

## 2 Summary of changes from 1998–99 to 2004–05

This chapter provides a summary of the significant changes that have occurred in each area covered by the BEACH program between 1998–99 and 2004–05. In the main, the comparisons are made across the full period, using data from alternating years: 1998–99, 2000–01, 2002–03 and 2004–05. Only significant changes are reported here. Statistical significance was judged on the basis of a linear trend (either positive or negative) over the years, with non-overlapping confidence intervals between the results from the earliest year available and the 2004–05 results.

These trends over time were further analysed using SAS V8.2 regression procedures that adjust the standard error to allow for the design effect of the cluster sample.<sup>21</sup> Test statistics and *p* values based on the adjusted standard error provide a more stringent test of significant changes over time.

Where we did detect a significant change over time, we calculated the estimated annual rate of change where such an estimate was appropriate. This is expressed as the mean annual increase (or decrease) over the study period in the number of general practice encounters for that problem/management occurring in Australia each year (see Chapter 5 – Methods, Section 5.5).

These estimates are provided in the far right hand column of Tables 2.2 to 2.8 in this chapter. Extrapolated estimates were calculated by multiplying the encounter rate for 1998–99 by the number of unreferral attendances (A1 and A2 items) claimed through Medicare in that year to give the estimated number of encounters for that event in 1998–99. The same was done for 2004–05. Where the change was linear over time, the difference between the two estimates was averaged over six years to give the estimated annual rate of change in encounters. To estimate the total effect from 1998–99 to 2004–05, the effect must be multiplied by six, as there are six time intervals. Examples are provided in some sections of this chapter.

In Chapter 3 (red margin) we investigate more closely how changes in management rates of particular problems and in medication rates observed in this chapter were reflected in management provided for specific problems of interest using linear regression.

A summary of results for each of the five years from 2000–01 to 2004–05 is provided for the most frequent events, irrespective of whether any change occurred over that period, in Appendix 5 of this report (available from <[www.aihw.gov.au/publications/index.cfm](http://www.aihw.gov.au/publications/index.cfm)>).

### 2.1 Characteristics of the GPs

Some interesting changes were apparent in the characteristics of GPs who participated in BEACH between 1998–99 and 2004–05 (Table 2.1). Participants have been demonstrated to be representative of the GP workforce (see Chapter 4, blue margin) so these changes in participants reflect changes in the GP workforce.

In summary, since 1998–99 the participating GPs have become:

- more often female (see note below) and older
- more likely to work in practices with computers
- more likely to work 6–10 sessions and less likely to work 11+ sessions per week
- less likely to be in solo practice and more likely to work in practices of five or more GPs
- less likely to provide their own after-hours care
- less likely to have graduated in Australia for their primary medical degree
- more likely to hold Fellowship of the RACGP.

*Note:* Although the observations from the selected years of BEACH data (Table 2.1) showed no significant change in sex of GPs, previous work found that the GP workforce was becoming increasingly female over time.<sup>22</sup> This prompted us to statistically test the change using data from all years of BEACH, and the result showed a significant increase since 1998–99 in the proportion who were female ( $\chi^2=13.73$ ,  $p=0.032$ ).

**Table 2.1: Significant changes in characteristics of participating GPs 1998–99 to 2004–05**

GP characteristic	1998–99	2000–01	2002–03	2004–05	Chi square statistic
	Per cent of GPs <sup>(a)</sup> (n=984)	Per cent of GPs <sup>(a)</sup> (n=999)	Per cent of GPs <sup>(a)</sup> (n=1,008)	Per cent of GPs <sup>(a)</sup> (n=953)	
Sex					$\chi^2=6.57$ , $p<0.08$
Male	70.0	68.4	64.8	67.9	—
Female	30.0	31.6	35.2	32.1	—
Age					$\chi^2=43.81$ , $p<0.0001$
< 35 years	6.3	6.7	7.3	8.9	
35–44 years	36.3	28.4	26.6	25.5	—
45–54 years	32.1	34.2	35.2	31.8	—
55+ years	25.2	29.7	30.9	33.6	—
Sessions per week					$\chi^2=40.1$ , $p<0.0001$
< 6 per week	12.4	15.9	18.7	14.4	—
6–10 per week	68.5	66.3	67.9	71.2	—
11+ per week	19.0	16.2	13.4	11.4	—
Size of practice					$\chi^2=45.64$ , $p<0.0001$
Solo	17.9	19.3	13.7	12.2	—
2–4 GPs	43.2	38.6	38.4	36.4	—
5+ GPs	38.9	42.1	47.9	51.3	—
Place of graduation					$\chi^2=11.37$ , $p=0.009$
Australia	76.5	72.7	72.0	69.9	—
Overseas	23.5	27.5	28.0	30.1	—
Fellow of RACGP	27.3	31.4	35.5	42.3	$\chi^2=52.05$ , $p<0.0001$
After-hours arrangements					$\chi^2=7.40$ , $p=0.0246$
Own or cooperative	NAv	64.7	62.5	52.1	—
Deputising service	NAv	44.5	47.7	45.8	—
Computer use	NAv	87.7	91.7	93.7	$\chi^2=22.05$ , $p<0.0001$

(a) Missing data removed. *Note:* NAv—Not available; RACGP—Royal Australian College of General Practitioners.

## 2.2 Encounter type

- Between 1998–99 and 2004–05 the proportion of all encounters that were chargeable to Medicare or to the Department of Veterans' Affairs increased significantly. The increase occurred in 2000–01 and the proportion has remained up. In contrast, there was a significant decrease in the proportion of encounters paid for by other funding sources, the major drop occurring in the same year, with later proportions remaining relatively steady (Table 2.2).
- There was a significant increase from 7.0% in 1998–99 to 9.9% in 2004–05 (a 38% increase) in the proportion of all encounters that were recorded as claimable as Medicare long consultation items. Extrapolated to all Medicare A1 and A2 items, we estimate there was an increase of about 380,000 long consultations claimed on average per year across the study period (i.e. 2.2 million more Medicare-claimed long consultations in 2004–05 than in 1998–99) (Table 2.2).

## Consultation length

In the subsample studies that included start and finish times for A1 Medicare-claimable encounters, there was no significant change in length of consultation. In 2000–01 ( $n=30,961$ ), the mean length of consultations was 14.8 minutes (95% CI: 14.5–15.1) and the median length 13 minutes. In 2004–05 ( $n=30,683$ ) the mean length was 15.1 minutes (95% CI: 14.8–15.3) and the median length remained 13.0 minutes (results not tabulated).

## 2.3 Characteristics of the patients at encounters

Table 2.3 shows that between 1998–99 and 2004–05:

- the proportion of encounters that were with children aged less than 15 years decreased from 16% to 12%, a decrease of approximately 25%
- the proportion of the GP workload accounted for by elderly patients (75 years and over) increased by about 20%, and by those aged 45–64 years by about 15%.

In 2004–05 there was a marginal increase in the proportion of patients who were aged 65–74 years but this represented a return to the result obtained in 1998–99.

The changes noted above represent:

- an estimated national annual decrease of 760,000 encounters with children (i.e. 4.5 million fewer encounters with children in 2004–05 than in 1998–99)
- an estimated national annual increase of 310,000 encounters (i.e. 1.8 million more encounters in 2004–05 than in 1998–99) with 45–64-year-old patients
- an estimated annual increase of 220,000 encounters with patients aged 75+ years (i.e. 1.1 million more encounters in 2004–05 than in 1998–99).

The proportion of patients holding a Commonwealth concession card fluctuated, decreasing in the 2000–01 and 2002–03 years, but returning to 1998–99 levels in 2004–05. This may reflect changes in GP attendance patterns of Commonwealth concession card holders during the years of decreasing bulk-billing, and then reversion to the previous pattern when new incentives were introduced for GPs to bulk-bill in 2004.<sup>8</sup>

**Table 2.2: Significant changes in encounter types 1998–99 to 2004–05**

	1998–99	2000–01	2002–03	2004–05	p value	Annual national change <sup>(b)</sup>
	Per cent of encounters <sup>(a)</sup> (95% CI) (n=96,901)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=99,307)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=100,987)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=78,711)		
Direct encounters	96.7 (96.4–97.0)	98.1 (97.8–98.4)	98.4 (98.2–98.6)	97.4 (97.1–97.7)	N/S	N/A
MBS items of service <sup>(c)</sup>	90.3 (89.3–91.2)	94.6 (94.2–95.0)	95.0 (94.6–95.3)	93.7 (93.3–94.2)	<0.0001	N/A
Long surgery consultations	7.0 (6.4–7.6)	8.4 (7.7–9.0)	9.1 (8.5–9.7)	9.9 (9.2–10.6)	<0.0001	+380,000
Other paid (hospital, state, etc.)	3.7 (1.8–5.7)	1.9 (1.2–2.6)	1.0 (0.2–1.8)	0.7 (0.1–1.3)	<0.0001	-510,000

(a) Missing data removed from analysis.

(b) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

(c) Includes encounters that were recorded with patients who held a Repatriation health card, funded through the Australian Department of Veterans' Affairs.

Note: CI—confidence interval; N/S—not statistically significant; N/A—not applicable.

**Table 2.3: Significant changes in the characteristics of the patients 1998–99 to 2004–05**

	1998–99	2000–01	2002–03	2004–05	p value	Annual national change <sup>(b)</sup>
	Per cent of encounters <sup>(a)</sup> (95% CI) (n=96,901)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=99,307)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=100,987)	Per cent of encounters <sup>(a)</sup> (95% CI) (n=94,386)		
Age group < 1 year	2.4 (2.2–2.7)	2.1 (1.9–2.4)	1.9 (1.8–2.1)	1.9 (1.7–2.1)	<0.0001	-100,000
1–4 years	5.7 (5.3–6.0)	5.4 (5.1–5.7)	5.0 (4.7–5.3)	4.3 (4.0–4.7)	<0.0001	-280,000
5–14 years	7.7 (7.3–8.1)	6.8 (6.4–7.2)	6.6 (6.3–6.9)	5.8 (5.5–6.1)	<0.0001	-380,000
15–24 years	9.8 (9.4–10.2)	10.3 (9.8–10.7)	10.1 (9.7–10.4)	9.0 (8.6–9.4)	0.0002	-230,000
25–44 years	26.0 (25.3–26.7)	26.3 (25.6–27.0)	25.7 (24.9–26.4)	24.4 (23.7–25.1)	<0.0001	-530,000
45–64 years	24.4 (23.8–25.0)	26.1 (25.5–26.7)	26.5 (25.9–27.0)	28.0 (27.4–28.6)	<0.0001	+310,000
65–74 years	12.3 (11.7–12.8)	11.7 (11.2–12.2)	11.6 (11.1–12.0)	12.6 (12.1–13.2)	N/S	N/A
75+ years	11.7 (11.1–12.4)	11.3 (10.7–12.0)	12.7 (11.9–13.4)	13.9 (13.1–14.7)	<0.0001	+220,000
Commonwealth concession card holder	47.3 (45.8–48.8)	36.7 (35.1–38.3)	40.4 (38.8–41.9)	43.2 (41.8–44.7)	0.003	N/A

(a) Missing data removed from analysis.

(b) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

Note: CI—confidence interval; N/S—not statistically significant; N/A—not applicable.

## 2.4 Patient reasons for encounter

Overall, there was no change in the number of reasons for encounter per 100 encounters between 1998–99 and 2004–05. However, Table 2.4 shows significant changes in the types of patient reasons for encounter at general practice encounters.

Between 1998–99 and 2004–05 there was:

- a significant and steady increase in patient presentations of RFEs of a general and unspecific nature
- a significant increase in the rate at which RFEs were described in process terms such as: request/need for medications, treatments and therapeutics; a referral; results of tests and administrative processes
- a significant and steady decrease in the rate of presentations of RFEs related to the respiratory system, the ear, and the blood/blood-forming organs
- a significant decrease in the rate of presentation of RFEs expressed in terms of a diagnostic label (e.g. 'about my diabetes')
- a significant increase in the rate at which patients reported the need for prescription as their reason for attendance
- an increase in the rate at which test results were reported as a RFE
- a decrease in patient presentations for abdominal pain
- a significant decrease in the rate at which patients reported upper respiratory tract infections as their reason for presentation.

Examples of the effect of these changes on a national level are:

- an estimated national annual decrease of 930,000 presentations of respiratory problems as a reason for encounter (i.e. 5.6 million fewer occasions in 2004–05 at which the patient presented a respiratory problem as their reason for the encounter than in 1998–99)
- an estimated national annual increase of 0.5 million reasons for encounter associated with the receipt of results of tests already undertaken (i.e. 3 million more occasions at which 'test results' was a reason for the encounter in 2004–05 than in 1998–99).

**Table 2.4: Significant changes in patient reasons for encounter 1998–99 and 2004–05**

Patient RFEs	1998–99	2000–01	2002–03	2004–05	p value	Annual national change <sup>(a)</sup>
	Rate per 100 encounters (95% CI) (n=96,901)	Rate per 100 encounters (95% CI) (n=99,307)	Rate per 100 encounters (95% CI) (n=100,987)	Rate per 100 encounters (95% CI) (n=94,386)		
<b>ICPC-2 Chapter</b>						
General & unspecified	26.6 (25.7–27.4)	28.3 (27.5–29.1)	34.6 (33.6–35.6)	36.5 (35.5–37.6)	<0.0001	+1,290,000
Respiratory	24.8 (24.0–25.6)	24.6 (23.7–25.4)	23.0 (22.0–24.0)	20.6 (19.8–21.4)	<0.0001	-930,000
Ear	4.5 (4.3–4.7)	4.2 (4.0–4.3)	4.0 (3.8–4.1)	3.9 (3.7–4.1)	<0.0001	-140,000
Blood	1.8 (1.6–2.0)	2.0 (1.8–2.2)	1.0 (0.8–1.2)	1.2 (1.0–1.5)	<0.0001	-110,000
<b>ICPC-2 Component</b>						
Diagnosis, diseases	33.6 (31.9–35.2)	29.0 (27.6–30.5)	26.0 (24.6–27.4)	24.5 (23.3–25.7)	<0.0001	-1,810,000
Medications/treatments /therapeutics	10.3 (9.8–10.9)	11.2 (10.6–11.8)	13.0 (12.4–13.6)	14.5 (13.8–15.3)	<0.0001	+550,000
Referral & other RFEs	4.4 (4.0–4.7)	6.5 (6.0–7.0)	7.0 (6.6–7.5)	7.4 (6.9–7.9)	<0.0001	+430,000
Results	3.4 (3.1–3.7)	4.2 (3.9–4.6)	5.4 (5.0–5.7)	6.8 (6.4–7.2)	<0.0001	+500,000
Administrative	1.1 (0.9–1.2)	1.1 (0.9–1.3)	1.6 (1.4–1.8)	1.7 (1.5–1.8)	<0.0001	+80,000
<b>Individual RFE</b>						
Prescription—all*	8.2 (7.7–8.7)	9.2 (8.7–9.8)	10.8 (10.2–11.3)	12.2 (11.5–12.9)	<0.0001	+540,000
Test results*	3.4 (3.1–3.7)	4.3 (3.9–4.6)	5.4 (5.0–5.7)	6.8 (6.4–7.2)	<0.0001	+500,000
Abdominal pain*	2.2 (2.1–2.4)	2.3 (2.1–2.4)	1.9 (1.8–2.1)	1.9 (1.7–2.0)	<0.0001	-80,000
Upper respiratory tract infection	2.9 (2.5–3.3)	2.6 (2.2–3.0)	2.2 (1.8–2.5)	1.8 (1.2–2.1)	<0.0001	-200,000

(a) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

\* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 3, <[www.aihw.gov.au/publications/index.cfm](http://www.aihw.gov.au/publications/index.cfm)>).

Note: CI—confidence interval.

## 2.5 Problems managed

Overall, there was no change in the number of problems managed per 100 encounters between 1998–99 and 2004–05. There was also no change in the rate of new problems managed. However, Table 2.5 shows significant changes in the types of problems managed at general practice encounters. The significant differences observed between 1998–99 and 2004–05 are listed below.

- The rate of chronic problems managed significantly increased from 46.5 to 50.8 per 100 encounters. The extrapolated effect was an estimated average annual national average increase of 180,000 occasions of GP management of a chronic problem (i.e. 1.1 million more occasions of chronic problem management in 2004–05 than in 1998–99).
- There was an increase in the management rate of general and unspecified problems. This increase can be accounted for in part by the increased rates of recording ‘prescription’ and ‘test result’ as problems managed.
- Endocrine and metabolic problems were managed significantly more often over time. This was particularly evident in the increased management rates of both diabetes and lipid disorders.
- The management of disorders of the male genital system increased.
- There was a significant decline in the rate of respiratory problems managed. The extrapolated national result suggests six million fewer contacts with respiratory problems in 2004–05 than in 1998–99. This decrease is demonstrated in the management of many individual respiratory problems, particularly upper respiratory tract infection, acute bronchitis, asthma, sinusitis and tonsillitis, all of which were managed significantly less often in 2004–05 than in 1998–99. The management of asthma is investigated in greater detail in Chapter 3, Section 3.5.
- There was a decrease in the management of disorders of the ear. However, this decline appears to have occurred between 1998–99 and 2002–03, with the management of ear disorders remaining steady since this time. Specifically, the management of acute otitis media decreased steadily over the period examined.

There was no change in the overall rate of musculoskeletal and digestive problem management since 1998–99. However, osteoarthritis and oesophageal disease were managed at steadily increasing rates between 1998–99 and 2004–05.

The management of menopausal complaints decreased in frequency, but this fall occurred only between 2002–03 and 2004–05. We hypothesise that this is due to media attention surrounding the link between hormone replacement therapy and breast cancer.<sup>23</sup>

The greatest national effects on management rates were for osteoarthritis, oesophageal disease and diabetes. Their management rates all showed an average annual national increased of 70,000 occasions of GP services (i.e. for each of these conditions there were 420,000 more encounters in 2004–05 than in 1998–99).

**Table 2.5: Significant changes in the problems managed at encounter 1998–99 to 2004–05**

Problems managed	1998–99	2000–01	2002–03	2004–05	p value	Annual national change <sup>(a)</sup>
	Rate per 100 encounters (95% CI) (n=96,901)	Rate per 100 encounters (95% CI) (n=99,307)	Rate per 100 encounters (95% CI) (n=100,987)	Rate per 100 encounters (95% CI) (n=94,386)		
Problems managed (all)	145.3 (143.5–147.2)	144.5 (142.8–146.3)	144.9 (143.0–146.8)	145.5 (143.6–147.4)	N/S	N/A
Chronic problems	46.5 (44.9–48.0)	47.4 (45.8–48.9)	48.2 (46.5–49.8)	50.8 (49.1–52.5)	<0.0001	+180,000
Respiratory	24.3 (23.6–25.0)	22.5 (21.9–23.2)	20.6 (20.0–21.3)	19.2 (18.6–19.9)	<0.0001	-1,070,000
Upper respiratory tract infection	6.8 (6.4–7.3)	6.9 (6.5–7.4)	6.4 (5.9–6.8)	5.6 (5.1–6.0)	<0.0001	-260,000
Acute bronchitis/bronchiolitis	3.3 (3.0–3.6)	2.7 (2.5–3.0)	2.6 (2.3–2.8)	2.4 (2.1–2.7)	<0.0001	-170,000
Asthma	3.2 (3.0–3.4)	2.8 (2.7–3.0)	2.7 (2.5–2.9)	2.3 (2.2–2.5)	<0.0001	-160,000
Sinusitis acute/chronic	1.6 (1.4–1.7)	1.5 (1.3–1.7)	1.3 (1.1–1.4)	1.2 (1.0–1.3)	<0.0001	-80,000
Tonsillitis*	1.5 (1.3–1.6)	1.2 (1.1–1.4)	1.1 (0.9–1.3)	1.1 (0.9–1.2)	<0.0001	-80,000
General & unspecified	13.3 (12.7–13.7)	14.3 (13.7–14.7)	15.8 (15.2–16.3)	15.1 (14.5–15.7)	<0.0001	+150,000
Prescription—all*	1.4 (1.1–1.7)	1.7 (1.4–1.9)	2.0 (1.6–2.3)	2.1 (1.7–2.5)	<0.0001	+84,000
Test results*	0.8 (0.5–1.1)	0.8 (0.6–1.0)	1.1 (0.8–1.3)	1.4 (1.2–1.6)	<0.0001	+84,000
Endocrine & metabolic	8.8 (8.4–9.2)	9.8 (9.3–10.2)	10.6 (10.2–11.0)	11.8 (11.2–12.3)	<0.0001	+370,000
Diabetes*	2.6 (2.4–2.7)	2.8 (2.6–3.0)	2.9 (2.7–3.1)	3.2 (3.0–3.4)	<0.001	+70,000
Lipid disorder	2.5 (2.3–2.7)	2.9 (2.7–3.1)	3.0 (2.8–3.2)	3.3 (3.1–3.6)	<0.0001	+110,000
Ear	4.9 (4.7–5.1)	4.4 (4.2–4.6)	4.0 (3.8–4.2)	4.1 (3.9–4.2)	<0.0001	-180,000
Acute otitis media/myringitis	1.8 (1.6–2.0)	1.5 (1.3–1.7)	1.3 (1.1–1.5)	1.2 (1.0–1.3)	<0.0001	-120,000
Male genital system	1.4 (1.3–1.5)	1.5 (1.3–1.6)	1.4 (1.3–1.6)	1.8 (1.6–1.9)	<0.0001	+40,000
Other individual conditions						
Osteoarthritis*	2.2 (2.0–2.4)	2.5 (2.3–2.7)	2.6 (2.4–2.8)	2.8 (2.6–3.0)	<0.0001	+70,000
Oesophageal disease	1.5 (1.4–1.6)	1.5 (1.3–1.6)	1.9 (1.7–2.1)	2.1 (1.9–2.3)	<0.0001	+70,000
Menopausal complaint	1.5 (1.3–1.6)	1.4 (1.3–1.5)	1.5 (1.3–1.6)	0.9 (0.8–1.1)	<0.0001	-110,000

(a) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

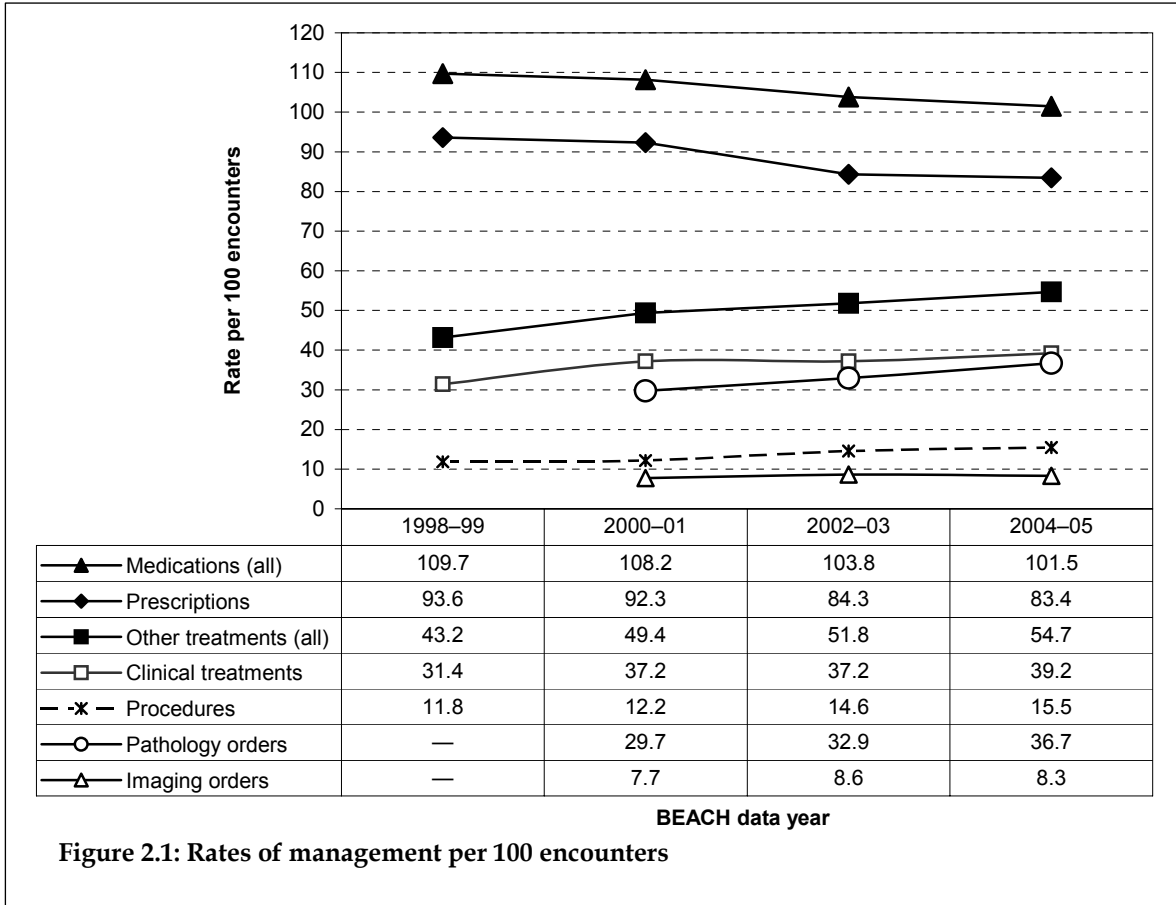
\* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 3, <[www.aihw.gov.au/publications/index.cfm](http://www.aihw.gov.au/publications/index.cfm)>).

Note: CI—confidence interval; N/S—not statistically significant; N/A—not applicable

## 2.6 Overview of management 1998–99 to 2004–05

From 1998–99 to 2004–05 there were some significant changes in management activities. These are presented in Figure 2.1 and are summarised below, but are examined in more detail later in this chapter.

- There was a decrease per 100 encounters in the overall medication rate, prescribed medications in particular.
- There was an increase per 100 encounters in:
  - the rate of provision of other treatments
  - the rate of provision of clinical treatments
  - the rate of procedural treatments
  - the number of pathology tests ordered.
- There was a marginally significant increase in the number of imaging tests ordered.
- There was no significant change in overall referral rates, or in rates of referral to medical specialists, allied health professionals or hospital services (results not shown).



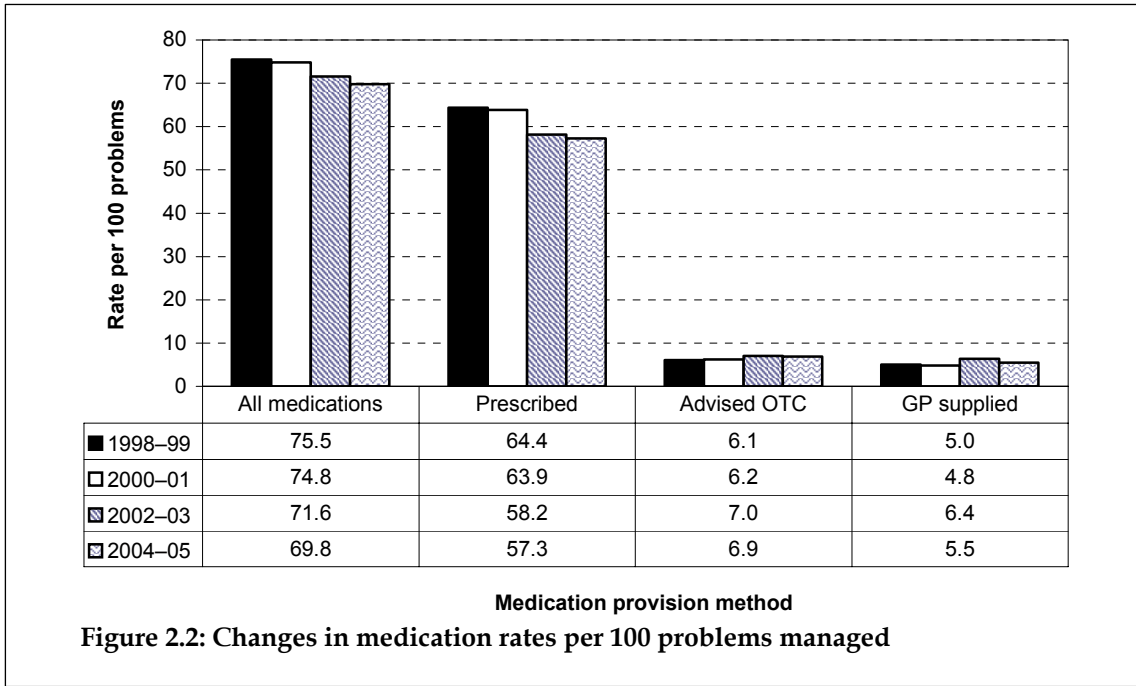
Note: Data collection and coding methods for pathology and imaging changed at the beginning of the third year of BEACH. Data from 1998–99 have therefore been omitted from this comparison.

## 2.7 Medications

The significant changes in the rates of medications (prescribed/supplied or advised) are listed below.

- There was a decrease in overall medication rates, from 110 per 100 encounters in 1998–99 to 102 per 100 in 2004–05 (Table 2.6).
- The rates of prescribed medications fell from 94 per 100 encounters to 83 per 100. The extrapolated effect of this change is an average annual national decrease in prescribed medications of 2.6 million prescriptions (i.e. there were an estimated 15.6 million fewer prescriptions given by GPs in 2004–05 than in 1998–99). It must be remembered that this decrease represents a change in the number of times a prescription is written by the GP. It does not take into consideration the number of repeat prescriptions involved or whether or not the patient actually filled the prescription (Table 2.6).
- The rate of advised OTC medications and those supplied by the GP showed no significant changes over this period (results not shown).

It has been demonstrated that the number of problems managed at encounters did not change over the period (Table 2.5). Therefore the decrease in the medication rate per 100 encounters is not due to a decrease in the number of problems managed at encounter. Figure 2.2 shows the changes in medication rates per 100 problems managed over time.



## Prescribed medications

Table 2.6 shows significant changes in prescribing rates. The Anatomical Therapeutic Chemical (ATC) drug group Level 2 has been chosen for the group comparisons over time because it is the most stable level. Individual generic medications are reported here in the Coding Atlas of Pharmaceutical Substances (CAPS) to ensure the most complete and comparable data are available over time. The effects of the measured changes at a national level are also presented in the right-hand column of this table. More details about the reasons for reporting in ATC Level 2 and CAPS are provided in Chapter 5 – Methods, Section 5.6.

We have not included 1998–99 in this section because there was a change in the CAPS coding system at the end of the 1999–00 BEACH year to provide more detail about each prescribed medication. Although 1998–99 can be included in time series analyses for a specific topic, the mapping processes required make inclusion of these earlier data extremely time consuming in a general analysis such as this where so many individual medications need to be compared over time.

The following statistically significant changes in prescribing rates occurred between 2000–01 and 2004–05.

- There was only a marginal increase in the prescribing rate of drugs for acid-related disorders, affecting an extrapolated estimated increase of 50,000 such prescriptions per year. However, there was movement among individual generic medications in this group. There was a significant decrease in the prescribing rate of ranitidine after it became available over-the-counter in 2000 and there was a significant increase in the prescribing rate of esomeprazole following its introduction in April 2002. The extrapolated effect of this movement is that in 2004–05 GPs prescribed ranitidine on about 720,000 fewer occasions than in 2000–01, and esomeprazole was prescribed on about 680,000 occasions since its inception.
- GPs prescribed plain diuretics significantly less often, coinciding with the advent of diuretic-cardiovascular drug combinations, but there was no significant change in the prescribing of any of the individual generic medications in this group.
- Agents acting on the renin-angiotensin system (mainly ACE inhibitors and A2RAs) showed a significant increase in prescribing rates, about half of which was due to a marginal increase in prescribing of ramipril.
- Serum lipid-lowering agents were prescribed significantly more often, atorvastatin in particular. Changes in rates for this group of medications are investigated in more detail in Chapter 3, Section 3.6.
- There was a significant decrease in the prescribing rate of antibacterials for systemic use, particularly for cefaclor monohydrate, accompanied by only a marginal decrease in the prescribing rate of roxithromycin.
- There was a decrease in the prescribing of anti-inflammatory and antirheumatic drugs acting on the musculoskeletal system (as a group). This was reflected particularly in the prescribing rate of celecoxib. In contrast there was a significant increase in the prescribing of meloxicam after its introduction in February 2002. Changes in prescribing patterns for this group of drugs are investigated in greater detail in Chapter 3, Section 3.3.
- While there was no significant change in the prescribing rate of analgesics (as a group) the prescribing rate of paracetamol decreased significantly. This decrease had the largest national effect of all the prescribing changes. The extrapolated national figures suggest

that GPs prescribed paracetamol on 1.3 million fewer occasions in 2004–05 than in 2000–01. At the same time, there was a significant increase in the prescribing rate of tramadol, suggesting that GPs prescribed it on 800,000 more occasions in 2004–05 than in 2000–01 when the slow-release presentation of the drug became available.

- There was a significant decrease in the prescribing rate of nasal preparations as a group, almost wholly accounted for by the decrease in prescriptions for topical nasal budesonide. This was probably due to an over-the-counter presentation of that medication coming onto the market in 2001.
- Drugs for obstructive airways disease (as a group) were prescribed significantly less often in 2004–05 than in 2000–01. However, there was also movement within this drug group, with a significant decrease in the prescribing rate of salbutamol once it was available over-the-counter, and a smaller but significant increase in prescriptions for the new fluticasone/salmeterol combination.

## Advice or supply of medications

There were no significant changes in the rates of provision of advice for OTC purchase, nor the rate of GP direct supply of individual medications.

## 2.8 Other treatments 1998–99 to 2004–05

### Clinical treatments

Table 2.6 shows the significant differences in clinical treatments between 1998–99 and 2004–05. These are described below.

- There was an increase in the number of clinical treatments provided. The extrapolated annual increase across the country was 900,000 more occasions each year at which such treatment was given (i.e. 5.4 million more occasions in 2004–05 than in 1998–99).
- The rate of provision of counselling relating to nutrition and weight increased. Extrapolated to all GP encounters in Australia, this result suggests that GPs provided counselling and advice about nutrition and weight on about 1.5 million more occasions in 2004–05 than they did in 1998–99. The SNAP (Smoking, Nutrition, Alcohol and Physical Activity) Framework for General Practice was introduced in June 2001. SNAP was developed by the Joint Advisory Group (JAG) on General Practice and Population Health.<sup>24</sup> This framework was possibly introduced in response to an increasing interest in these areas by GPs—reflected in the significant increase in the rate of counselling relating to nutrition/weight in 2000–01. It is interesting to note that the rate has continued at this high level in the subsequent three time intervals.
- The provision of general advice/education increased. At the same time, there was a relatively steady decrease in the rate of provision of advice and education about treatment. This could reflect the decrease in management rates of acute problems (particularly acute respiratory infections) and the increase in the management rate of chronic problems, demonstrated earlier in this chapter. On the other hand, it may simply reflect a shift in GP recording technique and the subsequent codes chosen to classify the data.

- There was an increase in the rate of provision of counselling for psychological problems. Extrapolated to all GP encounters in Australia, this result suggests that GPs provided psychological counselling on about 0.5 million more occasions in 2004–05 than they did in 1998–99.
- Sickness certificates were provided at higher rates in 2004–05 than in 1998–99.
- There was a steady increase between 1998–99 and 2002–03 in the rate of counselling for the problem under management. Overall there was a significant increase of one million occasions at which GPs provided counselling of this type in 2004–05 than in 1998–99.
- There was no significant change in the rate of advice/education regarding medication from 1998–99 to 2002–03 but there was a significant increase in 2004–05 and this recent change will be followed with interest next year.

## **Procedural treatments**

Table 2.6 shows the significant differences in procedural treatments between 1998–99 and 2004–05. These are described below.

- There was an overall steady increase in the total number of procedural treatments provided by GPs.
- There was a significant increase in the rate of local injection/infiltration administered, especially in 2002–03. This could be partially due to development of more specific instructions to the GPs about completing the ‘other treatment’ section for each problem. Nevertheless, the increase in overall procedural rates has been steady and linear. It would appear to represent a real increase in the total amount of procedural work being undertaken in general practice irrespective of the effect of improved recording of local injection/infiltration.
- There were no significant changes for the majority of individual types of procedural treatments (results not tabulated).

**Table 2.6: Significant changes in the rates of prescribed medications, clinical treatments and procedures 1998–99 to 2004–05**

	1998–99	2000–01	2002–03	2004–05		
	Rate per 100 encounters (95% CI) (n=96,901)	Rate per 100 encounters (95% CI) (n=99,307)	Rate per 100 encounters (95% CI) (n=100,987)	Rate per 100 encounters (95% CI) (n=94,386)	p value	Annual national change <sup>(a)</sup>
<b>Medications</b>						
<b>Medications—all</b>	109.7 (107.4–112.0)	108.2 (105.7–110.6)	103.8 (101.4–106.2)	101.5 (99.3–103.8)	<0.0001	-2,400,000
Prescribed medications	93.6 (91.2–96.1)	92.3 (89.9–94.7)	84.3 (81.8–86.9)	83.4 (81.2–85.5)	<0.0001	-2,630,000
<b>ATC group (Level 2) and CAPS generic—prescribed<sup>(b)</sup></b>						
Drugs for acid-related disorders	—	2.4 (2.2–2.5)	2.5 (2.4–2.7)	2.7 (2.5–2.9)	<0.001	+50,000
Esomeprazole <sup>+</sup>	—	N/A	0.3 (0.2–0.3)	0.7 (0.6–0.8)	<0.0001	+170,000
Ranitidine	—	1.0 (0.9–1.2)	0.5 (0.3–0.6)	0.3 (0.3–0.5)	<0.0001	-180,000
Diuretics	—	1.8 (1.7–2.0)	1.6 (1.4–1.8)	1.3 (1.2–1.5)	<0.0001	-130,000
Agents acting on the renin-angiotensin system	—	4.5 (4.3–4.8)	4.9 (4.6–5.2)	5.5 (5.2–5.9)	<0.0001	+190,000
Ramipril	—	0.4 (0.2–0.6)	0.7 (0.5–0.8)	0.8 (0.6–1.0)	<0.0001	+80,000
Serum lipid-lowering agents	—	2.4 (2.2–2.6)	2.4 (2.2–2.6)	3.0 (2.8–3.2)	<0.0001	+140,000
Atorvastatin	—	0.9 (0.8–1.0)	1.0 (0.9–1.2)	1.4 (1.2–1.5)	<0.0001	+100,000
Antibacterials for systemic use	—	15.4 (14.8–16.0)	13.3 (12.8–13.9)	14.0 (13.5–14.6)	<0.01	-460,000
Cefaclor monohydrate	—	1.6 (1.3–2.0)	1.0 (0.7–1.3)	0.8 (0.4–1.2)	<0.0001	-210,000
Roxithromycin	—	1.6 (1.4–1.8)	1.3 (1.1–1.6)	1.1 (0.1–1.4)	<0.0001	-120,000
Anti-inflammatory & antirheumatic acting on musculosk'l system	—	5.7 (5.4–6.0)	4.8 (4.6–5.1)	4.5 (4.2–4.8)	<0.0001	-350,000
Celecoxib	—	2.1 (1.9–2.4)	1.1 (0.9–1.2)	0.9 (0.7–1.1)	<0.0001	-300,000
Meloxicam <sup>+</sup>	—	N/A	0.3 (0.0–0.6)	0.8 (0.6–1.0)	<0.0001	+190,000
Analgesics	—	8.9 (8.4–9.4)	8.5 (8.0–9.1)	8.3 (7.8–8.7)	N/S	N/A
Paracetamol	—	3.9 (3.5–4.4)	3.1 (2.7–3.6)	2.7 (2.4–3.0)	<0.0001	-320,000
Tramadol	—	0.2 (0.0–0.5)	1.0 (0.8–1.1)	1.0 (0.8–1.2)	<0.0001	+200,000

(continued)

**Table 2.6 (continued): Significant changes in the rates of prescribed medications, clinical treatments and procedures 1998–99 to 2004–05**

	1998–99	2000–01	2002–03	2004–05	<i>p</i> value	Annual national change <sup>(a)</sup>
	Rate per 100 encounters (95% CI) (n=96,901)	Rate per 100 encounters (95% CI) (n=99,307)	Rate per 100 encounters (95% CI) (n=100,987)	Rate per 100 encounters (95% CI) (n=94,386)		
<b>Medications continued</b>						
Nasal preparations	—	1.5 (1.3–1.6)	0.8 (0.6–1.0)	0.8 (0.5–1.0)	<0.0001	-160,000
Budesonide topical nasal	—	0.9 (0.7–1.1)	0.3 (0.1–0.5)	0.3 (0.0–0.7)	<0.0001	-130,000
Drugs for obstructive airway disease	—	5.5 (5.2–5.9)	4.6 (4.2–4.9)	3.8 (3.6–4.1)	<0.0001	-470,000
Salbutamol	—	2.1 (1.9–2.3)	1.7 (1.5–1.9)	1.4 (1.3–1.6)	<0.0001	-170,000
Fluticasone/salmeterol	—	0.2 (0.0–0.6)	0.9 (0.7–1.1)	0.9 (0.7–1.0)	<0.0001	+150,000
<b>Clinical treatments</b>						
<b>Clinical treatments—all</b>	<b>31.4 (29.7–33.0)</b>	<b>37.2 (35.1–39.3)</b>	<b>37.2 (35.0–39.4)</b>	<b>39.2 (37.1–41.4)</b>	<0.0001	+900,000
Advice/education—treatment*	6.2 (5.5–6.8)	5.9 (5.1–6.6)	4.2 (3.6–4.9)	4.6 (4.0–5.1)	<0.0001	-320,000
Counselling/advice—nutrition/weight*	3.8 (3.4–4.1)	5.6 (4.9–6.2)	5.2 (4.6–5.9)	5.3 (4.7–5.9)	<0.0001	+240,000
Advice/education*	3.5 (2.7–4.3)	5.8 (5.1–6.5)	6.9 (5.9–7.9)	7.0 (6.2–7.8)	<0.0001	+510,000
Counselling—problem*	2.9 (2.4–3.5)	3.4 (2.8–3.9)	5.5 (4.7–6.3)	4.2 (3.3–5.0)	<0.0001	+160,000
Counselling—psychological*	2.5 (2.2–2.8)	2.8 (2.5–3.2)	2.9 (2.6–3.2)	3.2 (2.9–3.5)	<0.0001	+90,000
Advice/education—medication*	2.4 (2.1–2.7)	2.6 (2.2–3.0)	2.5 (2.1–2.8)	3.4 (2.9–3.8)	<0.0001	+120,000
Sickness certificate	0.7 (0.3–1.1)	1.1 (0.4–1.8)	1.3 (0.8–1.8)	1.7 (1.3–2.1)	<0.0001	+140,000
<b>Procedural treatments</b>						
<b>Procedural treatment—all</b>	<b>11.8 (11.2–12.5)</b>	<b>12.2 (11.6–12.8)</b>	<b>14.6 (13.9–15.3)</b>	<b>15.5 (14.6–16.4)</b>	<0.0001	+460,000
Local injection/infiltration*	0.3 (0.0–1.6)	0.2 (0.0–0.5)	1.5 (1.2–1.8)	2.0 (1.6–2.3)	<0.0001	+260,000

(a) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

(b) Prescribing data collected in 1998–99 are not reported here due to less coding precision in that year.

+ Esomeprazole and Meloxicam were not available for purchase prior to 2002.

\* Includes multiple ICPC-2 or ICPC-2 PLUS codes (see Appendix 3, <[www.aihw.gov.au/publications/index.cfm](http://www.aihw.gov.au/publications/index.cfm)>).

Note: CI—confidence interval; N/A—not applicable; musculosk'l—musculoskeletal; N/S—not significant.

## 2.9 Referrals 1998–99 to 2004–05

As previously stated, there were no significant changes in total referral rates over the study period and more specifically there was no change in referral rates to medical specialists allied health services, or hospital services.

## 2.10 Test ordering

### At least one test ordered 1998–99 to 2004–05

- As shown in Table 2.7, between 1998–99 and 2004–05 there was a significant increase in the proportion of encounters generating one or more pathology test orders – the likelihood of having pathology ordered at the encounter increased from 13.2% to 15.7% of encounters (a 19% increase) over that period. The extrapolated national effect is an average annual increase of 250,000 encounters that resulted in an order for a pathology test (i.e. there were 1.5 million more encounters at which GPs decided to order pathology tests in 2004–05 than in 1998–99).
- There was a significant increase of approximately the same proportion in the likelihood of one or more imaging tests being ordered at encounters between 1998–99 and 2004–05. However, since imaging is less frequently ordered by GPs than is pathology, the national effect was not as large after extrapolation. We estimate that in 2004–05 there were approximately 360,000 more encounters that resulted in a GP order for an imaging test than there were in 1998–99 (Table 2.7).

### Changes in distribution of test orders 2000–01 to 2004–05

Differences in the collection and coding of each pathology test from the first two years of BEACH data (1998–99 and 1999–00) mean that these data are not comparable with data from 2000–01 onward. Since the beginning of the third year of BEACH, this change in coding of pathology orders has allowed more specificity in recording these orders.

The change in pathology ordering over the first three years of the BEACH program was investigated in detail in a specific study of pathology ordering patterns undertaken for the Australian Government Department of Health and Ageing. The results have been reported in a separate publication.<sup>9</sup>

GPs can order more than one pathology test at any single encounter. Table 2.8 shows the changes in pathology ordering from 2000–01 to 2004–05.

- Since 2000–01 the number of pathology tests ordered per 100 encounters increased by almost 25% from 29.7 to 36.7. The extrapolated effect of the measured change in pathology test ordering in BEACH is an average annual increase of 1.4 million tests per year between 2000–01 and 2004–05 (i.e. GPs ordered 5.6 million more pathology tests in 2004–05 than they did in 2000–01).
- The significant increase in overall pathology order rates was particularly reflected in significant increases in ordering of chemical pathology and haematology.

There was only a marginally significant increase in the total number of imaging tests ordered per 100 encounters and there was no change in the distribution of imaging orders since 2000–01 (Table 2.8).

## 2.11 Patient risk behaviours 2000–01 to 2004–05

Although the patient risk factor questions were asked of subsamples of patients in 1998–99 and 1999–01, all three questions were not asked of the same patient. In 2000–01, the three questions were asked of the same patient subsample. The results presented here are therefore limited to the study years of 2000–01 to 2004–05 (Table 2.9).

- In 2000–01, 54.3% of patients were overweight or obese, compared with 57.0% in 2004–05. There was a significant increase in the proportion of adults classed as obese (from 20.2% to 22.4%) (Table 2.9).
- The proportion of adults reporting at-risk levels of alcohol consumption increased significantly (from 24.1% to 26.4%) over the four time intervals (Table 2.9).
- There was no significant change between 2000–01 and 2004–05 in:
  - the proportion of adults classed as overweight
  - the prevalence of self-reported daily smoking
  - the proportion of children who were overweight or the proportion who were obese.

**Table 2.7: Significant changes in per cent of encounters with at least one test ordered 1998–99 to 2004–05**

	1998–99	2000–01	2002–03	2004–05	p value	Annual national change <sup>(a)</sup>
	Per cent of encounters (95% CI) (n=96,901)	Per cent of encounters (95% CI) (n=99,307)	Per cent of encounters (95% CI) (n=100,987)	Per cent of encounters (95% CI) (n=94,385)		
At least one pathology test ordered	13.2 (12.8–13.7)	13.8 (13.3–14.3)	14.7 (14.2–15.3)	15.7 (15.2–16.3)	<0.0001	+250,000
At least one imaging ordered	6.3 (6.0–6.6)	6.8 (6.5–7.1)	7.5 (7.1–7.8)	7.3 (7.0–7.6)	<0.0001	+90,000

(a) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

Note: CI—confidence interval.

**Table 2.8: Significant changes in pathology and imaging test ordering 2000–01 to 2004–05**

	2000–01	2001–02	2002–03	2003–04	2004–05	p value	Annual national change <sup>(a)</sup>
	Rate per 100 encounters (95% CI) (n=99,307)	Rate per 100 encounters (95% CI) (n=97,973)	Rate per 100 encounters (95% CI) (n=100,987)	Rate per 100 encounters (95% CI) (n=98,877)	Rate per 100 encounters (95% CI) (n=94,385)		
<b>Pathology test ordered</b>							
<b>Total pathology tests</b>	<b>29.7 (28.4–30.9)</b>	<b>31.0 (29.7–32.4)</b>	<b>32.9 (31.5–34.4)</b>	<b>35.2 (33.7–36.7)</b>	<b>36.7 (35.2–38.2)</b>	<0.0001	+1,410,000
Chemical	15.7 (14.8–16.5)	16.5 (15.6–17.3)	17.7 (16.8–18.6)	19.1 (18.1–20.1)	20.4 (19.5–21.4)	<0.0001	+980,000
Haematology	5.8 (5.5–6.2)	6.2 (5.8–6.5)	6.3 (5.9–6.6)	6.8 (6.4–7.2)	7.0 (6.6–7.3)	<0.0001	+230,000
<b>Total imaging tests</b>	<b>7.7 (7.3–8.0)</b>	<b>7.9 (7.6–8.2)</b>	<b>8.6 (8.2–9.0)</b>	<b>8.2 (7.8–8.6)</b>	<b>8.3 (8.0–8.6)</b>	N/S	N/A

(a) Extrapolation for linear changes: the estimated average annual change on a national level in terms of events in general practice—the effect is cumulative over the study period.

Note: Data collection and coding method changed at the beginning of the third year of BEACH. Years 1 and 2 have therefore been excluded from this comparison. CI—confidence interval; N/S—not significant; N/A—not applicable.

**Table 2.9: Significant changes in patient (aged 18 years and over) risk factors 2000–01 to 2004–05**

Risk factor	2000–01	2001–02	2002–03	2003–04	2004–05
	Per cent (95% CI) (n=31,957)	Per cent (95% CI) (n=31,789)	Per cent (95% CI) (n=32,367)	Per cent (95% CI) (n=31,890)	Per cent (95% CI) (n=30,476)
Obese	20.2 (19.5–20.8)	21.4 (20.7–22.1)	20.9 (20.2–21.5)	22.0 (21.4–22.7)	22.4 (21.7–23.1)
Overweight	34.1 (33.4–34.7)	33.5 (32.9–34.1)	33.8 (33.2–34.5)	34.5 (33.8–35.1)	34.6 (33.9–35.2)
	<b>(n=31,543)</b>	<b>(n=31,559)</b>	<b>(n=32,140)</b>	<b>(n=31,721)</b>	<b>(n=30,414)</b>
At-risk alcohol level	24.1 (23.3–24.9)	26.0 (25.1–26.8)	26.2 (25.4–27.1)	26.7 (25.8–27.6)	26.4 (25.5–27.3)

Note: CI—confidence interval.

## 2.12 Discussion

### The GPs

Many of the demonstrated changes in the characteristics of the participating GPs align with information from other sources. The increasing feminisation of the GP workforce, the ageing of the workforce and the move away from longer hours of work have all been reported by the AIHW.<sup>2</sup> The move away from solo general practice and from provision of their own after-hours patient care, the increasing proportion of GPs who hold the FRACGP, and the decrease in the proportion of GPs who have graduated in Australia show a continuation of the trends already demonstrated in a more detailed earlier study of changing characteristics of GPs between 1990–91 and 2002–03.<sup>22</sup>

The increase in the proportion of encounters that were said to be claimable as long surgery consultations from Medicare supports Medicare data which show that the number of Medicare item 36 claims rose annually on average by 400,000 over the six time intervals of this study.<sup>4</sup> This increase is hardly surprising in light of the changing age distribution of patients at encounters.

### The patients at encounter

Earlier in this chapter we demonstrated that between 1998–99 and 2004–05 there were changes in the age distribution of patients encountered by the GPs. There were significant increases in the proportion of encounters with patients aged 45–64 and those aged 75 years and over. In parallel, there was a significant decrease in the proportion of the workload accounted for by children aged less than 15 years. This section investigates the relationship between these results and data drawn from other sources.

- Figure 2.3 provides a graphic view of the age distribution of patients encountered in the 2004–05 BEACH year compared with those encountered in the 1998–99 BEACH year, with the two older age groups combined into one (65 years and over) for comparability with other data sources.
- Figure 2.4 shows the age distribution of patients at services claimed as Medicare A1 items in each of these periods. These data show similar trends for children aged less than 15 years (decreasing from 17.1% to 14.3% of the MBS A1 items of service), and for patients aged 45–64 years (increasing from 24.1% to 27.1% of MBS A1 claims). However, in contrast to the BEACH data, Medicare shows that patients of 65 years and over accounted for a smaller proportion of the claims in 2004–05 than they did in 1998–99. This is probably because the Medicare data do not include claims made through the Department of Veterans' Affairs for patients who hold the Repatriation Card, a large proportion of whom would be in this older age group. Since BEACH includes samples of all encounters, those encounters paid for by both Medicare and the Department of Veterans' Affairs are included.
- Figure 2.5 shows changes in the age distribution of the population of Australia over the same period. It is apparent that children aged less than 15 years have decreased as a proportion of the population since 1998–99. Further, the largest increase in proportional distribution has occurred in the 45–64 years age group, which accounted for 24.3% of the population in 2004, an increase of over 2% since 1998–99. People aged 65 years and over

accounted for a larger proportion of the population in 2004 than in 1998, though the increase was not as large as in the 45–64 age group.

- Figure 2.6 shows the age-specific rates of Medicare-claimed A1 items of service in 2002–03.<sup>10</sup> It demonstrates that the age distribution of the patients at encounter will be affected to different degrees by both changes in population distribution and by the mean attendance rate of each age group. For example, although the proportion of the population accounted for by 45–64-year-olds increased by 2.2% over the study period, the attendance rate of this group of patients is on average 5.6 visits per year, so the effect may be less than the smaller increase of 0.7% in the proportion who are aged 65 years and over who visit more frequently.

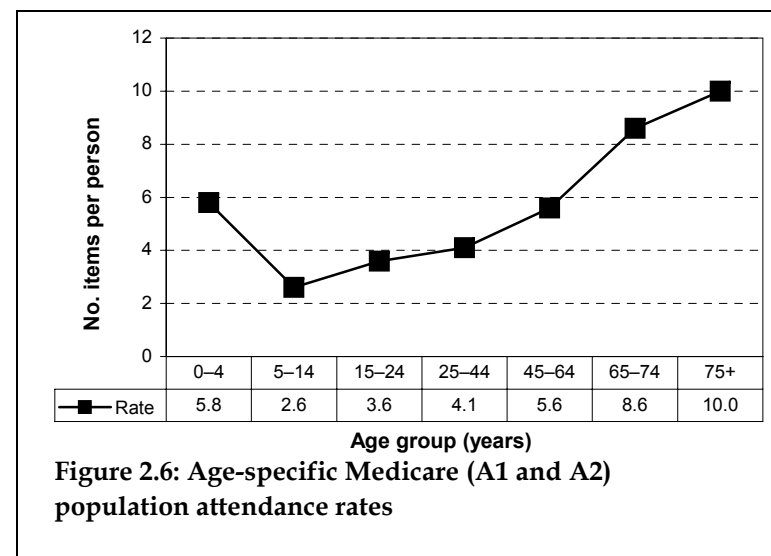
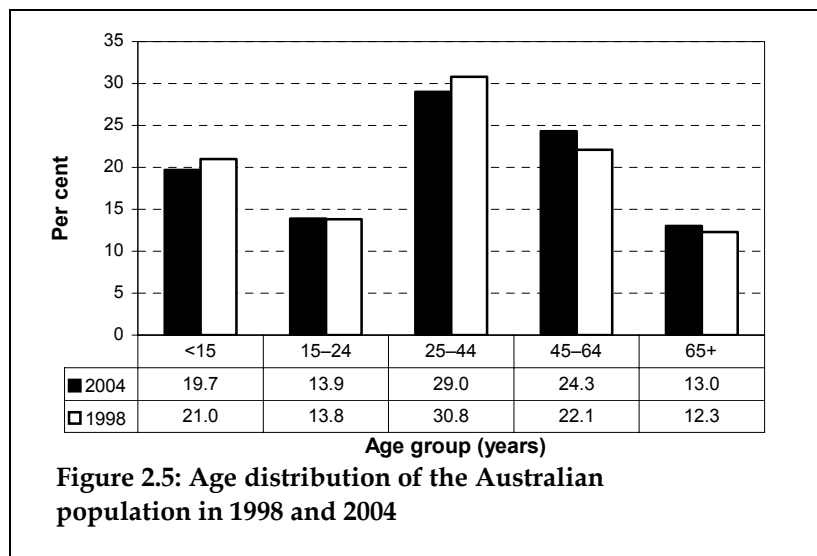
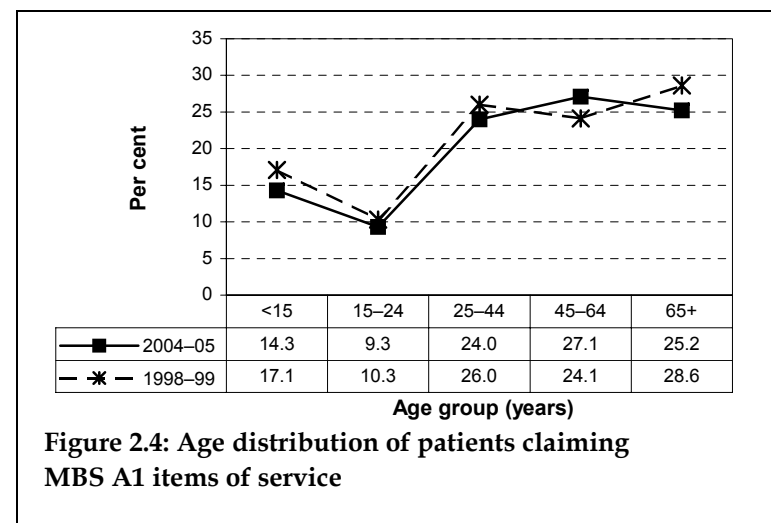
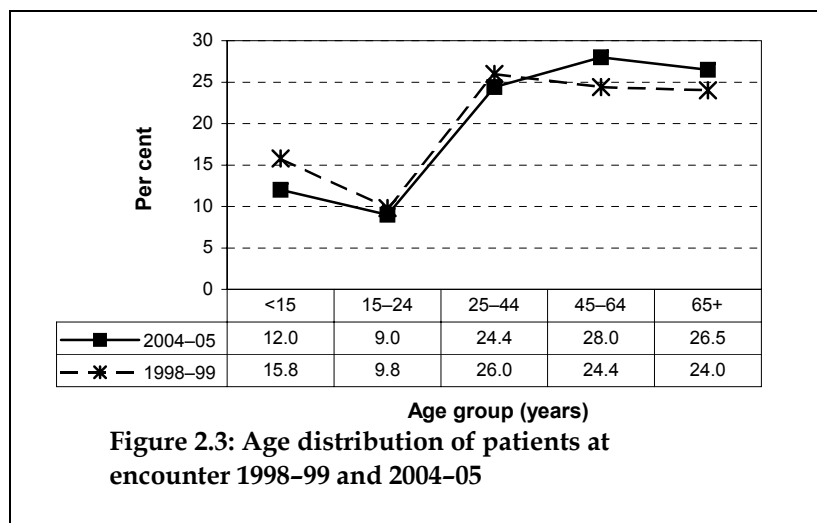
These data suggest that the increase in the proportion of BEACH encounters with patients of 45–64 years may reflect the baby boomer move into this age group – that is, there are more people in this age group in the population than there used to be, so they account for more services. Baby boomers are also moving into an age of increased GP service utilisation as they get older (moving from an average 4.1 Medicare A1 claims per year to 5.5 per year). So the increase reflects the increase in their proportion in the community multiplied by their high average attendance rates. It may also be the result of an increasing likelihood of people in this age group remaining in the community, and therefore seeing their GP regularly.

### **Patient reasons for encounter**

The changing age distribution of the patients at GP–patient encounters has resulted in a change in the reasons the patients give for seeing the GP (patient RFEs). There were increases in RFEs associated with the need for services such as a prescription, a referral, and returning for the results of tests and other administrative processes. In conjunction, there was a decrease in the rate at which the patients described their reason in terms of a diagnostic label.

An apparent significant decrease in RFEs related to the blood and blood-forming organs was found to be due to a change in the coding of the RFE ‘blood test results’ in early 2001. In the previous years this was classified in the ICPC-2 chapter ‘Blood and blood-forming organs’. In later years it was classified in the ‘General and unspecified’ chapter. This change would have made some contribution to the increase in RFEs of a general and unspecified nature over the six time intervals of this comparison.

Presentations of patients to receive test results doubled between 1998–99 and 2004–05, so that in the latter year there were 3 million more occasions of such presentations across the country than there were in 1998–99. This trend supports the hypothesis that there has been an increase in the rate at which patients are being asked to return to the GP to receive their test results (with a hypothesised decrease in the likelihood of GPs giving results over the telephone to their patients). The Privacy Legislation released at the end of 2001 together with economic reasons may have contributed to an increase in call-back of patients for receipt of test results.



Sources: Figure 2.3—1998-99 data from *General practice activity in Australia 1998-99* (Table 6.1, p. 25), 2004-05 data from Chapter 4, Table 4.11 this report; Figure 2.4—1998 data from *General Practice Activity in Australia 1998-99* (Table 4.2, p. 19), 2004-05 data from Chapter 4, Table 4.4 this report; Figure 2.5—from ABS Population Census data; Figure 2.6—1998 data from *General Practice Activity in the States and Territories of Australia 1998-2003* (Figure 3.2, p. 12).

## Problems managed at encounter

The decrease in the management rate of upper respiratory tract infection (URTI) is likely to be linked to the decrease in the proportion of encounters with children. In 2002–03, BEACH data showed that children aged less than 15 years accounted for 37% of all patients managed for URTI, while in that year they represented less than 7% of the attending patients for whom records were provided.<sup>25</sup> It is clear that the presentation rate for URTI in children is far higher than for adults, so that the overall decrease in attendance rates by children will have a marked effect on the management rate of URTI.

The changing age distribution of the patients may also partly or wholly explain the decrease in management rates of other acute respiratory problems such as tonsillitis and acute bronchitis, and acute otitis media – all of which decreased over the study period – since these problems were the fifth, sixth and second (respectively) most common problems managed at encounters with children in 2000–01.<sup>26</sup>

The increase in the management rate of chronic problems is also to be expected in light of the changing age distribution of the patients at encounter, particularly the increase in the proportion of 45–64-year-old and older patients. The increase in management rates of chronic problems was most apparent in the management rates of lipid disorders, diabetes, and osteoarthritis. The use of lipid-lowering agents in the management of lipid disorders is investigated in Chapter 3, Section 3.6 of this report.

The decrease in management rates of menopausal complaints occurred largely in 2004–05 and may well suggest a decrease in the use of hormone replacement therapy by menopausal women as a result of wide publicity of the link between hormone replacement therapy and breast cancer.<sup>23</sup>

A significant decrease in the management rate of asthma had an extrapolated national effect of almost one million fewer occasions at which GPs managed this problem in 2004–05 than in 1998–99, even though the estimated prevalence of asthma in the patient population has not changed over his period.<sup>27</sup> 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. Those interested in more detail about the management of asthma should refer to Section 13.4 (p. 101) in *General Practice Activity in Australia 2003–04*.<sup>25</sup>

The steady but marginal annual increase in the management rate of diabetes resulting in about 420,000 additional encounters in 2004–05 compared with 1998–99 may be a result of the introduction of a Medicare incentive item number for completion of annual diabetes programs in 2001.<sup>6</sup> Those interested in more detail about the management of diabetes should refer to Section 13.6 (p. 109) in *General Practice Activity in Australia 2003–04*.<sup>28</sup>

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 encounters at which it is managed) and perhaps to the management rate of psychological problems over all. This proved not to be the case. There has been no significant change in the management rate of psychological problems, or of depression specifically, since 1998–99. As earlier noted, the rate at which GPs are providing psychological counselling has increased over the study period but the increase has been slow and steady rather than being a sudden response to the introduction of these MBS item numbers.

The management rate and medication management of psychological problems (and depression in particular) are investigated in greater detail in Chapter 3, Section 3.4. The results indicate that the selective serotonin reuptake inhibitors and the serotonin-noradrenaline reuptake inhibitors have continued to increase as the medication of choice for the management of depression. Those interested in more detail about the management of psychological problems should refer to Section 13.3 (p. 97) in *General Practice Activity in Australia 2003–04*.<sup>28</sup>

## Management

The number of medications prescribed to patients decreased over the study period, to suggest an extrapolated effect of 15.8 million fewer prescriptions being written by GPs in 2004–05 than in 1998–99. This estimate does not consider the effect on the number of prescriptions filled at the pharmacy as a result of GP prescriptions. For example, if the prescriptions that were not written by GPs in 2004–05, had in the past, an average of one repeat, there would have been over 30 million fewer scripts crossing the counter in total in 2004–05 than in 1998–99.

In parallel with this decrease came increased use of clinical counselling/advice and increased use of procedural treatments. Both the chances of the GP ordering pathology and the total number of pathology tests ordered continued to rise. In 2004–05 one in every six encounters resulted in a pathology test order, and on average GPs ordered two tests on these occasions. The chances of the GP ordering an imaging test also increased, but it had a marginal effect on the total number of imaging tests ordered per 100 encounters. Both the pathology and imaging increases may be the result of increased fear of litigation.

It is notable that these changes did not appear to affect referral rates, which remained relatively constant. In 2004–05, one in 12 encounters resulted in patient referral to a specialist, and only 3% generated a referral to an allied health professional. Neither of these results differ from those of 1998–99. The lack of any increase in referrals to allied health professionals is somewhat surprising, in light of the general pressure on GPs in the last few years to involve allied health providers more in the care of patients with chronic and complex disease. However, the introduction of Medicare payments for some allied health services for some patients<sup>29</sup> in the latter half of 2004 may lead to an increase in such referrals in the coming years.

Although medication prescribing rates decreased overall, there was movement among some individual drug types in both directions. A number of the changes were caused by market shifts: either the introduction of new products or presentations, or the availability over-the-counter of medications that previously required a prescription. Prescriptions of tramadol increased following the introduction in 2001 of the slow-release tablet, which provided a more reliable prevention of breakthrough pain. Prescribing patterns for acid-related disorders were influenced by the release of ranitidine onto the over-the-counter market, and the advent of esomeprazole, which quickly showed significant increases.

Other changes in medication rates followed the management rates of the problems for which they are prescribed. For example, the increased prescribing rate of serum lipid-lowering agents occurred in parallel with the increased management rate of lipid problems. This topic is investigated in greater detail in Chapter 3, Section 3.6.

The largest decreases were seen in the prescribing of paracetamol and celecoxib. The reasons for the decrease in the prescribing of paracetamol are not clear, but may be due to the higher patient co-payment, required since January 2004 for Commonwealth concession card holders, making it less attractive to obtain paracetamol via a GP's prescription than to purchase it from

supermarkets. The decrease in the prescribing of celecoxib started in 2002–03 and has continued. This topic is investigated as part of the more detailed analysis of NSAID medications in Chapter 3, Section 3.3.

The 25% increase in provision of clinical treatments over the six time intervals since 1998–99 was reflected in increases in many different types of counselling (including psychological counselling as noted above).

The pathology test order rate continued to grow such that there were an estimated 5.6 million more tests ordered by GPs in 2004–05 than in 2000–01. In an earlier study of changes in pathology ordering by GPs between 1998 and 2001, the measured increase in ordering was found to be due to an increase in the number of tests ordered when the decision to order tests had been made, rather than to any increase in the likelihood of the GP ordering at least one pathology test at the encounter.<sup>9</sup> This is no longer the case. The chance of the GP ordering at least one pathology test increased by 19% so that GPs made the decision to order pathology at 1.5 million more encounters in 2004–05 than they did in 1998–99. Overall, there was a 24% increase in the actual number of tests ordered since 2000–01, indicating that together with the greater likelihood of ordering a test, more tests are being ordered on those occasions in 2004–05 than was the case in 2000–01.

External influences such as the introduction of new MBS item numbers, system changes such as increased computerisation, and possibly increased fear of litigation must be considered as possible influences on pathology ordering rates of GPs over the period of this study.

The likelihood of the GP ordering at least one imaging test also increased – possibly for similar reasons as those suggested above. However, this resulted in only a marginal increase in the total number of imaging tests ordered over the four time intervals for which comparable data were available on this topic.

## **2.13 Conclusion**

This chapter has given an overview of the changes in the GPs, their patients and the content of the encounters. It has shown that the characteristics of the general practice workforce is changing and so are their patients. It has demonstrated that GPs are prescribing less, referring at the same rate, ordering more tests, and providing counselling and advice more often than they were in 1998–99. In the next chapter some specific topics have been selected for more detailed investigation of changes that have occurred over the period 1998–99 to 2004–05.