

General practice activity in Australia 2014–15



Bettering the Evaluation and Care of Health

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Chapter 14:

Care of older people in general practice

14.1 Background

Like other OECD countries, Australia's population is ageing. The proportion aged 65 years or older (65+) increased from 12.4% in June 2000 to 14.7% in June 2014,¹ and the Australian Bureau of Statistics (ABS) expects the proportion to reach 18.6% by 2030.²

The two main drivers for this increase are lower fertility rates and increased life expectancy.

Lower fertility rates

Since the mid 1970s, Australia's fertility rate has been lower than that required to replace both the mother and her partner in the population (2.1 children per woman is considered to be the replacement rate).³ In 2013, the total fertility rate was approximately 1.88 children per woman,³ so the proportion of the population who are children is decreasing, and the proportion who are older is increasing.

Increasing life expectancy

People are living longer than they did in previous generations. Since 1947, life expectancy in Australia has increased by approximately 12 years and is currently one of the highest in the world.⁴ Importantly, it is not only the total number of years that has increased, but also the years without disability from illness.⁵ The increase in life expectancy has increased the number of older Australians, which in turn increases the average age of the population.

While Australians enjoy one of the longest life expectancies in the world, what we pay for health care is comparable to countries with lower life expectancies. Box 14.1 shows World Health Organization (WHO) data from 2013 for five selected developed countries. Of the group, Australia had the highest life expectancy (4 years more than the average American). In terms of total (public and private) health expenditure as a proportion of gross domestic product, Australia and the United Kingdom spent the least at 9%, while the United States spent 17%. In terms of total health expenditure per person in US dollars, the UK spent the least at \$3,311 per person, the United States spent the most at \$9,146 per person, and Australia was mid-range at \$4,191 per person.

Box 14.1: Life expectancy at birth and total health expenditure for selected countries (2013)

	Australia	New Zealand	United Kingdom	Canada	United States of America
Life expectancy	83 years	82 years	81 years	82 years	79 years
Total health expenditure (GDP)	9%	10%	9%	11%	17%
Total health expenditure (PPP USD\$ per capita)	\$4,191	\$3,405	\$3,311	\$4,759	\$9,146

Note: PPP – Purchasing Power Parity; GDP – Gross Domestic Product; USD – United States Dollars.

Sources: WHO Global Health Expenditure Database⁶; WHO Global Health Observatory Data Repository, Life expectancy data by country.⁷

However Indigenous Australians do not enjoy the same level of life expectancy. It is estimated male Indigenous Australians born in 2010–12 will live 10.6 fewer years on average, and Indigenous females 9.5 fewer years than the average for the non-Indigenous Australian population.⁸

The ageing of the population places additional demands on health and other resources because increased age is associated with increased prevalence of diagnosed chronic conditions. While the proportion of the population made up by people aged 65+ increased by 18% from June 2000 to June 2014,¹ Medicare data show that the proportion of GP encounters that were with patients aged 65+ increased by 22% over the same period. Nearly all people aged 65+ (98.5%) had at least one Medicare-claimed GP visit in 2014–15, and some of the remaining 1.5% may have also visited, with the visits being covered by the Department of Veterans' Affairs. The average number of GP visits per person aged 65+ in a given year increased from 9.6 in 2000–01 to 10.4 in 2014–15.

This chapter explores the care of people aged 65+ in general practice over the 15 years, from April 2000 to March 2015, using data from the BEACH study and several of its substudies. We examine GP services provided, the content of the encounters, continuity of care, and the prevalence of chronic problems and multimorbidity. Finally, we look at risk factors which affect the health of patients in older age groups.

We investigated:

- chronic pain, which is associated with many chronic problems, as pain management adds to the increasing number of medications being taken by older patients
- adverse drug events, a growing risk because of the increasing number of medications required to manage the multiple chronic conditions often prevalent in older patients
- smoking, alcohol consumption and overweight in patients aged 65+, as these are modifiable risk factors that exacerbate many chronic respiratory, circulatory, metabolic and musculoskeletal conditions experienced by older patients.

These results will provide valuable information for health policy makers and service providers, to help structure a response to the challenges of caring for an ageing population.

14.2 Results

The increase in people aged 65+ and the flow on increases in general practice use

Over the period 2000–01 to 2014–15, the proportion of:

- GP–patient encounters accounted for by people aged 65+ increased from 22.8% to 27.8%, a 22% relative increase
- GP face-to-face clinical consulting time that was spent managing patients aged 65+ increased from 23.9% to 28.7%, a 20% relative increase
- problems managed in general practice that were with patients aged 65+ increased from 26.9% to 35.0%, a 30% relative increase
- all medications prescribed, supplied or advised for over-the-counter purchase in general practice that were for patients aged 65+ increased from 28.2% to 35.8%, a 27% relative increase
- all pathology and imaging tests ordered that were for patients aged 65+ increased from 24.9% to 30.8%, a 24% relative increase
- referrals made in general practice that were for patients aged 65+ increased from 24.2% to 32.2%, a 33% relative increase.

All the relative increases were far larger than the 18% relative increase in the proportion of the population aged 65+. This is because patients aged 65+ attended more often than average, and more problems were managed at these encounters. This results in more clinical actions per encounter with people in this age group than at encounters with younger people.

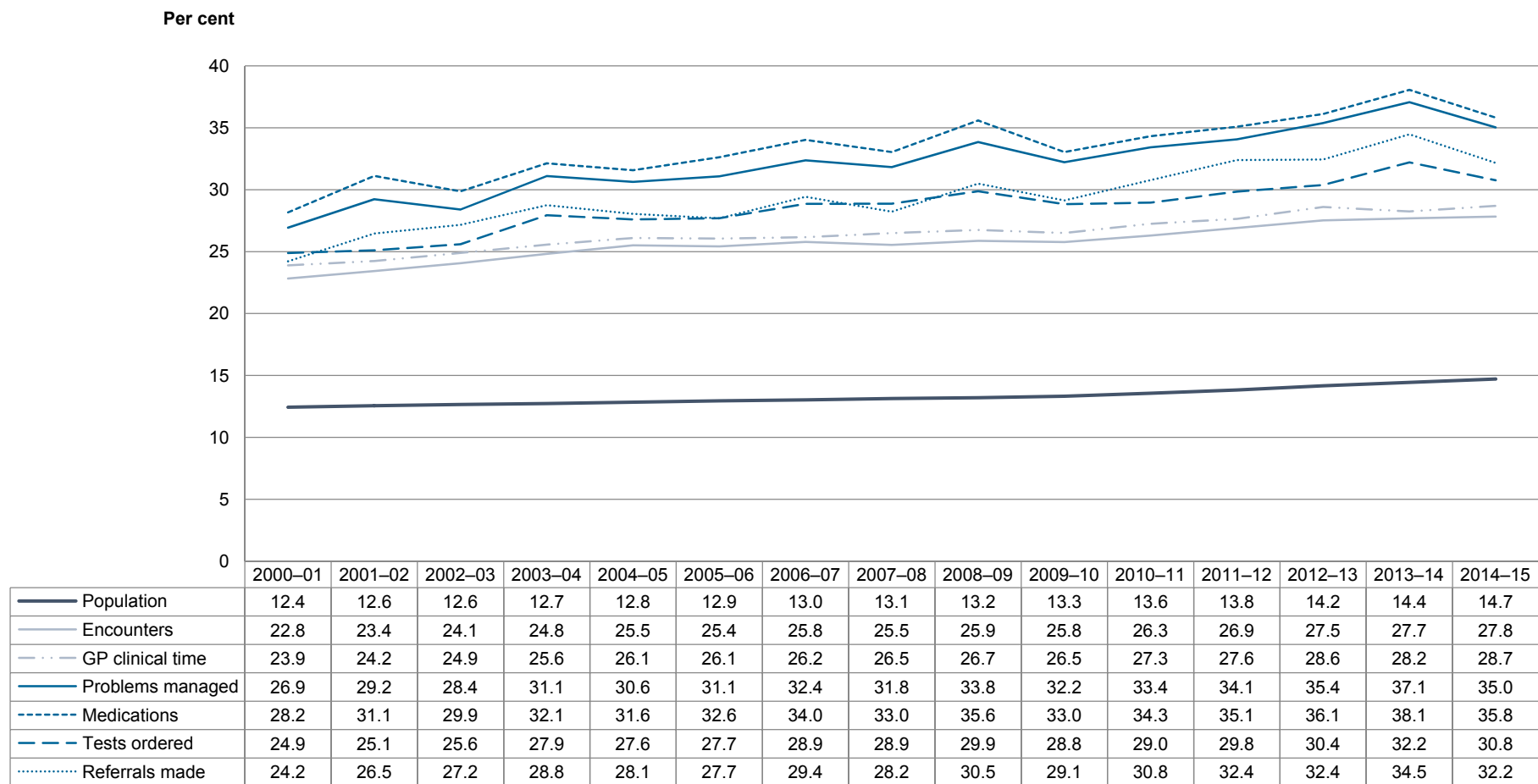
Figure 14.1 facilitates relative comparisons between the proportion of management actions accounted for by patients aged 65+ and the proportion they account for in the population. For example, in 2014–15, patients aged 65+ accounted for 35.8% of all medication emanating from general practice while they only accounted for 14.7% of the population. By dividing the 35.8% by 14.7%, we find that people aged 65+ on average use 2.4 times as many medications as the average Australian. Applying the same approach, in 2014–15, compared with the average Australian, people aged 65+ had:

- 1.9 times more GP encounters
- 2.0 times more clinical face-to-face time with GPs
- 2.4 times more problems managed
- 2.1 times more tests ordered
- 2.2 times more referrals made.

There was no significant change in the average length of consultations with this age group, ranging from 14.1 to 15.1 minutes across the study (results not tabled).

Figure 14.2 gives an idea of the content of GP encounters with patients aged 65+ from 2000–01 to 2014–15. Over this period, on average for every 100 encounters with patients aged 65+:

- the number of problems managed increased by 5% (from 169.2 per 100 encounters to 176.9)
- the number of tests ordered increased from 40.5 to 58.7, a 45% increase
- the number of referrals to specialists or allied health professionals, emergency departments or hospitals rose from 11.0 to 16.7, a 52% increase
- the number of medications prescribed, supplied to the patient or advised for over-the counter purchase decreased from 132.6 to 120.3, a decrease of 9%. This decrease may be due to the increasing number of combination medication products available (which now require a single prescription, when previously GPs had to prescribe the two products separately) and due to the increasing numbers of medications that used to be prescription-only, but are now available for over-the-counter purchase (so that patients can now acquire them without seeing a GP).



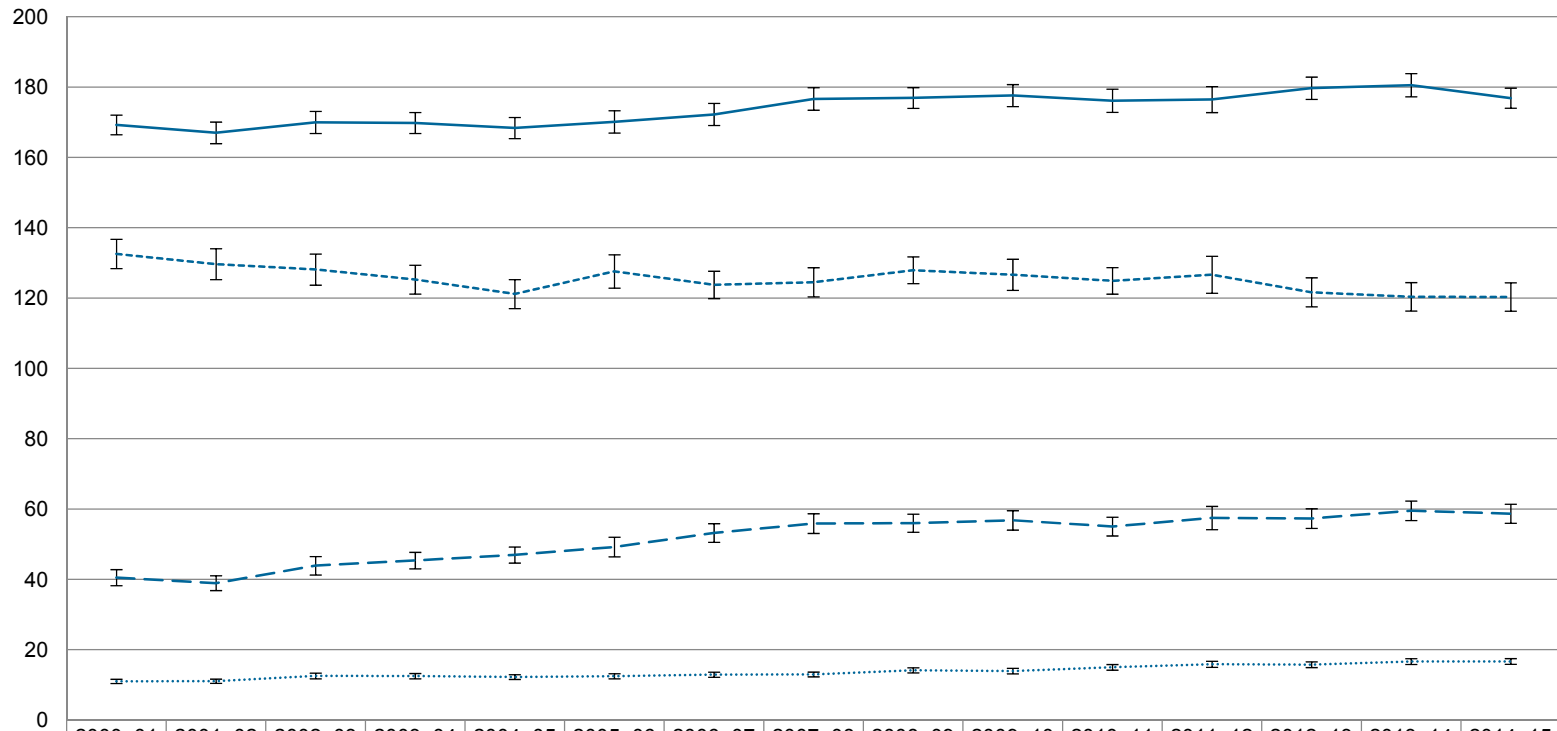
BEACH data years

Source: Population data: ABS 3101.0 Australian Demographic Statistics, Table 59.¹ Number of GP encounters: personal communication, Department of Health, June 2015. Length of consultation: BEACH SAND data.

Notes: Medications include GP-prescribed, GP-supplied direct to the patient, and those advised for patient over-the-counter purchase. Tests include pathology, imaging, and other tests ordered or undertaken at the encounter. Referrals include all referrals made at the encounter (e.g. to medical specialists, allied health services, hospitals, clinics).

Figure 14.1 Proportion of population, GP encounters and management actions accounted for by people aged 65+ (2000-01 to 2014-15)

Rate per 100 encounters with patients aged 65+



	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Problems managed	169.2	167.0	170.0	169.8	168.4	170.1	172.2	176.6	176.9	177.6	176.1	176.5	179.7	180.5	176.9
Medications	132.6	129.6	128.1	125.3	121.1	127.6	123.8	124.5	127.9	126.6	124.9	126.6	121.6	120.4	120.3
Tests	40.5	38.9	43.9	45.3	46.9	49.2	53.2	55.9	56.0	56.8	55.0	57.5	57.3	59.5	58.7
Referrals	11.0	11.0	12.5	12.5	12.2	12.4	12.9	13.0	14.1	13.9	15.0	15.9	15.7	16.6	16.7

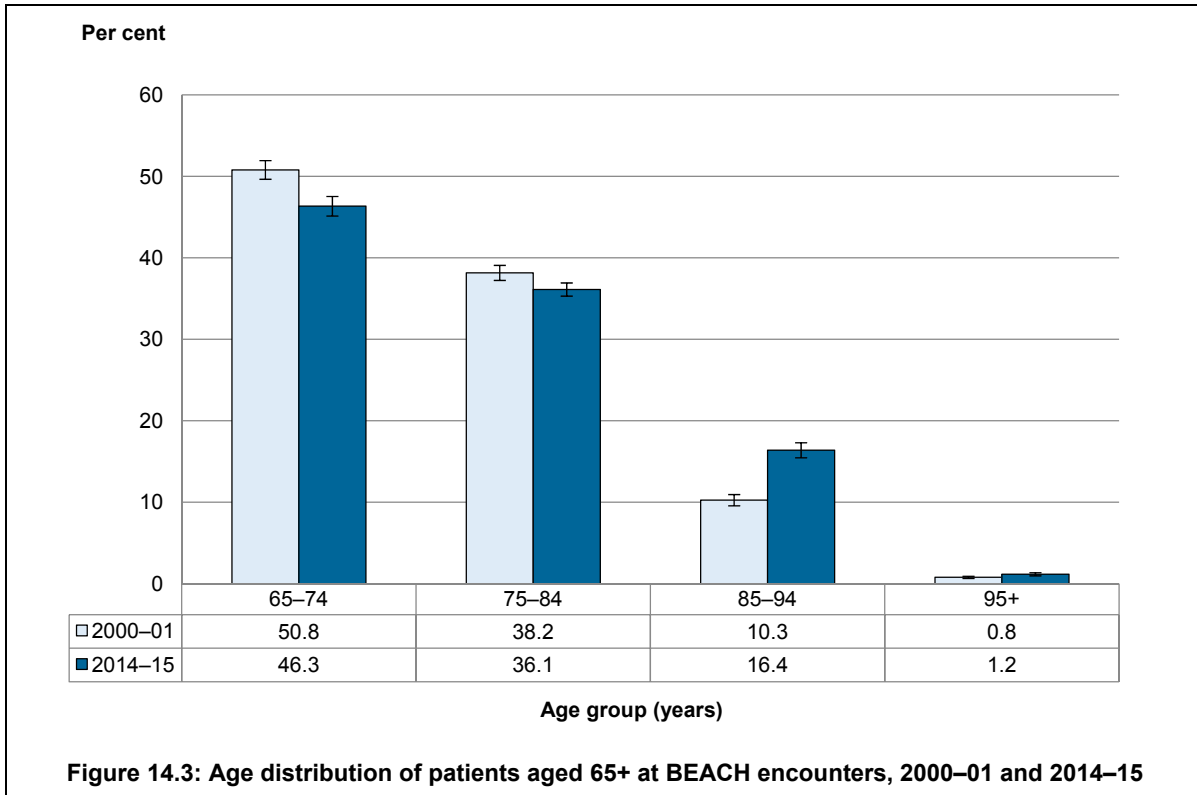
BEACH data years

Notes: Medications include GP-prescribed, GP-supplied direct to the patient, and those advised for patient over-the-counter purchase. Tests include pathology, imaging, and other tests ordered or undertaken at the encounter. Referrals include all referrals made at the encounter (e.g. to medical specialists, allied health services, hospitals, clinics).

Figure 14.2: Rate of problems managed and clinical actions used in treatment per 100 encounters with patients aged 65+ (2000-01 to 2014-15)

Age distribution of patients aged 65+ at encounters

Over the study period, the average age of patients aged 65+ increased from 75.7 (95% CI: 75.5–75.9) in 2000–01 to 76.7 (95% CI: 76.4–76.9) in 2014–15. Figure 14.3 shows the age distribution of patients aged 65+ at BEACH encounters in 2000–01 and 2014–15. It is apparent that in 2014–15, older patients at GP encounters were less likely to be aged 65–84 years and more likely to be aged 85 years or more than in 2000–01. This means that proportionally, GP encounters with patients of 85 years or more have increased. This may explain some of the increase in use of services by patients aged 65+ years (reported earlier), above and beyond their increase as a proportion of the population.



Number of chronic conditions in people aged 65+

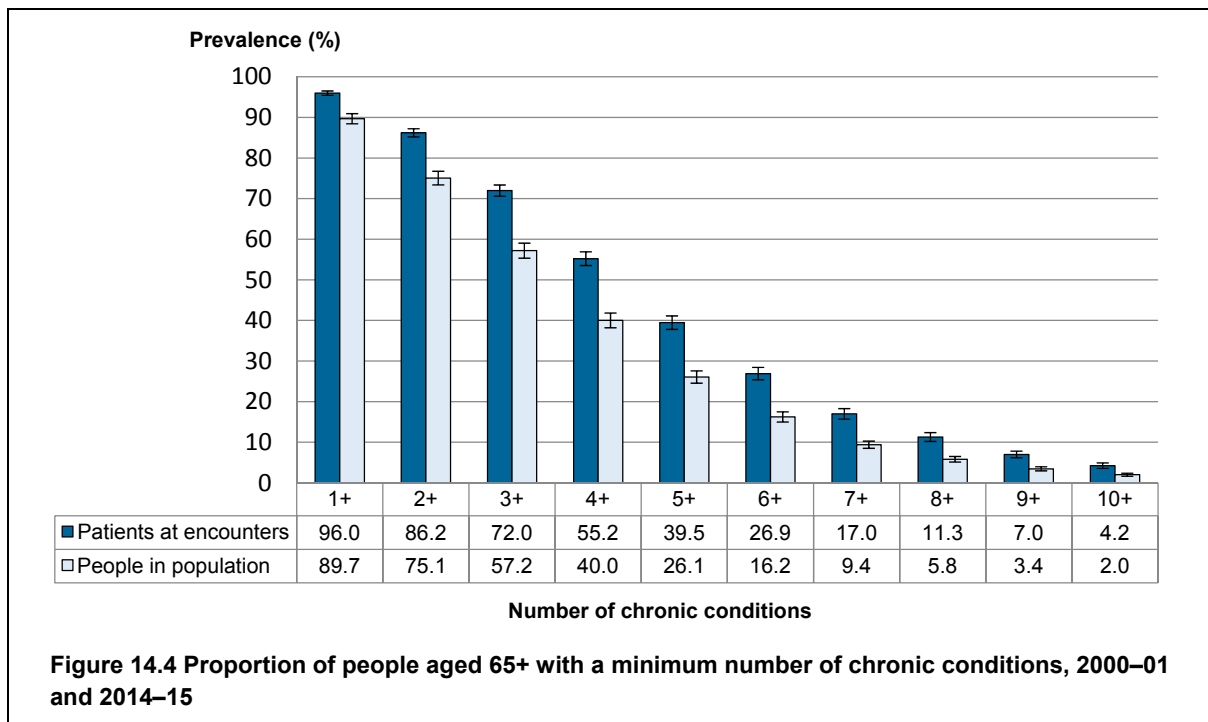
Between December 2012 and February 2015, we conducted a series of SAND substudies (see Section 2.6 for SAND methods) that examined the prevalence of diagnosed chronic conditions and multimorbidity among patients at general practice encounters. In total, information was collected from 35,162 patients, making it one of the largest, nationally representative, multimorbidity studies in the world. There were 11,181 patients in the sample aged 65+. The tools used in this study are described in more detail in SAND abstract 231 (Chapter 15).

Figure 14.4 shows that among those aged 65+:

- nearly all had one or more chronic conditions (96.0% of patients at encounters and 89.7% of people in the population). This means that only 4.0% of patients at encounters and 10.3% of people in the population aged 65+ had no diagnosed chronic conditions
- the majority had three or more diagnosed chronic conditions (72.0% of patients at encounters and 57.2% of people in the population)
- about a quarter of patients at encounters and 16.2% of people in the population had six or more diagnosed chronic conditions

- 4.2 % of patients at encounters and 2.0% of older people in the population had 10 or more diagnosed chronic conditions. Although this appears to be a small proportion it does suggest about 70,000 older people have 10 or more diagnosed chronic conditions.

Three or more diagnosed chronic conditions is often used as the definition of multimorbidity.⁹ Multimorbidity is an important health indicator as it is associated with increased health care resource use,¹⁰ complexity of care,¹¹ severity of illness,¹¹ polypharmacy¹² and adverse events.¹² Of the 11,181 patients aged 65+ in our sample, the average number of diagnosed chronic conditions among them was 4.2 (median = 4) and ranged from 0 to 21.



Prevalence and management of chronic conditions

Table 14.1 shows the prevalence and management rates of common chronic conditions among patients aged 65+. The pattern differs markedly for individual chronic conditions.

Example 1: diagnosed hypertension

- was present in 55.8% of patients aged 65+ at GP–patient encounters
- was managed at 15.5% of encounters with patients aged 65+, therefore was managed at 27.8% of encounters with patients with diagnosed hypertension.

Patients aged 65+ with diagnosed hypertension visited an average 8.7 times a year. Therefore we can conclude that among patients with diagnosed hypertension, this condition was managed at 2.4 of their 8.7 visits a year on average.

The prevalence of diagnosed hypertension among people aged 65+ in the population was 48.3%. Of those people with hypertension, 78.5% had two or more other chronic conditions (that is, they had three or more diagnosed chronic conditions in total).

Example 2: diagnosed type 2 diabetes

- was present in 19.4% of patients aged 65+ at encounters
- was managed at only 6.9% of encounters with patients aged 65+
- was managed at about 35.8% of GP encounters with a patient with diagnosed type 2 diabetes.

Patients aged 65+ with diagnosed type 2 diabetes visited 9.3 times a year on average (a little more often than patients with hypertension). This means that for these patients, their type 2 diabetes was managed 3.3 times a year on average.

The prevalence of type 2 diabetes among people aged 65+ in the population was 16.0%, and 83.8% of these people had two or more other diagnosed chronic conditions.

Example 3: diagnosed congestive heart failure (CHF)

- was managed at only 1.9% of encounters with patients aged 65+
- was present in 7.2% of patients aged 65+ at encounters
- was therefore managed at 26.0% of GP visits made by a patient with diagnosed CHF.

Patients aged 65+ with CHF visited 12.6 times a year on average (nearly 50% more often than patients with hypertension). We conclude that in these patients, CHF was managed 3.3 times a year on average (35% more often than hypertension).

The prevalence of CHF among people aged 65+ in the population was 4.2% and nearly all of these people (95.4%) had two or more other chronic conditions.

Example 4: diagnosed dementia (including Alzheimers)

- was managed at only 1.5% of encounters with patients aged 65+
- was present in 6.7% of patients aged 65+ at encounters
- was therefore managed at about 22.6% of GP visits by patients with diagnosed dementia.

Patients aged 65+ with dementia visited 10.3 times a year on average. This means that in these patients, dementia was managed 2.3 times a year on average.

The prevalence of dementia among people aged 65+ in the population was 4.7% and nearly all of these people (84.0%) had two or more other chronic conditions.

Patterns of multimorbidity

We examined the specific patterns of multimorbidity, and found the most common 'pair' of chronic conditions diagnosed among patients aged 65+ was hypertension and osteoarthritis:

- 32.4% (95% CI: 31.1–33.7) of patients surveyed at encounter having both
- 24.1% (22.8–25.5) of people in the population having both.

Of patients with both these conditions who were surveyed at encounter, 69.9% (95% CI: 68.4–71.4) had three or more other chronic conditions (i.e. five or more in total).

Hypertension and hyperlipidaemia was the second of most prevalent pair, both being diagnosed in:

- 24.2% (95% CI: 22.9–25.3) of patients surveyed at encounter
- 20.0% (95% CI: 18.8–21.3) of people in the population.

Hyperlipidaemia and osteoarthritis were the third most common pair:

- 19.3% (95% CI: 18.1–20.5) of patients at encounters having both
- 14.3% (95% CI: 13.2–15.4) of people in the population having both.

It is therefore not surprising that the most prevalent "trio" of diagnosed chronic conditions was hypertension, hyperlipidaemia and osteoarthritis, all three conditions being diagnosed in

- 14.7% (95% CI: 13.7–15.8) of patients at encounters
- 10.6% (95% CI: 9.7–11.5) of people in the population

Of those patients at encounters with these three conditions, 83.9% (95% CI: 82.1–85.7) had at least two or more other conditions (5 or more in diagnosed chronic conditions in total).

Table 14.1: Prevalence and management of chronic conditions among people aged 65 years and older

Diagnosed condition	Prevalence at encounters (95% CI)	Proportion of encounters where this problem managed (95% CI)	Management Ratio	Number of GP visits in previous year (95% CI)	Number of times this problem managed in general practice per year	Prevalence in the Australian population (95% CI)	Proportion of those with this condition, who had 2 or more other chronic conditions (95% CI)
Hypertension	55.8% (54.5–57.0)	15.5% (14.7–16.4)	27.8%	8.7 (8.4–9.0)	2.4	48.3% (46.7–49.9)	78.5% (76.6–80.4)
Osteoarthritis	51.6% (50.1–53.2)	7.0% (6.6–7.5)	13.6%	9.3 (9.0–9.7)	1.3	41.5% (39.7–43.2)	81.5% (79.7–83.4)
Hyperlipidaemia	33.2% (31.7–34.6)	4.7% (4.3–5.2)	14.3%	8.7 (8.4–9.0)	1.2	28.9% (27.3–30.5)	85.9% (84.0–87.7)
Gastro-oesophageal reflux disease	21.5% (20.3–22.7)	4.4% (4.1–4.8)	20.7%	10.2 (9.8–10.7)	2.1	15.8% (14.7–16.9)	89.8% (87.8–91.8)
Type 2 diabetes	19.4% (18.5–20.2)	6.9% (6.5–7.4)	35.8%	9.3 (8.9–9.7)	3.3	16.0% (15.0–17.0)	83.8% (81.1–86.6)
Ischaemic heart disease	19.4% (18.5–20.3)	2.7% (2.4–3.0)	14.1%	10.5 (10.0–11.0)	1.5	14.1% (13.3–15.0)	91.7% (89.9–93.5)
Depression	17.9% (16.9–18.9)	2.9% (2.6–3.1)	16.1%	10.5 (9.9–11.0)	1.7	12.8% (11.9–13.8)	91.1% (89.3–93.0)
Osteoporosis	15.7% (14.7–16.7)	2.2% (2.0–2.5)	14.1%	10.3 (9.7–10.8)	1.4	11.1% (10.3–12.0)	87.8% (85.2–90.5)
Chronic back pain	15.4% (14.3–16.5)	1.8% (1.6–2.0)	11.9%	10.7 (10.1–11.2)	1.3	10.8% (9.9–11.8)	91.7% (89.8–93.6)
Malignant neoplasm	13.4% (12.6–14.2)	4.9% (4.5–5.3)	36.4%	9.0 (8.5–9.5)	3.3	11.4% (10.5–12.2)	73.4% (69.7–77.0)
Anxiety	13.2% (12.3–14.2)	1.6% (1.4–1.8)	12.2%	10.8 (10.2–11.4)	1.3	9.1% (8.3–10.0)	91.1% (88.9–93.3)
Atrial fibrillation	11.6% (10.9–12.3)	3.7% (3.3–4.0)	31.6%	11.7 (11.0–12.5)	3.7	7.5% (6.8–8.1)	90.5% (88.1–92.9)
Chronic obstructive airways disease	10.2% (9.5–10.9)	2.2% (2.0–2.4)	21.8%	10.6 (10.0–11.3)	2.3	7.4% (6.7–8.1)	87.4% (84.2–90.7)

(continued)

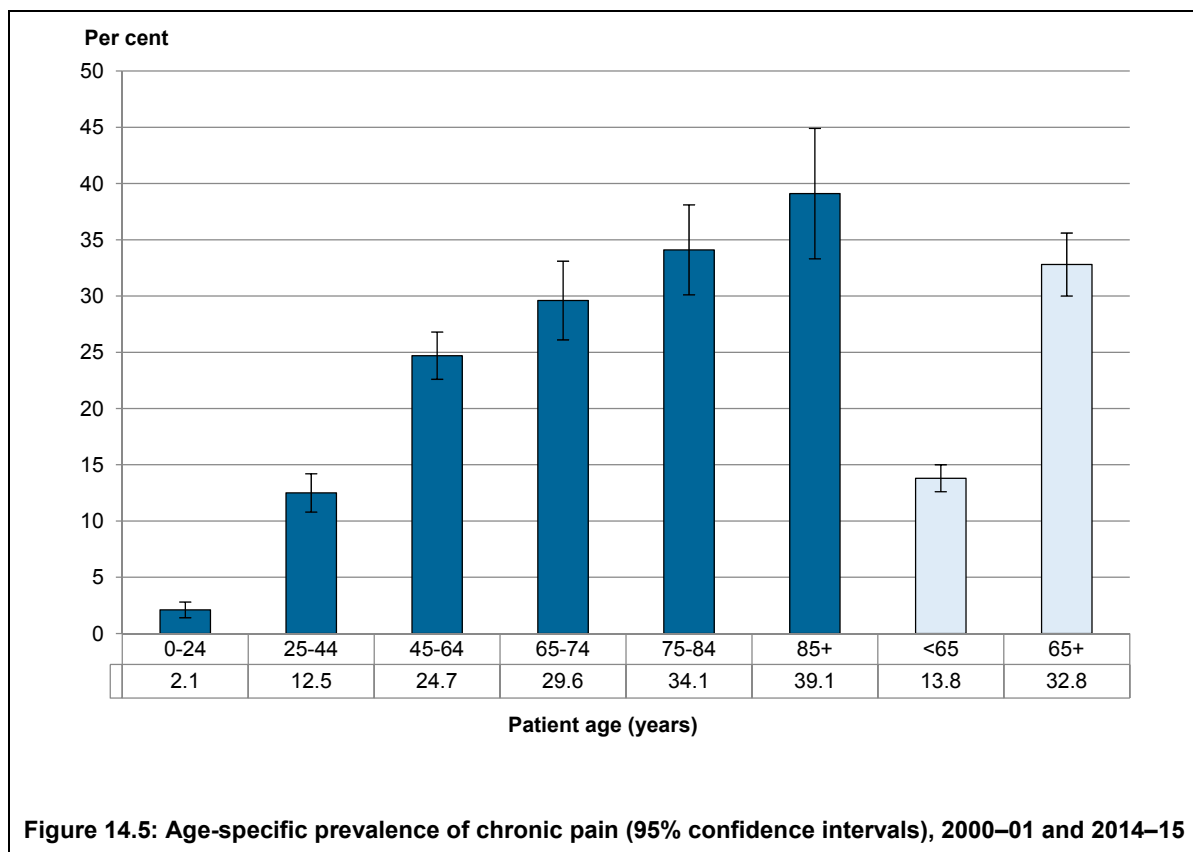
Table 14.1 (continued): Prevalence and management of chronic conditions among people aged 65 years and older

Diagnosed condition	Prevalence at encounters (95% CI)	Proportion of encounters where this problem managed (95% CI)	Management Ratio	Number of GP visits in previous year (95% CI)	Number of times this problem managed in general practice per year	Prevalence in the Australian population (95% CI)	Proportion of those with this condition, who had 2 or more other chronic conditions (95% CI)
Hypothyroidism	7.5% (6.9–8.0)	1.0% (0.9–1.2)	13.7%	9.1 (8.5–9.7)	1.2	6.1% (5.4–6.7)	81.9% (77.5–86.2)
Asthma	8.7% (8.1–9.3)	1.5% (1.3–1.6)	16.7%	9.6 (8.9–10.2)	1.6	6.8% (6.2–7.5)	82.5% (78.5–86.5)
Congestive heart failure	7.2% (6.5–7.8)	1.9% (1.7–2.1)	26.0%	12.6 (11.8–13.5)	3.3	4.2% (3.8–4.7)	95.4% (93.4–97.5)
Dementia (including Alzheimer's disease)	6.7% (5.8–7.5)	1.5% (1.3–1.7)	22.6%	10.3 (9.1–11.4)	2.3	4.7% (4.0–5.4)	84.0% (79.4–88.6)
Chronic renal failure	6.6% (6.0–7.2)	1.1% (0.9–1.2)	16.2%	11.9 (10.9–12.9)	1.9	4.2% (3.6–4.7)	91.3% (84.8–97.8)
Stroke/cerebrovascular accident	6.3% (5.8–6.9)	0.9% (0.8–1.0)	13.9%	10.5 (9.6–11.3)	1.4	4.6% (4.0–5.1)	92.4% (89.6–95.3)
Insomnia	5.8% (5.2–6.4)	2.0% (1.7–2.2)	33.7%	11.6 (10.7–12.4)	3.9	3.8% (3.2–4.3)	92.9% (88.8–96.9)
Peripheral vascular disease	4.5% (4.1–5.0)	0.5% (0.4–0.6)	12.1%	12.8 (11.9–13.7)	1.5	2.7% (2.4–3.0)	92.4% (88.8–96.1)
Glaucoma	4.0% (3.6–4.4)	0.6% (0.5–0.7)	13.8%	9.4 (8.6–10.2)	1.3	3.2% (2.8–3.6)	82.5% (76.5–88.5)
Sleep apnoea	3.1% (2.7–3.5)	0.2% (0.2–0.3)	7.7%	10.3 (9.4–11.2)	0.8	2.4% (2.0–2.7)	93.9% (90.2–97.5)
Other arthritis	3.0% (2.6–3.4)	0.1% (0.1–0.1)	3.5%	8.7 (7.6–9.8)	0.3	2.7% (2.2–3.1)	84.4% (77.0–91.9)
Rheumatoid arthritis	2.5% (2.2–2.8)	0.6% (0.5–0.7)	23.0%	10.2 (8.8–11.5)	2.3	1.8% (1.5–2.1)	75.1% (66.3–83.9)
Type 1 diabetes	1.1% (0.9–1.3)	0.3% (0.2–0.4)	27.6%	9.4 (7.6–11.3)	2.6	0.9% (0.6–1.1)	88.0% (80.2–95.9)
Hyperthyroidism	1.0% (0.8–1.2)	0.3% (0.2–0.3)	25.4%	10.5 (8.9–12.0)	2.7	0.7% (0.5–0.9)	81.0% (71.1–91.0)

Notes: CI: confidence intervals. Sources and calculation methods for results presented in Table 14.1 are provided in Appendix 5.

Patients aged 65+ years with chronic pain

Our earlier research found that chronic pain affects 1 in 5 patients attending general practice.¹³ (Chronic pain was defined as pain experienced every day for 3 months in the 6 months prior to this consultation¹⁴) A subsequent analysis of SAND substudies¹⁵⁻¹⁷ showed the prevalence increased with patient age (Figure 14.5). Of 2,217 patients aged 65 years or older, 1 in 3 (32.8%) had chronic pain.



There are many conditions that cause chronic pain, and most are musculoskeletal in nature. Patients and GPs were able to nominate multiple causal conditions for the pain. Among the patients aged 65+ years with chronic pain:

- 69.4% elected osteoarthritis as a cause
- 21.2% nominated back problems as a cause of the chronic pain.

The vast majority (93.4%) of patients in this age group who experienced chronic pain managed their pain with at least one medication. Some patients were on two or more different types of medications.

- For 33.7%, chronic pain management included opioids (including low dose combination products)
- For 20.7%, chronic pain management included non-steroidal anti-inflammatory drugs.

Risk factors and chronic problems can both affect chronic pain. Collectively, two-thirds of the patients aged 65+ were overweight or obese (Figure 14.6). Most importantly, the proportion of patients who were obese increased by 55% over the 15 years between 2000–01 and 2014–15. Obesity has a strong influence on the cause and progression of osteoarthritis,^{18,19} and osteoarthritis was the leading cause of chronic pain in the SAND patient samples. Chronic pain can limit physical activity, restricting the patient's capacity to manage their weight through exercise, which can detrimentally affect other chronic problems such as type 2 diabetes and cardiovascular problems.

Chronic pain has been found to be independently associated with multiple chronic conditions^{20,21} and Figure 14.4 shows that 72.0% of patients at encounters aged 65+ have three or more co-existing chronic conditions.

The fact that 93.4% of patients with chronic pain use one or more medications for pain management also adds to their risk of polypharmacy-related adverse events, as discussed below.

Multiple medications and adverse drug events in patients 65+

The combination of increased multimorbidity, cardiovascular risk factors and secondary symptomatic problems such as chronic pain, described above, result in many patients aged 65+ with multiple medications. The occurrence of adverse drug events in this age group is directly related to this increased medication load.

A series of SAND studies undertaken in 2014–15 ($n = 11,477$) (see Chapter 15 in this publication) indicate that the proportion of surveyed patients taking at least one continuing medication was:

- 86.4% (95% CI: 83.6–89.3) of those aged 65+
- 84.6% (95% CI: 81.5–87.7) of those aged 65–74
- 87.9% (95% CI: 84.7–91.1) of those aged 75+.

The average number of medications taken by patients aged 65+ was 5.6 (95% CI: 5.3–5.9) and within this age group the number increased in a linear fashion with age, with:

- patients aged 65–74 taking an average of 4.9 (95% CI: 4.6–5.2)
- patients aged 75+ taking an average of 6.1 (95% CI: 5.7–6.5).

The proportion of patients aged 65+ suffering an adverse drug event (ADE) in the preceding 6 months increased in a linear fashion with the number of continuing medications taken:

- from 7.8% (95% CI: 4.6–11.0) of patients on one continuing medication
- to 18.5% (95% CI: 14.9–22.1) of those on 10 or more.

One or more ADEs were reported for 13.0% (95% CI: 11.5–14.5) of patients aged 65+ who were taking at least one medication. As a result of the increasing medication rate with age, one or more ADEs were reported for:

- 11.1% (95% CI: 9.1–13.1) of patients aged 65–74 years taking at least one medication
- 14.4% (95% CI: 12.3–16.6) of patients aged 75+ taking at least one medication.

Among patients of all ages in the sample who had an ADE, hospital care (ED attendance or hospital admission) for the most recent ADE also increased in a linear fashion with the number of medications taken. Hospitalisation rate for ADEs increased from 4.7% (95% CI: 0.2–9.1) of those patients on one medication to 20.1% (95% CI: 12.9–27.4) of those on 10 or more.

Our previous research demonstrated that the vast majority of ADEs are manifestations of known side effects of commonly prescribed medications.²²

As a result of multimorbidity and associated use of multiple medications, patients aged 65 and older are at a significant risk of suffering an adverse drug event and consequent hospital care.

Lifestyle risk factors in patients aged 65+

While age is an important contributing factor for many chronic conditions, lifestyle risk factors are also important. Patient weight, smoking status and their level of alcohol consumption, are all studied in SAND subsamples every year. The SAND methods are described in Section 2.6.

Body Mass Index

For samples from each year 2000–01 to 2014–15, the number of patients aged 65+ for whom BMI could be calculated ranged from 8,394 to 11,638.

Using the WHO definitions of BMI,²³ Figure 14.6 shows that between 2000–01 and 2014–15, the proportion of sampled patients aged 65+ who were:

- underweight decreased significantly. This is a positive outcome as being underweight as an older patient is a health concern²⁴
- classed as 'normal' weight decreased from 40.0% to 31.1%
- considered 'overweight' did not significantly change
- classed as 'obese' increased by over 50% from 18.5% to 28.6%
- classed as 'Class III obesity' or 'morbidly obese' more than doubled from 1.2% to 2.7%.

This increase in the proportion of patients considered to be morbidly obese is a concern as it is expected to increase the prevalence of related health problems (such as diabetes and cardiovascular diseases) and escalate health care costs in future.²⁵ Interestingly, for patients aged 65+, being overweight is actually a protective factor against mortality. Patients aged 65+ classified as Class I obesity (BMI 30–34.99) have a similar risk of mortality as those who are normal weight (BMI 20.0–24.9).²⁶ This means the significant increase in the proportion of patients aged 65+ considered to be obese is not as concerning as the rise of obesity in younger adults.

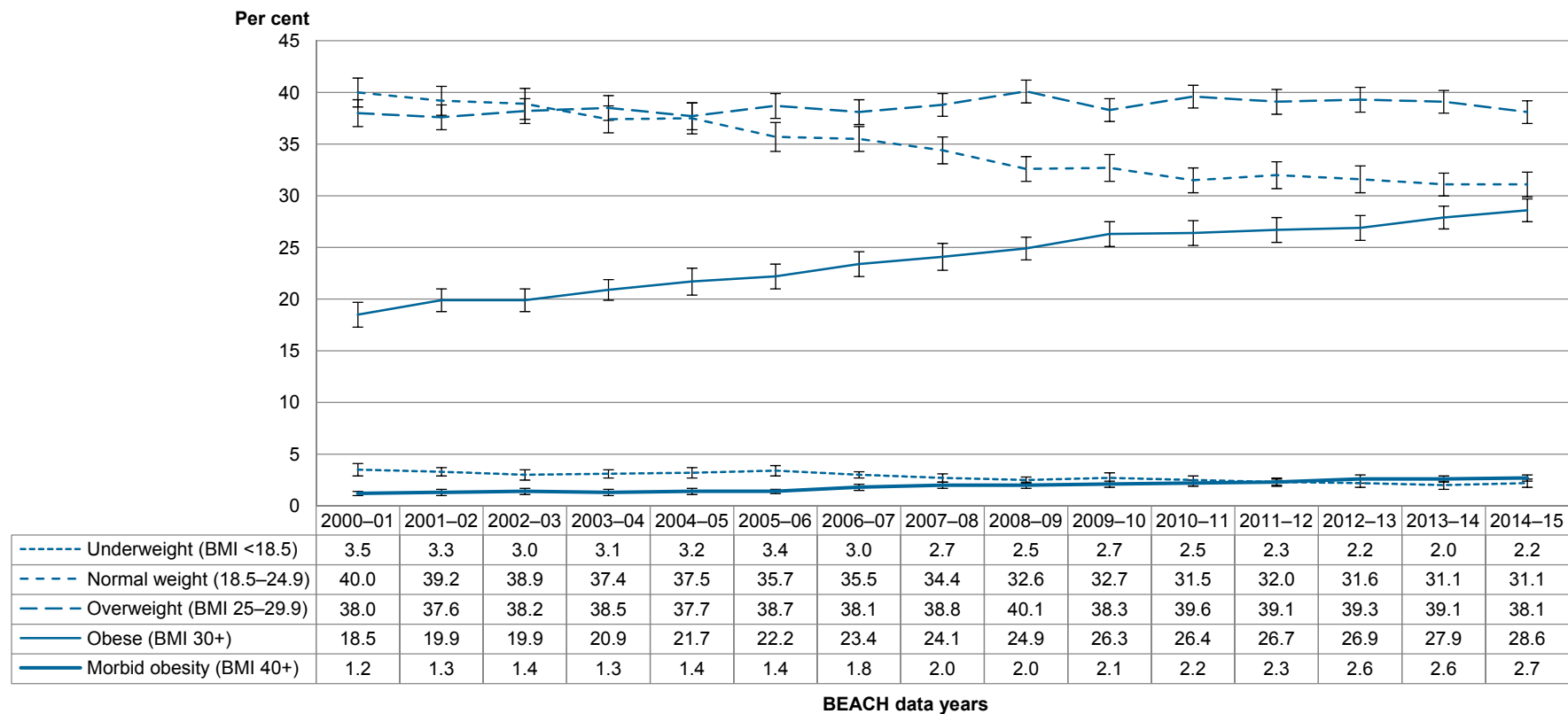
Smoking status

As discussed in Chapter 13, tobacco smoking is the leading cause of ill health, drug-related death and hospital separations in Australia.²⁷

We found that there was no significant change in the proportion of patients aged 65+ who had never smoked (range: 52.8%–56.1% over the years 2000–01 to 2014–15), were previous smokers (range: 37.0%–38.9%), or were daily smokers (range: 6.0%–8.3%). However, we did find a decrease in the proportion of patients who reported they were 'occasional' smokers (from 1.5% in 2000–01 to 0.7% in 2014–15). The prevalence of previous smokers was far higher than that of all adult patients and the prevalence of current daily smokers was lower (Chapter 13).

Alcohol consumption

Over the 15 years, there was no significant change in the proportion of patients aged 65+ who were non-drinkers (range: 39.0–43.0%), responsible drinkers (range: 41.6%–44.9%) and at-risk drinkers of alcohol (range: 15.1%–17.1%). Once again, while there was no change for these measures across the study period, the proportion of patients aged 65+ who were non-drinkers was consistently higher than the proportion among all surveyed adults (see Chapter 13). These older patients were significantly less likely to be at-risk drinkers.



Note: BMI – body mass index. Columns will not total to 100% as the obesity category includes morbid obesity.

Figure 14.6: Proportion of patients at encounters aged 65+ in each body mass index group (2000-01 to 2014-15)

Continuity of general practice care for patients aged 65+

As early as 2009, the National Primary Health Care Strategy²⁸ suggested voluntary enrolment with a 'health care home' in general practice could enhance continuity of care in Australia. The American Association of Family Physicians notes that:

*patient-centered medical homes integrate patients as active participants in their own health and well-being. Patients are cared for by a physician who leads the medical team that coordinates all aspects of preventive, acute and chronic needs of patients using the best available evidence and appropriate technology. These relationships offer patients comfort, convenience, and optimal health throughout their lifetimes.*²⁹

Adoption of 'patient-centred medical homes' has been raised repeatedly as a possible way forward for Australia. The most recent have been the McKinsey Report, which provided a summary of 'consumer enrolment systems' adopted in other countries – some voluntary and some mandatory,³⁰ and a subsequent discussion paper, *Better outcomes for people with chronic and complex health conditions*, recently released by the Primary Care Advisory Group. It also puts forward 'capitated payments' as one of a number of payment mechanisms that may support 'a better primary health care system', particularly for the delivery of 'ongoing care to people with chronic and complex health conditions'. {Primary Health Care Advisory Group, 2015 8365 /id}

Considering the very high prevalence of one or more chronic conditions among patients aged 65 years and over described earlier in this chapter, we wondered how difficult it may be to introduce voluntary registration among older people in Australia.

In a SAND substudy,³² we investigated the extent to which patients have a 'practice they usually visit' and the extent to which they used multiple practices, even when they did have a 'regular' practice.

Of the 7,799 patients surveyed at encounters with 269 randomly selected GPs, 2,645 were aged 65 years or over. Of this age group, the mean number of GP visits over the previous 12 months was 12.3, median 10, with a range of 1 to 110. At least one diagnosed chronic condition was present in 96.1% of these patients, but the proportion was significantly higher among those aged 75 years and over (98.6%, 95% CI: 97.9–99.3) than among 65–74 year olds (93.1%, 95% CI: 91.4–94.8). Almost all the older patients (98.6%, 95% CI: 97.9–99.3) said that they did have a practice they usually visited and the proportion did not differ between the 65–74 and 75+ age groups. After adjustment for the attendance rate (methods described in Appendix 5), we estimated that of all patients in this age group who attended general practice at least once in the year, 97.8% (95% CI: 96.2–99.4) have a practice they usually visit.

Presence of chronic condition(s) had little impact: 98.7% of those with one or more chronic conditions and 95.1% of the 102 without any diagnosed chronic conditions had a regular practice.

Of the 2,603 surveyed patients with a regular practice, 367 (14.1%) had visited another practice during the previous 12 months, most often because (multiple responses allowed):

- they were unable to get an appointment at their regular practice (24.1% of respondents)
- travelling (19.9%)
- convenience of location (16.8%)
- emergency (13.6%)
- they use another practice for specific health problems (9.1%).

Visits to seek a second opinion were rare (2.1% of respondents).

These results suggest that only 1.4% of older patients surveyed while seeing a GP did not have a regular practice, 82% had a regular practice and did not attend any other practice, and 17% had a regular practice but had, for one reason or another, visited another practice in the 12 months prior to being surveyed. This suggests that if voluntary registration to a practice was introduced it may well be taken up by the vast majority of older people. However, some means by which a visit to an 'other'

practice could be covered by payment systems would be required for the 1 in 7 who visit another practice, for reasons such as those listed above.

14.3 Discussion

Our results have highlighted some of the challenges facing general practice as a result of the ageing of the population. Since the beginning of the study period (2000–01) patients aged 65+ have consistently used a greater share of GP service resources than the proportion they accounted for in the population. Further, over the last 15 years this share has increased by more than their relative increase as a proportion of the general population.

Patients aged 65+ use more health resources than the average Australian (ranging from 1.9 times as many GP encounters, to using 2.4 times as many medications). When they visit a GP now, they are about 50% more likely to be referred and about 45% more likely to have tests ordered than in 2000–01.

Nearly all patients aged 65+ at a GP consultation have one or more diagnosed chronic conditions. In the Australian population, 90% of this older group have at least one chronic condition, the majority (57%) have three or more (multimorbidity), and almost 10% have seven or more diagnosed chronic conditions. For example, both hypertension and osteoarthritis have already been diagnosed in more than 50% of older patients sitting in front of a GP. It is therefore not surprising that older people are more likely than younger people to have chronic pain and be taking multiple medications, and so have a greater chance of experiencing an adverse drug event.

These results demonstrate the level of management complexity of these patients. When GPs manage a single chronic condition in an older patient, they almost always have to consider the implications of the presence of multiple other diagnosed chronic morbidities and the average 5.6 medications being taken for these conditions.

Considered collectively, these findings suggest we have some challenges ahead of us, but most are merely a by-product of the success of our health system, for example, the ageing population is partly a product of our increased longevity. We are better able to keep people alive, with increased years without disability than in the past. This allows them to extend their years as productive members of the workforce or the community. Medical advances have changed many once life-threatening health events (for example, acute coronary syndrome) into ones for which intervention (for example, stents) can solve (but not cure) the problem, though the patient still has to have ongoing (for example, cardiovascular) management for the rest of their lives.

The overall effect is that we have more people acquiring and being diagnosed with more conditions, and each condition is being managed for a longer period of time. The resulting exponential increase in chronic condition management must generate a similar growth in the number of GP visits and the number of management actions, such as prescriptions and test orders. The increased use of GP services has no doubt contributed to our increased life expectancy, and is provided at a per-person cost in line with, or less than, that of other countries.

Policy changes such as the introduction to Medicare of health assessment items, chronic disease management items, some disease-specific service items payments (SIP) and practice incentive payments (PIP),³³ represent efforts to improve primary and secondary health prevention, and facilitate early diagnosis and management of chronic disease. Early diagnosis means that over time, more and more chronic conditions may be managed for an individual, and these chronic conditions will be managed for a longer period because of Australia's increased life expectancy. For example, a patient diagnosed with diabetes at 45 years of age during a 45–49 years MBS-claimed Health Assessment potentially has 40 more years of life in which management of that problem is required.

Many chronic problems presenting to general practice result from modifiable risk factors. At-risk levels of alcohol consumption and daily tobacco smoking, though lower than adult community averages, may well have contributed to the health problems currently co-existing in older patients. The increasing prevalence of morbid obesity among older patients, more than doubling over the study

period, is a growing problem. However the significant decrease in the prevalence of underweight in this age group is a positive result, as being underweight is a significant risk factor for mortality in older people.

Australia's health system is largely structured on single diseases. The vast majority of specialists work within a single body system, and often sub-specialise within that system. Patients can be referred to multiple specialists, possibly one for each of their diagnosed diseases. Further, guidelines for care are based on a single/disease type; clinical trials and medical research (and its funding) are largely single disease/disease type focused. More broadly, a single disease/disease type focus is the basis of organisations such as Diabetes Australia, the Heart Foundation and Kidney Health Australia, and this flows through to the patient information/education material such groups distribute. Yet, we have shown that in this age group, 84–92% of people with one of these conditions have two or more other diagnosed conditions – multimorbidity is the rule, rather than the exception.

As stated by Barbara Starfield, "*Those who ... (are) focusing on diseases resist understanding that health is a pattern. Without grasping the pattern, management is at best an approximation of adequate care*".³⁴ This suggests that the patient is more than just a sum of their individual diseases and needs a 'whole patient' approach to management rather than a 'problem'-based approach.

As discussed earlier, the possibility of patient enrolment with a GP or practice has been raised repeatedly in Australia over the last 5 years. There is good evidence that continuity of care, especially in a 'patient-centred medical home' can result in improved quality of care and patient experiences, and decreased hospital and emergency department use. A recent review from the United States found some patient-centred medical home initiatives have resulted in improved quality of care and patient experiences and have reduced emergency department visits and hospitalisations, providing savings in health expenditure for the patients involved.^{35,36}

Our study has shown that the vast majority of patients aged 65+ have already voluntarily attached themselves to a single practice. Much of the ground work has already been done if Australia wanted to formally encourage the use of 'patient-centred medical homes'. However, medical homes should not be considered in isolation, but as one key part of an integrated health care system.

In the future, care of those with complex chronic problems will require better integration of services and coordination of the care given by multiple providers including hospitals, specialists, allied health professionals, and community services. General practices are in a prime position to act as the coordinators of care and help to lower the chance of 'fragmented care'. In turn, this may help reduce presentations to emergency departments and primary care preventable hospitalisations. Every extra hospitalisation avoided reduces unnecessary testing, extra prescribing and the risk of fragmented care through poor communication. It is likely that any extra resources spent in primary care would be countered by savings through reduced use of more expensive services.

Integration requires effective communication of core health information between different health sectors and different health professionals. Ideally there would be one record for one patient, a record all health providers could access when caring for that patient with structured standardised format for additions to the record made by each provider. Improvements to other forms of communication are also required if we are to move to a more patient-centred approach with shared decision-making between practitioners and the patient.

Possible remuneration systems for the care of patients enrolled in a medical home have not been widely discussed. The level of multimorbidity present in a patient has been shown to be a good indicator of health care resource use,¹⁰ complexity of care,¹¹ severity of illness,¹¹ polypharmacy¹² and adverse events.¹² From the BEACH data we can estimate general practice health resource utilisation (and its cost) for individuals with different numbers of diagnosed chronic conditions, and different combinations of conditions. Remuneration of the medical home for the annual care of an individual patient could be based on the level of their multimorbidity.

As always, this is not as simple as it sounds, since a patient with two diagnosed conditions of uncomplicated hypertension and hyperlipidaemia utilises fewer services and needs less co-ordination of care than an individual patient with insulin-treated type 2 diabetes plus severe osteoarthritis in

multiple sites. However, it would be a much more efficient starting point than merely paying for co-ordination of the care of each individual chronic condition, which must inevitably result in multiple payments for multiple diseases for the vast majority of older people.

14.4 Conclusion

We have demonstrated here the high chronic disease load and the resulting high service utilisation, (and therefore the cost to the health care budget) of people aged 65 years and over. Much more can be done with these data to assist in the planning of Australia's future primary health care system. For example, identifying the most common multimorbidity patterns of disease among this high health care needs population would provide useful evidence of services that would benefit from better co-ordination and integration. In thinking about our future health care system, the next step is to repeat this study for people aged 45–64 years, many of whom already have multiple diagnosed chronic conditions. For many of those who do not, there is still time for further preventive activities.

The Australian Government is aiming for a '*strong and sustainable Medicare*'.³⁷ Perhaps what we should be aiming for is a system for sustainable health of the population. Clearly there will be challenges for quality care provision to older patients over the coming decades but with a strong primary care system Australia is well-placed to take up this challenge.

This chapter contains unpublished methods that form part of Christopher Harrison's thesis for his candidature for Doctor of Philosophy in Medicine.

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Appendix 5: Calculation methods for Table 14.1

Attending population weight

On the SAND recording form (see Appendix 1), there was a question asking the number of times the patient had seen a GP in the previous 12 months (including the current visit). An attending population weight was created by weighting each surveyed patient by their chance of being in our sample. The chance of being in our sample is based on how many times they had visited a GP in the previous year. A weight of $X/(\text{number of GP visits})$ was applied to each patient.

Management ratios

The management ratio was calculated by dividing the proportion of encounters at which the chronic condition was managed, by the prevalence of the condition among patients at general practice encounters.

Number of GP visits in previous 12 months

The average number of times patients aged 65+ with a certain chronic condition had seen a GP in the previous year was calculated using the attending population weight (described above).

Number of times condition was managed in general practice

The number of times a condition was managed in general practice was calculated by multiplying the management ratio by the average number of times patients with the selected chronic condition had visited a GP in previous 12 months.

Population prevalence

Population prevalence was calculated by first applying the attending population weight to the data. A second weight was created so that when applied to the attending population weight, the proportion of surveyed patients in each age–sex group matched the proportion represented by that age–sex group in the Australian population.

The numerator of whether a patient had a specific chronic condition (1 = patient has chronic condition, 0 = patient does not have condition) was weighted by the proportion of people in that age–sex group that saw a GP at least once in the previous year. This adjusted the data for those who did not see a GP, whom we assumed had not been diagnosed with that chronic condition.

Proportion of patients with a selected condition, who had 2 or more other chronic conditions

The proportion of people aged 65+ with a selected condition who had two or more other diagnosed chronic conditions was calculated using the attending population weight. This means that the results are representative of people in the population who have the selected diagnosed condition.