

14 Patient risk factors

14.1 Background

General practice is commonly identified as a significant intervention point for health care and health promotion because GPs have considerable exposure to the health of the population. Approximately 85% of the population visited a GP in 2002 (personal communication, GP Branch, Australian Government Department of Health and Ageing). Therefore, general practice provides a suitable basis from which to monitor many aspects of the health of the population.

Since April 1998, when BEACH began, a section on the bottom of each encounter form has been allocated to investigate aspects of patient health or health care delivery not covered by general practice consultation-based information. These additional substudies are referred to as SAND (Supplementary Analysis of Nominated Data). Organisations supporting the BEACH program have access to a subsample of 6,000 encounter forms per year in which to insert a series of questions (or two sets of questions at 3,000 encounters each) on a subject of their choice.

14.2 Methods

The sixth annual BEACH data collection period was divided into ten blocks of 5 weeks. Each block included data from 100 GPs, with 20 GPs recording per week. The recording pads of 100 forms were divided into three sections (40 A forms, 30 B forms and 30 C forms). Form A topics remained constant over the ten blocks, while Form B and Form C topics changed from block to block. The order of SAND sections in the GP recording pack was rotated, so that the 40 A forms may appear first, second or third in the pad. Rotation of ordering of the components ensured there was no order effect on the quality of the information collected.

Form A contained questions about patient risk factors, including self-reported height and weight (for calculation of body mass index, BMI), alcohol consumption and smoking status.

The population risk factor questions for BMI, alcohol consumption and smoking status will remain constant in future years, and results are reported in each annual report. Abstracts of results for other topics covered in SAND are available on the Family Medicine Research Centre website <http://www.fmrc.org.au/publications/SAND_abstracts.htm>.

14.3 Body mass index

Overweight and obesity have been estimated to account for more than 4% of the total burden of disease in Australia.⁴¹ The 1999–2000 Australian diabetes, obesity and lifestyle study (AusDiab) estimated that 60% of Australians aged over 25 years were overweight or obese (BMI >25). Men were more likely to be overweight or obese than women (67% compared with 52%).⁴²

The BMI for an individual is calculated by dividing weight (kilograms) by height (metres) squared. A person with a BMI less than 20 is considered underweight, 20–24 is normal, 25–29 overweight, and more than 30 is considered to be obese.

The GPs were instructed to ask the patients (or their carer in the case of children):

- What is your height in centimetres?
- What is your weight in kilograms?

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

The standard BMI calculation described above is not appropriate in the case of children. Cole et al. have developed a method which calculates the age–sex-specific BMI cut-off levels for overweight and obesity specific to children.⁴³ This method, based on international data from developed Western cultures, is applicable within the Australian setting.

The BEACH data on BMI are presented separately for adults (aged 18 and over) and children. The standard BMI cut-offs have been applied for the adult population, and the method described by Cole et al. has been used for defining overweight and obesity in children (aged 2 to 17 years).⁴³ There are three categories defined for childhood BMI: underweight/normal, overweight and obese.

Body mass index of adults

BMI was calculated for 31,890 patients aged 18 years and over at encounters with 994 GPs. Overall, 56.5% of patients were overweight or obese – 22.0% being defined as obese and 34.5% were defined as overweight. A further 7.2% were underweight patients, and 36.3% were patients whose BMI was in the normal range (Table 14.1).

A significantly greater proportion of males were overweight or obese (62.9%, 95% CI: 61.8–64.0) than females (52.3%, 95% CI: 51.3–53.4). The proportion of patients considered overweight or obese was greatest for male patients aged 45–64 years (Figure 14.1). These results are consistent with those of the 1999–00 AusDiab study⁴² and the results reported for BEACH 2000–01, 2001–02 and 2002–03.⁴⁴

The BEACH results reported above are broadly consistent with the Australian Bureau of Statistics 2001 figures from the National Health Survey, of 58% of adults ages 18 or more being overweight or obese.⁵

In the 18–24 year age group, 17.8% of women and 11.8% of men were considered underweight, as were 12.1% of women and 6.5% of men aged 75 years or more (Figure 14.2).

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

BMI class	Male ^(a)			Female ^(a)			Total respondents		
	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL
Obese	20.7	19.8	21.5	22.9	22.1	23.7	22.0	21.4	22.7
Overweight	42.3	41.3	43.2	29.4	28.7	30.1	34.5	33.8	35.1
Normal	33.1	32.1	34.2	38.5	37.6	39.4	36.3	35.6	37.1
Underweight	4.0	3.2	4.7	9.2	8.7	9.8	7.2	6.8	7.5
Total (n, %)	12,434	100.0	—	19,214	100.0	—	31,890	100.0	—

(a) Patient sex was unknown for 242 respondents.

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

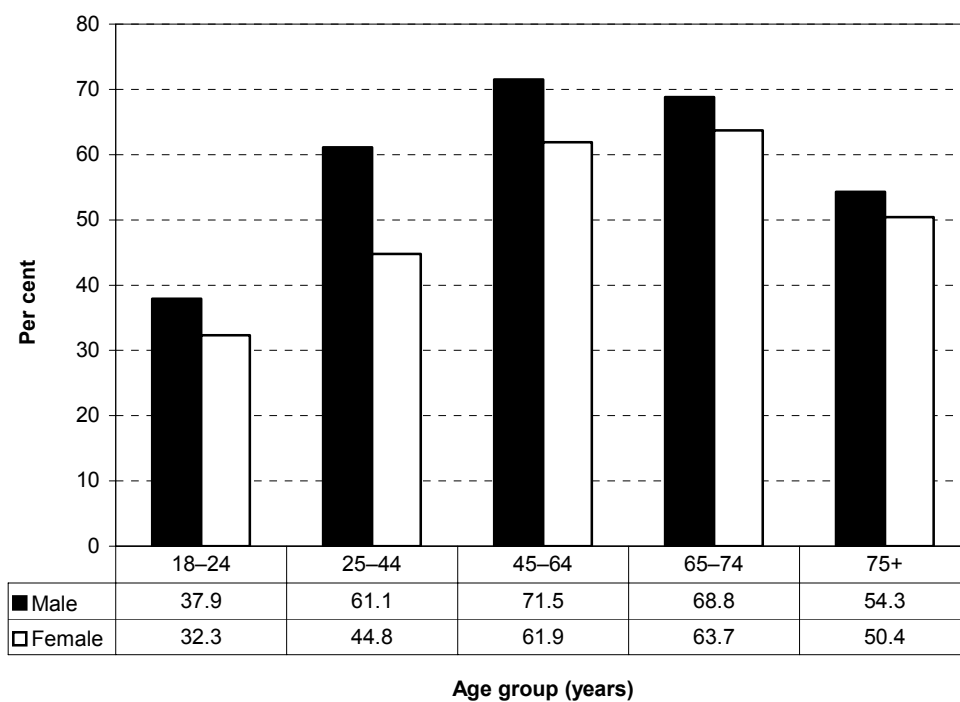


Figure 14.1: Age-sex-specific rates of overweight and obesity in adults

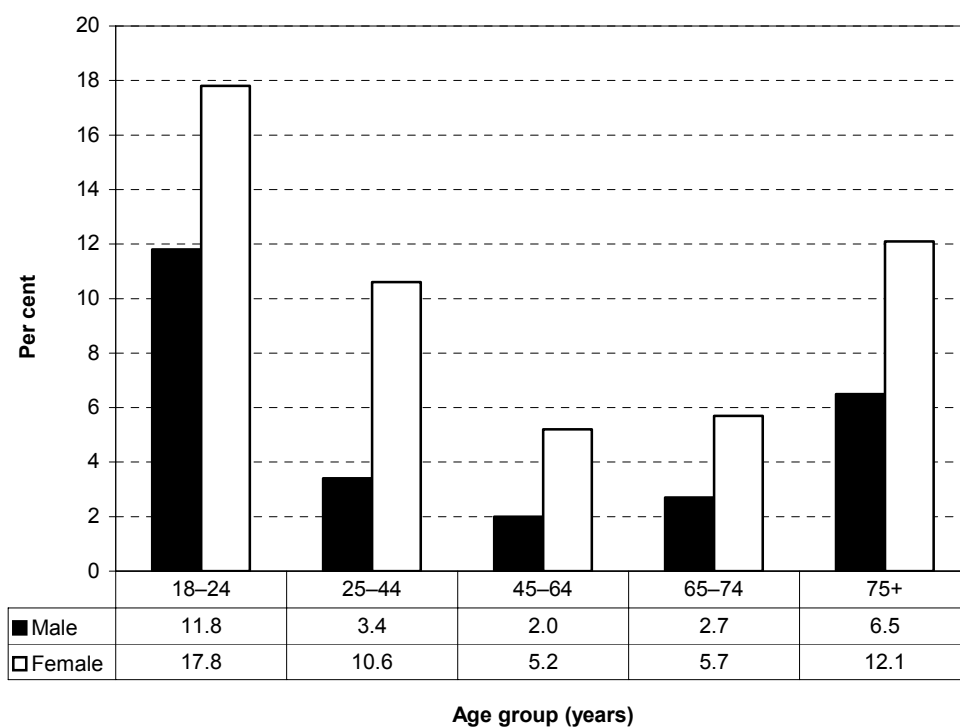
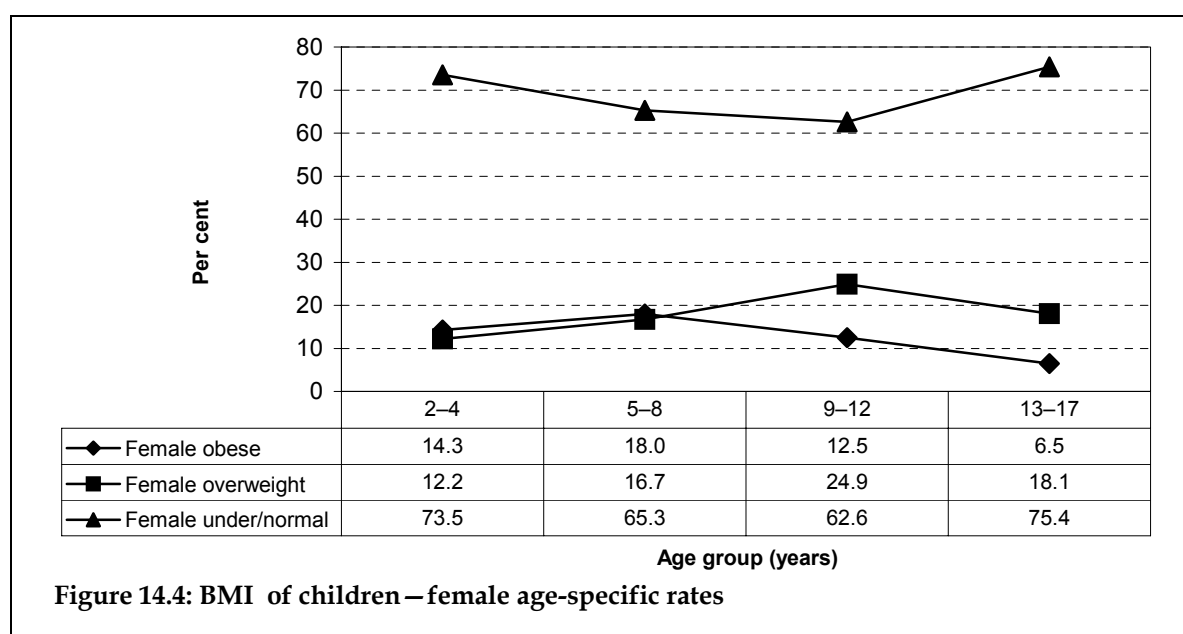
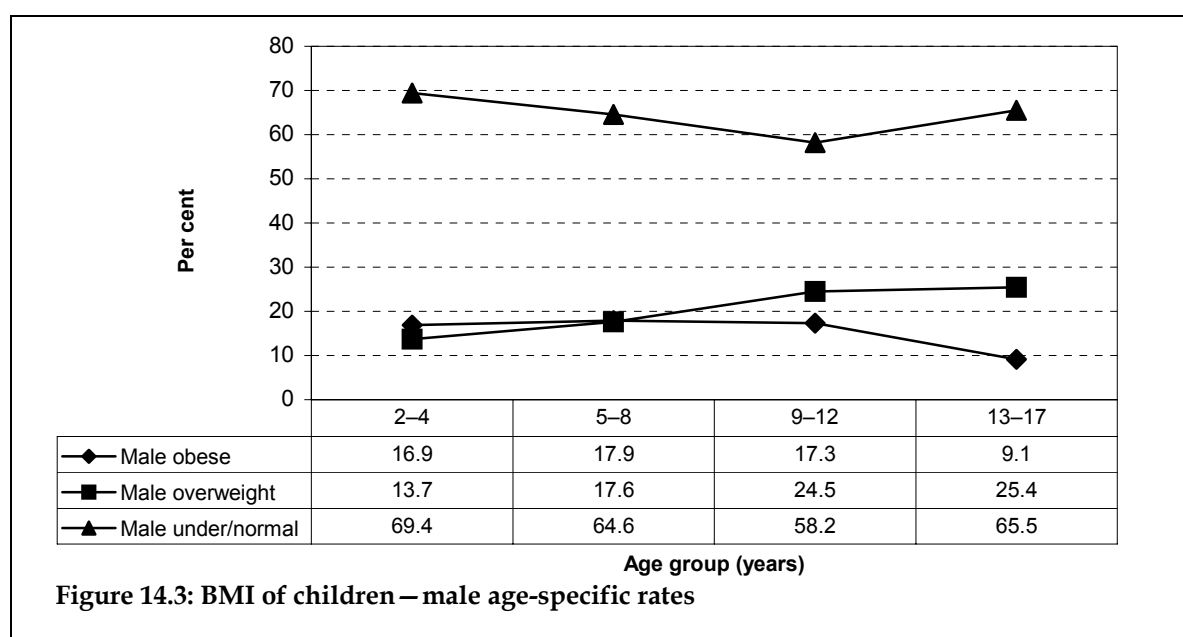


Figure 14.2: Age-sex-specific rates of underweight in adults

Body mass index of children

BMI was calculated for 3,301 patients aged between 2 and 17 years at encounters with 908 GPs. About one-third of all children aged 2 to 17 (32.2%, 95% CI: 30.1–34.3) were considered overweight or obese; comprising 35.2% (95% CI: 32.0–38.3) of male children and 29.6% (95% CI: 26.7–32.4) of female children. Overall, 13.2% (95% CI: 10.5–16.0) of children were considered obese, and a further 19.0% (95% CI: 17.0–21.0) were defined as overweight (results not shown).

Being overweight or obese was most likely in the 9–12 age group (39.6%) and least likely in those aged 13–17 years (28.6%) (results not shown). Three-quarters of adolescent (13–17 years) females (75.4%, 95% CI: 72.3–78.5) were considered to be in the underweight/normal range, which was significantly higher than for females aged between 9 and 12 years (62.6%, 95% CI: 57.1–68.1) (Figures 14.3 and 14.4).



14.4 Smoking

Tobacco smoking is the leading cause of drug-related death and hospital separations in Australia.⁴⁵ It has been identified as the risk factor associated with the greatest disease burden, accounting for 9.7% of the total burden of disease in Australian.⁴¹ According to the 2001 National Drug Strategy Household Survey (NDSHS), 19.5% of Australians aged 14 years and over smoked daily, 21.1% of males and 18.0% of females.⁴⁶

As part of the current study, the GPs were instructed to ask the patients (18 years and over):

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

Respondents were limited to adults aged 18 years and over because there are ethical concerns about approaching this younger patient group to ask for information on smoking and alcohol consumption for survey purposes. In addition, the reliability of this information from patients aged 14–17 years may be compromised if a parent is present at the consultation.

The smoking status of 32,718 adult patients was established at encounters with 996 GPs. Overall, 17.6% of adult patients were daily smokers, 4.3% were occasional smokers, and 28.0% were previous smokers. Significantly more male patients than female patients reported being daily smokers (21.0% compared with 15.4%) (Table 14.2).

It is notable that the prevalence of daily smoking is highest among young adult patients (aged 18–24 and 25–44), with 24.7% and 26.6% of patients respectively reporting daily smoking. The proportion of smokers decreased with age: only 6.2% of male and 4.3% of female patients aged 75 years and over reported daily smoking (Figures 14.5 and 14.6). However, 61.3% of male and 24.6% of female patients aged 75 years and over stated they were previous smokers.

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

Smoking status	Male ^(a)			Female ^(a)			Total respondents		
	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL
Daily	21.0	20.0	22.1	15.4	14.6	16.1	17.6	16.8	18.3
Occasional	4.5	3.5	5.4	4.2	3.6	4.9	4.3	3.9	4.8
Previous	37.3	36.2	38.5	22.0	21.2	22.8	28.0	27.3	28.8
Never	37.2	36.0	38.3	58.4	57.3	59.5	50.1	49.1	51.0
Total (n, %)	12,692	100.0	—	19,780	100.0	—	32,718	100.0	—

(a) Patient sex was unknown for 246 respondents.

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

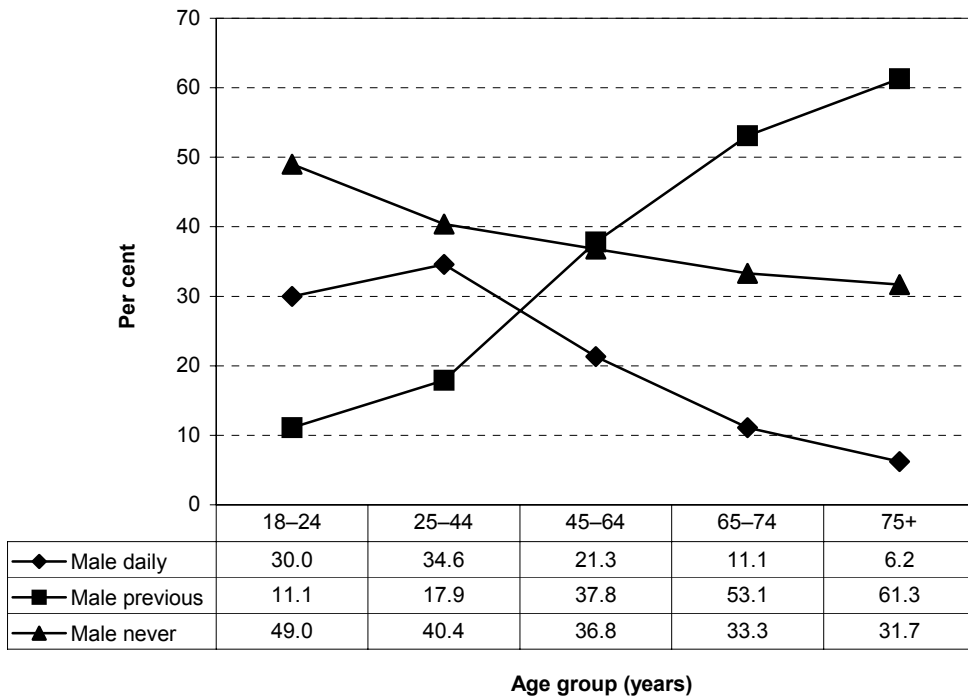


Figure 14.5: Smoking status – male age-specific rates

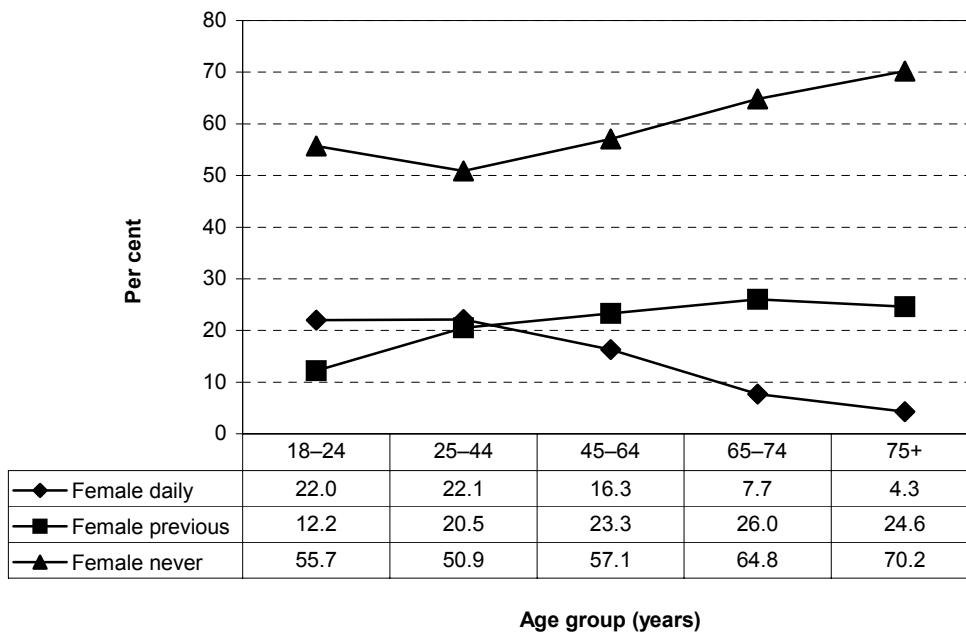


Figure 14.6: Smoking status – female age-specific rates

14.5 Alcohol consumption

In people aged 65 years and over, low to moderate consumption of alcohol has been found to have a preventative effect against selected causes of morbidity and mortality (e.g. cardiovascular disease).⁴⁵ The beneficial impact of low alcohol consumption has been found to prevent more mortality than harmful alcohol consumption causes.⁴⁵ Alcohol consumption accounted for 4.9% of the total burden of disease in Australia; however, after taking into account the benefit derived from low to moderate alcohol consumption, this fell to 2.2%.⁴¹

The 2001 NDSHS found that 9.9% of people aged 14 years and over (10.2% of males and 9.4% of females) drank at levels considered to be risky or high risk for their health in the long term.⁴⁶ This risk level of alcohol consumption was based on the National Health and Medical Research Council 2001 Guidelines.⁴⁷ The NDSHS also found that 34.4% of people aged 14 years and above (39.3% of males and 29.6% of females) drank alcohol at levels which put their health at risk in the short term during the preceding 12 months.⁴⁶

To measure alcohol consumption, BEACH uses three items from the WHO Alcohol Use Disorders Identification Test (AUDIT),⁴⁸ with scoring for an Australian setting.⁴⁹ Together, these three questions assess 'at-risk' alcohol consumption. The scores for each question range from zero to four. A total (sum of all three questions) score of five or more for males or four or more for females suggests that the person's drinking level is placing him or her at risk.⁴⁹

GPs were instructed to ask the patient (18 years and over):

- How often do you have a drink containing alcohol? Never
 Monthly or less
 Once a week/fortnight
 2–3 times a week
 4+ times a week.
- How many standard drinks do you have on a typical day when you are drinking? _____
- How often do you have 6 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.

The wording of the responses to the first and third questions were changed from 2001–02 onwards to reflect exactly the AUDIT instrument from which they are derived. This update, along with a data entry change enabling more specific entry for the second question, slightly increased the rates of at-risk drinking reported for the fourth, fifth and sixth years (2001–02, 2002–03 and 2003–04) compared with the first three years of the BEACH program. The data collected from 2001–02 onwards are a more accurate reflection of the alcohol consumption of general practice patients.

Responses to these questions were recorded at 31,721 patient encounters (18 years and over) from 994 GPs. Overall, 26.7% of patients reported drinking alcohol at risk levels. The proportion of at-risk drinkers was higher for male patients than for female patients (33.1% compared with 22.6%) (Table 14.3).

The highest proportion of at-risk drinkers was in the 18–24 age group, where almost half of the males (46.9%) and more than a third of females (36.9%) reported at-risk alcohol consumption. The proportion of patients who were at-risk drinkers decreased with age for both males and females (Figure 14.7).

These estimates are a little lower than those made from the NDSHS.⁴⁶ This is likely to be due to the difference in the age ranges studied (14 and over in NDSHS and 18 and over in BEACH), and to differences in the age-sex distributions of the study populations. As older people attend the GP more frequently than young adults, they have a greater chance of being selected in the subsample and this leads to a greater proportion of older people, the group less likely to report drinking alcohol at at-risk levels.

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

Alcohol consumption	Male			Female			Total respondents		
	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL	Per cent	95% LCL	95% UCL
At-risk drinker	33.1	31.9	34.3	22.6	21.7	23.6	26.7	25.8	27.6
Responsible drinker	47.3	46.1	48.5	43.5	42.4	44.5	45.0	44.1	45.8
Non-drinker	19.6	18.5	20.7	33.9	32.7	35.2	28.4	27.3	29.4
Total (n, %)	12,334	100.0	—	19,387	100.0	—	31,721	100.0	—

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

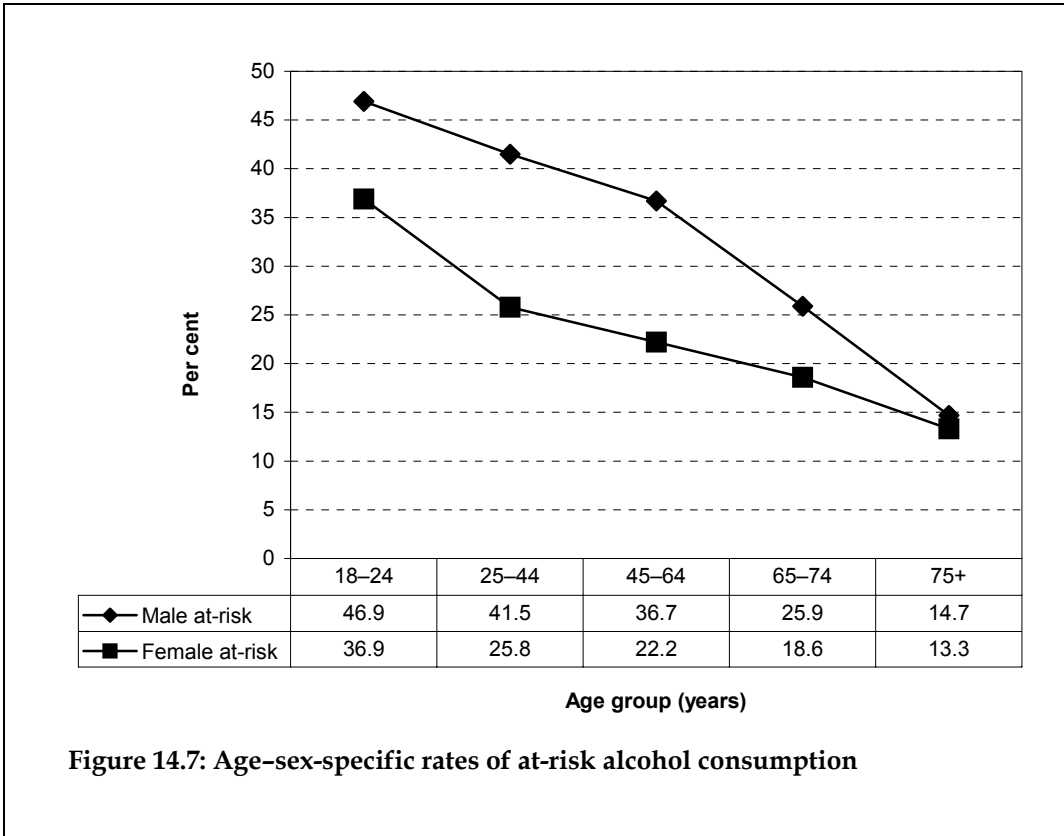


Figure 14.7: Age-sex-specific rates of at-risk alcohol consumption

14.6 Risk factor profile of adult patients

From 2001–02 onwards, all patient risk factor questions (BMI, smoking and alcohol consumption) were asked of the same subsample of patients, making it possible to build a risk profile of this sample of adult patients. For the purposes of this analysis, being overweight or obese, a daily smoker or an at-risk drinker are considered to be risk factors.

A risk factor profile was prepared for 30,713 adult patients (aged 18 or more). Of the three measured risk factors, almost half of adult patients (49.0%) had one risk factor. Being overweight or obese accounted for three-quarters of these single risk factor patients (74.2%). One in five patients (19.8%) had two risk factors. The three most common combinations when a patient had two risk factors all involved drinking at risk levels. At-risk alcohol consumption in combination with being overweight was most common (35.5% of patients with two risk factors) followed by daily smoking (19.9%) then obesity (19.5%). A small minority (4.0%) of patients reported having all three risk factors (Table 14.4).

Overall, female patients reported significantly lower levels of risk factors than males. Almost a third of females (31.2%) reported not having any of the measured risk factors, compared with 21.2% of males. About a quarter of males (25.9%) had two risk factors compared with 15.9% of females (Table 14.5).

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

Number of risk factors	Number	Per cent of patients (n=30,713)	95% LCL	95% UCL
None	8,365	27.2	26.4	28.1
One	15,060	49.0	48.4	49.7
Overweight only	6,694	21.8	21.2	22.4
Obese only	4,480	14.6	14.1	15.1
At-risk alcohol level only	2,494	8.1	7.6	8.7
Current daily smoker only	1,392	4.5	4.1	4.9
Two	6,072	19.8	19.2	20.4
Overweight and at-risk alcohol level	2,153	7.0	6.6	7.4
Daily smoker and at-risk alcohol level	1,211	3.9	3.6	4.3
Obese and at-risk alcohol level	1,184	3.9	3.5	4.2
Overweight and current daily smoker	893	2.9	2.6	3.2
Obese and current daily smoker	631	2.1	1.7	2.4
Three	1,216	4.0	3.6	4.4
Overweight and current daily smoker and 'at-risk' alcohol level	758	2.5	2.1	2.8
Obese and current daily smoker and 'at-risk' alcohol level	458	1.5	1.1	1.9

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

Table 14.5: Number of risk factors, by patient sex

Number of risk factors	Number	Per cent of patients	95% LCL	95% UCL
Male patients	11,999	100.0	—	—
Zero	2,534	21.2	20.1	22.1
One	5,631	46.9	45.9	47.9
Two	3,105	25.9	25.0	26.8
Three	729	6.1	5.2	6.9
Female patients	18,714	100.0	—	—
Zero	5,831	31.2	30.2	32.1
One	9,429	50.4	49.6	51.2
Two	2,967	15.9	15.2	16.5
Three	487	2.6	2.0	3.2
Total patients	30,713	—	—	—

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

14.7 Changes from 1999–00 to 2003–04

The proportion of adults classified as obese according to their self-reported height and weight showed a significant increase over the five years (19.4% in 1999–00 compared with 22.0% in 2003–04). The proportion classified as overweight has increased (33.1% in 1999–00 compared with 34.5% in 2003–04), but just fails to reach significance. In 1999–00, 52.5% of patients were overweight or obese, compared with 56.5% in 2003–04 (Appendix 5, Table A5.18). The increase in obese patients over the period corresponds with a significant decrease in patients of normal weight from 39.1% in 1999–00 to 36.3% in 2003–04 (results not shown).

Overall, 13.2% (95% CI: 10.5–16.0) of children were considered obese, and a further 19.0% (95% CI: 17.0–21.0) were defined as overweight in 2003–04. The proportion classified as overweight (19.0%, 95% CI: 17.0–21.0) has increased significantly since 2000–01 (15.3%, 95% CI: 13.8–16.8) when BMI for children was first reported.¹⁰

The proportion of adults attending general practice who reported being daily smokers in 2003–04 (17.6%) was significantly lower than in 2000–01 (19.3%) (Appendix 5, Table A5.18).

The proportion of adult patients consuming at-risk levels of alcohol has remained consistent from 2001–02 to 2003–04 (Appendix 5, Table A5.18).

15 Discussion

This report has provided a picture of the current activities of GPs, particularly the more frequent events which together make up a large part of their workload. The generalist nature of their practice is clearly demonstrated by the breadth of problems managed and the wide variety of management techniques utilised. This report has shown that medication is the most common form of problem management, but that only 57% of problems managed generate a prescription and management of a problem by medication alone applies to less than 40% of all problems managed. It has demonstrated the importance of counselling and advice in a GP's working day as it is used in the management of one in five problems. Procedural work has also been shown to remain important, undertaken in the management of one in every ten problems. The relatively small number of patients admitted to hospital or referred to the emergency department indicates the extent to which patients are cared for in the community. The fact that one in every 13 problems is referred to a specialist reflects the collaborative approach to management of ambulatory patients by GPs and specialists in Australia. Rates of referrals to allied health services remain relatively low. However, the recent introduction of a Medicare item for some allied health services for selected patients⁵⁰ may affect such referral rates in the future.

These data provide other researchers with a national average against which they can compare smaller studies. The large sample size underlying these data and the consequent accuracy of the estimates reported also allow researchers to plan studies of specific problems and their management by providing better estimates of required GP sample size through a knowledge of the likely occurrence of the event of interest. They provide health care planners with an up-to-date view of the common issues taken to and managed by GPs, and an opportunity to relate prescribing patterns and costs to the management of specific types of conditions.

This report provides a national picture of general practice. Those interested in information about general practice activity in a single state or territory should consult the recent state and territory report of findings from the first five years of the BEACH program – *General Practice Activity in the States and Territories of Australia 1998–2003*.⁵¹

There have clearly been changes in the characteristics of the practising GP population over the last decade. Charles et al. found that the Australian GP workforce is becoming proportionally more female, older, more likely to work fewer sessions per week, more likely to hold Fellowship of the RACGP, more likely to work in large practices, and increasingly more likely to have graduated overseas.³⁰ We know from previous research that changes in such characteristics can influence style of practice. For example, the practice style of FRACGPs has been shown to differ from that of non-FRACGPs,⁵² and women practice differently from men.⁵³

There have also been changes in the patients encountered by GPs in Australia. For example, the proportion of encounters that are with children is decreasing while the proportion with older people is increasing – perhaps reflecting the ageing of the Australian population. This will also have an impact on the work undertaken by GPs and its effect will be gradual over time.

The top ten problems managed by GPs in Australia made up about 25% of the total morbidity workload of GPs. Hypertension remains the most frequently managed, as it has been for the past 15 years.²³ While upper respiratory tract infection remains in second place

its management rate is gradually decreasing, reflecting a measured decrease in patient presentations with this problem.

Some topics were selected for more detailed investigation and these were presented in Chapter 13. Such specific analyses can be applied to any problem, medication, test or referral type or patient group – the options are almost endless. The topics were therefore chosen on the basis of their topical interest in terms of public health initiatives or developments in treatments. Consideration was also given to whether a significant change in overall management had occurred during the last five years and to the relationship of the subject to the National Health Priority Areas.⁶ While the number of topics in this report is limited, the reader should be aware that almost any subject included in the data set could be analysed in this manner (for access details see Section 16.2).

It may have been expected that the introduction of MBS items specifically for the care of depression would lead to an increase in its management rate (i.e. in the number of consultations at which it is managed). However, there has been no change in its management rate over the last five years. Further, there has been no increase in the rate at which psychological counselling has been recorded by GPs. However, Chapter 13 showed the movement away from the prescription of tricyclic anti-depressants and MAOIs, and towards SSRIs in the management of depression.

In earlier years we have reported the marked increase in the prescription or supply of NSAIDs, as a result of a strong uptake of the coxibs when they were released in 2000. We noted that a considerable proportion of this increase was due to provision of coxibs for musculoskeletal conditions other than arthritis. This year we have shown that the use of coxibs for conditions other than arthritis has decreased steadily since its peak in 2001–02, while their use in the management of arthritis has remained relatively steady.

A significant decrease in the management rate of asthma was found in 2000–01 and this decrease has continued at an average rate of 100,000 fewer encounters per year nationally, even though the estimated prevalence of asthma within the patient population has not changed over this period.⁴⁰ The introduction of a Medicare item for the Asthma 3+Visit Plan did not appear to be the cause of the initial drop in 2000–01 as the decrease occurred before its introduction. However, there were other types of asthma plans being promoted before the Asthma 3+Visit Plan and these may have caused the measured decrease in management rates in 2000–01. The extent to which such plans have improved patient education in self-management of this problem and in turn led to this decrease in management rate is not known. A small decrease in the medication rate of asthma preventives together with a considerable decrease in the rate of prescribed/supplied/advised bronchodilators may support the argument that patients are managing their asthma better, thus requiring fewer visits to the GP for acute exacerbations. Alternatively, patients are obtaining bronchodilators directly from pharmacists, and have less need to visit the GP for repeat scripts.

BEACH is the only data source that provides an indication of GP use of clinical treatments such as counselling. With increasing attention being paid to the need for improved health preventive behaviour in the overall population, it is notable that there has been no significant change in the rate at which GPs provide counselling and advice to their patients since the beginning of BEACH in 1998–99. About 25% of patients for whom data were available about their BMI, alcohol consumption and smoking reported carrying two or three of these risk factors: daily smoking, overweight/obesity, and at-risk alcohol consumption. Only 27.2% had none of these risk factors. There would seem to be ample opportunity for GPs to attempt educational interventions with a very large proportion of their attending patients.

The effect of GP and patient educational interventions on practice patterns cannot easily be measured. Often, multiple interventions occur in parallel to system changes. For example, there has been a significant increase in the management rate of non-gestational diabetes from 2.6 per 100 encounters in 1998–99 to 3.3 per 100 encounters in 2003–04, representing an estimated increase of 75,000 extra GP contacts with diabetes each year. This may be a result of the introduction of a Medicare incentive item number for completion of annual diabetes programs.²

Increases in pathology order rates have been the subject of another study, the results of which are reported in *Changes in Pathology Ordering by General Practitioners in Australia, 1998–2001*.³⁸

15.1 Methodological issues

Cluster sampling

The statistical techniques applied in BEACH recognise that the sampling is based on GPs and that for each GP there is a cluster of encounters. Each cluster may have its own characteristics, being influenced by the characteristics of the GP. While ideally the sample should be a random sample of GP–patient encounters, such a sampling method is impractical in the Australian health care system. The reader should, however, be aware that the larger the GP sample and the smaller the cluster, the better. The sample size of 100,000 encounters from a random sample of 1,000 GPs has been demonstrated to be the most suitable balance between cost and statistical power and validity.⁷ The cluster effect is dealt with through SAS 8.2 (see Chapter 4).

GP participation rates

The response rate of GPs in the sixth year of BEACH was disappointingly low, 23.7% of those with whom contact was established. This compares with 28.9% in the previous year (BEACH year 5), 32.3% in year 4, 29.8% in year 3, 39.1% in year 2 and 38.4% in the first year (1998–99). One of the difficulties in reliably reporting response rate is the changing size of the denominator. The GP Branch of the DoHA selects the samples from a sample frame made up of all non-specialists who have claimed at least 375 Medicare A1 items of service in the most recent 3 month period available from HIC data. Unfortunately this means that the sample frame includes current Registrars who are not required to undertake QA activities (the major attraction of BEACH to recognised GPs). It also includes temporary visa overseas trained doctors who work under arrangements with the Australian Government, who practice in areas of need and claim A1 items of service. Until 2004 these doctors have not been required to do QA and are not ‘recognised GPs’. The annual intake of registrars to the training program for general practice recently increased by 50% from 400 to 600 per year. Added to this is an increase in the number of overseas trained doctors working in areas of need under these special arrangements.

The intent of BEACH is to describe the activities of recognised GPs, yet the denominator (the sample frame) is dynamic and likely to include a varying proportion of non-recognised GPs. Therefore the accuracy of the response rate reported each year for BEACH is limited. It would be preferable if the sample frame included only recognised GPs to provide a more accurate estimate of response rates.

However, the continued decreasing response rate is of concern and the research team believes that a number of system factors have contributed to it.

- One of the main reasons many GPs agree to participate in BEACH is because they receive audit points towards their QA requirements. In recent years a wide range of new options have become available to GPs through the QA Program. When refusing to participate, many GPs have voiced the opinion that there are many other options 'easier' than BEACH but which gain a similar number of points.
- There are increasing demands being made on GPs to participate in a wide range of non-clinical activities such as divisional projects and programs and other audits (such as those offered by the National Prescribing Service), and this may influence the extent to which they are willing to participate in BEACH.
- Sampling issues also affect recruitment levels but these have been reasonably constant influences over the period of the BEACH program. In the sample of GPs provided by the DoHA from the HIC records 8% could not be contacted. A large proportion of these were not practising at the time of recruitment, having retired, died, gone overseas or taken maternity leave since their selection from the HIC records. As the aim is to represent active, practising GPs, the exclusion of these GPs from the sample is a valid and necessary action. However, there were also some GPs who had left the practice to which the BEACH approach letter was sent and could not be traced. In many of these cases, the practice informed recruiting staff that the GP selected had not been at the practice for some years. The number of GPs for whom the current address and/or phone number (provided by the DoHA for this study) are out of date has increased in recent years. This may reflect a change in processes of address recording with increased use by GPs of electronic payment mechanisms. In any case, these problems suggest that the HIC system of practice address registration is not error-free.

The participating GPs were found to be older and to have claimed fewer consultations on average from Medicare in the previous quarter (10.6 fewer consultations per week on average) than those who declined to participate. Some people suggest that this means the participants are 'less busy' than those who decline to participate. This is not necessarily true as the total number of claims depends on both the number of sessions worked per week and the number of consultations conducted per session. Female GPs were slightly over-represented in the sample and women are more likely than men to work part-time so will claim from Medicare fewer consultations over the year than will their male counterparts. Yet a person who works four sessions per week and claims 50 consultations cannot be regarded as 'less busy' than the GP who works 8 sessions per week and claims 100 consultations. Unfortunately there is no method by which we can test the 'busyness' hypothesis because the number of sessions usually worked per week is not available for non-participating GPs. It is possible that the time required to participate in BEACH may be a greater issue for full-time GPs than part-time GPs. BEACH also may offer an avenue for fulfilling RACGP Clinical Audit requirements to part-time GPs who may not be as able to take up other avenues. In any case, the post-stratification weights applied to the encounter data deal with these differences.

Sampling remote areas

It is often said that practising in remote areas is very different from practising in other locations. Only 2.4% of GPs practise in remote areas. As a result, when a random sample of all GPs is drawn, the final sample in remote areas is relatively small ($n=27$) (see Chapter 3). Earlier research has suggested that we should have a minimum of 40 GPs each providing

data regarding 100 encounters (giving a sample of 4,000 encounters) to reliably describe their activity and compare it with others.

A suitable sample could be gained for remote areas if we actively over-sampled these GPs. The cooperation of this small group of practitioners would first need to be established. As there are relatively few, a very high response rate would be required if sufficient numbers of GPs are to be recruited. Alternately, combining all data drawn from remote area GPs during the last few years may give a sufficiently reliable view of their practice activity.

Electronic BEACH data collection

The BEACH program is currently a paper-based data collection program. Many people have suggested that with the increased GP uptake of electronic prescribing systems or full clinical systems (electronic health records, EHRs), national data could soon be drawn passively, directly from the GPs' computers. Although an attractive proposition, there are still many barriers to its implementation:

- To obtain a national random sample of practising GPs, each GP must have an equal chance of selection. Until all GPs are using EHRs, this would not be the case. Further, with the recognised variance between GPs⁵⁴ it is likely that those who do not have EHRs differ from those who do. Sampling from only those GPs with EHRs would therefore give a biased national result.
- Many GPs currently use electronic prescribing systems rather than full EHRs, or use their EHRs for prescribing only (see Chapter 3). The extent to which data are entered at encounters that do not involve a prescription is not known. Where GPs do not record the problem managed unless a prescription is provided, measurement of changes in prescribing behaviour over time becomes impossible. For example: if GPs significantly decrease the prescribing of antibiotics for URTI, and in parallel only record problems where a medication is prescribed, the recorded rate of antibiotic prescriptions for URTI will either not change or may increase. Further, this report has demonstrated that drug prescription is only one of many management techniques used by GPs. The measurement of GP clinical activity should not be confined to the measurement of prescribing behaviour any more than it should be limited to activities claimed only through the MBS.
- The structure of electronic clinical systems varies, as do the coding and classification systems used in each. Drawing reliable and representative data from electronic clinical systems will require the introduction of a standardised minimum data set and use of standard coding and classification systems in all electronic clinical systems.
- Issues of privacy and confidentiality also need to be resolved.

Other BEACH applications

Under DoHA funding, the National Consortium for Education in Primary Medical Care offered an alternative pathway to general practice recognition between 2002 and 2004. Practitioners who wished to take this pathway to the FRACGP examination were required to complete 400 hours of education before sitting for the examination. These unrecognised GPs first assess their educational needs so that their educational program can be planned around the individual practitioner. Approximately 100 practitioners have undertaken BEACH for this purpose to date. The clinical activities of this group will be reported in a separate publication.

The General Practice Statistics and Classification Unit (GPSCU) is currently applying the BEACH methods in a study of the experience gained by GP registrars during each stage of their training. These data may assist in better defining the areas in which registrars should receive training and may identify areas in which they are not gaining experience.

15.2 Comparing BEACH data with those from other sources

Users of the data reported in this publication might wish to compare the results with those from other sources, such as that from the HIC.³⁶ Integration of data from multiple sources can provide a more comprehensive picture of the health and health care of the Australian community, but the user must keep in mind the limitations of each data set and the differences between them. Some examples are presented below.

The Pharmaceutical Benefits Scheme (PBS)

If comparing BEACH prescribing data with data from the PBS, the reader should be aware of the following:

- Total medications in BEACH include those prescribed, supplied to the patient directly by the GP, and those advised for OTC purchase.
- Each prescription recorded in the BEACH program 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.
- Prescriptions are counted in BEACH irrespective of whether the medication is covered by the PBS for all patients, for those holding a Commonwealth concession card or for those who have reached the safety net threshold.
- The BEACH data do not provide information on the number of prescriptions not filled by the patient (and neither does the PBS).

In contrast, the PBS data:

- count the prescription each time it crosses the pharmacist's counter

- count only prescribed medications subsidised by the PBS and costing more than the minimum subsidy and which are therefore covered by the PBS for all patients, or are prescribed for those holding a Commonwealth concession card or for those who have reached the safety net threshold. Note that the set of drugs that satisfy these criteria changes with each change in the PBS threshold – when the threshold increases, as it will in January 2005, there will be more drugs that are not counted in the PBS for non-Commonwealth concession card holders.

These differences will influence not only the numbers of prescriptions counted but also their distribution. For example, the majority of hormone replacement therapies (HRTs) currently fall under the PBS minimum subsidy level and would not be counted in the PBS data unless patients receive the medication under the PBS because they are a Commonwealth concession card holder or have reached the annual safety net threshold. The PBS would therefore underestimate the number of HRT prescriptions filled and the proportion of total medications accounted for by HRTs.

Medicare Benefits Schedule (MBS) items

If comparing the BEACH data with Medicare data, the reader should remember the following:

- The MBS data provided by the DoHA do not usually include data about patients and encounters funded through the Department of Veterans' Affairs. The effect of this on comparisons between data sets was demonstrated in Chapter 4 (Section 4.3) in the comparison of the age-sex distribution of patients at A1 encounters in BEACH with that for the MBS A1 items of service.
- The BEACH participants have the opportunity to record only one Medicare item number on each encounter form. They are instructed to select the more general item number where two item numbers apply to the consultation because additional services attracting their own item number (e.g. 30026 – repair of wound) are counted as actions in other parts of the form. This results in a lesser number of 'other' Medicare items than would be counted in the Medicare data.
- The BEACH database includes data about all clinical activities, not only those billed to the MBS. Both direct (patient seen) and indirect (patient not seen but a clinical activity undertaken) consultations are recorded. Some of these are paid by other funding sources (e.g. state health departments, private insurance companies, workers compensation), and some are provided free of charge by the GP (see Chapter 5). In contrast, the MBS data include only those GP services that have been billed to Medicare.
- In activities of relatively low frequency with a skewed distribution across individual GPs, the relative frequency of the event in the BEACH data may not reflect that reported in the MBS data. For example, a study of early uptake of some enhanced primary care items by GPs demonstrated that almost half the enhanced primary care items claimed through the MBS came from about 6% of active GPs.⁵⁵ Where activity is so skewed across the practising population, a national random sample will provide an underestimate of activity because the sample reflects the whole population rather than the minority.

Pathology data from the MBS

The BEACH database includes details of pathology tests ordered by the participating GPs. When comparing these data with those in the MBS, readers should remember the following:

- BEACH reflects the GP's intent that the patient have the pathology test(s) done, and information about the extent to which patients do not have the test done is not available.
- Each pathology company can respond differently to a specific test order label recorded by the GP. Further, the pathology companies can charge through the MBS only for the three most expensive tests undertaken even where more were actually undertaken. This is called 'coning' and is part of the DoHA pathology payment system.
- Pathology MBS items contain pathology tests grouped on the basis of cost. An item may therefore not give a clear picture of the precise tests performed.

The effect of these factors is that the MBS pathology data include only those tests billed to the MBS after interpretation of the order by the pathologist and after selection of the three most expensive tests. This effect will not be random. For example, in an order for four tests to review the status of a patient with diabetes, it is likely that the HbA1c test will be the least expensive and will 'drop' off the billing process due to coning. This would result in an under-estimate of the number of HbA1c tests being ordered by GPs.

The distributions of the two data sets will differ, reflecting on the one hand the GP order and on the other the MBS-billed services after coning and assignment of MBS item number.

Those interested in GP pathology ordering will find more detailed information from the BEACH program in *Pathology Ordering by General Practitioners in Australia 1998*.³⁵ A study of changes in pathology ordering patterns between 1998–99 and 2000–01 has also recently been released³⁸ and is available through the Family Medicine Research Centre website <<http://www.fmrc.org.au/publications/>> (go to Books – General Practice Series).

Imaging data from the MBS

Some of the issues discussed regarding pathology data also apply to imaging data. Although coning is not an issue for imaging, radiologists are free to decide whether or not the test ordered by the GP is the most suitable and whether to undertake other tests of their choosing. The MBS data therefore reflect the tests that are actually undertaken by the radiologist, whereas the BEACH data reflect those ordered by the GP. Those interested in GP imaging ordering will find more detailed information from the BEACH program in *Imaging Orders by General Practitioners in Australia 1999–00*,³⁷ also available from the Family Medicine Research Centre website.

16 Conclusion

This report has provided an updated description of the major aspects of general practice activity in Australia in 2003–04. It has also provided a further measure of the changes that have occurred in general practice since 1999–00.

Readers should be aware that Appendix 5 provides a summary of the results of the more common events recorded in BEACH in each of the last 5 years. This acts as an easy reference point for trends in data pertaining to the more common aspects of general practice. This appendix also includes a summary of the results for the total 5-year data set. This provides more accurate estimates with tighter confidence intervals for most events than do any single year's data.

16.1 Current status of BEACH

The BEACH program is now in its seventh year. The database for the first 6 years includes data pertaining to approximately 600,000 GP–patient encounters from about 6,000 GPs. Each year the GPSCU publishes an annual report of BEACH results through the Australian Institute of Health and Welfare. This publication reports results from the previous BEACH data year on a national basis for the more common events. Other reports use the database for secondary analyses of a selected topic or for a specific research question. The most recent examples are a study of the changes in pathology ordering by GPs between 1998–99 and 2001–02, and a comparative study of general practice activity in each of the states and territories of Australia. These and other BEACH reports can be downloaded from <http://www.fmrc.org.au/publications/> (go to Books – General Practice Series) or from <http://www.aihw.gov.au/publications/>.

16.2 Access to BEACH data

Public domain

In line with standard Australian Institute of Health and Welfare practice, this annual publication provides a comprehensive view of general practice activity in Australia.

There are also many papers on a wide range of topics available in journals and professional magazines. All published material is listed in Appendix 6 of this report.

Abstracts of results for the substudies conducted in the sixth year of the program and not reported in this document have been added to the list of abstracts on the website of the Family Medicine Research Centre (of which the GPSCU is a part) at http://www.fmrc.org.au/publications/SAND_abstracts.htm. The subjects covered in the abstracts are listed in Table 16.1 with an indication of the number of GPs and the number of encounters in each subsample.

Analysis of the BEACH data is a complex task. The GPSCU has therefore designed standard report formats that cover most aspects of the subject under investigation. Examples of a problem-based standard report (the subject is warts) and a pharmacological-based standard

report (subject allopurinol) for a single year's data are available on our website, <<http://www.fmrc.org.au/purchase.htm>>. They give potential users an opportunity to see the types of information provided in such a report.

Standard reports are also available for selected groups of patients (e.g. children aged less than 15 years, or all women with a cardiovascular problem, or all patients residing in New South Wales), or a for a specific non-pharmacological management action (e.g. all recorded cases of provision of psychological counselling; all orders for a full blood count).

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

Table 16.1: SAND abstracts for 2002-03 and sample size for each

Abstract number	Subject	Number of encounters	Number of GPs
55	Patient weight, perception of weight and weight loss	2,969	99
56	Prevalence, cause and severity of adverse pharmacological events	8,215	282
57	Prevalence and management of chronic heart failure in general practice patients	2,641	91
58	Lipid lowering medications: patient eligibility under PBS	2,732	93
59	Hypertension management and control in general practice patients	2,647	92
60	Prevalence of GORD and associated proton pump inhibitor use	2,538	88
61	Prevalence of chronic illnesses identified as National Health Priority Areas among general practice patients	8,911	299
62	Use of proton pump inhibitors by general practice patients	5,245	182
63	Asthma—prevalence, management and medication side-effects	2,527	87
64	Current use of statins by general practice patients	3,202	109
65	Language and cultural background of general practice patients	9,245	311
66	Anti-psychotic medication use by general practice patients	3,338	117

Participating organisations

Organisations providing funding for the BEACH program receive summary reports of the encounter data quarterly and standard reports about their subjects of interest.

The GPSCU now provides participating organisations direct access to straightforward analyses on any selected problem or medication in real time, through our interactive web server.

External purchasers of standard reports

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