. Of these, 433 reported the severity of problems caused by their bladder condition, which was further categorised as mild 37.4%, moderate 54.7% or severe 7.9%.

Of the 453 above: 13.9% reported the current or most recent treatment was medication only; 15.2% reported 'other treatment' only; 67.6% neither medication nor 'other treatment'; and 3.3% both. Of 64 respondents taking medication, 45 (70.3%) took it as prescribed, 7 (10.9%) only when symptomatic and 12 (18.8%) had discontinued. Of 80 reported medications, oxybutynin accounted for 28.8%, systemic antibacterials 12.5% and solifenacin 10.0%. Of the 8 reported discontinuations, 3 were of oxybutynin. Of the 86 'other treatments' reported, incontinence pads comprised 37.2% and therapeutic exercises 17.4%.

(Part 2) Of 1,405 respondents aged 45 years and older, 963 (68.5%) had discussed influenza or pneumococcal vaccination with a health professional in the previous 12 months. Of these, the prompt for discussion was: the patient's medical condition for 54.4%; patient age for 53.0%; patient vaccination status for 22.7%; recall notice from practice for 20.6%; and 'other' reasons for 4.6% (of which the most common was 'work').

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 **OVERACTIVE BLADDER and VACCINATION IN OLDER PATIENTS.**
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.**

Please answer the questions for patients aged 45 years or more. Please leave the questions in the bottom section blank for any patients aged less than 45 years.

For patients aged 45+ years

PART 1: Overactive bladder diagnosis and/or symptoms
(you may need to ask the patient)

Please use the tick boxes to indicate whether the patient has been diagnosed with **overactive bladder (OB)** and/or whether they have any of the listed **symptoms** defined below:

Urgency - sudden urgent desire to pass urine, unable to delay going to the toilet

Frequency - urinating seven (7) or more times per day

Nocturia - waking to urinate more than once per night

Urge incontinence - leaking urine before toilet can be reached

If the patient **does not** have OB or any of these symptoms, please tick the **'None'** box and **go to PART 2.**

Impact of bladder condition

Please ask the patient to **describe their bladder condition** currently, from the following statements*. Tick **one box** (only) to indicate their response.

* from 'The Patient Perception of Bladder Condition' in Coyne SK, Matza LS et al., Eur Urol 2006;49:1079-86

Symptom management

Please write name of any **medication** or **other treatment currently**, or **most recently**, used for **OB symptom management.**

Medication: Please tick **one box only** to indicate whether the patient takes the **medication as prescribed**, only when they are **symptomatic**, or has **discontinued** treatment.

Where **medication** was discontinued, please **write the reason** in the space provided (e.g. no longer needed; side effects; ran out of script etc.)

PART 2: Influenza and pneumococcal vaccination

Please indicate whether (prior to today's visit) the patient **has discussed** influenza or pneumococcal vaccination with a health professional during the past 12 months.

If **'No'** please **end the questions** here for this patient.

Initiation of discussion

If **'Yes'** please use the tick boxes to advise **what prompted the discussion.**

If neither you nor the patient **can recall** who or what initiated the discussion please tick the box labelled **'don't know'.**

If discussion was prompted by a reason **other than those listed**, please tick the box labelled **'other'** and **write the reason** in the space provided.

Form section

PART 1 *(Ask patients 45+ yrs)*
Does this patient have:
☐ overactive bladder
AND/OR any symptoms below
☐ urgency   *(tick all*
☐ frequency   *that apply)*
☐ nocturia
☐ urge incontinence
☐ None → **Go to PART 2**

If 'yes', bladder condition causes the patient ...
☐ no problems at all
☐ some very minor problems
☐ some minor problems
☐ some moderate problems
☐ severe problems
☐ many severe problems

Current / most recent treatment is / was:
(tick one only)

Medication: **Taken -** ☐ As prescribed
                              ☐ Only when
                                symptomatic
_____   ☐ Discontinued ⌐

Other treatment:
_____
(please state reason)

PART 2
(Prior to today's visit) has the patient discussed influenza or pneumococcal vaccination with any health professional in the past 12 months?
☐ Yes
☐ No → **End questions**

→ **If 'YES' what prompted the discussion?** *(Tick all that apply)*
☐ Patient's medical conditions   ☐ Recall notice from practice
☐ Patient age   ☐ Flag/prompt from software
☐ Patient vaccination status   ☐ Media
☐ Advice from family   ☐ Patient accessing internet
☐ Advice from other health   ☐ Don't know
   professional   ☐ Other _____
                                    (please specify)

BL143C

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SAND abstract number 201: Asthma control in general practice patients – 2012

Organisation collaborating for this study: AstraZeneca Pty Ltd (Australia)

Issues: The prevalence of diagnosed asthma among patients aged 18 years and over attending general practice; GP perception of level of asthma control; patient perception of impact of asthma on their lives; asthma medications taken in previous month and use of these in the previous week; patient report of being woken by asthma at night, morning asthma, activity limitation, shortness of breath and wheezing; asthma control rated by the Asthma Control Questionnaire[a] (ACQ5) score compared with GP opinion.

Sample: 2,536 patients aged 18 years and over from 102 GPs; data collection period: 10/07/2012 – 13/08/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: The Asthma Control Questionnaire (5-item version - ACQ5)[a] was used to determine level of asthma control.

Summary of results

The prevalence of diagnosed asthma among 2,536 respondents aged 18 years and over was 12.8% (95% CI: 11.0–14.6) (*n* = 324). The age and sex-specific rates of asthma did not significantly differ across patient demographic groups.

Among 317 patients for whom asthma control was rated by the GP, 74.4% were categorised as well-controlled, 19.6% partially controlled, and 6.0% poorly controlled. Among 318 who reported the impact of asthma on their lives, 41.8% rated impact as 'a little', and 35.5% indicated 'no impact at all'. For 14.8%, asthma had a moderate impact, for 5.3% it impacted quite a lot, and for 2.5% asthma impacted a great deal on their lives.

A total of 414 medications for asthma had been taken in the previous month by the 324 patients with asthma. Salbutamol accounted for 41.3%, fluticasone/salmeterol 25.1%, and budesonide/eformoterol 14.0%. Frequency of use in the previous week was reported for 391 medications. For 13.8% of these medications none had been taken in the previous week, while for 39.6% they had been taken 11 or more times in the previous week. Of the 414 medications, 387 could be linked to the patient's level of asthma control. Respondents whose asthma was poorly controlled were twice as likely to record medications used 11+ times in the previous week (67.9%) than well-controlled respondents, for whom only 33.5% of medications had been used 11+ times in the previous week.

Among 317 respondents to the ACQ5, in the previous week 52.2% were never woken at night by asthma; 54.4% had no asthma symptoms on waking in the morning; 54.7% were not limited in their activities due to asthma; 42.3% had no shortness of breath; 39.4% had no wheezing. The ACQ5 score showed that 26.8% of respondents had a score of 0 and therefore were classed as having good control. Only 2 patients (0.6%) had an average score of more than 5 and were classed as having poor control. A comparison was made between level of asthma control in the opinion of the GP and ACQ5 categories. Statistical tests showed a positive correlation between ACQ5 score and GP opinion of level of asthma control (Spearman correlation 0.60, 95% CI: 0.53–0.67).

(a) Juniper E.F, O'Byrne P.M, et al. Measuring asthma control: Clinic questionnaire or daily diary? Am J Respir Crit Care Med 2000;162:1330–4.

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

Asthma Control Questionnaire
(5-item version – ACQ 5)

From: Juniper E.F., O'Byrne P.M., et al., Am J Respir Crit Care Med
2001;162:1330-4.

1. On average, during the past week, how often were you woken by your asthma during the night?

- ❏ Never
- ❏ Hardly ever
- ❏ A few times
- ❏ Several times
- ❏ Many times
- ❏ A great many times
- ❏ Unable to sleep because of asthma

2. On average, during the past week, how bad were your asthma symptoms when you woke up in the morning?

- ❏ No symptoms
- ❏ Very mild symptoms
- ❏ Mild symptoms
- ❏ Moderate symptoms
- ❏ Quite severe symptoms
- ❏ Severe symptoms
- ❏ Very severe symptoms

(P.T.O – Questions continue on the back of the card …)

3. In general, during the past week, how limited were you in your activities because of your asthma?

- ❏ Not limited at all
- ❏ Very slightly limited
- ❏ Slightly limited
- ❏ Moderately limited
- ❏ Very limited
- ❏ Extremely limited
- ❏ Totally limited

4. In general, during the past week, how much shortness of breath did you experience because of your asthma?

- ❏ None
- ❏ Very little
- ❏ A little
- ❏ A moderate amount
- ❏ Quite a lot
- ❏ A great deal
- ❏ A very great deal

5. In general, during the past week, how much of the time did you wheeze?

- ❏ Not at all
- ❏ Hardly any of the time
- ❏ A little of the time
- ❏ A moderate amount of the time
- ❏ A lot of the time
- ❏ Most of the time
- ❏ All the time

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **ASTHMA CONTROL.**
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.**

Please answer the questions for patients *aged 18 years or more*. Please leave the questions blank for any patients aged less than 18 years.

Asthma Control Questionnaire (5-item version - ACQ 5*)

Your research kit contains a laminated card with **5 questions about asthma symptoms**. Please **show the card** to the patient and use the tick boxes below to **record their answers**. Tick one box (only) to indicate their response to each question.

The questions are **repeated here** for your convenience:

1. **On average, during the past week, how often were you woken by your asthma during the night?**

2. **On average, during the past week, how bad were your asthma symptoms when you woke up in the morning?**

3. **In general, during the past week, how limited were you in your activities because of your asthma?**

4. **In general, during the past week, how much shortness of breath did you experience because of your asthma?**

5. **In general, during the past week, how much of the time did you wheeze?**

*from Juniper E.F., O'Byrne P.M., et al., Am J Respir Crit Care Med 2001;162:1330-4.

For patients aged 18+ years

Diagnosed asthma

Please use the tick boxes to indicate whether the patient has been **diagnosed with asthma**, either today or at a previous consultation, by you or another doctor.

If the patient **does not** have diagnosed asthma please **finish the questions** here for this patient.

Asthma medication

In the space/s provided, please write the **name/s** of any **asthma medications** taken by the patient **in the past month**.

Please write combination products as a single medication. Write preventers and relievers separately only if they are taken as individual medications.

Use the tick boxes to advise **how often each medication has been used in the past week.**

Asthma control

Please advise the **level of asthma control** for this patient, based on **your** clinical opinion.

Please **ASK THE PATIENT** the remaining questions about their asthma.

Use the tick boxes to advise the **overall impact of asthma** on the patient's life.

Does this patient have diagnosed asthma?	*Ask the patient* How does asthma impact on your life?	If yes, how do you rate their asthma control?	What medication have you taken in the past month for your asthma?	How often have you used them in the past week?			*Please respond here to ACQ 5 questions (see card) about asthma in the past week:* 1. - woken at night?	2. - symptoms in morning?	3. - limited activities?	4. - shortness of breath?	5. - how much did you wheeze?
					Med 1.	Med 2.	Med 3.					
☐ Yes	☐ not at all	☐ poor	1._____	Not at all	☐	☐	☐	☐ Never	☐ None	☐ Not limited at all	☐ None	☐ Not at all
☐ No	☐ a little	☐ partial	2._____	1-2 times	☐	☐	☐	☐ Hardly ever	☐ Very mild	☐ Very slightly	☐ Very little	☐ Hardly any
	☐ moderately	☐ well	3._____	3-10 times	☐	☐	☐	☐ A few times	☐ Mild	☐ Slightly	☐ A little	☐ A little
Finish Q's	☐ quite a lot	☐ well controlled		> 10 times	☐	☐	☐	☐ Several times	☐ Moderate	☐ Moderately	☐ A moderate amount	☐ A moderate amount
	☐ a great deal							☐ Many times	☐ Quite severe	☐ Very limited	☐ Quite a lot	☐ A lot of the time
								☐ Great many times	☐ Severe	☐ Extremely	☐ A great deal	☐ Most of the time
								☐ Unable to sleep	☐ Very severe	☐ Totally limited	☐ A very great deal	☐ All of the time

BL144B

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SAND abstract number 202: Diagnosis of chronic obstructive pulmonary disease in general practice patients – 2012

Organisation collaborating for this study: Novartis Pharmaceuticals Australia Pty Ltd.

Issues: The proportion of general practice patients diagnosed with chronic obstructive pulmonary disease (COPD) (with/without asthma); duration of COPD and asthma; most recent asthma exacerbation; proportion who had spirometry for COPD diagnosis, who performed this and time since the most recent test; other diagnostic tests used; current smoking status; and duration of smoking and quitting.

Sample: 2,911 patients from 100 GPs; data collection period: 10/07/2012 – 13/08/2012.

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 sex distribution of the 2,911 respondents did not significantly differ from that of patients at all 2011–12 BEACH encounters, but there was a significantly smaller proportion aged 25–44 years (19.3%) than average (22.8%).

Estimated prevalence of COPD (+/- asthma) was 4.3% (95% CI: 3.4–5.2), including 1.8% with COPD-with-asthma and 2.5% COPD-without-asthma. Prevalence of asthma-without-COPD was 10.4%. After weighting, the estimated prevalence of COPD (+/- asthma) and of asthma (+/- COPD), among the patient population who attend Australian general practices at least once in a year, were 2.6% (95% CI: 2.0–3.2) and 11.8% (95% CI: 10.0–13.7), respectively.

For COPD (+/- asthma), there were no differences in sex-specific prevalence. The age-specific prevalence was significantly higher in the two oldest age-groups, 75 years or over (11.0%) and 65–74 years (7.8%) than in the younger age groups.

Of 116 respondents with COPD, median duration since diagnosis was 10 years (mean 11.4 years). Of 40 COPD-with-asthma respondents, median duration since diagnosis was 19.5 years (mean 27.9 years) and median time since last asthma exacerbation was 6 months.

Among 121 COPD respondents, spirometry had been used for diagnosis for 77 (63.6%, 95% CI: 53.7–73.6). These were performed by one or more practitioners: a specialist in 46.8% of cases, a GP in 44.2% and a practice nurse in 18.2%. The most recent spirometry was within the last year in 46.1% of cases.

Among COPD respondents, non-spirometry diagnostic factors used were: clinical history (85.9%); smoking history (79.0%); chest X-ray (72.4%); electronic forced expiratory volume meter (50.7%); and bronchodilator non-response (37.9%). There were a median of 3 diagnostic factors per patient.

Of 121 COPD respondents, 28.9% (95% CI: 19.8–38.1) were current smokers, 60.3% (95% CI: 50.4–70.3) past smokers and 10.7% (95% CI: 4.8–16.7) had never smoked.

Of 33 COPD current smokers, mean smoking duration was 43.0 years, median 40 years. Of 65 COPD past smokers, mean was 34.6 and median 35 years. Of 63 past smokers, the mean time since quitting was 14.3 years and the median was 10 years.

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 **DIAGNOSIS 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 <u>next 30 PATIENTS</u> in the order in which the patients are seen.

Please <u>**DO NOT**</u> **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.

Patient age at diagnosis

In the space provided, please **write the** patient's approximate **age at the time they were first diagnosed with COPD**. If you do not know, please ask the patient for their best estimate.

If the patient **also** has asthma, please also write their approximate age at the time **they were first diagnosed with asthma.**

Most recent exacerbation of asthma

If the patient has **asthma and COPD**, please advise the approximate **time since the most recent exacerbation of asthma**. Please write a number in the space provided and **circle an option** to indicate whether **weeks, months or years.**

Spirometry in COPD

Please advise whether the patient **underwent spirometry** as part of **COPD diagnosis** and who performed the spirometry test. If the test was performed by an **'Other'** health professional, **please specify** in the space provided.

If you **do not know** whether the test was performed at diagnosis, please tick the box labelled **'Don't know'**.

Most recent spirometry test

If spirometry was used to **confirm diagnosis**, please advise the approximate time **since the patient's most recent spirometry test.**

Other factors contributing to COPD diagnosis

Please advise **which of the listed factors**, (additional to, or other than, spirometry) **formed the basis of the COPD diagnosis.**

If you **do not know** whether any of the listed factors were part of the diagnosis, please tick the box labelled **'Don't know'**.

If a factor **other than** those listed contributed to the COPD diagnosis, please **write it in** the space provided.

Patient smoking status

Please advise the patient's **smoking history** as either a **current** smoker, **previous** smoker, or has **never smoked**.

If current or previous smoker ...

For current or previous smokers, please write the approximate **number of years the patient smoked** in the space provided.

For previous smokers, please write the approximate **number of years since they quit** smoking in the space provided.

Has this patient been diagnosed with:	The patient's age (approx) when first diagnosed with:	If 'yes' to asthma, how long since the most recent asthma exacerbation?	Was spirometry used in COPD diagnosis?	If 'yes' how long since the most recent test?:
COPD with Asthma ☐ ⌐	- COPD ___ (yrs)	___	☐ Yes - by GP	☐ < 1 yr
COPD without Asthma ☐		*wks / mths / yrs*	☐ Yes - by practice nurse	☐ 1 - 2 yrs
Asthma without COPD ☐ ⌐	- asthma ___ (yrs)	*(please circle)*	☐ Yes - by specialist	☐ >2 - 4 yrs
None of the above ☐		☐ Don't know	☐ Yes - other: ___	☐ > 4 yrs
End questions ↓			☐ Yes - by unknown	
			☐ No ☐ Don't know	

On what other basis was the COPD diagnosis made?	Yes	No	Don't know		What is the patient's current smoking status?	If the patient is a current or previous smoker ...
Non-response to bronchodilator	☐	☐	☐		☐ current smoker	No. of years they smoked? ___ (yrs)
Chest X-ray	☐	☐	☐		☐ past smoker	
Smoking history	☐	☐	☐		☐ never smoked	No. of years since they quit? ___ (yrs)
Clinical history/symptoms	☐	☐	☐			
Symptom-based questionnaire	☐	☐	☐			
Electronic FEV$_1$/FEV$_6$ meter	☐	☐	☐			
Other: ___ *(please specify)*						

SAND abstract number 203: Neuropathic pain in general practice patients

Organisation collaborating for this study: Pfizer Australia Pty Ltd

Issues: The proportion of general practice patients who have been diagnosed with, or had symptoms of, neuropathic pain; the description of symptoms; duration between symptom onset and first consulting a GP; reasons for delay in seeking treatment if greater than 6 months; reasons for seeking GP's help; the time interval between first seeking treatment and diagnosis of neuropathic pain; and who made the diagnosis.

Sample: 2,654 patients from 90 GPs; data collection period: 14/08/2012 – 17/09/2012.

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 sex distribution of respondents in this study did not differ from that of patients at all 2011–12 BEACH encounters. However, a significantly greater proportion were aged 0–14 years (16.9%) than at total BEACH encounters (11.8%) and a significantly smaller proportion were aged 65–74 years (10.1% cf. 13.2%).

Of the 2,654 respondents, 226 (8.5%, 95% CI: 6.7–10.3) reported neuropathic pain. Of these, 77.9% had diagnosed neuropathic pain and 22.1% had symptoms of undiagnosed neuropathic pain. Of patients with neuropathic pain, 61.5% were female. There was no difference in the sex-specific rates (8.4% each). The 45–64 year age-group had the highest age-specific prevalence (15.8%), and this group accounted for almost half (48.7%) of all neuropathic pain patients.

There were 439 responses from 225 patients who described the nature of the neuropathic pain: most commonly 'shooting pain' (52.9% of patients), 'burning' (47.6%) and 'pins and needles' (44.0%). Of 205 respondents, waiting time between symptom onset and first GP consultation was <3 months for 70.2%, 3–6 months for 14.6% and >6 months for 15.1%. neuropathic pain had not been previously discussed with a GP by 22 respondents.

For those who waited >6 months, 30 respondents gave 37 reasons: 'hoped pain would self-resolve' (40.0% of patients); 'other reason' (40.0%); and 'pain was tolerable' (20.0%) were the top three. Among 204 patients, 505 responses were recorded regarding the issue(s) that prompted them to seek a GP consultation: 'unable to tolerate pain' (59.3% of patients), 'pain interfering with normal daily routine' (55.9%), 'pain interfering with sleep' (51.0%) and 'pain interfering with physical activity' (51.0%) were the top four.

Of 170 patients with diagnosed neuropathic pain, time from initial GP consultation to diagnosis was <3 months for 75.9%, 3–6 months for 10.6% and >6 months for 13.5%. Neuropathic pain had been diagnosed by a GP for 64.9% of patients, by a non-specified specialist for 14.6% and by a neurologist for 9.9%.

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 **NEUROPATHIC PAIN.**

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.

Neuropathic pain

Please use the tick boxes to indicate whether the patient has been **diagnosed with neuropathic pain** either today or at a previous consultation, by you or another doctor.

Please also indicate whether the patient has **symptoms** suggestive of neuropathic pain, even though a definitive diagnosis **has not been** determined.

If the patient **does not** have diagnosed neuropathic pain, or symptoms of neuropathic pain, please **finish the questions** here for this patient.

N.B. - The remaining 2 questions are for diagnosed patients only.

If the patient has **symptoms** but **has not been diagnosed** with neuropathic pain, please **end the questions** here.

Time to diagnosis

Please advise **how long** it took between you **first seeking help** for your symptoms, and **being diagnosed** with neuropathic pain.

Diagnosis

Please advise **who diagnosed** your condition as neuropathic pain.

Deciding factors in seeking help

Please advise **what factors** made you finally decide to **seek help** for your pain symptoms.

Tick as many options as apply.

For patients who have sought help from a GP

Duration of symptoms

Use the tick boxes to advise **how long** (approximately) you tolerated your symptoms **before seeking help** from a GP.

Reason for waiting

If you **waited longer than 6 months** to seek treatment from a GP, please advise the **reason/s for waiting** to see your GP.

Tick as many options as apply.

NB: *AHP = allied health professional e.g. physiotherapist, chiropractor, pharmacist, etc.*

Please ASK THE PATIENT the remaining questions.

Please use the tick boxes, or your own words (in the space provided) to **describe your pain** when pain is experienced.

Tick as many options as apply.

Has this patient been diagnosed with, or have symptoms of, neuropathic pain?	Ask the patient How would you describe your pain? *(tick all that apply)*	If you sought help from a GP, how long did you wait between onset of symptoms and consulting the GP?	If more than 6 mths - why did you wait before seeking the GP's help?	What ultimately prompted you to seek help from a GP? Pain interfering with: *(tick all that apply)*	The diagnosis of neuropathic pain was made by?
☐ Yes - diagnosed ☐ Yes - symptoms (not diagnosed) ☐ No → **Finish Questions** BL145B	☐ shooting ☐ stabbing ☐ burning ☐ pins & needles ☐ other _____ *(please specify)*	☐ < 3 months ☐ 3-6 months ☐ > 6 - 12 months ☐ >1 - 2 years ☐ > 2 years ☐ Not discussed before today's visit	☐ hoped pain would self-resolve ☐ pain was tolerable ☐ too busy ☐ cost ☐ sought help from AHP first ☐ other _____ ☐ not applicable *(please specify)*	☐ sleep ☐ normal daily routine ☐ relationship ☐ family/friends ☐ physical activity ☐ unable to tolerate pain severity	☐ GP ☐ pain clinic ☐ pain specialist ☐ rheumatologist ☐ neurologist ☐ other specialist

If diagnosed how long between first seeking treatment from a GP, and diagnosis?
☐ < 3 months ☐ 3-6 months ☐ > 6-12 months ☐ >1-2 years ☐ > 2 years

SAND abstract number 204: Care provided to general practice patients by medical and/or surgical specialists

Organisation collaborating for this study: Family Medicine Research Centre

Issues: The proportion of patients attending general practice who had consulted a medical and/or surgical specialist in the previous 12 months; the types of specialists consulted; the problem(s) involving specialist management; whether specialist care was ongoing; duration of specialist care; reason(s) specialist management was requested.

Sample: 5,732 patients from 193 GPs; data collection period: 18/09/2012 – 26/11/2012.

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 age and sex distributions of the sampled patients did not differ significantly from those of patients at all BEACH encounters in 2011–12.

Almost half (46.1%, 95% CI: 43.6–48.6) of the sampled patients had consulted a medical and/or surgical specialist in the previous 12 months. The likelihood of having consulted a specialist increased significantly with patient age: from 28.7% (95% CI: 19.0–38.4) of children aged < 1 year, to 68.4% (95% CI: 64.0–72.7) of patients aged 75 years or more. Of the 2,643 patients who had consulted at least one specialist, 2,631 provided details about the types of specialists seen. Most (67.1%) of these patients had consulted only one type, 21.9% had consulted two types, and 11.0% had consulted three or more specialist types in the previous 12 months.

There were 3,859 specialist types consulted, the most common being: cardiologist (11.9%), ophthalmologist (8.9%), orthopaedic surgeon (8.3%) and unspecified/general surgeon (7.9%). There were 4,045 problems managed by these specialists for the sampled patients. The most common problems were: ischaemic heart disease (3.6%), diabetes (3.2%), malignant skin neoplasm (2.6%), atrial fibrillation (2.2%) and cataract (2.2%).

Of the 3,859 specialist types consulted, the question about current specialist care was answered for 3,689. Of these, 72.1% were still currently under the care of the specialist. Duration of specialist management, reported for 3,567 patients, averaged 41.3 months (3.4 years). Specialist care had been provided for less than 12 months by 48.8% of specialists, 1–4 years for 25.1% and ≥ 5 years for 26.0%.

Reason(s) for specialist management were provided for 3,782 specialist types consulted. Of these, 64.7% of specialists were consulted for continuing management of the problem, 46.8% for management advice, 30.6% for diagnostic assistance (multiple responses allowed), and 8.9% of specialist types were consulted for tests or procedures only. For occasions of specialist management of an ongoing nature (*n* = 3,445; i.e. not for a test or procedure only), duration of management was reported for 3,249. The average duration of specialist management (to date) was 43.4 months (3.6 years), 46.1% being for less than 12 months, and 27.5% being for 5 years or longer.

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 **CARE PROVIDED BY MEDICAL AND/OR SURGICAL SPECIALISTS.**

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

INSTRUCTIONS

In collaboration with the patient, 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.

Medical and/or surgical specialist care

Please use the tick boxes to advise whether in the past 12 months this patient has consulted a medical and/or surgical specialist.

If the patient **has not** consulted a medical/surgical specialist in the past 12 months please **end the questions here.**

Types of medical and/or surgical specialists consulted

Please specify the **types of medical or surgical specialists consulted** by the patient in the past 12 months.

This question refers to the **profession of the specialist** (e.g. endocrinologist). Please **do not** specify the specialist's name.

The rest of the questions relate to each type of specialist consulted. **Please record information on one line for each specialist.**

Problems managed by each type of medical/surgical specialist

Please **specify the problem or problems managed by each type of specialist.**

Note: you may include multiple problems for each specialist type and/or include the same problem for multiple specialist types if necessary.

Duration of specialist management

Please specify (in years and/or months) **how long** the patient has been **actively managed by** this type of **medical or surgical specialist for the nominated problem(s).**

If the patient has had the same problem managed by a specialist on multiple separate occasions (e.g. obstetrician care for each pregnancy) please specify the duration of the current/most recent period of care.

Current specialist management

Please circle 'yes' or 'no' to indicate whether this patient is **still under the medical/ surgical specialist's care.**

Reason(s) for specialist management

Please use the tick boxes to indicate the **reason(s)** the patient has **received each type of specialist care**:

- **Test/procedure only** - where the purpose of the referral was to have a specialised test or procedure performed but the care of the patient was not transferred to the specialist (e.g. for endoscopy).
- **Diagnostic assistance** e.g. opinion on the diagnosis of a patient
- **Management advice** e.g. changes of treatment regime.
- **Continuing management** of the patient's problem/s.

Please tick all that apply.

Has this patient consulted a medical/surgical specialist in the past 12 months?	If 'yes', please answer the following questions about each type of specialist consulted.	Which types of specialist/s was/were consulted?	For what problem/s?		Patient still under specialist care?	For how long has the patient seen this type of specialist?		Reason/s for specialist management of this problem/s: *(Tick all that apply)*			
								Test/procedure only	Diagnostic assistance	Management advice	Continuing management
☐ Yes ☐ No → **End** questions								☐	☐	☐	☑
	For example:										
	1. *Endocrinologist*	→	*Type 2 diabetes*	→	(Yes) No →	5 yrs ___ mths	→	☐	☐	☐	☑
	1. _____	→	_____	→	Yes / No →	___ yrs ___ mths	→	☐	☐	☐	☐
	2. _____	→	_____	→	Yes / No →	___ yrs ___ mths	→	☐	☐	☐	☐
	3. _____	→	_____	→	Yes / No →	___ yrs ___ mths	→	☐	☐	☐	☐
	4. _____	→	_____	→	Yes / No →	___ yrs ___ mths	→	☐	☐	☐	☐

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SAND abstract number 205: Private prescriptions and generic substitution of medications in general practice

Organisation collaborating for this study: Family Medicine Research Centre

Issues: The proportion and types of medications that were written as private prescriptions; the proportion of all prescriptions written for which generic substitution was not allowed; the types of medications for which generic substitution was not allowed.

Sample: 2,978 patients from 102 GPs; data collection period: 18/09/2012 – 22/10/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: 'Private prescriptions' were defined as medications intended to be dispensed outside the Pharmaceutical Benefits Scheme (PBS) or Repatriation Pharmaceutical Benefits Scheme (RPBS), excluding those that fall below the PBS/RPBS subsidy threshold.

Summary of results

The age and sex distributions of the 2,966 patients who responded to the questions about private prescriptions and the 2,938 patients who responded about generic substitution did not differ from all patients at 2011–12 BEACH encounters.

Private prescriptions: In total there were 243 medications identified as private prescriptions (9.8% of all medications prescribed), written at a rate of 8.2 per 100 encounters (95% CI: 6.0–10.3). Of these, corticosteroids accounted for 10.3%, medications for erectile dysfunction for 4.9%, and fixed combination progestogens and oestrogens for 4.5%.

No prescriptions were written at 47.6% (n = 1,413) of the 2,966 encounters. At 45.0% of encounters (n = 1,336) no private prescriptions were provided. At least one private prescription was provided at 7.3% (n = 217) of encounters: all prescriptions being private at 4.3% (n = 128) of encounters; and some being private at 3.0% (n = 89).

Generic substitution: There were 2,461 medications prescribed at the 1,525 encounters where at least one medication was prescribed, and where generic substitution status (allowed versus not allowed) was indicated. Of these, 6.7% (n = 166 medications) were identified as 'generic substitution not allowed'. Generic substitution was allowed for prescribed medications at a rate of 77.1 (95% CI: 69.9–84.2) per 100 encounters, and not allowed at a rate of 5.6 per 100 encounters (95% CI: 2.1–9.0).

Vitamin K antagonists, plain angiotensin II antagonists and macrolides each accounted for 5.4%, and angiotensin-converting enzyme (ACE) inhibitors 4.8% of medications for which generic substitution was not allowed.

No prescriptions were written at 48.1% (n = 1,413) of the 2,938 encounters; generic substitution was allowed for all prescribed medications at 48.2% (n = 1,416) of encounters; generic substitution was not allowed for any of the prescribed medications at 3.5% (n = 103) of encounters; and was allowed for some prescriptions at 0.2% (n = 6) of encounters.

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 **PRIVATE PRESCRIPTIONS AND GENERIC MEDICATION SUBSTITUTION.**

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.

PART 1: Private prescription

Please indicate whether any of the **medications** prescribed at **today's encounter** were written as a **private prescription.**

The purpose of this question is to determine the extent to which prescriptions for medications are intentionally written as private prescriptions by GPs in Australia. **Private prescription** is defined in Box 1.

If **all** of today's medications were written as private prescriptions please tick the box labelled 'yes - all' and **go to PART 2** of the form.

If only **some** of today's medications were written as a **private prescription(s)**, please use the tick boxes to indicate **which medication(s).** The tick boxes refer to the position the medication is recorded on the form. In the enclosed example, yasmin is recorded in position: Problem 1, medication 1.

If **none** of today's medications were private please tick the box labelled 'no – none' and go to PART 2 of the form.

Box 1: Private prescription definition

Medications that are prescribed by the GP as a private prescription (regardless of the reason for a private prescription). This refers to medications prescribed at today's encounter that the GP intends will be dispensed outside the Pharmaceutical Benefits Scheme (PBS) or the Repatriation Pharmaceutical Benefits Scheme (RPBS).

For example, a medication may be written as a private prescription if it is not covered by the PBS/RPBS or the criteria for PBS/RPBS subsidy are not met by the patient.

Note this definition does not include medications that fall below the PBS/RPBS subsidy threshold when the medication is written as PBS/RPBS prescription.

PART 2: Generic medication substitution

The purpose of this question is to determine the proportion of prescriptions where GPs indicate that no generic substitution is allowed.

Please use the tick boxes to advise whether you marked **'no generic substitution allowed'** for any of the **prescriptions provided today.**

If you ticked 'no generic substitution allowed' for **some** of today's prescriptions, please indicate **which medication(s)**, using the tick boxes listed under the 'Problem' headings, which refer to the position in the same manner as the question in Part 1.

BEACH (**B**ettering the **E**valuation **A**nd **C**are of **H**ealth) – Morbidity and Treat

Encounter Number	Date of encounter	Date of Birth	Sex	F
001	30 / 04 / 12	13 / 03 / 1985	M ☐ F ☑	

Patient Reasons for Encounter
1. *Contraception prescription*
2.
3.

Diagnosis/ Problem ①: *Oral contraceptive pill*

Drug Name AND Form for this problem
1. *Yasmin tablets*
2.
3.
4.

Problem Status: New ☑ Old ☐

Strength of product / Dose / Frequency / No. of Rpts
1 tab 1 daily / 5

Procedures, other treatments, counselling this consult for this problem
1. Prac Nurse? ☐ 2.

PART 1: Private prescription

Were any of the medications prescribed at today's encounter written as a private prescription**?

(***See definition on green instruction sheet*)

☐ Yes - some of today's medications
☐ Yes - all ──┐
☐ No - none ──┴─► **Go to PART 2**

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PART 2: Generic medication substitution

Did you tick 'No generic substitution allowed' for any of the prescriptions written today?

☐ Yes - ticked for some medications
☐ Yes - ticked all ──┐
☐ No - ticked none ──┴─► **End questions**

If 'yes - some', which medication(s) recorded on the form above were written as a private prescription(s)?
(Tick the box(es) to indicate medication position)

Problem 1:	Problem 2:	Problem 3:	Problem 4:
☐ Med 1	☐ Med 1	☐ Med 1	☐ Med 1
☐ Med 2	☐ Med 2	☐ Med 2	☐ Med 2
☐ Med 3	☐ Med 3	☐ Med 3	☐ Med 3
☐ Med 4	☐ Med 4	☐ Med 4	☐ Med 4

If 'yes - ticked some', for which of the above medication(s) was this ticked?
(Tick the box(es) to indicate medication position)

Problem 1:	Problem 2:	Problem 3:	Problem 4:
☐ Med 1	☐ Med 1	☐ Med 1	☐ Med 1
☐ Med 2	☐ Med 2	☐ Med 2	☐ Med 2
☐ Med 3	☐ Med 3	☐ Med 3	☐ Med 3
☐ Med 4	☐ Med 4	☐ Med 4	☐ Med 4

SAND abstract number 206: Asthma, chronic obstructive pulmonary disease and respiratory symptoms in general practice patients

Organisation collaborating for this study: National Prescribing Service Ltd

Issues: The prevalence of respiratory conditions, including asthma, chronic obstructive pulmonary disease (COPD), post viral cough, other respiratory symptoms; whether respiratory conditions were managed at the encounter; current medications for respiratory conditions; rates of lung function testing in previous 2 years; asthma control; severity of COPD; action plan status.

Sample: 2,589 patients from 91 GPs; data collection period: 23/10/2012 – 26/11/2012.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: A card classifying asthma control based on the Global Initiative for Asthma (GINA) Global strategy for asthma management and prevention, and defining COPD severity based on the COPD-X 2011 guidelines, was supplied to participating GPs.

Summary of results

The age and sex distributions of the 2,589 respondents did not differ from those of all patients at 2011–12 BEACH encounters.

Of 2,589 patients, 498 (19.2%, 95% CI: 17.1–21.4) reported at least one of the listed respiratory conditions at the time of the visit. Asthma was reported for 11.1% (95% CI: 9.5–12.8) of patients (*n* = 288), 5.2% (95% CI: 4.0–6.4) had COPD (*n* = 135), 0.8% had post viral cough (*n* = 22), 3.8% had other respiratory symptoms (*n* = 99). There were no significant differences in sex-specific rates of these conditions. The highest age-specific rates were: 15.8% (5–14 years) for asthma; 14.1% (75 years or more) for COPD; 2.7% (5–14 years) for post viral cough; 7.9% (<5 years) for other respiratory symptoms.

Of 498 patients with at least one respiratory condition, 44.4% had the condition managed at the encounter, most frequently for 'diagnosis' and to 'manage exacerbation'. One-quarter (25.7%) of those with asthma and 23.7% of those with COPD had been managed for that condition at the encounter.

For 472 of the 498 patients with at least one respiratory condition, medication data were recorded. At least one respiratory medication was recorded for 370 (78.4%) patients, with a total of 612 medications listed. Classified at the generic level, 37.3% of the 612 medications were salbutamol, 20.3% were fluticasone/salmeterol and 13.1% were tiotropium. Grouped by respiratory medication groups, 40.2% were short-acting beta agonists (SABA), 32.2% were fixed dose combination long-acting beta agonists/inhaled corticosteroid (LABA/ICS) and 14.7% were anticholinergics.

Of 410 respondents with at least one respiratory condition, lung function was tested (in the previous 2 years) for one-third (37.3%). Spirometry was used in 28.5%, peak flow in 11.0% (2.2% had both). Of 246 patients with asthma, 17.1% had spirometry, and of 127 patients with COPD, 55.1% had spirometry in the previous 2 years.

Using the GINA tool, asthma was classified as well controlled for 76.4% of 275 patients with asthma, and uncontrolled for 5.8%. An action plan had been developed for 26.3% of 262 patients with asthma. COPD was mild in 42.9% of 126 patients, and severe in 14.3%. More than one-third (36.3%) of 124 patients with COPD had an action plan.

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

Classification of asthma control

Ask the patient about their asthma:

Over the past 4 weeks, have you...

Experienced daytime asthma symptoms more than twice/week?	Yes ☐ (score=1)	No ☐ (score=0)
Needed your asthma reliever more than twice/week?	Yes ☐ (score=1)	No ☐ (score=0)
Had any limitation of activity due to asthma?	Yes ☐ (score=1)	No ☐ (score=0)
Had any night waking due to asthma?	Yes ☐ (score=1)	No ☐ (score=0)

Total scores to determine level of control:

$$0 \quad = \quad \text{Well controlled}$$
$$1\text{-}2 \quad = \quad \text{Partly controlled}$$
$$3\text{-}4 \quad = \quad \text{Uncontrolled}$$

Source: Classification of asthma control adapted from Global Initiative for Asthma. Global strategy for asthma management and prevention. Bethesda (MD): GINA. 2011.

Severity of Chronic Obstructive Pulmonary Disease (COPD) reference card

Severity	Spirometry	Functional assessment (activities of daily living)
Mild	FEV_1 60–80% predicted	Few symptoms; no effect on daily activities; breathless on moderate exertion.
Moderate	FEV_1 40–59% predicted	Increasing dyspnoea; breathless on the flat; increasing limitation of daily activities.
Severe	FEV_1 <40% predicted	Dyspnoea on minimal exertion; daily activities severely curtailed.

Note: FEV_1—postbronchodilator forced expiratory volume in one second.

Source: McKenzie DK, Abramson M, Crockett AJ, et al. The COPD-X Plan: Australian and New Zealand Guidelines for the management of Chronic Obstructive Pulmonary Disease 2011. Lutwyche, Queensland: Australian Lung Foundation, 2011.

PLEASE READ CAREFULLY

The shaded section of the following forms asks questions about **MANAGEMENT OF ASTHMA, COPD AND RESPIRATORY SYMPTOMS.**

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.

Respiratory conditions

Please use the tick boxes to indicate whether this patient has **any of the listed respiratory conditions.** Please tick all that apply.

If the patient currently has an 'other' respiratory symptom or condition please specify the symptom/condition in the space provided and indicate its duration.

If the patient does **not have any of the listed conditions** please **end questions here** for this patient.

Note: COPD = Chronic Obstructive Pulmonary Disease; respir sympt = respiratory symptoms.

Management of respiratory conditions

If any of the listed respiratory conditions were managed at **today's encounter**, please use the tick boxes to indicate the **reason/s for management.**

Use of ICS and ICS/LABA medication

For patients currently taking an **inhaled corticosteroid (ICS)** or an **ICS/long-acting beta agonist (LABA) combination product,** please use the tick boxes to indicate the **intended duration of ICS or ICS/LABA treatment.**

Current respiratory medications

Please write the **name, form and regimen (dose and frequency)** of the medication(s) **currently used to treat the listed respiratory conditions.**

Please use the tick boxes to indicate whether the **medication is prescribed for daily AND/OR prn use.** For medications **prescribed as daily and prn** please specify the dose and frequency of the daily regimen and tick both boxes.

If the patient is **not taking any medication** for the treatment of these conditions please tick the box labelled '**no current respiratory med**'.

Asthma control

For patients with asthma

Referring to the **asthma control classification** on the **laminated card** in your research pack, please calculate the **level of control of the patient's asthma.**

Lung function

Please use tick boxes to indicate whether the patient has had their **lung function measured** in the **past 2 years.** Tick all that apply.

Written asthma/COPD action plan

For patients with asthma and/or COPD

Please indicate whether the patient has a **current written action plan,** i.e. written instructions of what to do if their asthma/COPD gets worse or out of control.

Severity of COPD

For patients with COPD

Referring to the **COPD severity scale** on the **laminated card** in your research pack, please indicate the **severity of the patient's COPD.**

Does the patient have: *(Tick all that apply)*
- ☐ Asthma
- ☐ COPD
- ☐ Post viral cough
- ☐ Other respir. sympt: _____

Specify:

Duration: ☐ < 2 mth ☐ ≥ 2 mth

- ☐ None→ **End Qs**

If any of these conditions were managed today, was this visit for: *(Tick all that apply)*
- ☐ Diagnosis
- ☐ Manage exacerbation
- ☐ Scheduled review
- ☐ Repeat script
- ☐ Other   BL147B

Current respiratory medication/s:

Name & Form	Strength	Dose	Freq	Prescribed daily?	prn?
_____				☐	☐
_____				☐	☐
_____				☐	☐
_____				☐	☐

☐ No current respiratory med

For patients taking an ICS or ICS/LABA, the intended duration of treatment is:
- ☐ < 1 month
- ☐ 1 -3 months
- ☐ 4 -6 months
- ☐ > 6 months

Has the patient had their lung function measured in the past 2 years?
- ☐ Yes - spirometry
- ☐ Yes - peak flow
- ☐ No
- ☐ Don't know

How controlled is the patient's asthma?
(See card)
- ☐ Well controlled
- ☐ Partly controlled
- ☐ Uncontrolled

How severe is the patient's COPD?
(See card)
- ☐ Mild
- ☐ Moderate
- ☐ Severe
- ☐ Don't know

Does the patient have a current written asthma or COPD action plan?
- ☐ Yes
- ☐ No
- ☐ Don't know

SAND abstract number 207: Management of allergic asthma in general practice patients

Organisation collaborating for this study: Novartis Pharmaceuticals Australia Pty Ltd.

Issues: The prevalence of diagnosed asthma; the prevalence of asthma triggered by allergens; tests confirming diagnosis; duration and severity of asthma; medication and duration of medication use; GP perception of asthma control; other managements for allergic asthma during the previous 12 months (listed, tick-box, multiple responses allowed).

Sample: 2,522 patients from 85 GPs; data collection period: 27/11/2012 – 14/01/2013.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>

Summary of results

A significantly larger proportion of the 2,522 respondents in this SAND sample were female (61.5%, 95% CI 58.3–64.7) than the proportion at all BEACH encounters in 2011–12 (56.5%, 95% CI: 55.7–57.3), but the age distribution did not differ.

Asthma had been diagnosed in 353 patients (14.0%, 95% CI: 12.0–16.0). There was no difference in prevalence among males (12.7%) and females (14.9%), and the age-specific prevalence ranged from 9.9% of patients aged 65–74 years to 17.8% of 15–24 years olds. Of all patients, 6.1% ($n = 153$) had allergic asthma, with no significant difference in sex-specific or age-specific rates.

The majority (83.7%) of patients with allergic asthma had been diagnosed more than 5 years earlier. At least one test had been used to confirm diagnosis for 61.6% of the 153 patients, most commonly spirometry (45.0%); peak flow (23.8%); skin prick (14.6%); total immunoglobulin E (IgE) (5.3%) and allergen specific IgE test (5.3%). Severity was reported for 150 patients: 58.7% had mild allergic asthma, 35.3% moderate, and 6.0% severe. Asthma medication was taken by 73.9% of patients with mild allergic asthma, by all those with moderate allergic asthma, and by 88.9% of patients with severe allergic asthma.

No asthma medication was taken by 15.7% of patients with allergic asthma ($n = 24$). The remaining 129 patients reported taking a total of 201 medications for allergic asthma management. Almost half (48.3%) of the reported medications were short-acting beta agonists (SABA) and 36.8% were long-acting beta agonists/inhaled corticosteroid (LABA/ICS) combination medications. Salbutamol accounted for 47.3%, and fluticasone/salmeterol combination accounted for 22.9% of medications taken for allergic asthma. Duration of use was reported for 150 of the 201 medications. Duration of use at the current dose was most commonly 7–12 months (for 24.7% of medications), and 0–6 months (for 24.0%), including 4% that were initiated at the recorded encounter.

Of the 153 patients with allergic asthma, the GP opinion of asthma control was reported for 148. In 85.1% of patients, the GP considered the asthma to be well-controlled ($n = 126$); partially controlled for 14.2% ($n = 21$), and uncontrolled for one patient (0.7%). Of 124 patients taking medication, 82.3% ($n = 102$) were well controlled; 16.9% were partially controlled, and one patient was uncontrolled. All patients with allergic asthma who were not on medication ($n = 24$) were regarded as well controlled.

Other managements for allergic asthma used during the past year were also reported: 54.7% (of 150 patients) visited a GP; 25.0% (of 148) had oral corticosteroid initiated; 8.8% (of 148) attended an accident and emergency department; 5.4% (of 147) saw a specialist; 5.4% (of 148) had dose of oral corticosteroid increased; and 4.7% (of 148) were admitted to hospital.

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.**
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.

Diagnosed asthma

Please use the tick boxes to indicate whether the patient has been **diagnosed with asthma**, either today or at a previous consultation, by you or by another doctor.

If the patient **does not** have diagnosed asthma please **end the questions** here for this patient.

Time since diagnosis

Please use the tick boxes to advise the **approximate length of time** since the patient's asthma was diagnosed.

Allergic asthma

Please advise whether the patient's asthma is **triggered by allergens** (i.e. allergic asthma)?

Tests

Please indicate which of the **following test(s)** were used, by you or by another clinician, to **confirm** the asthma diagnosis. Tick all that apply.

If none were performed, please tick the box labelled '**none of the above**'.

Asthma severity

Please advise which of the **severity levels** best describes the patient's **asthma**, based on **your** clinical opinion.

Current asthma medications

Please write the **name, form** and regimen **(dose and frequency)** of any medication(s) **currently taken to manage this patient's asthma.**

Please indicate **how long** the patient has taken the medication at the current dose by **writing a number** in the **space beside** each medication.

If the patient is **not taking any medication** for the treatment of asthma please tick the box labelled '**no current asthma medication**'.

Asthma control

Please advise the **level of asthma control** for this patient, based on **your** clinical opinion.

Other asthma management

Please write **the number of times** (over the past 12 months) management of the patient's asthma has required any of the listed interventions

If the patient has **not required** the listed management actions please **write '0' or '_'** in the space provided next to each management action.

Does this patient have diagnosed asthma?	If 'yes' is the asthma triggered by allergens?	How long ago was asthma diagnosed?	What tests were used (by you or another clinician) to confirm diagnosis?	How severe is the patient's asthma?	In your clinical opinion, how controlled is the patient's asthma?
☐ Yes ☐ No ↳ End Qs	☐ Yes ☐ No ☐ Don't know	☐ <12 mths ☐ 1-3 yrs ☐ >3-5 yrs ☐ >5 yrs	☐ Spirometry ☐ Peak flow ☐ Skin prick test ☐ Total IgE test ☐ Allergen-specific IgE ☐ None of the above	☐ mild ☐ moderate ☐ severe ☐ refractory	☐ well controlled ☐ partially controlled ☐ uncontrolled

Current asthma medication/s taken:

Name & Form	Strength	Dose	Freq	Duration of use at this dose
				——— mths
				——— mths
				——— mths

☐ No current asthma medication

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In the past 12 mths, how many times has the asthma required: *(If none write '_' or '0')*

Initiation of oral corticosteroid ....
Increase dose of oral corticosteroid ...
Visit(s) to a GP ....
Visit(s) to a specialist ....
Visit(s) to A & E dept. ....
Admission(s) to hospital ....

SAND abstract number 208: Lifestyle risk factors

Organisations collaborating for this study: FMRC and the National Heart Foundation

Issues: The proportion of patients attending general practice who have: one or more of the listed chronic disease(s) and/or listed lifestyle risk factor(s). Whether patients with risk factors had these managed at this visit and/or in the previous 12 months. Other services to which patients had been advised/referred for the management of their risk factors.

Sample: 2,838 patients from 98 GPs; data collection period: 15/01/2013 – 18/02/2013.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>

Methods for this substudy: Risk factors were drawn from SNAP guidelines.[a]

Summary of results

Among this sample, there was a smaller proportion of males (38.1%, 95% CI: 34.6–41.7 compared with 43.5%, 95% CI: 42.7–44.3) and a larger proportion of patients aged 65–74 years than in the total BEACH 2011–12 sample (16.9%, 95% CI: 14.6–19.1 compared with 13.4%, 95% CI: 12.8–13.9).

Of 2,727 respondents to the chronic disease questions, 46.0% had at least one of the listed conditions: 19.9% had one, 14.4% two, and 11.7% had three. Most prevalent was hypertension (33.6%), then: dyslipidaemia (26.9%); diabetes (11.6%); other cardiovascular disease (10.6%); and chronic kidney disease (4.6%).

Of 2,653 respondents to the lifestyle risk factor questions, 39.2% (*n* = 1,040) had at least one risk factor: 21.1% had one, 13.5% two, and 4.6% had three or more. Most prevalent was overweight or obesity (23.8%), then: too little physical activity (18.9%); smoking (8.9%); poor nutrition (7.0%); and excess alcohol consumption (4.4%). The most prevalent combinations were overweight/obesity and low physical activity (21.3%); poor nutrition and low physical activity (5.0%).

Of 2,542 respondents to the risk factor and chronic conditions questions, 25.6% (*n* = 652) had at least one chronic condition and at least one lifestyle risk factor. Of respondents with at least one lifestyle risk factor (*n* = 986), 49.9% had hypertension; 40.6% dyslipidaemia, 20.8% diabetes; 16.4% other cardiovascular disease; and 7.1% had chronic kidney disease.

Of respondents with at least one chronic condition (*n* = 1,115), 40.1% were overweight/obese; 33.9% had too little physical activity; 10.7% had poor nutrition; 7.7% were smokers; and 5.8% had excess alcohol consumption.

Of the 1,026 patients with risk factors, 37.9% had these risk factors managed at this encounter (i.e. 'today'), a further 44.2% had them managed in the previous 12 months, GPs believed managing risk factors was not appropriate for 6.7% of patients, leaving 11.2% of patients who did not have their risk factors managed over the previous 12 months.

Of the 354 patients who had been advised to use/referred to a service (today or in the previous 12 months), the type of service was reported for 319, of whom 69.3% were advised/referred to a health professional; 24.8% to a commercial health activity; 18.5% to a telephone/online advice service; and 15.7% were advised/referred to an other service or organisation.

(a) Royal Australian College of General Practitioners. Smoking, Nutrition, Alcohol and Physical activity (SNAP): a population health guide to behavioural risk factors in general practice. Melbourne: RACGP, 2004. Viewed 30 July 2013, <www.racgp.org.au/download/documents/Guidelines/snapguide2004.pdf>.

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

INSTRUCTIONS

For **EACH** of the **next 30 PATIENTS (in the order in which the patients are seen)** please answer the following questions, based on your own knowledge, the patient's records and the patient's responses. Please **DO NOT select patients** to suit the topic being investigated.

Chronic conditions

Please use the tick boxes to indicate whether the patient has been **diagnosed with any of the listed chronic conditions.** Tick all that apply.

Lifestyle risk factors

Please advise whether the patient has any of the listed **lifestyle risk factors**, defined for healthy patients as per the RACGP SNAP guide*. Tick all that apply.

- **Smoking** - any tobacco smoking.
- Poor **Nutrition** - less than 2 portions of fruit and 5 portions of vegetables daily.
- Excess **Alcohol** consumption - more than 2 standard drinks of alcohol per day.
- Too little **Physical activity** - less than 30 minutes of moderate intensity activity on most days of the week.
- **Overweight / obesity** - body mass index of ≥25 and/or waist circumference of >94cm in men and >80cm in women.

Note for patients with chronic disease, lower cut offs may apply, GPs should use clinical judgment to define risk for these patients.

If the patient has **none of these risk factors** please tick the box labelled 'none of the above' and **end questions here for this patient.**

Management of lifestyle risk factors

If the patient has any of the listed lifestyle risk factors, please advise whether you have **generally discussed** with the patient the need to modify the risk behaviour, **advised** the use of a **type of service** (e.g. a gym, Quitline etc), and/or **referred the patient to a specific service** by either writing a referral, providing contact details for the service, or arranging an appointment for the patient.

Please indicate whether this occurred **at today's visit, in the past 12 months, or both.**

If risk factor managment was **not appropriate today** (e.g. the patient was too unwell **today**) but may be appropriate at a subsequent visit, please tick the box labelled **'had no discussion - not appropriate today'.**

If risk factor management is **not appropriate at all** for the patient (e.g. very elderly, too unwell generally etc), please tick box labelled 'had no discussion - not appropriate for this patient'.

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.

Advised or referred services

What **types of services** has the patient been **referred to, or advised to access, either today or in the past 12 months** for the management of their lifestyle risk factors. Types of services include:

Telephone or online advice such as Quitline, 'Swap it', 'Get Healthy' etc.

Commercially-run health activity e.g. gym, personal trainer, Jenny Craig, Weight Watchers, etc.

Health professional: please specify the type of profession (e.g. dietitian, exercise physiologist, etc) in the space provided.

Other service or organisation includes health organisations (such as community health centres) and not-for-profit organisations (such as 'Heart Foundation Walking').

Please specify the **type of service or organisation** in the space provided.

Does the patient have:	... and/or any of these risk factors?	Approx. how many times has this patient seen any GP in the past 12 months (including today)?	To manage risk factors, have you / any other GP:	At this visit?	In past 12 mths?	If a service was advised or referred to today or in the past 12 months, what type/s of service/s were they?
(tick all that apply)	*(tick all that apply)*					*(tick all that apply)*
☐ Dyslipidaemia	☐ Tobacco smoking *(* see green sheet)*		Generally discussed modification	☐	☐	☐ Telephone/online advice (e.g. quitline)
☐ Diabetes	☐ Poor nutrition*		Advised using a type of service	☐	☐	☐ Commercially-run health activity (e.g. gym,
☐ Chronic kidney disease	☐ Excess alcohol intake*		Referred the patient to a specific service	☐	☐	Weight watchers)
☐ Hypertension	☐ Too little physical activity*		Had no discussion - not appropriate today			☐ Health professional: _____ *(please specify)*
☐ Other cardiovascular disease	☐ Overweight/obesity*		Had no discussion - not appropriate for			☐ Other service or organisation: _____ *(please specify)*
☐ None of the above	☐ None of the above	☐ Don't know	this patient	☐		BL149B
	End Questions ↵					

SAND abstract number 209: Patient use of the internet for health information

Organisation collaborating for this study: Family Medicine Research Centre

Issues: The proportion of attending general practice patients who had used the internet in the previous month; frequency of internet use; device(s) used to access the internet (multiple response allowed); whether health information was obtained; types of health information obtained (multiple response allowed); and whether the information sought related to problems discussed or managed by the GP at the visit.

Sample: 2,944 patients from 100 GPs; data collection period: 15/01/2013 – 18/02/2013.

Method: Detailed in the paper entitled *SAND Method 2012–13* on this website: <sydney.edu.au/medicine/fmrc/publications/sand-abstracts>.

Methods for this substudy: Socio-economic Indexes for Areas (SEIFA 2006) Index of Relative Socio-economic Advantage and Disadvantage <www.abs.gov.au/ausstats/abs@.nsf/mf/2039.0/> was used to measure relative socio-economic advantage and disadvantage based on the patient's postcode of residence.

Summary of results

The age and sex distributions of this sample differed from all patients at BEACH encounters in 2011–12 in that there was a smaller proportion of males, and of patients aged less than 15 years in this sample.

Of the 2,944 respondents, 1,866 (63.4%, 95% CI: 59.8–67.0) had accessed the internet in the previous month, and this proportion did not differ among males and females. Of 1,855 respondents who accessed the internet, 69.9% used it daily. Most patients (87.1%) used a laptop/desktop computer, 42.9% used a smart phone and 22.7% used a tablet.

Overall, 28.1% (*n* = 827) of patients had used the internet to obtain health information in the previous month: 57.2% sought information related to a specific illness or disease, 31.7% used it for diet/fitness, 28.7% for undiagnosed symptoms, and 25.3% for medication information. Around 1-in-6 (17.1%) patients had obtained health information related to a problem discussed or managed by the GP at the current visit.

Patient age was significantly associated with rates of overall and health related internet use. Those most likely to have used the internet were aged 15–24 years (91.7%) and 25–44 years (89.0%). Those aged 25–44 years were most likely to have used it to obtain health information (48.7%), and also most likely to have used it for information related to problem(s) discussed or managed by the GP at the current visit (30.2%).

Patients aged 75 years and older were least likely to use the internet overall (23.5%) and for health information (5.4%, *n* = 30). Of the 30 respondents who sought health information on the internet, the information related to a problem managed by the GP for 21 patients.

Patients from the most socio-economically advantaged area (highest SEIFA score) (32.2%, 95% CI: 26.9–37.5) were more likely than those from the most disadvantaged area (lowest SEIFA score) (16.3%, 95% CI: 9.7–22.9) to use the internet for health information and to obtain information that was related to problem(s) discussed or managed by the GP (19.6%, 95% CI: 15.2–24.0 compared with 8.4%, 95% CI: 2.7–14.1).

There were no statistically significant relationships between patient sex, location or English-speaking status and internet use.

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 USE OF THE INTERNET FOR HEALTH INFORMATION.**
You may tear out this page as a guide to completing the following section of forms.

INSTRUCTIONS

Please **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.

ASK THE PATIENT …

Internet use

Please ask the patient whether they have **used the internet** during the past month.

If **'yes'**, please **continue** to the next question.

If **'no'**, please **end the questions** here for this patient.

Technology used to access the internet

Please use the tick boxes to advise what **devices** the patient used to **access the internet.**

Technological devices include **smart phones** (e.g. iPhone, Android etc), **electronic tablets** (e.g. iPad, Galaxy etc), **and desktop or laptop computers.**

Tick all that apply.

Specific health or medical information

If **'yes'** to internet use for health or medical information, please advise what **specific health information** the patient was seeking.

'Other medical treatments' may include physiotherapy, acupuncture, dental, optometry etc.

It the patient sought information about a health issue not listed in the options provided, please **tick the box labelled 'other' and write the details in the space provided.**

'Other' may include information about alternate/ complementary medications or therapies, online help services (e.g. Quitline, AA etc), location of help services etc.

Tick all that apply.

Average internet use

If 'yes' to internet use in the past month, please advise **how often** (on average) the patient accessed the internet.

Internet use for health or medical information

Please advise whether the patient accessed the internet for health or medical information.

If **'yes'**, please **continue** to the next question.

If **'no'**, please **end the questions** here for this patient.

Relationship to this visit

Please advise whether any of the information accessed related in any way to a **problem or issue managed or discussed at today's visit.**

Please ask the patient -					
Have you used the internet during the past month?	**If 'yes', how often did you access the internet (on average)?**	**Did you access the internet using:** *(tick all that apply)*	**In the past month did you use the internet to obtain health or medical information?**	**If 'yes' was the information about:** *(tick all that apply)*	**Did any of the information relate to any problem you have discussed with your GP today?**
☐ Yes	☐ daily	☐ a smart phone	☐ Yes	☐ diet and / or fitness	☐ Yes
☐ No → End Questions	☐ several times per week	☐ an electronic tablet	☐ No → End Questions	☐ a particular illness or disease	☐ No
	☐ once per week	☐ a laptop / desktop computer		☐ undiagnosed symptoms	
	☐ less than once per week			☐ medications	
				☐ immunisation / vaccinations	
				☐ other medical treatments	
				☐ other _____ *(please specify)*	

BL149C

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SAND abstract number 210: Management of hypertension in general practice patients

Organisation collaborating for this study: National Prescribing Service Ltd

Issues: The prevalence of diagnosed hypertension among patients attending general practice. For patients with hypertension: their demographics; medication use for hypertension (including number and types taken); use of ambulatory and/or home blood pressure monitoring in previous 12 months; current blood pressure; assessment of blood pressure control; management plan for patients with uncontrolled blood pressure; investigation of secondary causes; assessment of absolute cardiovascular risk.

Sample: 2,820 patients from 95 GPs; data collection period: 19/02/2013 – 25/03/2013.

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 age and sex distributions of the patients responding to this substudy did not differ from all patients at 2011–12 BEACH encounters. Prevalence of diagnosed hypertension was 27.7% (95% CI: 24.7–30.7) (n = 780) among patients in the waiting room, 17.8% (95% CI: 15.5–20.0) of all patients attending general practice, and 14.8% (95% CI: 12.8–16.7) of the population. Prevalence did not differ among male and female patients. Sample prevalence increased significantly with age, to a peak of 58.0% (95% CI: 51.2–64.9) of those aged 75 years and over.

Information about medications taken for hypertension was provided for 757 patients, 95.5% (n = 723) of whom were currently taking medication. There were 1,093 medications recorded, some of which were combination products. Plain angiotensin-converting enzyme (ACE) inhibitors accounted for 19.0% of medications, followed by plain angiotensin II antagonists (17.8%). There were 433 patients (59.9%) taking one medication, 220 (30.4%) taking two medications, 60 (8.3%) taking three medications and 10 (1.4%) taking four medications for hypertension.

Home blood pressure monitoring and/or ambulatory blood pressure monitoring had been used by 26.2% of patients (n = 196) in the previous 12 months. Patients' current blood pressure measured at the encounter (in mmHg) showed that the mean systolic blood pressure was 135 and the median was 133 in 760 patients, and the mean diastolic blood pressure was 76 and the median 78 in 759 patients.

In the clinical opinion of the GP, blood pressure was not well controlled in 18.8% of 745 patients. A comparison was undertaken between the current blood pressure (measured at the encounter), the GPs' clinical opinion of blood pressure control and the National Heart Foundation diagnostic categories. Of 139 patients whose blood pressure was not well controlled, 72 (51.8%) had isolated systolic hypertension, 23 (16.6%) had mild hypertension and 20 (14.4%) had moderate hypertension. Of 598 patients whose blood pressure was regarded as well controlled, 137 (22.9%) had isolated systolic hypertension.

Of 137 patients with uncontrolled blood pressure, a change in management plan was proposed for 81.8% of patients. Proposed changes included dose titration of existing medication (17.5% of 137 respondents) and adding a medication (16.1%).

Of 754 patients with hypertension, 15.6% had been investigated in the previous 12 months to identify any secondary cause of hypertension, and 52.8% had been assessed for absolute cardiovascular disease risk in the past.

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 **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.

Cardiovascular disease risk assessment

Please indicate whether the patient's **absolute cardiovascular disease risk has ever been assessed** (see definition on the laminated card enclosed in the research pack).

Please note we are asking whether this assessment has occurred. We **are not** asking you to assess the patient's absolute risk.

Secondary causes of hypertension

Please indicate whether tests or investigations have been ordered by you/another GP for this patient to investigate the presence of **secondary causes of hypertension** in the **past 12 months.** Examples of causes of secondary hypertension include phaeochromocytoma, primary hyperaldosteronism, renal artery disease.

If **'yes'**, please **specify the tests/investigations** ordered for this purpose.

Blood pressure level, control and future management plan

Please **measure the patient's blood pressure** and write the result in the space provided.

Please advise whether, in your clinical opinion, the patient's **blood pressure is well controlled.**

For patients who have **poorly controlled blood pressure** please indicate your **next step** in the **medication management plan** for this patient's **blood pressure.** If your next step is not listed please write it in the space provided. Tick all that apply.

Blood pressure monitoring

Please indicate whether **ambulatory or home blood pressure monitoring** have been used by this patient **in the past 12 months.** Tick all that apply.

Hypertension

Please indicate whether this patient has been **diagnosed with hypertension.**

If '**no**' please **end questions here** for this patient.

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 hypertension medication**'.

| Has this patient been diagnosed with hypertension?
☐ Yes
☐ No → End questions

BL150B | Current hypertension medication (i.e. prior to this visit):
<u>Name & Form</u>   <u>Strength</u>   <u>Dose</u>   <u>Freq</u>
1. _____
2. _____
3. _____
4. _____
☐ NO HYPERTENSION MEDICATION | Patient's BP today is:
_____ / _____ mmHg

In your clinical opinion, is this patient's BP currently well controlled?
☐ Yes
☐ No | → If 'no', what is the next step in the management plan? *(Tick all that apply)*
☐ NO CHANGE
☐ Dose titration of existing med'n
☐ Add a med'n: *(please specify)* _____
☐ Cease med'n ← 1 2 3 4 *(Please circle no.s from previous Q)*
☐ Other: _____ | In the past 12 months, has the patient used/had:
☐ Ambulatory BP monitoring
☐ Home BP monitoring
☐ Neither | In the past 12 months, have you/another GP ordered tests/investigations to determine the presence of a secondary cause of hypertension?
☐ Yes: _____
  (please specify tests/investigations)
☐ No
☐ Don't know | Has absolute cardiovascular disease risk ever been assessed for this patient?
☐ Yes
☐ No
☐ Don't know |

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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
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.

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).

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 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 2012–13 recording form

BEACH (Bettering the Evaluation And Care of Health) - Morbidity and Treatment Survey - National

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DOC ID

Encounter Number | Date of encounter | Date of Birth | Sex | Patient Postcode

M / F

START Time

AM / PM (please circle)

Patient Reasons for Encounter
1.
2.
3.

	Yes / No	
PATIENT SEEN BY GP		
PATIENT NOT SEEN BY GP		
New Patient		
Health Care/Benefits Card		
Veterans Affairs Card		
NESB		
Aboriginal		
Torres Strait Islander		

Medicare Item Nos: (if applicable)
1.
2.
3.

Home visit
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	Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1.
2.
Prac Nurse? ☐

Diagnosis/ Problem ③ :

Problem Status New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1.
2.
Prac Nurse? ☐

Diagnosis/ Problem ② :

Problem Status New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1.
2.
Prac Nurse? ☐

Diagnosis/ Problem ④ :

Problem Status New ☐ Old ☐ Work related ☐

Drug Name AND Form for this problem	Strength of product	Dose	Frequency	No. of Rpts	OTC	GP Supply	Drug status New	Cont.
1.								
2.								
3.								
4.								

Procedures, other treatments, counselling this consult for this problem
1.
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 today's visit and their last visit?
☐ Yes ☐ No ☐ N/A ☐ Unsure

If 'yes', approx how many minutes? _____ of time

Reason: _____

FINISH Time

:

AM / PM (please circle)

BA15

190

Appendix 2: GP characteristics questionnaire, 2012–13

THE UNIVERSITY OF SYDNEY

GP profile

Family Medicine Research Centre

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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. How many practice locations do you usually work at 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 at your major practice?

(includes services in the same building or within 50 metres, available on a daily or regular basis) *(Circle all that apply)*

Physiotherapist...1
Psychologist 2
Dietitian..3
Podiatrist 4
Pathology lab/collection centre..................................5
Imaging 6
Specialist *(specify)* _____ 7
Other *(specify)* _____ 8
None..9

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.

Appendix 3: Patient information card, 2012–13

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)

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 2012–2013 are:

✦ The Australian Government Department of Health and Ageing

✦ AstraZeneca Pty Ltd (Australia)   ✦ Pfizer Australia Pty Ltd

✦ CSL Biotherapies Pty Ltd

✦ GlaxoSmithKline Australia Pty Ltd

✦ Merck Sharp & Dohme (Australia) Pty Ltd

✦ Novartis Pharmaceuticals Australia Pty Ltd

BEACH is endorsed
by
the Royal Australian College
of General Practitioners

BEACH is endorsed
by
the Australian Medical Association

AMA

FURTHER INFORMATION:

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Email: jan.charles@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/9781743323779>, see 'Electronic editions and downloads'.

The book provides a summary of results from the 15th year of the BEACH program, a continuing national study of general practice activity in Australia.

From April 2012 to March 2013, 978 general practitioners recorded details of 97,800 GP–patient encounters, at which patients presented 152,278 reasons for encounter and 152,517 problems were managed. For an 'average' 100 problems managed, GPs recorded: 66 medications (including 54 prescribed, 6 supplied to the patient and 6 advised for over-the-counter purchase); 11 procedures; 24 clinical treatments (advice and counselling); 6 referrals to specialists and 3 to allied health services; orders for 30 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 2012–13 were: obesity—26%; overweight—34%; daily smoking—17%; at-risk alcohol consumption—27%. One in four people in the attending population had at least two of these risk factors.