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A regional analysis

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGC	Australian standard geographical classification
ATC	Anatomical therapeutic chemical classification
BEACH	The Bettering the Evaluation and Care of Health study
BMI	Body mass index
CI	Confidence interval
CVD	Cardiovascular diseases
DoHA	Department of Health and Welfare
DVA	Department of Veterans' Affairs
GP	General Practitioner
ICD-10	International statistical classification of diseases and related health problems, 10th revision
ICPC-2	International classification of primary care version 2
MBS	Medicare Benefits Schedule
NACCHO	National Aboriginal Community Controlled Health Organisation
NATSIHS	National Aboriginal and Torres Strait Islander health survey
NHS	National health survey
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PBS	Pharmaceutical Benefits Scheme
RPBS	Repatriation Pharmaceutical Benefits Scheme
SAR	Service Activity Reporting

Summary

Cardiovascular diseases (CVD) are among the leading causes of death and disease burden in Australia. Primary health care and cardiovascular medicines are critical to their successful management.

This report explores the relationships between CVD and the supply of cardiovascular medicines and primary health care services across Australian regions. The report is limited in part by the quality and availability of the data, particularly for *Remote* and *Very remote* regions.

Key findings are presented below.

Regional need for cardiovascular medicines and primary health care

- CVD death and hospitalisation rates increased with increasing remoteness.
- The age-standardised prevalence of CVD was significantly higher in *Inner regional* areas than in *Major cities*.
- Indigenous Australians, who make up a high proportion of the population in *Remote* and *Very remote* areas, had significantly higher rates of CVD deaths and hospitalisations than Other Australians.

Regional supply of cardiovascular medicines

- The supply of cardiovascular medicines was generally highest in *Inner* and *Outer regional* areas, reflecting the poorer cardiovascular health outside *Major cities*.
- This pattern does not apply to serum-lipid-reducing agents, such as cholesterol-lowering medicines, where the supply decreased with increasing remoteness.
- Accurately estimating the supply of medicines to *Remote* and *Very remote* areas was difficult owing to data limitations, particularly for Section 100 medicines— these medicines comprise up to one-third of the total medicine supply in these areas.

Regional GP services and medicine prescription

- The rate of General Practitioner (GP) attendances for cardiovascular or lipid disorders was significantly higher in *Major cities* than in other areas. This is in contrast to both CVD prevalence, which was highest in *Inner regional* areas, and the supply of cardiovascular medicines, which was highest in *Inner* and *Outer regional* areas.
- GPs across regions prescribed cardiovascular medicines in a similar pattern.

Conclusions

This report reveals differences in the supply of cardiovascular medicines and primary health care services across regions in Australia. However, the relationship between CVD, remoteness and the supply of cardiovascular medicines and primary health-care services is complex. This relationship could not be fully explored in this report because of data limitations, but it is hoped that improvements to data quality and data linkage will allow more comprehensive analyses in future.

1 Introduction

Background

Cardiovascular diseases (CVD) are the leading cause of death in Australia and are the second leading cause of disease burden. Although CVD may strike suddenly— especially in the form of a heart attack or stroke— these events are usually preceded by an extended history of CVD, or risk factors for CVD.

Because cardiovascular diseases progress over an extended period, and because early stages of the disease are often mild, primary health care is a critical part of managing CVD. Primary health care also plays a vital role in preventing CVD by monitoring and treating cardiovascular risk factors such as high blood pressure and high blood cholesterol.

What is primary health care?

Primary health care is the care that people in Australia receive from general medical and dental practitioners, Indigenous health workers and nurses, as well as from local pharmacists and other allied health professionals working 'in the community' (as opposed to those working in hospitals or other institutions) (AIHW 2008a). It is called primary health care because it is usually delivered before the care given by other parts of the health system, such as hospitals and specialist doctors. It is also usually the first point of contact Australians have with the health system. Note, however, that in some parts of the country patients use hospitals to receive primary health-care services where no other providers are available. This is discussed in more detail later in this report.

As a result, primary health care, especially through general practitioners (GPs), acts as a 'gateway' for patients into the broader health system. Through assessment and referral, patients are directed both from one primary health-care service to another, and from primary health-care services to further health-care services (such as specialist, hospital and palliative care services) and back again.

Although care of illness is a major function of primary health care, a good primary health-care system should also incorporate health-promotion and disease-prevention activities to help people with chronic conditions to manage their own health and to prevent people developing chronic diseases in the first place.

Why is primary health care important for cardiovascular health?

The primary health-care system, as described above, is essential for best-practice management of chronic conditions such as CVD. Patients may have risk factors for CVD for many years before the disease develops. Primary health care— usually through a GP— can intervene to reduce a patient's exposure to risk factors through health promotion, diet or exercise modification, or the prescription of cardiovascular medicines.

Where cardiovascular diseases are established, primary health-care practitioners can continue to work on risk factors to impede the progress and severity of the diseases. Primary

health-care practitioners can also refer patients with CVD to the most appropriate specialist care.

A particularly important function of the primary health-care provider is the prescription of cardiovascular medicines. Cardiovascular medicines are critical to manage CVD effectively. Medicines such as blood-pressure-lowering medicines and lipid-lowering agents can be used to reduce the chance of at-risk patients developing CVD. Blood-pressure-lowering medicines are also widely used with patients who already have CVD, to slow the progress of the disease or to treat symptoms. Several other medicines are also prescribed to patients with pre-existing CVD to help manage symptoms and to help patients continue their lives with a minimum of discomfort or disability.

These primary health-care actions are critical to manage CVD effectively. Where these services are difficult to access or unavailable, the health of patients with CVD would be expected to suffer.

Why are we interested in regional differences?

There is evidence that cardiovascular health, the provision of primary health care and the use of medicines all vary by region (AIHW 2008b). People in more remote areas tend to have poorer health than people in other areas, with higher rates of hospitalisation and death. The number of primary health-care practitioners differs across regions, with limited data available for the most remote regions. Data on the number of primary health-care services and the supply of cardiovascular medicines by remoteness are also limited, although some evidence suggests that patients in remote areas are dispensed these medicines at a lower rate than in other regions (AIHW: Senes & Penm 2007).

Given the importance of primary health care to the effective management of CVD, and the potential for access to these services to vary by region, it is important to investigate the state of primary health care for cardiovascular health in Australia by region.

Aim of this report

This report aims to provide information on the distribution of primary health-care providers and the supply of primary health-care services and cardiovascular medicines across regions in Australia. This information is presented in the context of varying need for cardiovascular primary health care in Australia, as well as possible relationships between the availability of primary health care and the supply of medicines.

This report is limited by the data available. Many data sources provide some insight into the distribution of primary health care or medicines in Australia, but do not allow us to describe the distribution with great certainty. Additionally, it is not possible to clearly link distribution of primary health-care providers to the supply of primary health-care services, and to the supply of cardiovascular medicines, or to the underlying need for primary health care in a community.

Instead, the approach taken in this report is to provide the reader with the available data and information on the limitations of those data. Where possible, the main points that can be drawn from the data are discussed.

Bearing the limitations of this approach in mind, this report aims to answer the following research questions:

- Does the need for primary health care related to CVD differ by region?
- Does the supply of cardiovascular medicines differ by region?
- Does the distribution of primary health-care providers differ by region?
- Does the supply of primary health-care services for cardiovascular health differ by region?
- What conclusions can be drawn about the effectiveness and adequacy of primary health care in managing cardiovascular health across regions in Australia by considering the sources of data together?

Where possible, data relating specifically to Indigenous Australians are included in this report.

Structure of the report

Chapter 2 uses data from health surveys and death and hospitalisation reporting to describe the impact of CVD on different regions in Australia, to give an indication of the underlying need for primary health care and cardiovascular medicines across regions.

Chapter 3 describes the supply of cardiovascular medicines across regions in Australia. Data from the Pharmaceutical Benefits Data System and Medicare Australia are used to describe the supply of government-subsidised cardiovascular medicines by region and medicine type.

Chapter 4 uses GP survey data to describe prescribing patterns by GPs across regions.

Chapter 5 uses the Medicare Benefits Schedule and GP survey data to provide information on the number and distribution of selected primary health-care services delivered for CVD, the characteristics of the people who receive these services, and how these vary by region. This chapter also presents information on the distribution of the main providers of primary health care across regions in Australia.

Chapter 6 presents the conclusions of this report. Information from the previous chapters is summarised and discussed.

Detailed descriptions of the main data sources used and statistical methodology are given as appendices.

2 The need for cardiovascular medicines and primary health care across Australian regions

Key points

- Overall health tends to be poorer in more remote areas.
- The rates of deaths and hospitalisations with CVD are highest among people living in *Remote* and *Very remote* areas.
- The age-standardised prevalence of CVD is significantly higher in *Inner regional* areas than in *Major cities.*
- The burden of CVD increases with remoteness.
- Aboriginal and Torres Strait Islander people make up a substantially greater proportion of the population of *Remote* and *Very remote* areas, and have significantly higher rates of deaths and hospitalisations from CVD than Other Australians.

This chapter provides information about the people of Australia's regions and their health. This is important contextual information for the interpretation of subsequent analyses of the supply of medicines and primary health care to Australia's various regions. One important factor affecting the supply of cardiovascular medicines and primary health care is the need for these medicines and services.

At the individual level, a patient's need for cardiovascular medicines and services will be determined by their overall health, their health in relation to cardiovascular conditions, their cardiovascular risk factors, and demographic variables such as age and sex. At the population level, these characteristics can be expected to vary by region and, with them, the need for cardiovascular medicines and primary health care.

These regional variations are the subject of this chapter, with particular focus on:

- the Australian population distribution
- the prevalence of CVD
- deaths from CVD
- hospitalisations with CVD
- cardiovascular medical procedures
- the distribution of Indigenous Australians and their health.

Geographic classification

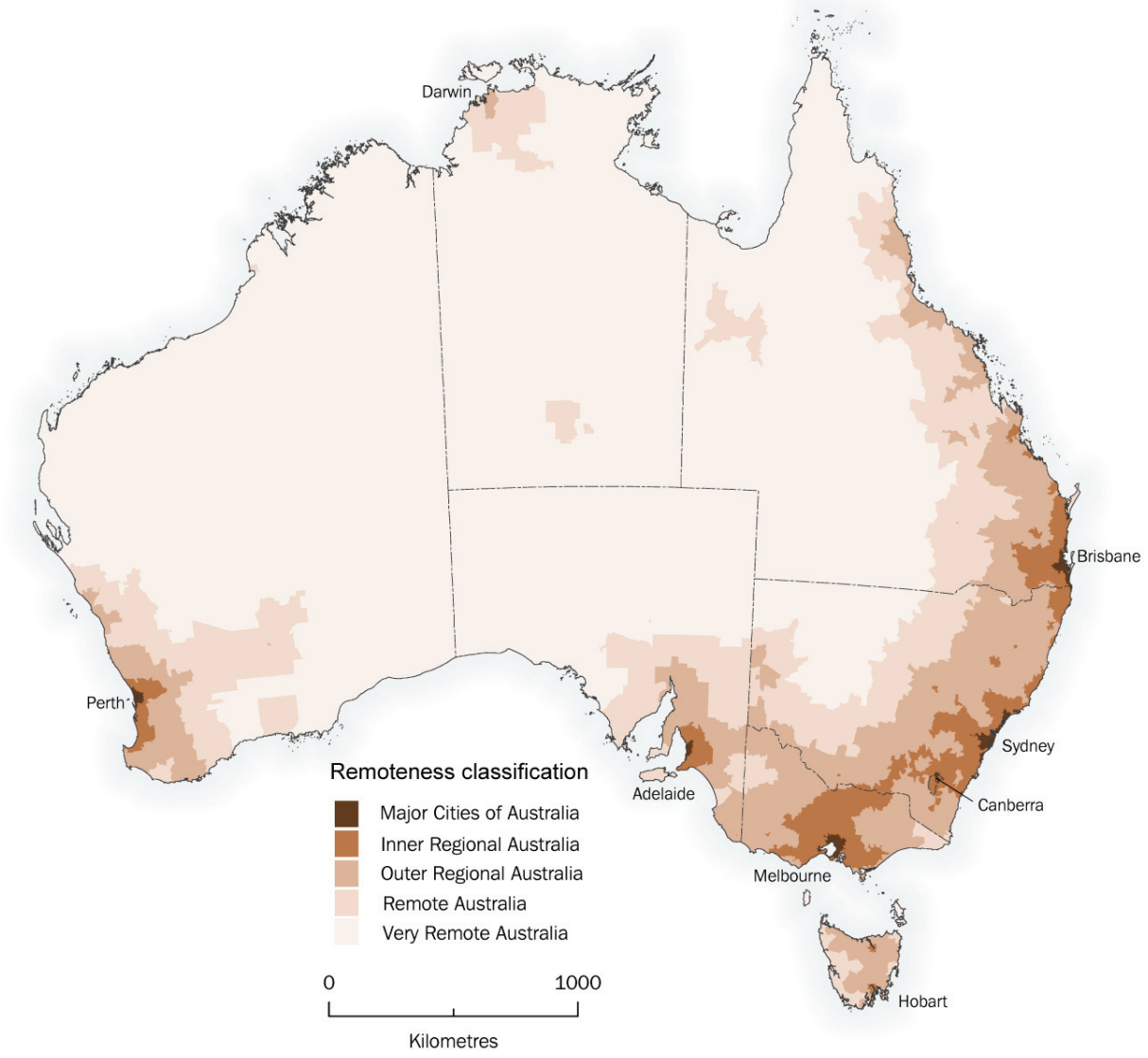
This report uses the Australian Standard Geographical Classification (ASGC) remoteness areas classification developed by the Australian Bureau of Statistics (ABS). The classification maps regional areas by grouping together areas based on their road distance to the nearest

population centre (AIHW 2004a). It consists of six categories: *Major cities*, *Inner regional*, *Outer regional*, *Remote*, *Very remote* and *Migratory*.

The ASGC remoteness area classification was used in this report as it describes the least remote aspects of an area better than other classification schemes. For example, the ASGC remoteness area classification classifies some outlying areas of major capital cities as *Inner regional*, reflecting the likelihood that outer suburban areas may have lower levels of access to goods and services than areas closer to the central business district. In other classification schemes these areas would be classified as *Major cities* or equivalent: losing the information on remoteness.

For more information on geographical classification schemes, please refer to *Rural, regional and remote health: a guide to remoteness classifications* (AIHW 2004a).

Owing to the constraints of the data available, *Remote* and *Very remote* regions have been collapsed together throughout this report. These areas are all distant from major population centres but their nature is diverse—located not only in inland 'outback' Australia but also by the coast, and deriving their income from agriculture, forestry, fishing, mining, tourism or other industry sectors (AIHW 2007) (Figure 2.1).



Source: ABS.

Figure 2.1: Australia by remoteness area, 2006

2.1 How is the Australian population distributed by region?

The majority of Australians, over 14 million people, live in *Major cities*, but a substantial number of Australians live in *Inner* and *Outer regional* areas—just over 6 million people. *Remote* and *Very remote* areas have a very small population by comparison— fewer than half a million people.

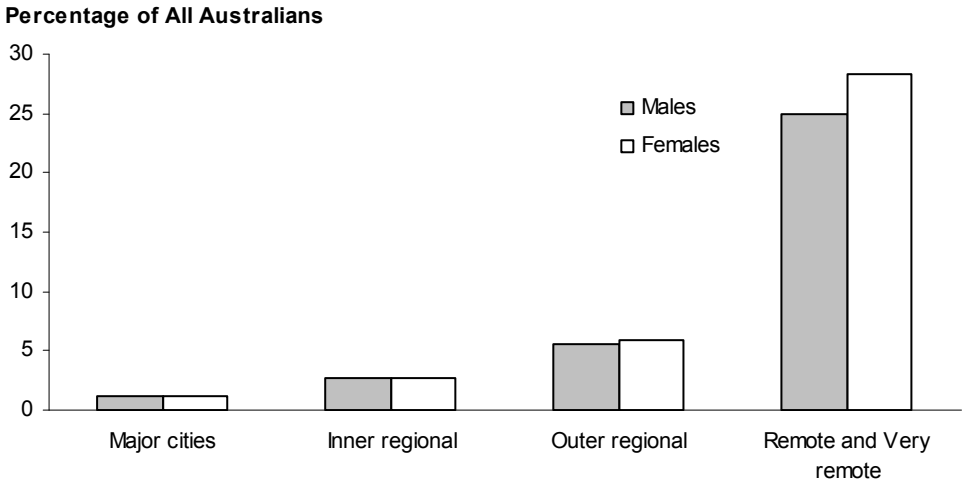
An important factor in the distribution of population by region in Australia is the distribution of Aboriginal and Torres Strait Islander people. Although more Indigenous Australians live in *Major cities* than in any other region (Table 2.1), they represent an increasing proportion of the total population as remoteness increases: 1% in *Major cities*, 2–5% in *Inner* and *Outer regional* areas, and 25–28% in *Remote* and *Very remote* areas (Figure 2.2).

The relatively large proportion of Indigenous people in *Remote* and *Very remote* areas has important implications for the health profile of *Remote* and *Very remote* areas because Indigenous Australians generally have poorer health than Other Australians. This is discussed in more detail later in this chapter.

Table 2.1: Distribution of the Australian population by remoteness area, 2006

Population	Major cities	Inner regional	Outer regional	Remote and Very remote	Total
			All Australians (number)		
Males	6,991,270	2,031,050	1,005,043	253,768	**10,281,131**
Females	7,170,988	2,054,357	962,261	226,764	**10,414,370**
Persons	**14,162,258**	**4,085,407**	**1,967,304**	**480,532**	**20,695,501**
			All Australians (per cent)		
Males	68.0	19.8	9.8	2.5	**100**
Females	68.9	19.7	9.2	2.2	**100**
Persons	**68.4**	**19.7**	**9.5**	**2.3**	**100**
			Indigenous Australians (number)		
Males	81,990	55,767	56,296	63,256	**257,309**
Females	83,814	54,876	56,984	64,060	**259,734**
Persons	**165,804**	**110,643**	**113,280**	**127,316**	**517,043**
			Indigenous Australians (per cent)		
Males	31.9	21.7	21.9	24.6	**100**
Females	32.3	21.1	21.9	24.7	**100**
Persons	**32.1**	**21.4**	**21.9**	**24.6**	**100**

Source: Derived from ABS 2006 and 2008.



Source: ABS 2008.

Figure 2.2: Indigenous Australians as a proportion of All Australians, by sex and remoteness area, 2006

2.2 The overall health of Australians by region

Several measures indicate worse levels of health among people living outside of *Major cities*. Poorer health outcomes in regional and remote areas may be the result of worse risk factor profiles of residents of those areas, poorer access to health services, lower socioeconomic conditions, or a combination of these factors.

Other factors may also play an important role. Levels of income and education are lower in regional and remote areas than in *Major cities*. The cost of housing in regional and remote areas is less than in *Major cities* but other costs, such as food and petrol, are higher (AIHW 2005). Lower socioeconomic status is associated with poorer health and more risk factors for chronic disease (AIHW 2008e). Where patient health is poorer, it is likely that the need for primary health care will be greater.

Life expectancy

Life expectancy decreases with increasing remoteness. Compared with *Major cities*, life expectancy in 2002–04 was 1–2 years lower in *Inner* and *Outer regional* areas and up to 7 years lower in *Remote* and *Very remote* areas (AIHW 2008c). For non-Indigenous Australians, life expectancy was similar in all areas. Indigenous Australians have markedly lower life expectancy than non-Indigenous persons. The large proportion of Indigenous persons living in *Remote* and *Very remote* areas contributes to the reduced overall life expectancy in these areas. Note that the effect of remoteness on life expectancy may be reduced by the migration of less healthy people to less remote areas where they may be able to access health services more easily. This could have the effect of concentrating elderly people with relatively good health in more remote areas, increasing the apparent life expectancy in these areas.

The probability of a newborn living to 65 years is a more appropriate means of comparing life expectancy between regions, because it reduces the effect of any migration of elderly

people to less remote areas. The probability of a newborn living to 65 years decreased with increasing remoteness in 2002–04, from 88% for males and 92% for females in *Major cities* to 73% (males) and 81% (females) in *Very remote* areas (AIHW 2008c). The differences between areas mostly reflect the relatively large proportion of Indigenous Australians living in more remote areas, although the probability of non-Indigenous newborns living to age 65 also decreased with increasing remoteness.

Wellbeing

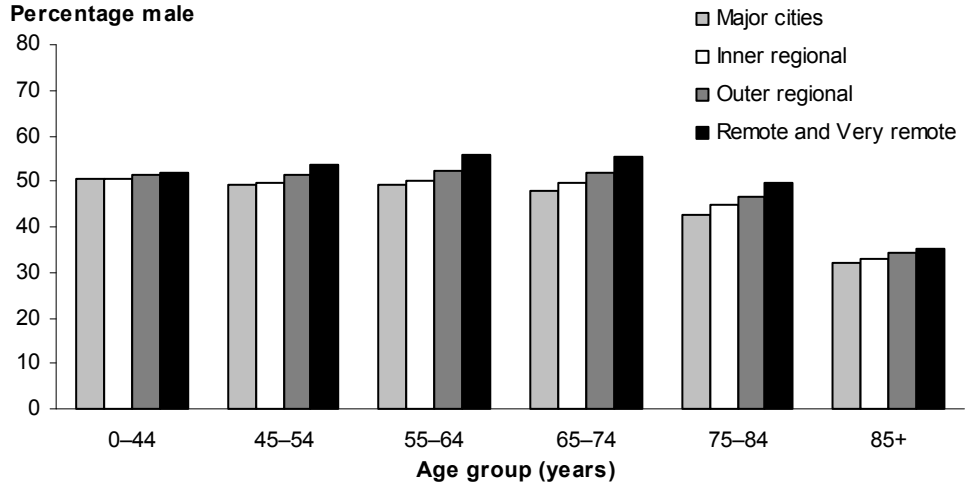
In 2004–05, people outside *Major cities* were less likely to report excellent or very good health and more likely to report fair or poor health compared with those in *Major cities* (AIHW 2008c). These differences were also found when comparing Indigenous persons in each area with All Australians living in *Major cities*.

2.3 Risk factors for cardiovascular health by region

Sex

The presentation of CVD differs by sex. Although the overall prevalence of CVD is higher in women than in men, more males are hospitalised with CVD. Therefore, males and females are likely to need access to primary health-care services in different ways.

In the Australian population as a whole, males slightly outnumber females, except at older ages. In ages above about 75 years females outnumber males because women tend to live longer than men. In contrast to other regions, the number of males in *Remote* and *Very remote* areas is noticeably greater than that of females between the ages of 45 and 74 years (Figure 2.3).



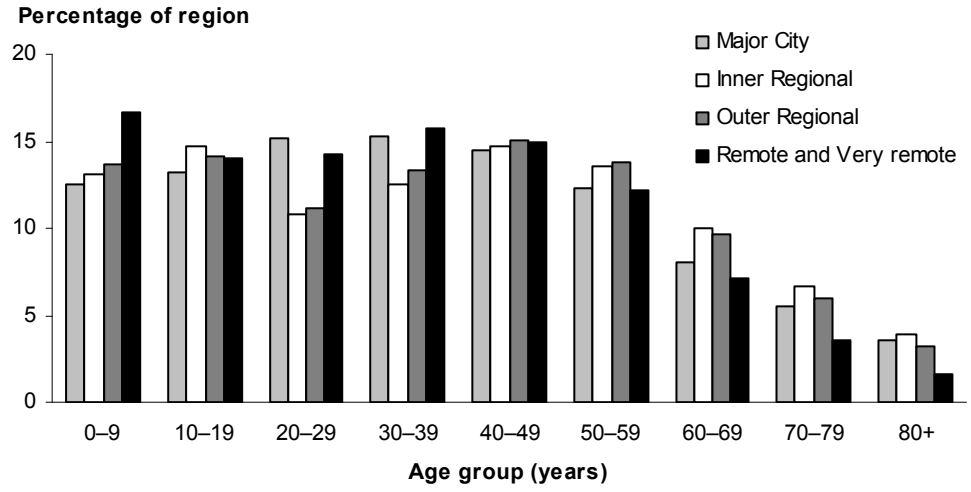
Source: Derived from ABS 2006.

Figure 2.3: Proportion of males in the Australian population, by remoteness area and age group, 2006

Age

Age is an important cardiovascular risk factor, with CVD mainly affecting the elderly. The differences seen in the population age structure between regions will be reflected in differences in the need for primary health-care services for CVD in these areas.

People living in *Remote* and *Very remote* areas are generally younger than those in *Major cities*; there are proportionally more children and fewer older people. In *Inner* and *Outer regional* areas, there are proportionally more children and people in their fifties, sixties and seventies, but fewer people in their twenties and thirties than in *Major cities* (Figure 2.4).



Source: Derived from ABS 2006.

Figure 2.4: Age distribution of the Australian population by remoteness area, 2006

Other risk factors

In 2004–05, based on self-reported information, people living outside *Major cities* were more likely to smoke, drink alcohol to risky levels (males only), be sedentary (males only), be overweight or obese, and have high blood pressure (females only) than residents of *Major cities* (Table 2.2). On the other hand, people living outside *Major cities* were significantly less likely to report high blood cholesterol. However, in the case of high blood pressure and high cholesterol, the differences seen could also reflect differences in people being aware of their condition and reporting it. The ability of people to access primary health care will affect the likelihood of their being diagnosed with a condition, and consequently their awareness of it.

Diabetes is a risk factor for CVD. It shares many risk factors with CVD and the two conditions commonly co-occur. Although diabetes prevalence was similar between regions, hospitalisations with diabetes increased with remoteness (AIHW 2008d).

These risk factors all increase the risk for CVD, as well as for other diseases, and may result in different needs for medicines and primary health care between regions.

Table 2.2: Standardised prevalence ratio of cardiovascular risk factors, by remoteness area, 2004–05

	Major cities crude[(a)]	Major cities	Inner regional	Outer regional and Remote	All regional and Remote areas[(b)]
	Per cent	Standardised prevalence ratio			
Daily or current smoking[(c)]					
Males	23.2	1.00	1.11	1.26*	1.17*
Females	17.2	1.00	1.20*	1.37*	1.26*
Persons	20.2	1.00	1.15*	1.30*	1.21*
Risky or high-risk alcohol consumption[(d)]					
Males	13.0	1.00	1.19*	1.41*	1.27*
Females	10.3	1.00	1.12	1.16	1.13
Persons	11.7	1.00	1.16*	1.30*	1.21*
Sedentary levels of physical activity[(e)]					
Males	30.0	1.00	1.16*	1.39*	1.25*
Females	33.8	1.00	1.02	1.10	1.05
Persons	31.9	1.00	1.09*	1.24*	1.15*
Self-reported high blood pressure					
Males	19.6	1.00	1.09	1.08	1.08
Females	10.4	1.00	1.13	1.18	1.15*
Persons	10.0	1.00	1.11*	1.13	1.12*
Self-reported high cholesterol					
Males	7.2	1.00	0.85	0.86	0.85*
Females	6.8	1.00	0.91	0.77*	0.86*
Persons	7.0	1.00	0.88*	0.82*	0.85*
Self-reported overweight and obesity[(f)]					
Males	58.2	1.00	1.03	1.13*	1.07*
Females	42.0	1.00	1.08	1.11	1.09*
Persons	50.2	1.00	1.05*	1.12*	1.08*

* Findings statistically significant.

(a) Crude percentage.

(b) Does not include *Very remote* areas.

(c) Persons aged 15 years and older.

(d) Persons aged 15 years and older. Risky alcohol consumption refers to an average daily consumption of more than 50–75 mL for males and more than 25–50 mL for females; high-risk refers to more than 75 mL for males and 50 mL for females.

(e) Persons aged 15 years and over. Sedentary is defined as less than 100 minutes of exercise in the 2 weeks before the survey, and includes those who undertook no exercise.

(f) Persons aged 15 years and over. Overweight refers to a body mass index (BMI) of 25.0 and over, and obese to a BMI of 30.0 and over. BMI calculated from self-reported weight and height.

Note: All measures are self-reported.

Source: AIHW 2008c.

2.4 Cardiovascular health by region

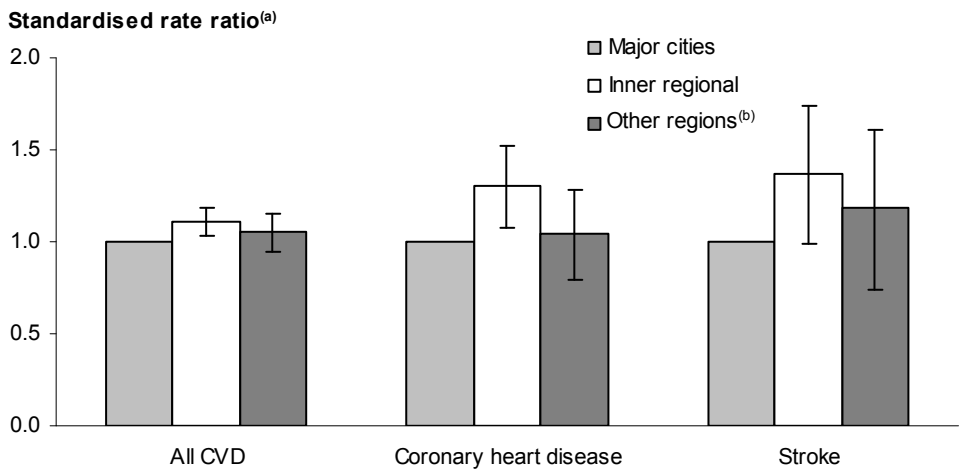
Prevalence of CVD

Estimates of CVD prevalence in this section are based on self-reported information collected in the 2004–05 National Health Survey (NHS). A limitation of the NHS is that it does not sample *Very remote* areas, so the NHS data do not provide results for *Very remote* areas. In addition, because the NHS is a self-report measure, it relies on respondents being aware of their disease status. A person's ability to access primary health care will affect the likelihood of their being diagnosed with a condition, and consequently their awareness of it.

To adjust for the effects of age and sex, the prevalence estimates are presented as standardised rate ratios. This measure compares the observed prevalence of CVD in the populations of *Inner regional* areas and Other regions (*Outer regional* and *Remote*) with the prevalence that would be expected if the age-sex-specific prevalence rate in *Major cities* applied in those regions.

Using this approach, a ratio of 1.0 would indicate that the prevalence in *Inner regional* areas is the same as in *Major cities*, while a ratio of 2.0 would indicate the prevalence in *Inner regional* areas is twice that of *Major cities*, and so on. See Appendices 1 and 5 for details of this survey and the methods used to analyse the data.

Among people aged 20 years and older, the prevalence of all CVD and coronary heart disease were significantly higher in *Inner regional* areas than in *Major cities*. The prevalence of stroke did not differ significantly across regions. Prevalence in Other areas did not differ significantly from *Major cities* for any disease type (Figure 2.5, Table A6.1).



(a) This measure compares the observed prevalence of CVD in the populations of *Inner regional* areas and *Other regions* with the prevalence that would be expected if the age-sex-specific prevalence rate in *Major cities* applied in those regions.

(b) *Other* category combines *Outer regional* and *Remote* areas. *Very remote* areas are excluded.

Notes

1. Based on self-reported information. These results relate to people aged 20 years or over.
2. These results have been adjusted for age and sex.
3. Error bars show 95% confidence intervals.

Source: AIHW analysis of ABS 2004–05 National Health Survey.

Figure 2.5: Standardised rate ratios of CVD prevalence, by region and disease type, 2004–05

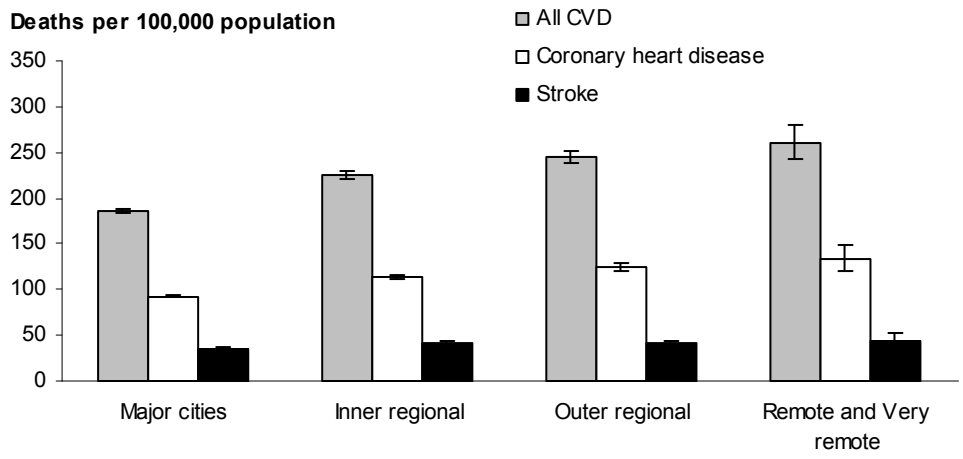
Burden of CVD

Cardiovascular diseases were the second leading cause of disease burden in Australia in 2003. The burden of CVD per head of population increases with remoteness, being 11% higher in *Inner* and *Outer regional* areas than in *Major cities* and 15% higher in *Remote* and *Very remote* areas (AIHW: Begg et al. 2007).

In *Inner* and *Outer regional* areas, coronary heart disease was the leading specific cause of disease burden overall, accounting for 11% of the total burden, and cerebrovascular disease was ranked fourth, representing 5% of the total. In *Remote* and *Very remote* areas, coronary heart disease was ranked second (7% of the total burden) and cerebrovascular disease was ranked eighth (3% of the total burden) overall.

Cardiovascular deaths

Death rates from all types of CVD generally increased with remoteness. The same pattern was evident for death rates from coronary heart disease. The rate of deaths from stroke was similar across regions, with rates in *Major cities* lower than in other areas (Figure 2.6, Table A6.2).



Notes

1. Age-standardised rates.
2. Error bars show 95% confidence interval.

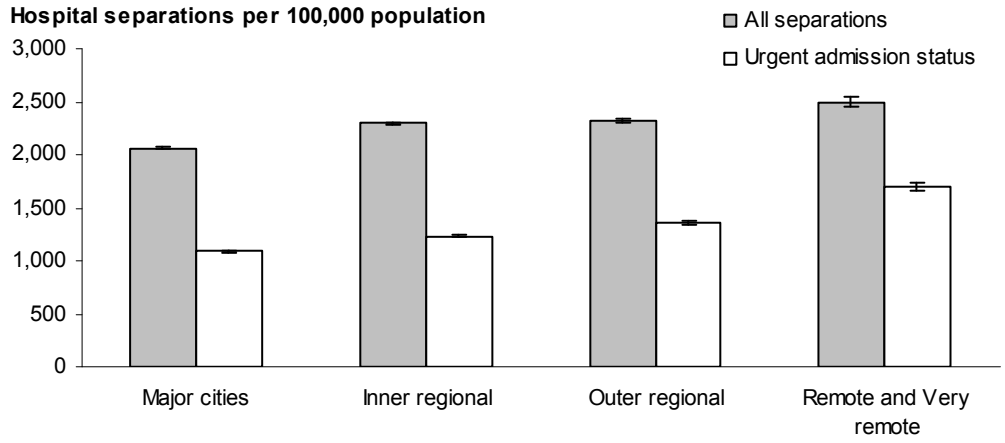
Source: AIHW National Mortality Database.

Figure 2.6: Deaths rates from CVD, by disease type and remoteness area, 2006

Cardiovascular hospitalisations

Rates of hospital separations with CVD increased with remoteness, with the highest rate for people living in *Remote* and *Very remote* areas.

Hospital separations with an urgent admission status are of interest because such admissions may indicate cases where primary health care was ineffective or not accessed, although a range of other factors can also influence the rate of urgent admissions. The rates of hospital separations of this type also increased with remoteness, with the highest rates occurring for people living in *Remote* and *Very Remote* areas (Figure 2.7, Table A6.3).



Notes

1. Age-standardised rates.
2. Error bars show 95% confidence interval.

Source: AIHW National Hospital Morbidity database.

Figure 2.7: Rates of hospital separations with principal diagnoses of CVD, by remoteness area, 2006–07

The cardiovascular health of Indigenous Australians

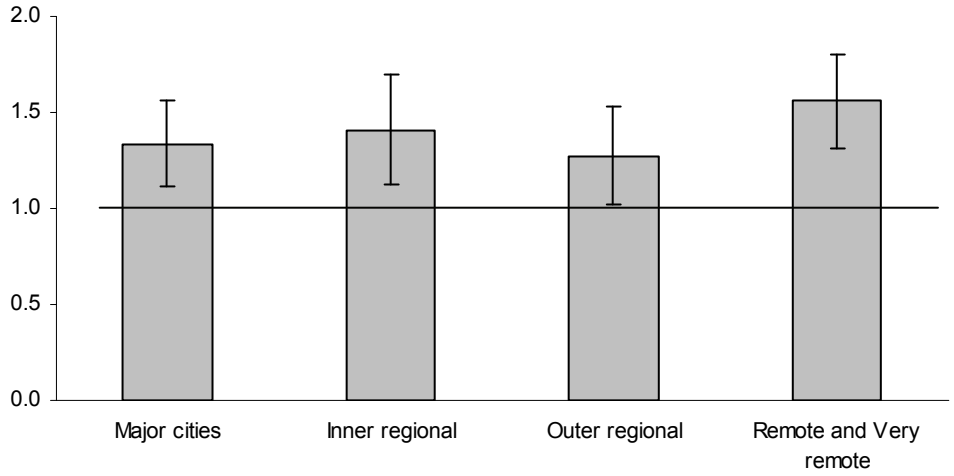
Prevalence

In this section we compare the prevalence of CVD among Indigenous Australians by region from estimates based on self-reported information collected in the 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS). To adjust for the effects of age and sex, the prevalence estimates are presented as standardised rate ratios. This measure compares the observed prevalence of CVD in the Indigenous populations of different areas with the prevalence that would be expected if the age-sex-specific prevalence rate of the non-Indigenous population in *Major cities* applied in those regions.

Using this approach, a ratio of 1.0 indicates that the prevalence among Indigenous Australians in a region is the same as non-Indigenous Australians in *Major cities*, while a ratio of 2.0 indicates the prevalence of Indigenous Australians is twice that of

non-Indigenous Australians in *Major cities*, and so on. See Appendices 1 and 5 for details of this survey and the methods used to analyse the data.

Overall, among those aged 20 years and older, cardiovascular diseases were more common in Indigenous Australians regardless of where they lived than in non-Indigenous Australians in *Major cities*. The comparative prevalence of CVD in Indigenous Australians versus non-Indigenous city dwellers was similar across regions (Figure 2.8, Table A6.4).



(a) This measure compares the observed prevalence of CVD in the Indigenous populations living in various regions with the prevalence that would be expected if the prevalence rate of non-Indigenous people in *Major cities* applied to those populations.

Notes

1. Based on self-reported information. These results relate to people aged 20 years or over.
2. These results have been adjusted for age and sex.
3. Error bars show 95% confidence intervals.

Source: AIHW analysis of ABS 2004–05 NATSIHS.

Figure 2.8: Standardised rate ratios of CVD prevalence in Indigenous Australians by region, 2004–05

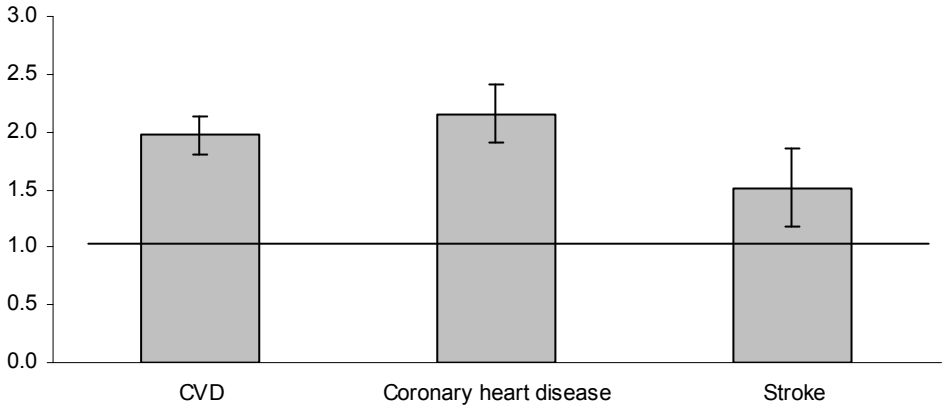
Deaths and hospitalisations

Comparing rates of deaths and hospitalisations among Indigenous Australians across regions is problematic. Identification of Indigenous Australians in hospital and deaths data collections differs by remoteness, with better identification in more remote areas compared with *Major cities.* As a result, calculations by region can give misleading results, with the deaths and hospitalisation rates of Indigenous Australians in *Major cities* being underestimated.

For this reason, this section presents standardised ratios instead, as for the prevalence estimates above. The ratios have been calculated to adjust for the different age structure of Indigenous populations. Only those states with reliable identification of Indigenous Australians have been included in this analysis. More detail about this approach can be found in Appendix 1.

Deaths

Indigenous Australians died from CVD at twice the rate of non-Indigenous Australians in 2006 (standardised mortality ratio of 2.0). Death rates from coronary heart disease (standardised mortality ratio of 2.2) and stroke (standardised mortality ratio of 1.5) were also significantly higher for Indigenous Australians than for non-Indigenous Australians (Figure 2.9, Table A6.5).



Notes

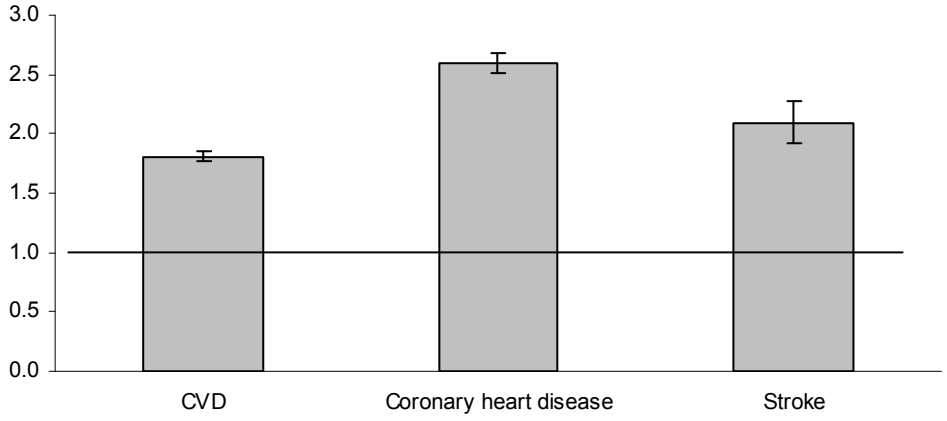
1. Includes deaths from New South Wales, Queensland, Western Australia, South Australia and Northern Territory only.
2. Error bars show 95% confidence intervals.

Source: AIWH National Mortality Database.

Figure 2.9: Standardised mortality ratio for Indigenous Australians, by disease type, 2006.

Hospitalisations

In 2006–07, Indigenous Australians were hospitalised with CVD at almost twice the rate (1.8 times) of Other Australians. Similarly, Indigenous Australians were hospitalised with coronary heart disease at 2.6 times the rate of Other Australians, and with stroke at 2.1 times the rate (Figure 2.10, Table A6.5).



Notes

1. Includes hospitalisations from New South Wales, Victoria, Queensland, Western Australia, South Australia and Northern Territory only.
2. Error bars show 95% confidence intervals.

Source: AIWH National Hospital Morbidity Database.

Figure 2.10: Standardised hospitalisation ratio for Indigenous Australians, by disease type, 2006–07.

These results show that death and hospitalisation rates for CVD among Indigenous Australians are significantly higher than among Other Australians. As Indigenous Australians make up a high proportion of the population in *Remote* and *Very remote* areas, it follows that the need for primary health-care services for cardiovascular health will be higher in these regions.

2.5 Conclusions

In this chapter we have highlighted a number of substantial differences in the health of Australians across different regions. People in more remote areas had poorer health overall. They suffered more from CVD, which is reflected in higher rates of death and hospitalisation in these regions. The level of CVD risk factors tended to be greater in more remote areas. Indigenous Australians have significantly higher rates of death and hospitalisation from CVD than Other Australians. In *Remote* and *Very remote* areas, Indigenous Australians make up a substantially greater proportion of the population.

These findings indicate that the need for effective management of CVD and risk factors generally increase with remoteness. A major component of the management of CVD at the

primary health care level is the supply of cardiovascular medicines. The next chapter comprises an analysis of the supply of cardiovascular medicines by region, to determine whether the supply reflects the need as established in this chapter.

3 Supply of cardiovascular medicines by region

Key points

- The supply of cardiovascular medicines differs across regions, generally being dispensed at the highest rate to patients in *Inner regional* areas.
- Medicines supplied under Section 100 arrangements are a very important source of medicines for patients in *Remote* and *Very remote* areas.
- Comparing the supply of medicines in *Remote* and *Very remote* areas with other regions is problematic because of data limitations.

3.1 Introduction

Purpose of this chapter

In this chapter we aim to report the supply of cardiovascular medicines in Australia, with a focus on how supply differs across regions. We present regional analyses of cardiovascular medicine supply by medicine class.

It is important to examine the supply of cardiovascular medicines because they are a major component of the effective management of CVD. Cardiovascular medicines are used to treat cardiovascular risk factors, and to prevent or slow progression of CVD. Comparing the supply of these medicines by region gives an indication of the effectiveness of primary health care in an area, because effective primary health care of CVD is impossible without ready access to the appropriate medicines.

What are cardiovascular medicines?

Cardiovascular medicines are medicines used to treat or prevent CVD or CVD risk factors. In this report we have used the medicine names and groupings of the Anatomic Therapeutic Chemical (ATC) classification of medicines (see Box 3.1). Table 3.1 shows the ATC medicine classes included in this report.

Box 3.1: The Anatomic Therapeutic Chemical (ATC) classification of medicines

This report uses the ATC classification of medicines, developed by the World Health Organisation. The ATC classification groups medicines according to the body organ or system on which they act, their therapeutic characteristics, and their chemical characteristics. The ATC classification is the Australian standard for classifying medicines and is the classification adopted by some of the main data sources analysed in this report. However, it does not align well with clinical practice or pharmacology.

Table 3.1: ATC medicine classes included in this report

ATC code	Description
B	**Blood and blood-forming organs**
B01	Antithrombotic agents
C	**Cardiovascular system**
C01	Cardiac therapy
C02	Antihypertensives
C03	Diuretics
C04[(a)]	Peripheral vasodilators
C05[(b)]	Vasoprotectives
C07	Beta-blocking agents
C08	Calcium-channel blockers
C09	Agents acting on the renin–angiotensin system
C10	Serum-lipid-reducing agents

(a) Medicines in this class are included in counts of total cardiovascular medicine supply, but are not reported separately because of the small number of prescriptions for these medicines.

(b) Medicines in this class are not included in this report because they are not used to treat chronic CVD. They are excluded from all analyses.

Sources of medicines data included in this report

Patients can access cardiovascular medicines from a range of different sources in Australia. However, many of these sources lack reliable, national-level data collection. As a result, analysis of medicine supply in this chapter is limited to the following two data sources.

Pharmaceutical Benefits Data System

In Australia, a range of medicines are subsidised by the Australian Government through the Pharmaceutical Benefits Scheme (PBS). A similar scheme, called the Repatriation Pharmaceutical Benefits Scheme (RPBS) exists to provide subsidised medicines to Veterans and their dependents. When the Australian Government subsidises a prescription through either the PBS or RPBS, details of the prescription and the patient are recorded in the Pharmaceutical Benefits Data System.

Note that only those prescriptions subsidised by the PBS/RPBS are recorded in the Pharmaceutical Benefits Data System. In 2007, it was estimated that 84% of prescribed medicines in the ATC class 'C' (cardiovascular) were subsidised by the PBS/RPBS and so would appear in the Pharmaceutical Benefits Data System (DoHA 2009).

In many cases, a patient is prescribed a medicine with a number of 'repeats'—a prescription for additional doses of the same medicine. In this report, each repeat is counted as one prescription: so, for example a prescription for a cardiovascular medicine with three additional repeats would be counted as four prescriptions.

Note that there are a number of important patient characteristics that determine whether a prescription is recorded on the Pharmaceutical Benefits Data System, and this will affect interpretation of the results in this chapter.

Section 100 medicines

Section 100 medicines are those medicines dispensed under Section 100 of the *National Health Act of 1953*, which are intended to improve the access of Indigenous Australians to PBS medicines. Section 100 arrangements allow patients attending an approved remote area Aboriginal or Torres Strait Islander Health Service centre to receive PBS medicines without the need for a prescription form and at no cost.

Section 100 medicines are an important source of medicines for Australians living in remote areas, especially Indigenous Australians. Where possible, Section 100 data are combined with PBS/RPBS data to accurately reflect the medicine supply to these regions. However, because no patient information is collected, it is not possible to include Section 100 medicines in all analyses, such as analyses by age and sex. This limitation also precludes the calculation of age-standardised rates for any counts that include Section 100 data.

A Section 100 prescription is delivered in the form of a medicine pack, equivalent to a PBS/RPBS prescription in terms of the amount of medicine supplied. However, Section 100 data report medicines supplied to medical centres, not medicines dispensed to patients as is the case with PBS/RPBS prescriptions. Not all of the Section 100 medicine supply will be dispensed to patients, meaning that Section 100 data overestimates the supply of medicines to patients to some extent. Table A6.6 shows the number of Section 100 medicine packs supplied from 2005–2008.

Important points for interpreting results in this chapter

The data sources used in this chapter are complex: varying in their coverage, the information collected and missing data, all of which can affect interpretation of results. It is highly recommended that readers view the section on medicine supply analysis in Appendix 2 of this report to fully understand what is reported in this chapter. Failing that, readers should note the following points when interpreting the results in this chapter.

1. Cardiovascular prescriptions dispensed through the PBS/RPBS show only a portion of the total supply of cardiovascular medicines in the community. Patients can obtain medicines through a number of other sources. When interpreting the results in this chapter, it should be remembered that there is an additional supply of medicines to what is reported here.
2. A number of patient characteristics can influence whether a prescription is included in the PBS/RPBS data. As the prevalence of these patient characteristics can vary by region, this could affect comparisons of prescriptions between regions, with more prescriptions captured in some regions and less in others. However, a number of potential sources of bias were investigated prior to analysis. They are considered unlikely to have a large effect on observed differences between regions.
3. The supply of cardiovascular medicines to *Remote* and *Very remote* regions is likely to be underestimated more than in other regions because of difficulties in allocating some data to a remoteness area and higher use of alternative sources of medicines. For this reason, the *Remote* and *Very remote* categories have been grouped together for the analyses in this chapter.
4. The supply of PBS/RPBS-subsidised cardiovascular medicines to Indigenous Australians is likely to be underestimated because of difficulties in identifying Indigenous patients in this data set and the higher use of alternative sources of medicines.

5. Medicines dispensed in remote areas under Section 100 arrangements can account for some of this shortfall. However, it is not possible to include Section 100 medicines in all analyses in this chapter. Those analyses that do not include Section 100 medicines will under-count the supply of medicines to *Remote* and *Very remote* areas and to Indigenous Australians.
6. The number of medicines dispensed in some medicine classes in *Remote* and *Very remote* areas is small relative to other regions, and this may affect interpretation.

Overall, the data sources used in this chapter give a useful summary of the supply of medicines to Australians. However, these data should be interpreted cautiously, especially when comparing the medicine supply in *Remote* and *Very remote* areas to other regions.

3.2 Cardiovascular medicines by region

This section uses data from the Pharmaceutical Benefits Data System and Section 100 medicines to compare the supply of cardiovascular medicine classes across regions. In 2007–08, over 70 million prescriptions for cardiovascular medicines were supplied through the PBS/RPBS to 3.8 million patients (Table A6.7). The majority of these prescriptions would have been prescribed for cardiovascular or lipid conditions (Table 3.2).

Table 3.2: Number of patients and prescriptions dispensed for cardiovascular medicines, by ATC medicine class, 2007–08

ATC2 Class	Class name	Number of patients[(a)]	Number of prescriptions[(a)]	Per cent prescribed for a cardiovascular or lipid condition[(b)]
B01	Antithrombotic medicines	1,098,851	7,191,285	84.0
C01	Cardiac therapy medicines	571,213	3,531,732	85.9
C02	Antihypertensive medicines	174,065	846,068	72.8
C03	Diuretic medicines	697,126	2,479,389	85.3
C04	Peripheral vasodilators	572	2,633	16.7
C07	Beta-blocking agents	839,531	5,854,199	88.1
C08	Calcium-channel blocking agents	884,799	7,657,120	92.6
C09	Renin–angiotensin system agents	2,093,723	20,853,697	92.3
C10	Serum-lipid-reducing agents	2,312,404	21,853,719	82.8
Total		**3,846,788**	**70,269,842**	

(a) Does not include prescriptions dispensed under Section 100 arrangements.

(b) Based on BEACH estimates. Note that these estimates are based on all GP prescriptions, not just those supplied under PBS/RPBS arrangements.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; BEACH survey data.

Patients did not seem to migrate to seek better access to medicines. Comparing the region of patient residence for their first and last prescription of the year found that in most cases patients did not change remoteness areas. Where patients did move, it tended to be to a less remote area (Table 3.3).

Table 3.3: Change in patient residence for patients prescribed a PBS/RPBS-subsidised cardiovascular medicine, by remoteness area, 2007–08

		Final patient residence			
		Major cities	**Inner regional**	**Outer regional**	**Remote and Very remote**
		Number of patients			
Initial patient residence	**Major cities**	**2,535,536**	18,265	4,750	760
	Inner regional	14,992	**826,459**	4,621	550
	Outer regional	4,149	5,358	**358,962**	757
	Remote and Very remote	812	746	1,075	**52,678**

Note: Figures in bold indicate those patients who did not change region of residence.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System

Antithrombotic medicines

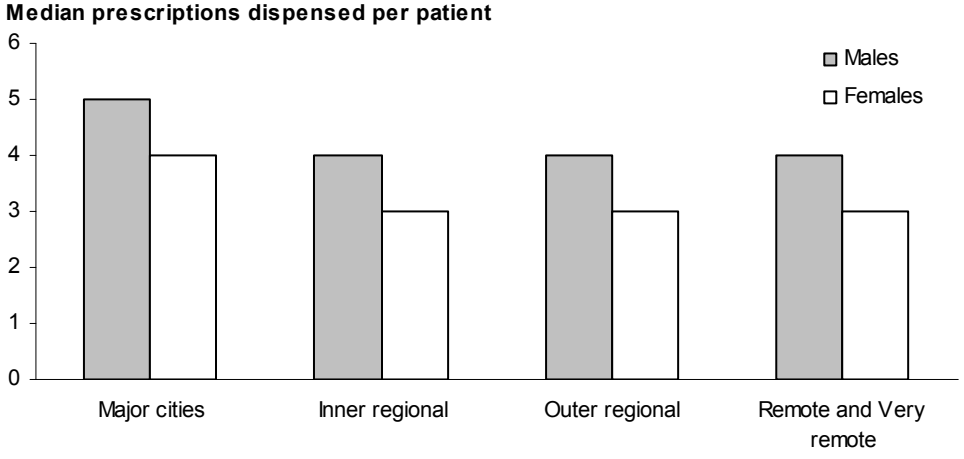
What are antithrombotic medicines?

Antithrombotic medicines act by preventing the formation of blood clots, or by dissolving existing blood clots. These medicines are typically taken over a long period to reduce the risk of heart attack and death among people with coronary heart disease, and to reduce the risk of subsequent strokes and disability among patients with a history of ischaemic stroke.

Medicines in this class include antiplatelet agents and anticoagulants such as warfarin. This class also includes thrombolytic drugs, which act by dissolving blood clots. They are given to patients suffering a heart attack or ischaemic stroke. However, these are powerful drugs that are generally given only in hospital under close supervision, and so would rarely appear in the Pharmaceutical Benefits Data System.

Who uses antithrombotic medicines?

In 2007–08, a total of 1.1 million Australians received 7.2 million PBS/RPBS-subsidised prescriptions for antithrombotic medicines. Similar numbers of males and females received antithrombotic medicines in 2007–08 (550,599 males versus 545,972 females) (Table A6.8). However, males were dispensed slightly more antithrombotic medicines overall than females— males were dispensed a median of five prescriptions per patient, compared with four prescriptions per female patient (Figure 3.1 and Table A6.9).

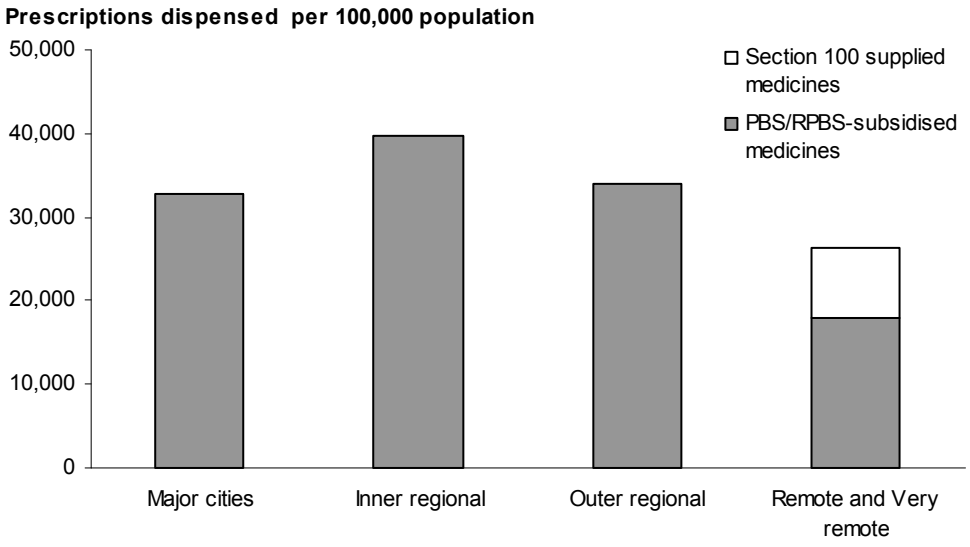


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.1: Median number of prescriptions for antithrombotic medicines dispensed per patient, by sex and remoteness area, 2007–08

Overall, patients in *Inner regional* areas were dispensed antithrombotic medicines at the highest rate (39,829 prescriptions dispensed per 100,000 population), followed by *Outer regional* areas and *Major cities* (34,062 and 32,875 prescriptions dispensed per 100,000 population, respectively). The rate in *Remote* and *Very remote* areas was lower (26,428 prescriptions dispensed per 100,000 population), even when medicines administered under Section 100 were included (Figure 3.2). In *Remote* and *Very remote* areas, 32% of government-subsidised prescriptions for antithrombotic medicines were supplied under Section 100 arrangements.



Note: These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

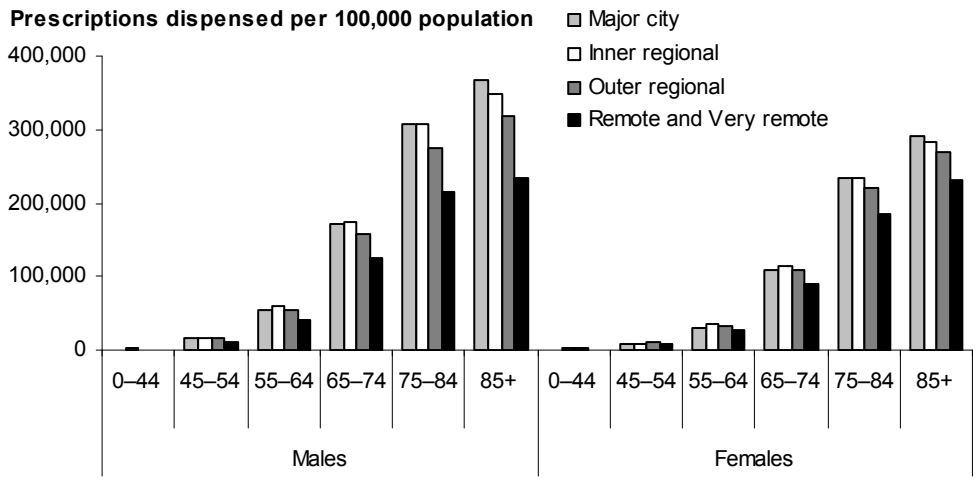
Figure 3.2: Prescription rates for antithrombotic medicines dispensed, by remoteness area, 2007–08

When the supply of antithrombotic medicines is age-standardised, the difference between regions is reduced, with similar rates of prescriptions dispensed per 100,000 population in *Major cities* (31,763), *Inner regional* (32,832) and *Outer regional* (30,845) areas. This means that the differences observed in Figure 3.2 are mostly due to differences in the age structure of populations across regions. Age-standardised rates for *Remote* and *Very remote* areas are not presented here, because the supply of Section 100 medicines cannot be age-standardised and so the supply of medicines to these areas would be underestimated.

Antithrombotic medicines were dispensed to males at a higher rate than to females among those aged above 45 years (Figure 3.3 and Table A6.10). The rate increased with age for both sexes, reflecting the increase in the risk and prevalence of stroke and heart attack in more elderly Australians.

Among males, antithrombotic medicines were dispensed in *Inner regional* and *Outer regional* areas at a similar rate to that of *Major cities* up to around 65 years of age (Figure 3.3 and Table A6.10). Beyond this age, the rate among males in *Outer regional* areas began to fall behind that of males in *Major cities* or *Inner regional* areas. The pattern among females was

broadly similar. However, among females, the rate of dispensed antithrombotic medicines in *Remote* and *Very Remote* areas trailed other areas by a smaller amount than in males (Figure 3.3 and Table A6.10). Note that Section 100 medicines are not included in the rates shown here for *Remote* and *Very Remote* areas.



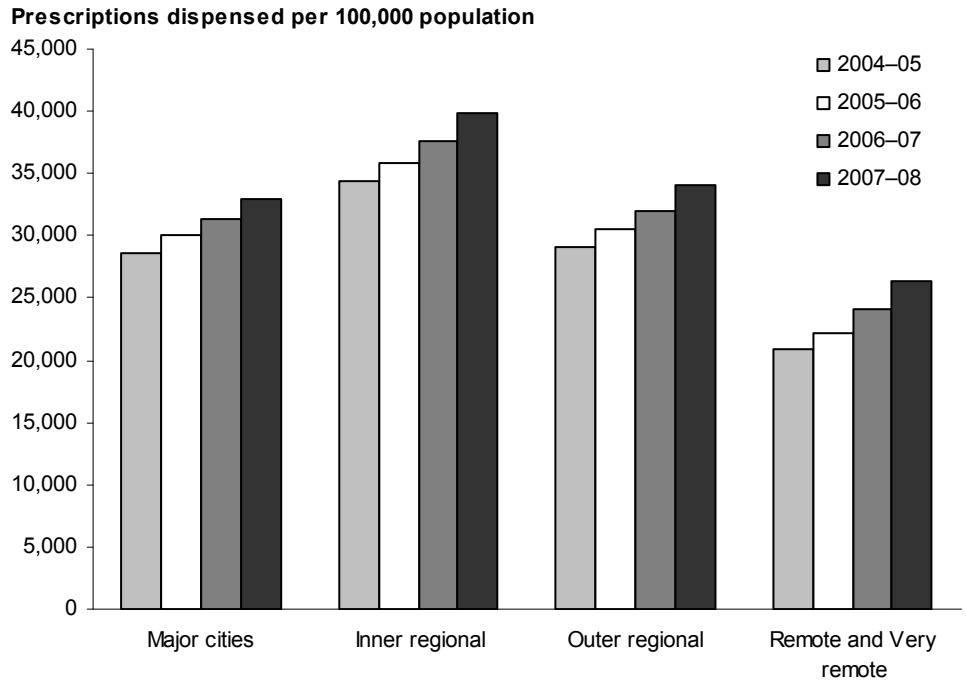
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.3: Prescription rates for antithrombotic medicines dispensed population, by remoteness area, age and sex, 2007–08

How is the supply of antithrombotic medicines changing?

Antithrombotic medicines were dispensed at a higher rate in 2007–08 than in 2004–05. In 2004–05, there were 29,702 antithrombotic medicine prescriptions dispensed per 100,000 population. This rate had risen to 34,325 prescriptions dispensed per 100,000 population in 2007–08. The increase in the rate of dispensed antithrombotic medicine prescriptions was similar across remoteness areas. (Figure 3.4 and Table A6.11).



Note: Remote and Very remote areas include medicines supplied under Section 100. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.4: Prescription rates for antithrombotic medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

Cardiac therapy medicines

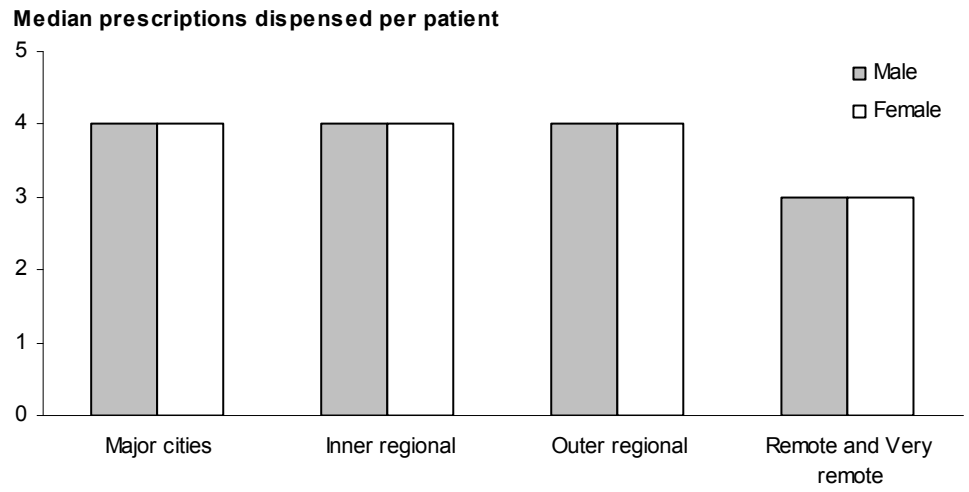
What are cardiac therapy medicines?

Medicines in this class include cardiac glycosides, antiarrhythmics, cardiac stimulants and vasodilators. Cardiac glycosides and antiarrhythmics are used to suppress fast rhythms of the heart such as atrial flutter or atrial fibrillation. They may also be used to treat angina where the chest pain is caused by an abnormally fast heart rhythm. Cardiac glycosides are also used to prevent the worsening of heart failure by increasing the force of contraction of the heart.

Vasodilators are used to treat heart failure and angina. They dilate, or open up, the main blood vessels of the body. This reduces the workload of the heart, which is important for patients with heart failure, and can relieve angina as well.

Who uses cardiac therapy medicines?

Almost 600,000 Australians received around 3.5 million PBS/RPBS-subsidised prescriptions for cardiac therapy medicines in 2007–08, split roughly evenly between males and females (283,910 male compared with 286,048 female patients) (Table A6.12). Overall, in that year, males and females were both dispensed a median of four cardiac therapy prescriptions per patient, but patients in *Remote* and *Very Remote* areas were dispensed slightly fewer prescriptions than those in other areas (Figure 3.5 and Table A6.9).

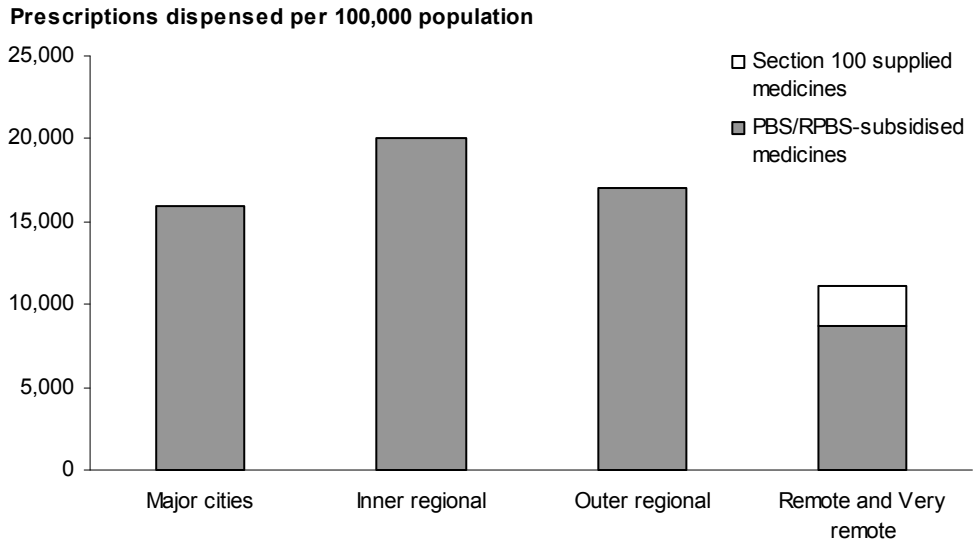


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.5: Median number of prescriptions for cardiac therapy medicines dispensed per patient, by sex and remoteness area, 2007–08

Cardiac therapy medicines were dispensed at the highest rate to patients in *Inner regional* areas (20,100 prescriptions dispensed per 100,000 population). They were dispensed at a similar rate in *Major cities* and *Outer regional* areas (15,962 and 17,027 prescriptions dispensed per 100,000 population, respectively). Patients in *Remote* and *Very Remote* areas were dispensed these medicines at the lowest rate (11,111 prescriptions dispensed per 100,000 population), even when Section 100 medicines were included (Figure 3.6). In *Remote* and *Very Remote* areas, 22% of the government-subsidised prescriptions dispensed for cardiac therapy medicines were supplied under Section 100 arrangements.



Note: These rates are not age-standardised.

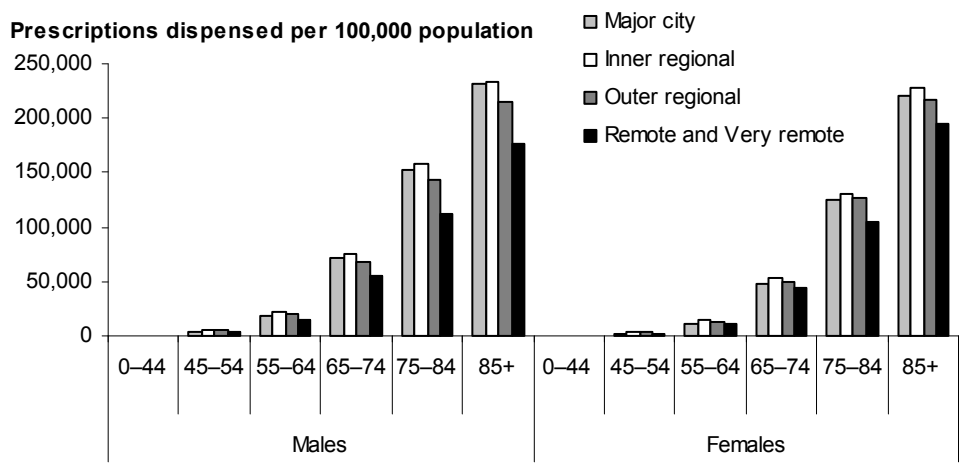
Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.6: Prescription rates for cardiac therapy medicines dispensed, by remoteness area, 2007–08

The difference between regions is reduced when the supply of cardiac therapy medicines is age-standardised. The rate of dispensed cardiac therapy medicines per 100,000 population is similar in *Major cities* (15,231), *Inner regional* (16,428) and *Outer regional* (15,534) areas. This suggests that much of the difference between regions seen in Figure 3.6 is due to the underlying age structure of the populations across regions. Rates from *Remote* and *Very remote* areas are not presented here, because the supply of Section 100 medicines cannot be age-standardised and so the supply of medicines to these areas would be underestimated.

Cardiac therapy medicines were dispensed at an increasing rate as patients' age increased (Figure 3.7 and Table A6.13). The rate of dispensed prescriptions for cardiac therapy medicines was similar between *Major cities*, *Inner regional* and *Outer regional* areas for most age groups. However, among male patients aged 85 years and over, patients in *Outer regional* areas were dispensed the medicines at a substantially lower rate than in *Major cities* or *Inner regional* areas. Rates in *Remote* and *Very Remote* areas were substantially lower than in other areas in all age groups, but some of this difference is due the Section 100 medicines, which are not included here (Figure 3.7 and Table A6.13).



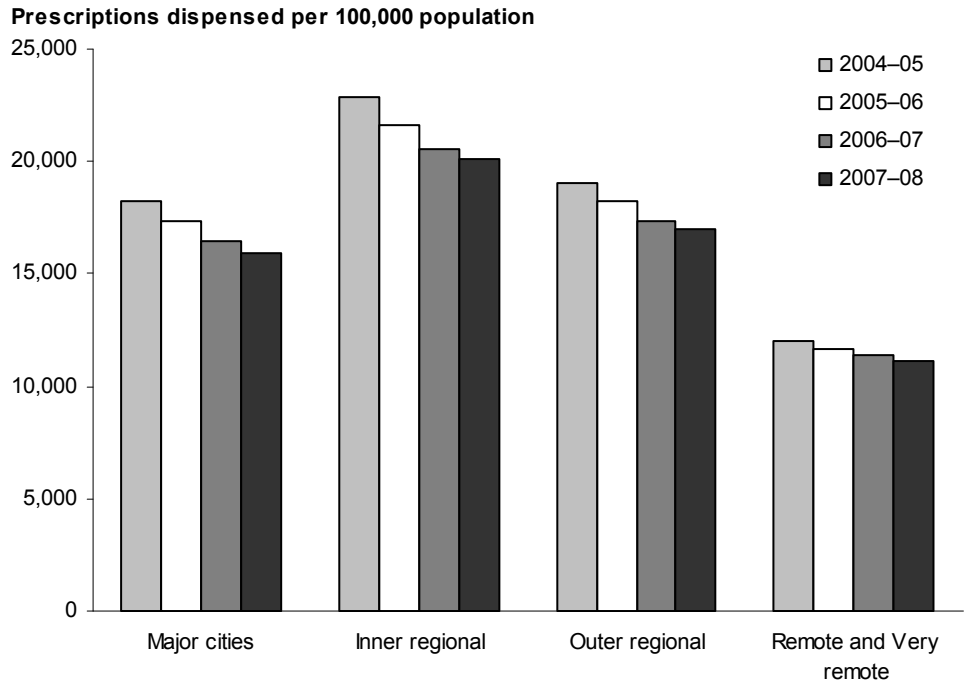
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.7: Prescription rates for cardiac therapy medicines dispensed, by remoteness area, age and sex, 2007–08

How is the supply of cardiac therapy medicines changing?

Cardiac therapy medicines were dispensed at a lower rate in 2007–08 than in 2004–05 (Figure 3.8 and Table A6.13). In 2004–05, there were 19,112 prescriptions for cardiac therapy medicines dispensed per 100,000 population. This rate had dropped to 16,817 prescriptions dispensed per 100,000 population in 2007–08. The dispensed prescription rate decreased at a similar rate across remoteness areas (Figure 3.8 and Table A6.14).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.8: Prescription rates for cardiac therapy medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

Antihypertensive medicines

What are antihypertensive medicines?

Antihypertensive medicines are a class of medicines designed to lower a patient's blood pressure. Some antihypertensives act centrally by suppressing the signals to the heart that make it beat harder, resulting in a lower cardiac output and therefore blood pressure. Other medicines in this class reduce blood pressure by opening and relaxing the peripheral arteries.

This type of medicine has generally been replaced by newer medicines to control blood pressure. Antihypertensive medicines are now usually reserved for use when other medicines have failed to control the patient's blood pressure. For more information on the

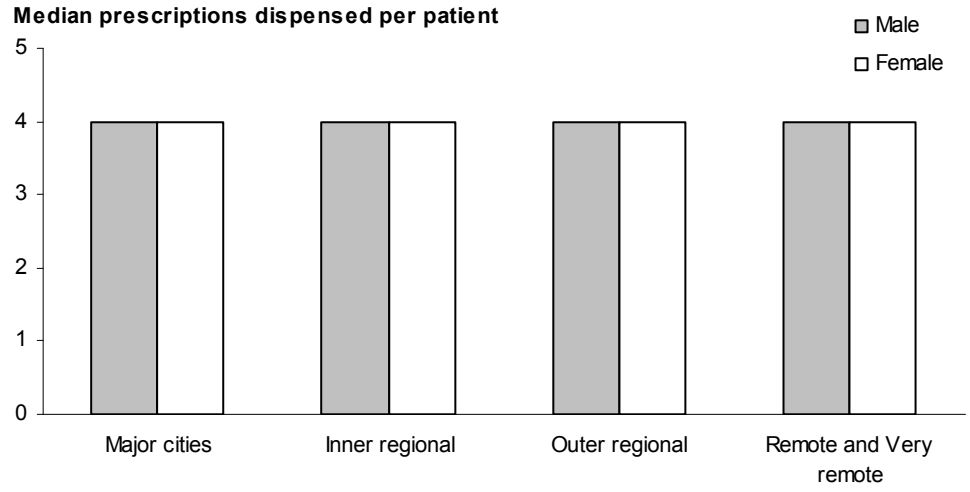
terminology used to describe medicines with a blood-pressure-lowering effect in this report, see Box 3.2.

Box 3.2: Terminology used to describe medicines used to treat hypertension

In this report, we have used the term 'antihypertensives' strictly to refer to medicines in this class, as per the ATC classification. However, there are many other medicines used to treat hypertension, such as beta-blocking agents or renin–angiotensin system agents, which may be referred to elsewhere as 'antihypertensives'. Such medicines are reported separately in this report, by their ATC medicine classes. In this report, we have referred to all medicines used to treat hypertension as 'medicines with a blood-pressure-lowering effect'.

Who uses antihypertensive medicines?

Almost 175,000 Australians received 846,046 PBS/RPBS-subsidised prescriptions for antihypertensive medicines in 2007–08. More males than females were dispensed an antihypertensive medicine (111,409 males compared with 62,445 females), reflecting the higher prevalence of hypertension among males (Table A6.15) (AIHW 2004b). Males and females were both dispensed a median of four prescriptions per person in 2007–08. The median number of dispensed prescriptions per patient did not differ across remoteness areas (Figure 3.9 and Table A6.9).

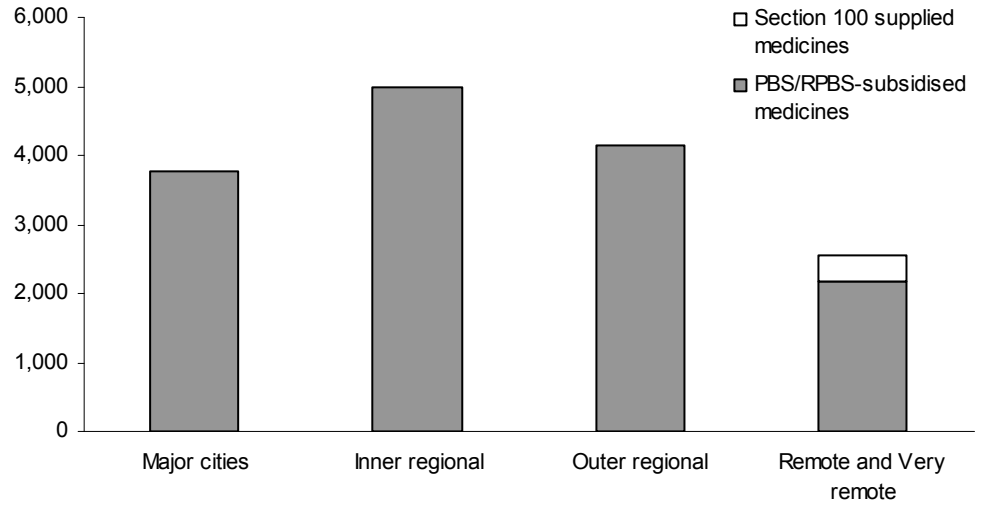


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.9: Median number of prescriptions for antihypertensive medicines dispensed per patient, by sex and remoteness area, 2007–08

Antihypertensive medicines were dispensed at the highest rate in *Inner regional* areas (4,986 prescriptions dispensed per 100,000 population), followed by *Outer regional* areas (4,154 prescriptions dispensed per 100,000 population), then *Major cities* (3,761 prescriptions dispensed per 100,000 population; Figure 3.10). Even when medicines supplied through Section 100 were included, patients in *Remote* and *Very Remote* areas were dispensed antihypertensive medicines at a substantially lower rate (2,539 prescription dispensed per 100,000 population) than other areas. In *Remote* and *Very Remote* areas, 15% of government-subsidised prescriptions for antihypertensive medicines were dispensed under Section 100 arrangements (Figure 3.10).



Note: These rates are not age-standardised.

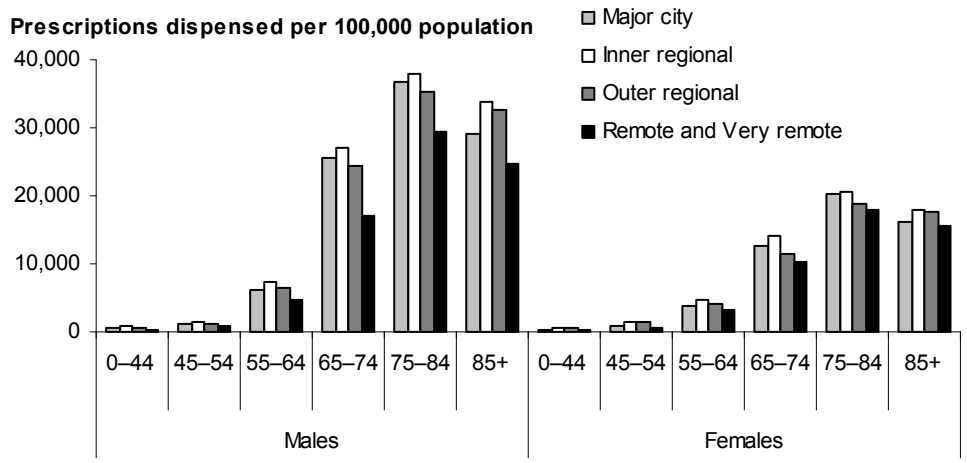
Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.10: Prescription rates for antihypertensive medicines dispensed, by remoteness area, 2007–08

The differences between regions were reduced after the supply of antihypertensive medicines was age-standardised. However, these medicines were still supplied at a higher rate in *Inner regional* areas (12,118 prescriptions dispensed per 100,000 population) than either *Major cities* (10,892) or *Outer regional* areas (10,799). This means that the higher rate of supply to *Inner regional* areas seen in Figure 3.10 was not entirely due to differences in the age structure of the regional population. Rates from *Remote* and *Very remote* areas are not presented here, because the supply of Section 100 medicines cannot be age-standardised and so the supply of medicines to these areas would be underestimated.

Antihypertensive medicines were dispensed at a higher rate as the patients' age increased (Figure 3.11 and Table A6.16). The rate of dispensed prescriptions was highest among those aged 75–84 years, and decreased among those aged 85 years and over. Generally, antihypertensive medicines were dispensed at the highest rate in *Inner regional* areas and the lowest rate in *Remote* and *Very Remote* areas. However, among females aged 65 years and over, rates in *Outer regional* and *Remote* and *Very Remote* areas were quite similar, especially among those aged 75–84 years. Antihypertensive medicines were dispensed to males in *Remote* and *Very Remote* areas at a considerably lower rate than in other areas for all age groups, but this difference may be partly explained by the medicines supplied under Section 100 arrangements, which are not included here.



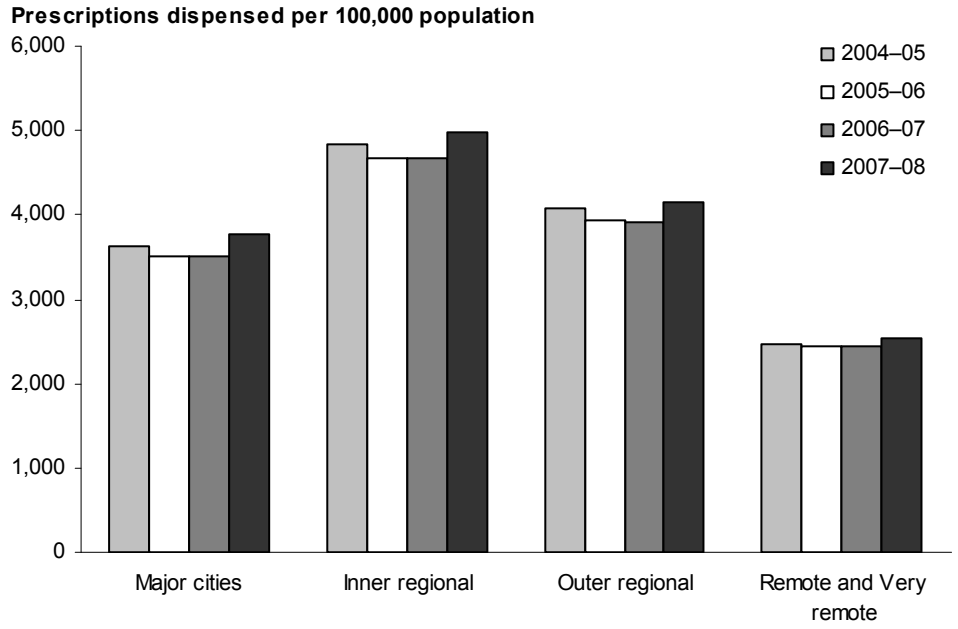
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.11: Prescription rates for antihypertensive medicines dispensed, by remoteness area, age and sex, 2007–08

How is the supply of antihypertensive medicines changing?

Overall, the supply of antihypertensive medicines fell between 2004–05 and 2006–07, before increasing slightly in 2007–08 to 4,024 prescriptions dispensed per 100,000 population. A similar pattern occurred in all remoteness areas (Figure 3.12 and Table A6.17).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.12: Prescription rates for antihypertensive medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

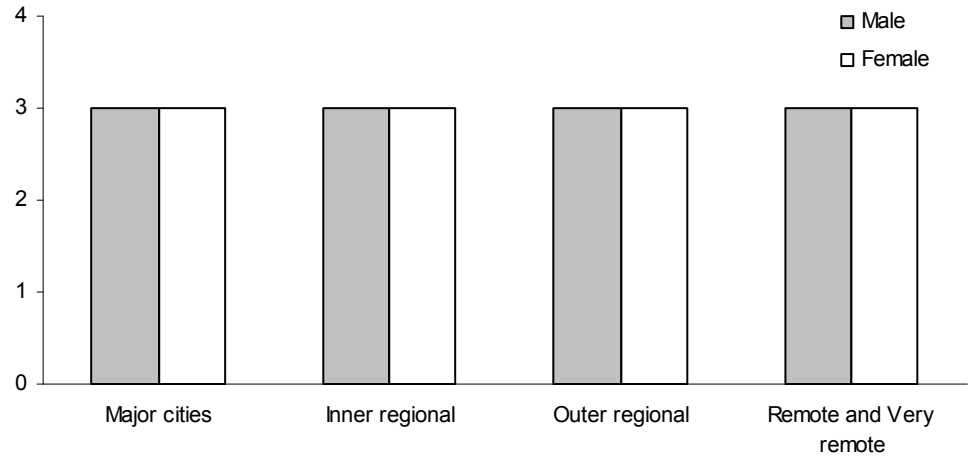
Diuretic medicines

What are diuretic medicines?

Diuretic medicine increases the rate of urination. The increase in urine production leads to a reduction in blood volume. This is useful for reducing blood pressure and treating the symptoms of heart failure. Diuretics are popular medicines because they can be as effective in lowering blood pressure as other medicine classes, are inexpensive and have few side-effects.

Who uses diuretic medicines?

Approximately 2.5 million PBS/RPBS-subsidised prescriptions were dispensed to almost 700,000 Australians in 2007–08. The majority of patients receiving diuretics through the PBS/RPBS were female (441,838 females versus 254,001 males) (Table A6.18). Males and females in all regions received a median of three prescriptions per patient in 2007–08 (Figure 3.13 and Table A6.9).

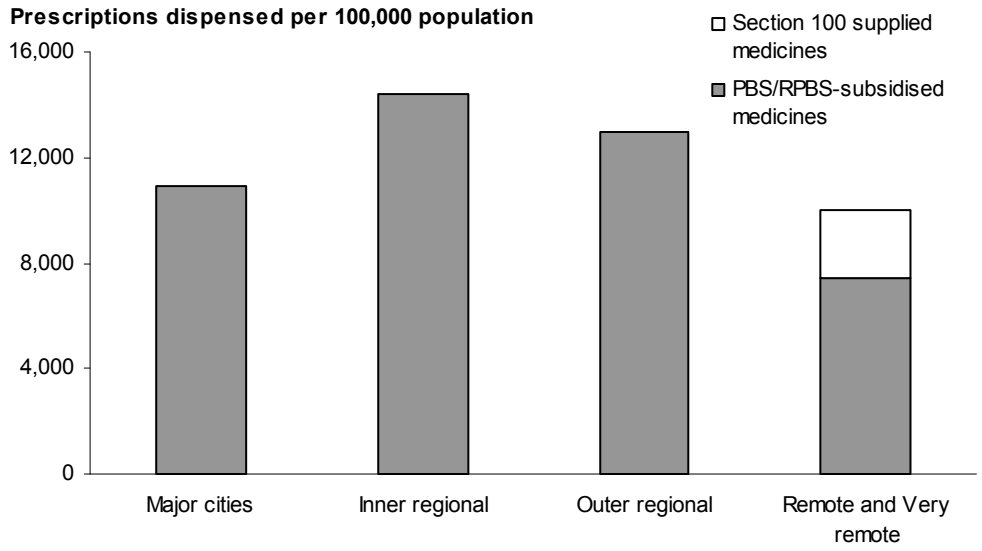


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System

Figure 3.13: Median number of prescriptions for diuretic medicines dispensed per patient, by sex and remoteness area, 2007–08

Diuretic medicines were dispensed to patients in *Inner regional* areas at the highest rate (14,425 prescriptions dispensed per 100,000 population), followed by *Outer regional* areas (12,959 prescriptions dispensed per 100,000 population) (Figure 3.14). The rate in *Remote* and *Very Remote* areas (9,999 prescriptions dispensed per 100,000 population) was similar to that of *Major cities* (10,926 prescriptions dispensed per 100,000 population) once Section 100 supplied medicines were included. In *Remote* and *Very Remote* areas, 25% of government-subsidised prescriptions for diuretic medicines were dispensed under Section 100 arrangements.



Note: These rates are not age-standardised.

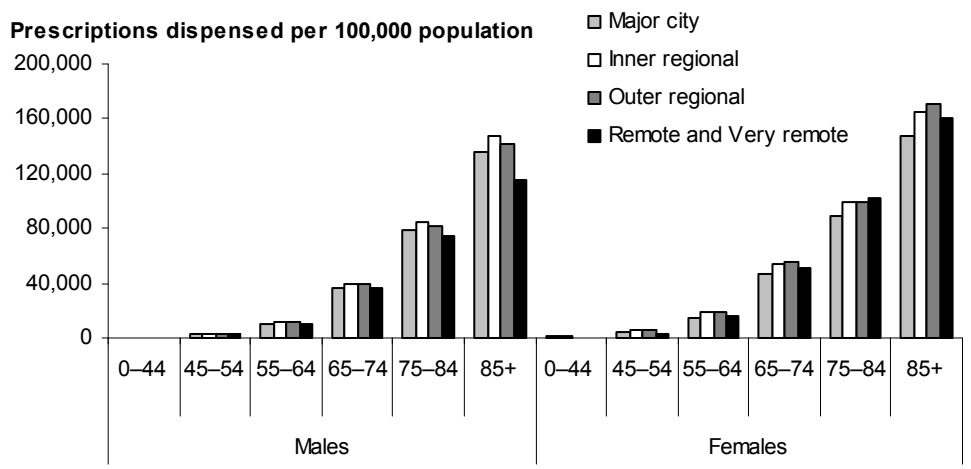
Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.14: Prescription rates for diuretic medicines dispensed, by remoteness area, 2007–08

When the supply of diuretic medicines was age-standardised, the rate of dispensed prescriptions for diuretic medicines per 100,000 population was highest in *Outer regional* (29,140) and *Inner regional* areas (28,968). The supply in *Major cities* was lower (24,901 dispensed prescriptions per 100,000 population). This means that the higher rate of supply in *Inner* and *Outer regional* areas seen in Figure 3.14 are not due to the age structure of the population in these regions. Age-standardised rates for *Remote* and *Very remote* areas cannot be calculated, because Section 100 data does not include information on the patient's age.

Diuretic medicines were dispensed at an increasing rate with patient age and were dispensed at a higher rate to women than to men (Figure 3.15 and Table A6.19). In most age groups, diuretic medicines were dispensed in *Inner regional* and *Outer regional* areas at the highest rate. Diuretics were dispensed in *Remote* and *Very Remote* areas at a similar rate to that of *Major cities* for most age groups. Among females aged 75–84, years the dispensed prescription rate was higher in *Remote* and *Very Remote* areas than in any other. Note that Section 100 medicines are not included, so the use of diuretic medicines in *Remote* and *Very Remote* areas is likely to be higher than appears here.



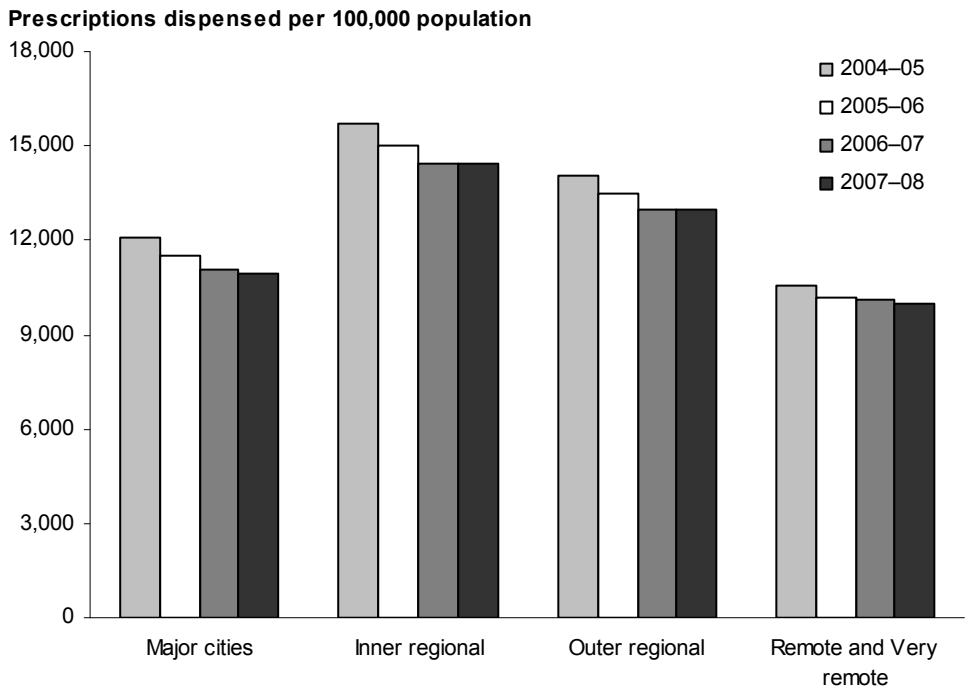
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.15: Prescription rates for diuretic medicines dispensed, by remoteness area, age and sex, 2007–08

How is the supply of diuretic medicines changing?

Diuretic medicines were dispensed slightly less in 2007–08 than in 2004–05. In 2004–05, there were 12,980 prescriptions for diuretic medicines dispensed per 100,000 population. By 2007–08, the rate was 11,826 per 100,000. Proportionally, the smallest fall in the dispensed prescription rate occurred in *Remote* and *Very Remote* areas (Figure 3.16 and Table A6.20).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.16: Prescription rates for diuretic medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

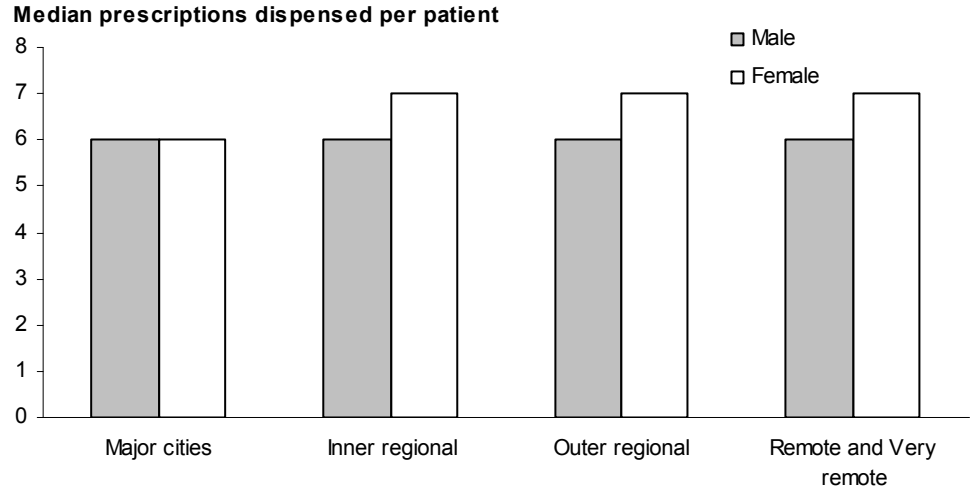
Beta-blocking agents

What are beta-blocking agents?

Beta-blocking agents suppress certain signals to the heart that cause it to beat faster and harder. This reduces the work of the heart and the amount of blood it pumps around the body. This is useful in treating patients with high blood pressure. By lowering blood pressure, these drugs prevent strokes and heart attacks. Also, in people with angina or history of heart attack, beta-blockers can reduce pain and deaths, and prevent further heart attacks. Certain beta-blockers are often used in the treatment of heart failure.

Who uses beta-blocking agents?

Around 840,000 Australians received just under 5.9 million PBS/RPBS-subsidised prescriptions for beta-blocking agents in 2007–08. More females (444,950) received beta-blocking agents than did males (393,477) (Table A6.21). Females were also dispensed slightly more prescriptions overall than were males (a median of seven prescriptions for females versus six for males). But, in *Major cities*, both sexes were dispensed the same median number of prescriptions for beta-blocking agents in 2007–08 (Figure 3.17 and Table A6.9).

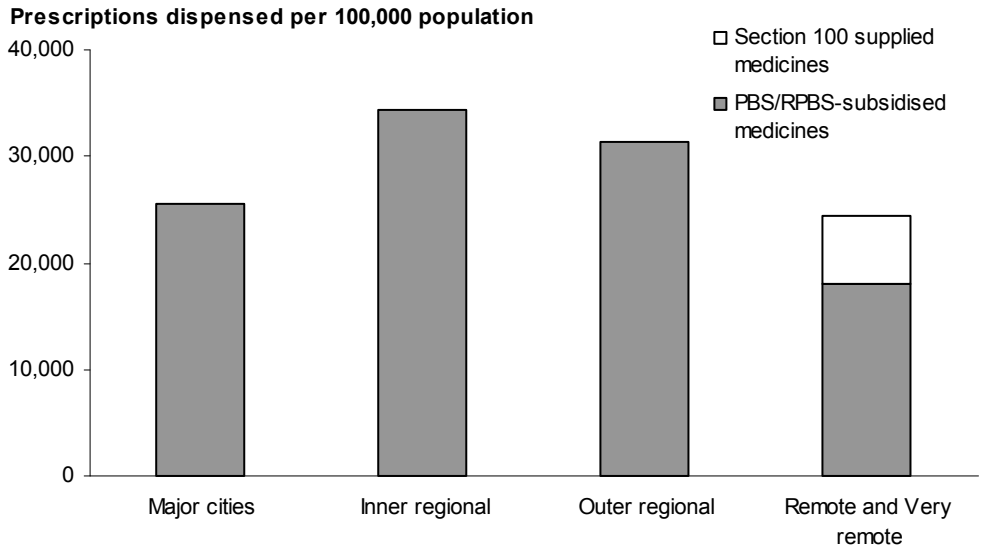


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.17: Median number of prescriptions for beta-blocking agents dispensed per patient, by remoteness area and sex, 2007–08

Overall, beta-blocking agent prescriptions dispensed per 100,000 population were dispensed in *Inner regional* areas at the highest rate (34,434), followed by *Outer regional* areas (31,415). After beta-blockers dispensed under Section 100 were included, prescriptions of beta-blocking agents were dispensed at the lowest rate in *Remote* and *Very Remote* areas (24,503 prescriptions dispensed per 100,000 population), but this rate was similar to that of *Major cities* (25,542). In *Remote* and *Very Remote* areas, 26% of government-subsidised prescriptions for beta-blocking agents were dispensed under Section 100 arrangements (Figure 3.18).



Note: These rates are not age-standardised.

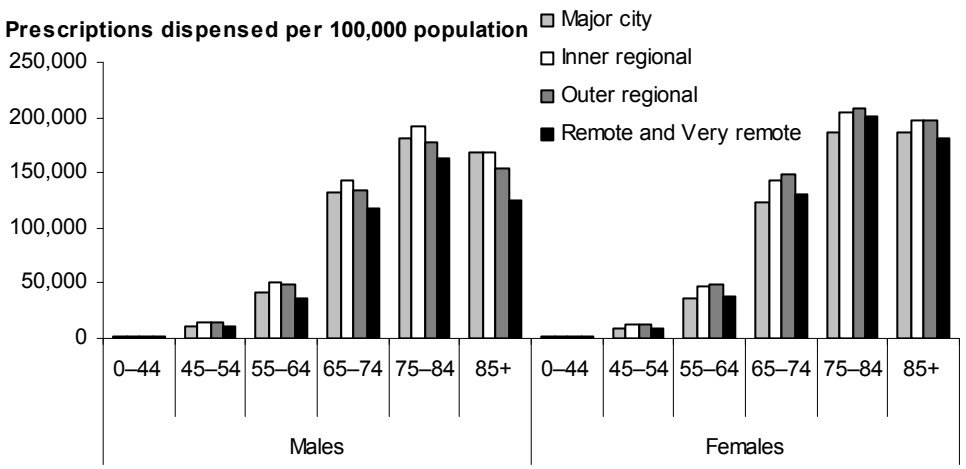
Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.18: Prescription rates for beta-blocking agents dispensed, by remoteness area, 2007–08

A similar pattern of supply emerged after the supply of beta-blocking agents was age-standardised. The rate of dispensed prescriptions for beta-blocking agents per 100,000 population was highest in *Inner regional* (28,502) and *Outer regional* areas (28,202). The supply was lower in *Major cities* (24,944). This means that the higher dispensed prescription rate in *Inner* and *Outer regional* areas are not due to the underlying age structure of those regions' populations. Age-standardised rates for *Remote* and *Very remote* areas could not be calculated, because Section 100 data does not include information on the patient's age.

Beta-blocking agents were dispensed at an increasing rate with age, and decreased slightly among patients aged 85 years and over in most regions. Beta-blocking agents were generally dispensed at the highest rates in *Inner regional* and *Outer regional* areas for females, and in *Inner regional* areas for males. Rates were substantially lower in *Remote* and *Very Remote* areas for males, but among females were generally comparable to the rate of *Major cities*. Note that Section 100 medicines are not included in the rates shown here for *Remote* and *Very Remote* areas (Figure 3.19 and Table A6.22).



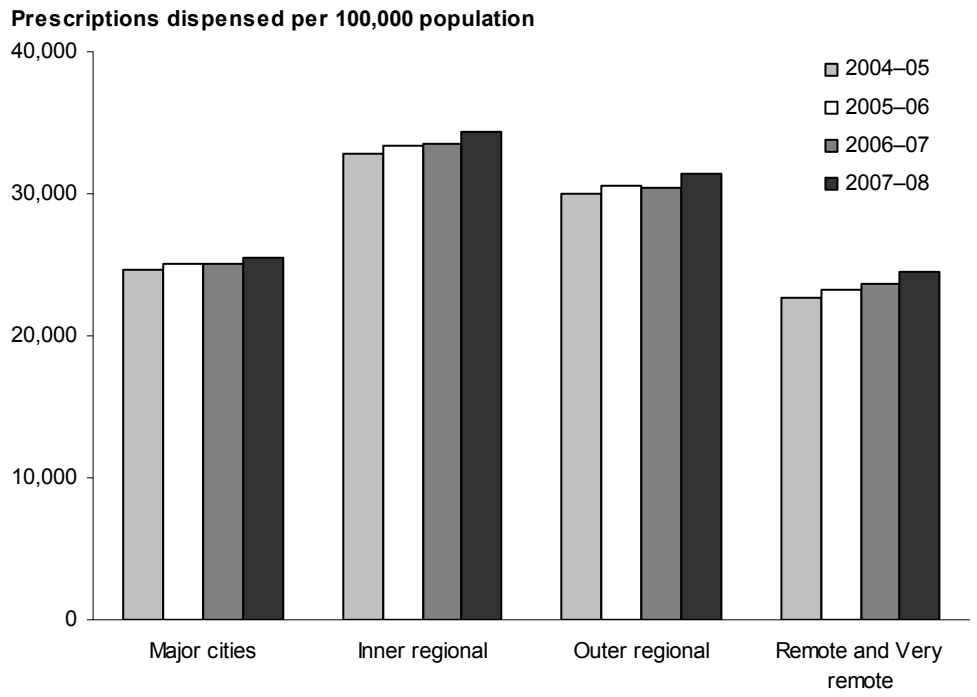
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.19: Prescription rates for beta-blocking agents dispensed, by remoteness area, age and sex, 2007–08

How is the supply of beta-blockers changing?

Beta-blockers were dispensed at a steadily increasing rate between 2004–05 and 2007–08. In 2004–05, there were 26,829 prescriptions for beta-blockers dispensed per 100,000 population. In 2007–08, this rate had increased to 27,933 per 100,000. A similar increase occurred across remoteness areas (Figure 3.20 and Table A6.23).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.20: Prescription rates for beta-blocking agents dispensed, by remoteness area and year, 2004–05 to 2007–08

Calcium-channel blockers

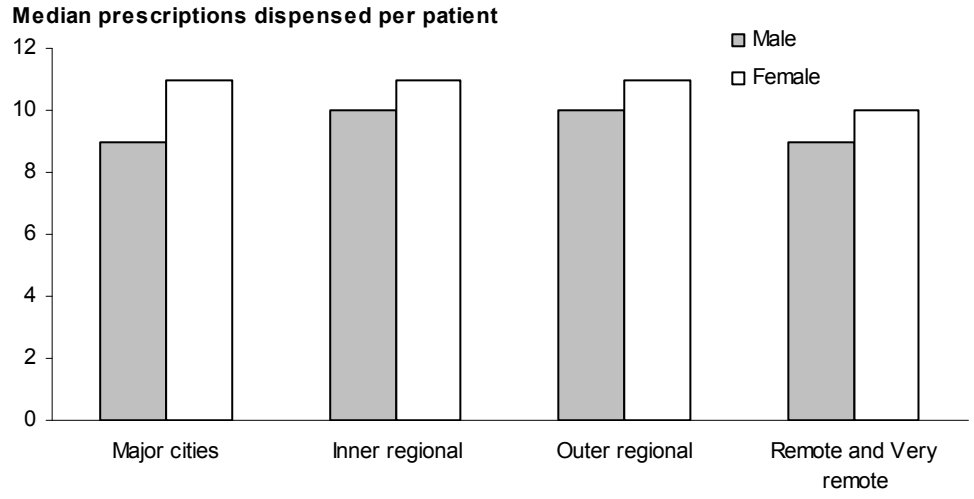
What are calcium-channel blockers?

Calcium-channel blockers are medicines used to reduce blood pressure and angina. They act by blocking a conduction pathway in the heart called the calcium channel. This has the effect of reducing the force of contraction of the heart, which, in turn, can reduce blood pressure and angina.

Who uses calcium-channel blockers?

In 2007–08, around 885,000 Australians were dispensed just under 7.7 million PBS/RPBS-subsidised prescriptions for calcium-channel blockers. More females were dispensed these medicines than men (489,933 females versus 393,800 males) (Table A6.24). In 2007–08, males received slightly fewer median prescriptions per patient than females (10 prescriptions per male compared with 11 prescriptions per female).

Females were dispensed the same median number of prescriptions for calcium-channel blockers per patient in all areas except for *Remote* and *Very Remote* areas, where patients received slightly fewer medicines. Males were dispensed the highest median number of prescriptions in *Inner* and *Outer regional* areas, with slightly fewer calcium-channel blockers dispensed per patient in *Major cities* and *Remote* and *Very Remote* areas (Figure 3.21 and Table A6.9).

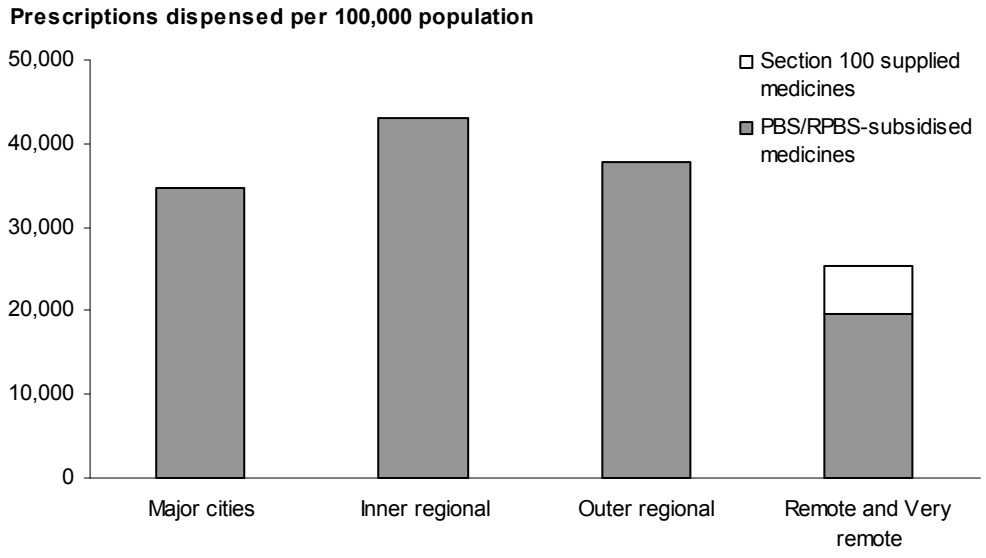


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.21: Median number of prescriptions for calcium-channel blockers dispensed per patient, by remoteness area and sex, 2007–08

Patients in *Inner regional* areas were dispensed calcium-channel blockers at the highest rate (43,112 prescriptions dispensed per 100,000 population). Calcium channel-blockers were dispensed at a similar rate in *Major cities* and *Outer regional* areas (34,578 and 37,896 prescriptions per 100,000 population, respectively). Calcium-channel blockers were dispensed at a substantially lower rate (25,402 prescriptions per 100,000 population) in *Remote* and *Very Remote* areas, even when Section 100 medicines were included. In *Remote* and *Very Remote* areas in 2007–08, 22% of government-subsidised prescriptions for calcium-channel blockers were dispensed under Section 100 arrangements (Figure 3.22).



Note: These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

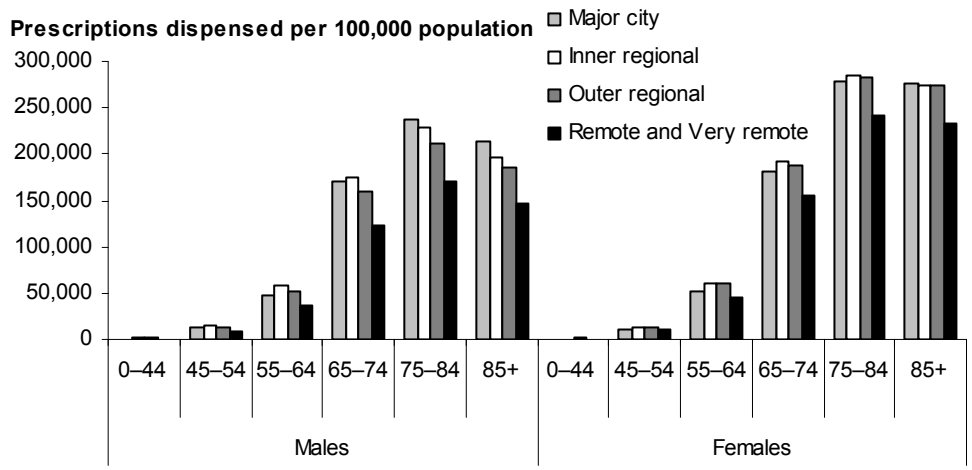
Figure 3.22: Prescription rates for calcium-channel blockers dispensed, by remoteness area, 2007–08

The age-standardised supply of calcium-channel blockers showed smaller differences between regions. Rates of dispensed calcium-channel blocker prescriptions per 100,000 population were slightly higher in *Inner regional* areas (35,487) than in *Outer regional* areas (33,996) or *Major cities* (33,764). This means that much of the difference between regions seen in Figure 3.22 was due to differences in population age structure across regions. Age-standardised rates for *Remote* and *Very remote* areas could not be calculated, because Section 100 data does not include information on the patient's age.

The rate of dispensed calcium-channel blocker prescriptions increased with age for both men and women. Beyond 85 years of age, the rate decreased for both males and females, more so for males. Among males, the rate of dispensed calcium-channel blocker prescriptions was similar in *Major cities*, *Inner regional* and *Outer regional* areas in most age groups. However, the rate in *Inner* and *Outer regional* areas decreased relative to *Major cities* beyond 75 years of age.

Among females, the rate of dispensed calcium-channel blocker prescriptions was highest in those aged over 74 years. Unlike males, where the dispensed script rate declined markedly in those aged over 84 years, among females aged over 84 years the rate remained at a similar level to those aged 75–84 years.

Calcium-channel blockers were dispensed in *Remote* and *Very Remote* areas at a substantially lower rate than in other areas across all ages and in both sexes. Medicines supplied under Section 100 arrangements are not included in these rates, which partly accounts for the lower rate in *Remote* and *Very Remote* areas (Figure 3.23 and Table A6.25).



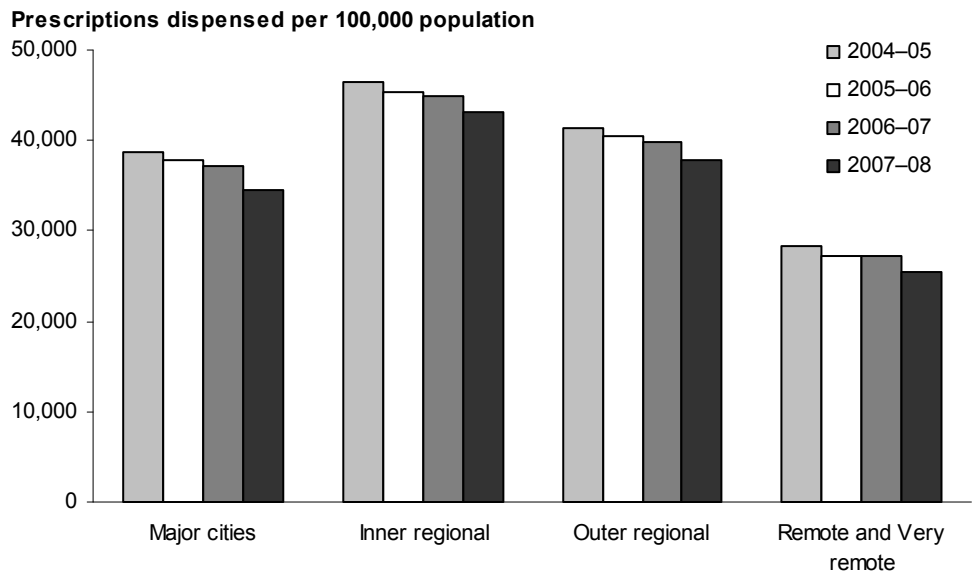
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.23: Prescription rates for calcium-channel blockers dispensed, by remoteness area, age and sex, 2007–08

How is the supply of calcium-channel blockers changing?

Calcium-channel blockers were dispensed at a steadily decreasing rate between 2004–05 and 2007–08. In 2004–05, there were 40,300 prescriptions for calcium-channel blockers dispensed per 100,000 population. By 2007–08, this rate had decreased to 36,473 prescriptions dispensed per 100,000 population. A similar decrease in the use of calcium-channel blockers occurred in each remoteness area (Figure 3.24 and Table A6.26).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.24: Prescription rates for calcium-channel blockers dispensed, by remoteness area and year, 2004–05 to 2007–08

Renin–angiotensin system agents

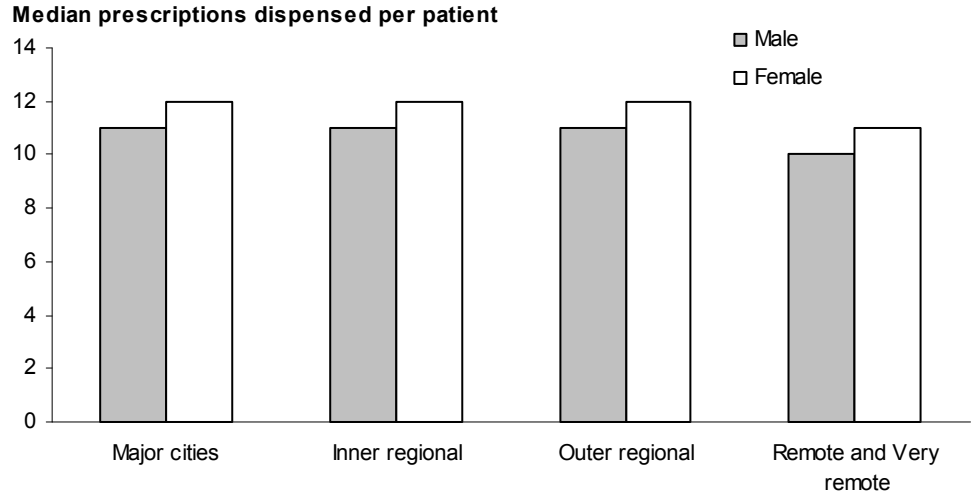
What are renin–angiotensin system agents?

The renin–angiotensin system is a physiological system that, when triggered, acts to increase blood pressure. In cardiovascular disease, renin–angiotensin system agents are administered to block the effects of the renin–angiotensin system. This reduces blood pressure, which is useful in the treatment of high blood pressure and heart failure.

ACE (angiotensin-converting enzyme) inhibitors are a common form of renin–angiotensin system agents. In some cases, these are the first-choice treatment for high blood pressure and heart failure.

Who uses renin–angiotensin system agents?

In 2007–08, over 2 million Australians were dispensed just under 20.9 million PBS/RPBS-subsidised prescriptions for a renin–angiotensin system agent. Females were dispensed renin–angiotensin system agents more often than males (1,121,094 females compared with 970,405 males) (Table A6.27). Females were dispensed slightly more median prescriptions per person than males across regions. However, both sexes in *Remote* and *Very Remote* areas were dispensed slightly fewer renin–angiotensin system agents than were patients in other areas (Figure 3.25 and Table A6.9).

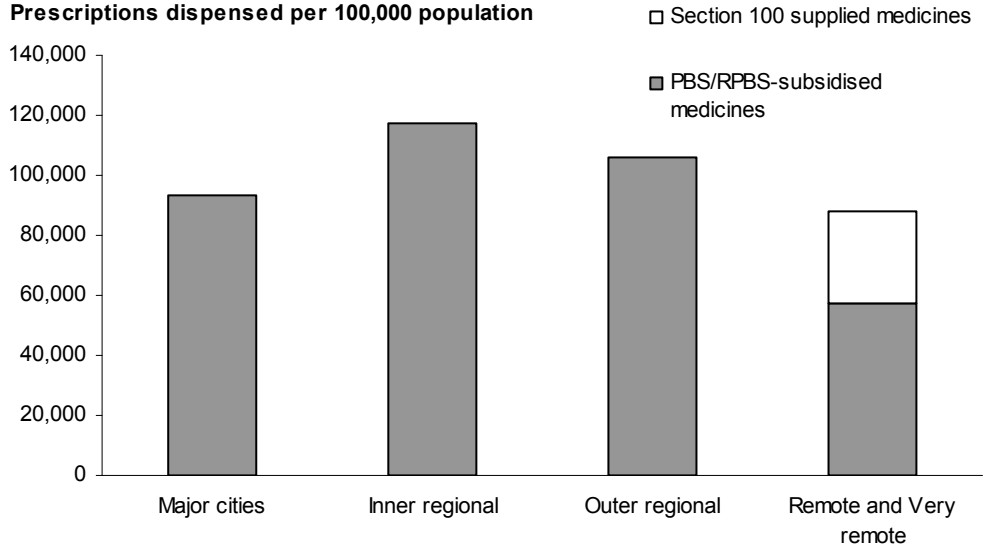


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.25: Median number of prescriptions for renin–angiotensin system agents dispensed per patient, by sex and remoteness area, 2007–08

Patients in *Inner regional* areas were dispensed renin–angiotensin system agents at the highest rate (117,606 prescriptions dispensed per 100,000 population), followed by patients in *Outer regional* areas (105,787 prescriptions dispensed per 100,000 population). Although patients in *Remote* and *Very Remote* areas were dispensed the medicines at the lowest rate (87,890 prescriptions dispensed per 100,000 population), this was similar to the rate the medicines were dispensed in *Major cities* (93,562 prescriptions dispensed per 100,000 population). In *Remote* and *Very Remote* areas in 2007–08, 35% of government-subsidised prescriptions for renin–angiotensin system agents were dispensed under Section 100 arrangements (Figure 3.26).



Note: These rates are not age-standardised.

Sources

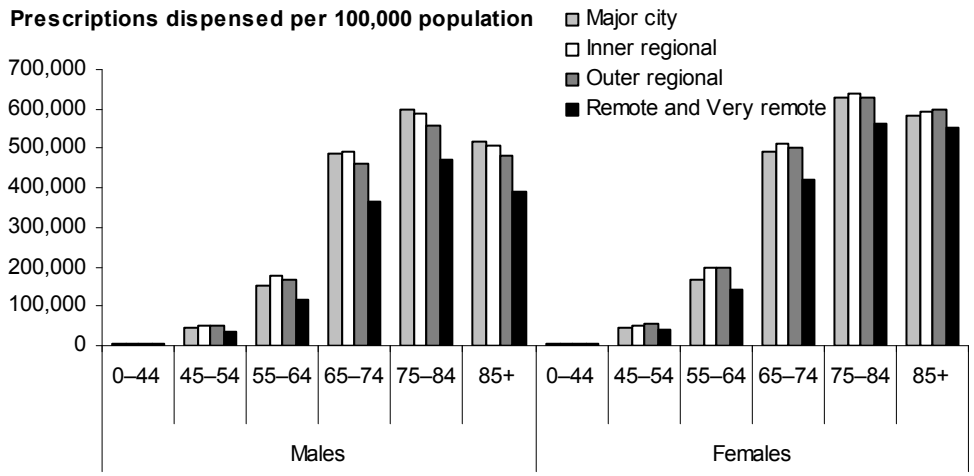
AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.26: Prescription rates for renin–angiotensin system agents dispensed, by remoteness area, 2007–08

The age-standardised supply of renin–angiotensin system agents showed that supply was highest in *Inner regional* areas (97,146 dispensed prescriptions per 100,000 population). The rate was lower in *Outer regional* areas (94,374) and *Major cities* (91,641). This suggests that differences in the supply of renin–angiotensin system agents are not due to differences in the population age structure across regions. Age-standardised rates for *Remote* and *Very remote* areas could not be calculated, because Section 100 data does not include information on the patient's age.

The dispensed prescription rate of renin–angiotensin system agents increased with age for both males and females, and decreased slightly among those aged over 84 years. Among males, the medicines were dispensed at the highest rates to patients in *Major cities* or *Inner regional* areas, with rates in *Outer regional* areas generally being less. Among females, the rate of dispensed renin–angiotensin system agent prescriptions was generally highest in *Inner regional* areas, followed by rates in *Major cities* and *Outer regional* areas, which were similar.

Rates of dispensed prescriptions were lowest in *Remote* and *Very Remote* areas across all ages for both sexes, although this may be partly due the Section 100 medicines supplied to *Remote* and *Very Remote* areas, which are not included here (Figure 3.27 and Table A6.28).



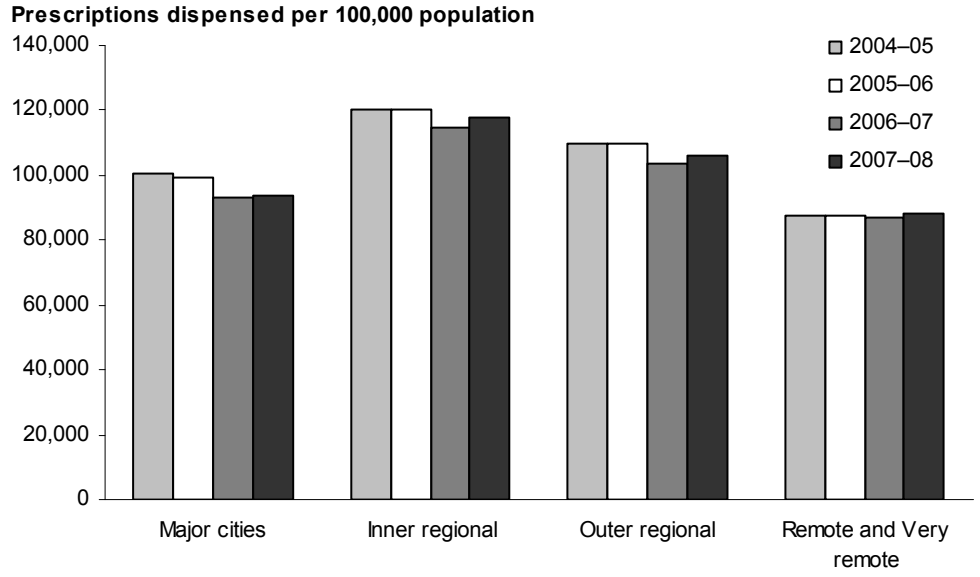
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.27: Prescription rates for renin–angiotensin system agents dispensed, by remoteness area, age and sex, 2007–08

How is the supply of renin–angiotensin system agents changing?

Overall, the supply of renin–angiotensin system agents over time varied between different regions. In *Major cities*, the dispensed prescription rate for these medicines fell between 2004–05 and 2007–08. The dispensed prescription rate also fell in *Inner* and *Outer regional* areas, but by a smaller amount. In *Remote* and *Very Remote* areas, the dispensed prescription rate for renin–angiotensin agents remained fairly steady over time (Figure 3.28 and Table A6.29).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.28: Prescription rates for renin–angiotensin system agents dispensed, by remoteness area and year, 2004–05 to 2007–08

Serum-lipid-reducing agents

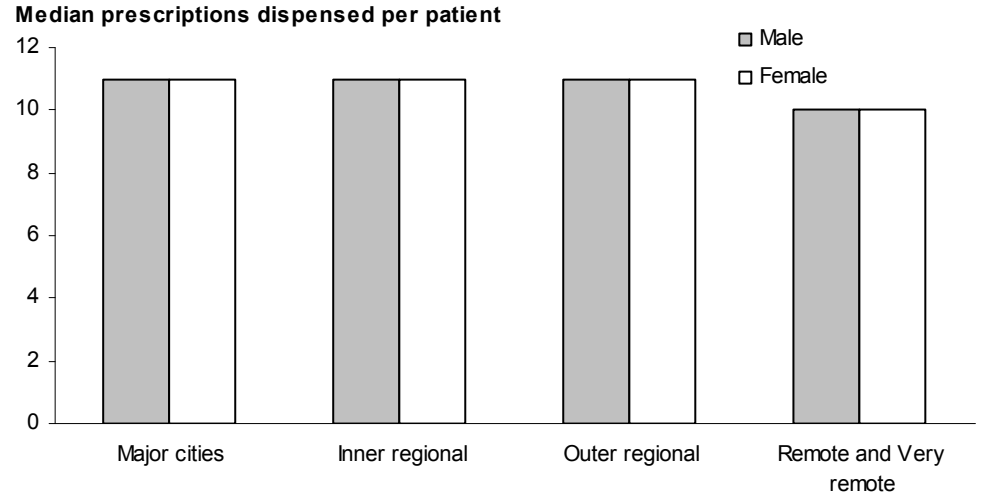
What are serum-lipid-reducing agents?

High levels of blood cholesterol are associated with the formation of fatty plaques in blood vessels. These plaques can result in serious cardiovascular events such as heart attack or stroke. Therefore, controlling the level of blood cholesterol is important for people who have, or who are at risk of developing CVD.

Serum-lipid-reducing agents are used to control blood cholesterol levels. They reduce blood LDL cholesterol (low-density lipoprotein, the so-called 'bad' cholesterol) and increase blood HDL cholesterol (high-density lipoprotein, the so-called 'good' cholesterol). They may also be used to reduce the levels of blood triglyceride: a fatty acid associated with the development of heart disease.

Who uses serum-lipid-reducing agents?

In 2007–08, just over 2.3 million Australians were dispensed around 21.9 million PBS/RPBS-subsidised prescriptions for serum-lipid-reducing agents. Both males (1,193,500 patients) and females (1,116,834 patients) received these medicines in similar numbers (Table A6.30). Patients were dispensed a median of 11 prescriptions per person in each remoteness area, except for *Remote* and *Very Remote* areas, where patients received 10 (Figure 3.29 and Table A6.9).

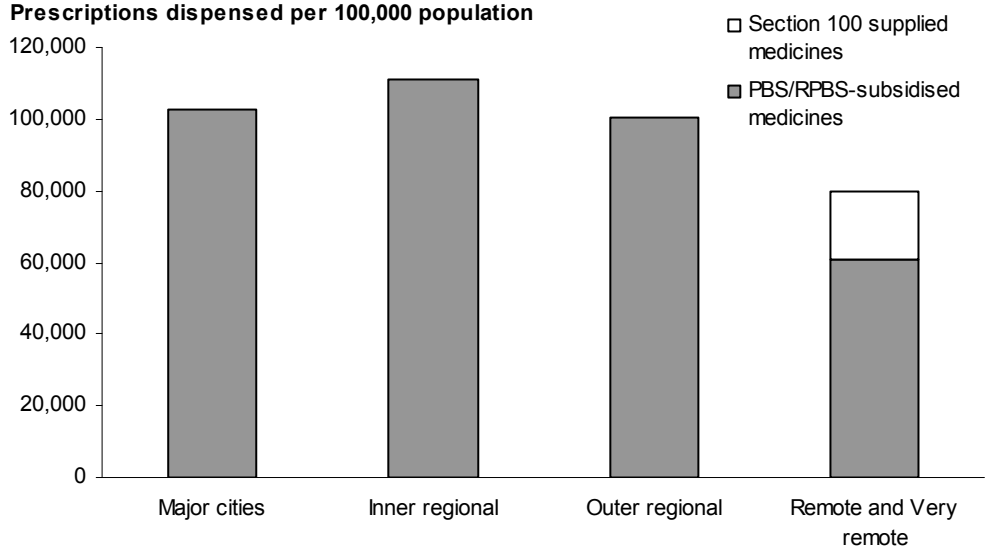


Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure 3.29: Median number of prescriptions for serum-lipid-reducing agents dispensed per patient, by sex and remoteness area, 2007–08

Serum-lipid-reducing agents were dispensed to patients in *Inner regional* areas at a higher rate (111,259 prescriptions dispensed per 100,000 people) than patients in other areas. The medicines were dispensed to patients in *Major cities* and *Outer regional* areas at a similar rate (102,746 and 100,614 prescriptions dispensed per 100,000 people, respectively). Serum-lipid-reducing agents were dispensed to patients in *Remote* and *Very Remote* areas at a substantially lower rate (80,058 prescriptions dispensed per 100,000 people), even when Section 100 medicines were included. In *Remote* and *Very Remote* areas in 2007–08, 24% of government-subsidised prescriptions for serum-lipid-reducing agents were dispensed under Section 100 arrangements (Figure 3.30).



Note: These rates are not age-standardised.

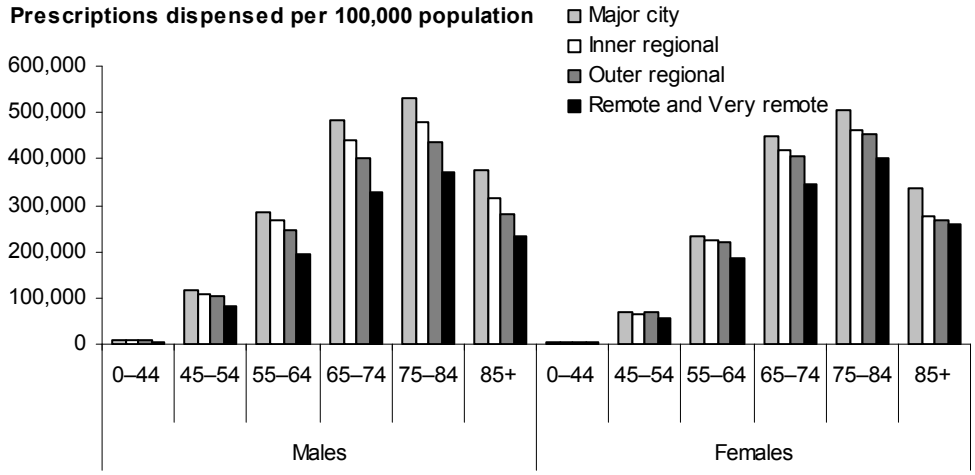
Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.30: Prescription rates for serum-lipid-reducing agents dispensed, by remoteness area, 2007–08

The age-standardised supply of serum-lipid-reducing agents showed a different pattern, with prescription rates decreasing with remoteness. The rate of dispensed prescriptions for serum-lipid-reducing agents per 100,000 population was highest in *Major cities* (100,480) and less in *Inner regional* (92,456) and *Outer regional* areas (88,645). This suggests that differences in the population age structures of regions have a strong influence on the supply of serum-lipid-reducing agents. Age-standardised rates for *Remote* and *Very remote* areas could not be calculated, because Section 100 data does not include information on the patient's age.

The rate of dispensed serum-lipid-reducing agent prescriptions in individual age and sex groups echoed the age-standardised rate. The medicines were dispensed at the highest rate in *Major cities* for both sexes, followed by *Inner regional*, *Outer regional* then *Remote* and *Very Remote* areas in all age groups aged over 55 years. Note that these figures do not include those medicines supplied under Section 100 arrangements, so will under-count the dispensed prescription rate in *Remote* and *Very Remote* areas (Figure 3.31 and Table A6.31).



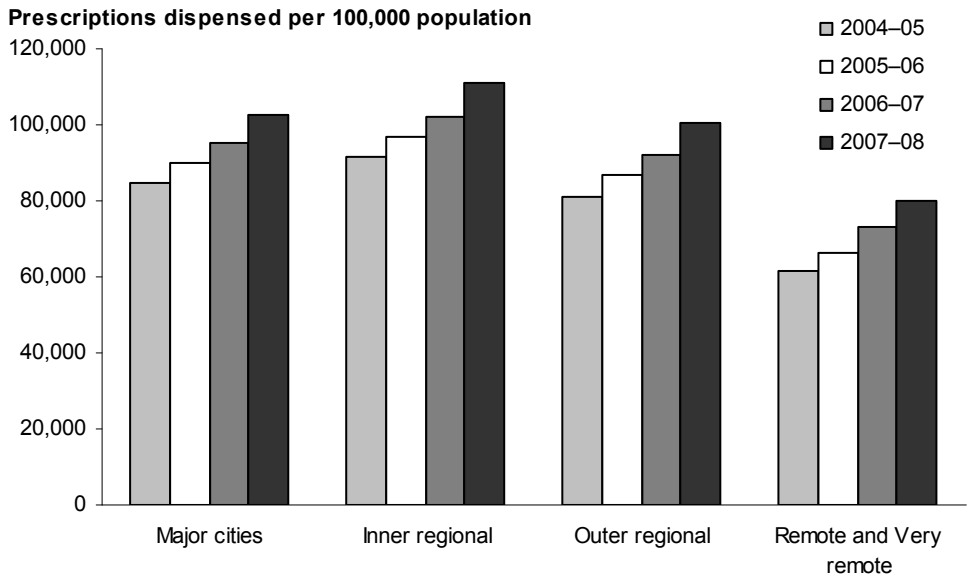
Note: Medicines supplied under Section 100 are not included.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System

Figure 3.31: Prescription rates for serum-lipid-reducing agents dispensed, by remoteness area, age and sex, 2007–08

How is the supply of serum-lipid-reducing agents changing?

There was a strong increase in the dispensed serum-lipid-reducing agent prescription rate between 2004–05 and 2007–08. In 2004–05, 85,665 prescriptions for these medicines were dispensed per 100,000 population. By 2007–08, this rate had increased to 104,161 prescriptions dispensed per 100,000 population. A similar increase occurred in all remoteness areas (Figure 3.32 and Table A6.32).



Note: Remote and Very remote areas include medicines supplied under Section 100 arrangements. These rates are not age-standardised.

Sources

AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Figure 3.32: Prescription rates for serum-lipid-reducing agents dispensed, by remoteness area and year, 2004–05 to 2007–08

3.3 Cardiovascular medicine use by Indigenous Australians

Data issues for Indigenous Australians

Reporting the supply of cardiovascular medicines to Aboriginal and Torres Strait Islander people is difficult using PBS/RPBS data. The number of patients prescribed cardiovascular medicines identified as Indigenous Australians in the PBS/RPBS cardiovascular population is substantially lower than would be expected from the Australian population.

It is not clear how much of this under-count is due to the under-identification of Indigenous patients using the PBS/RPBS and how much is due to Indigenous Australians under-using the PBS/RPBS. But, given the mismatch between the distribution of Indigenous Australians in the population compared with the PBS/RPBS cardiovascular population, it was decided that medicine supply rates for Indigenous Australians should not be calculated because they could be highly misleading.

3.4 Conclusions

In this chapter we showed substantial differences in the supply of a number of medicine classes across regions, even after adjusting for the effect of the population age structure. For most medicine classes, medicines were supplied at the highest rates to patients in *Inner regional* areas, and at a lower rate to patients in *Major cities*. An exception to this pattern was observed with serum-lipid-reducing agents, where age-standardised dispensed prescription rates were highest in *Major cities* and decreased with increasing remoteness.

Section 100 arrangements were introduced to improve the access of Indigenous Australians in *Remote* and *Very remote* areas to medicines. The data in this chapter showed that patients in *Remote* and *Very remote* areas relied heavily on Section 100 arrangements to receive their medicines, with up to one-third of government-subsidised cardiovascular medicines in these regions supplied under Section 100 arrangements.

Estimating the supply of medicines to *Remote* and *Very remote* areas was problematic. To estimate the medicine supply accurately in these regions, it is necessary to include Section 100 medicines. However, including these medicines precludes age-standardisation, because Section 100 data do not include patient age or sex information. As a result, it is only possible to report medicine supply in *Remote* and *Very remote* areas using either a method that does not adjust for the underlying age structure of the region, or using a method that will underestimate the supply of medicines because of the exclusion of Section 100 medicines. It is therefore difficult to compare the supply of cardiovascular medicines in *Remote* and *Very remote* areas with that of other regions.

A number of explanations could account for the differences in medicine supply rates described in this chapter. Chapter 2 demonstrated that patients in more remote areas have a greater need for cardiovascular medicines. This is reflected in the higher rates of supply for most medicine classes in *Inner* and *Outer regional* areas. Relating the need for cardiovascular medicines in *Remote* and *Very remote* areas with the supply reported in this chapter is difficult because of the data limitations described above.

Another explanation is that the rate of medicine supply may be related to particular cardiovascular conditions occurring at different rates across regions, or to how GPs prescribe medicines for particular conditions across regions; that is, the prescribing patterns of GPs.

It is not possible to explore these issues with PBS/RPBS data, because the problem for which a medicine was prescribed is not recorded. However, the BEACH survey of general practice does collect this information. The prescribing patterns of GPs, as recorded by the BEACH survey, are the focus of the next chapter.

4 Prescribing patterns of GPs for cardiovascular medicines by region

Key points

- In most cases, prescribing patterns by GPs did not differ significantly across regions.
- Some differences in GP prescribing patterns were found, but they were small.

4.1 Introduction

In Chapter 3 we reported the supply of government-subsidised medicines by region in Australia. However, PBS/RPBS data provided no information on the condition for which a medicine was prescribed. Differences in medicine supply might be related to the prevalence of particular cardiovascular conditions in different regions, or to how GPs prescribe medicines for these conditions. From PBS/RPBS or Section 100 data, it is not possible to determine if the differences in medicine supply reported in Chapter 3 are attributable to such variables.

This chapter presents data from the BEACH (Bettering the Evaluation and Care of Health) survey of general practice. This survey can provide details on the condition for which a medicine was prescribed. As a result, it is possible to report which medicines were prescribed to treat a particular condition, and how often the medicine was prescribed.

This chapter reports data for each medicine class, detailing the number of medicines prescribed per 100 encounters, by presenting problem type and region. These data allow comparison of GPs' prescribing patterns across regions—what medicines are used to treat particular conditions, how often, and how this behaviour differs by region. One of the presenting problems reported here is ischaemic heart disease. The majority of ischaemic heart diseases occur as coronary heart disease and the terms are often used interchangeably.

Note that the data in this chapter can only report how medicines are prescribed to those patients who see a GP. The ability of patients to access a GP will have a major effect on the supply of medicines to the population, and this is covered in Chapter 5.

BEACH medicine data

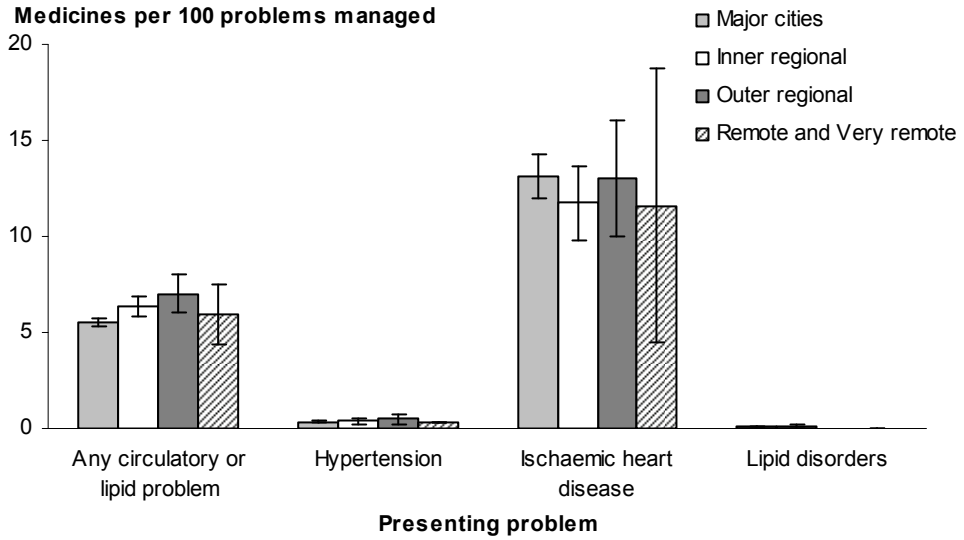
The BEACH survey is a national survey of the activity of GPs in Australia (see Appendix 5 for more information). BEACH data provide details of what medicines were prescribed to a patient, as well as the problem for which the medicines were prescribed. Because this analysis only included those patients being treated for a cardiovascular or lipid disorder, it was not necessary to adjust these results for age or sex.

One limitation of BEACH data is that observations from *Remote* and *Very remote* regions can become quite small, and so the error in estimates from these regions can be large. In some cases, there were too few observations for rates or errors to be calculated so these regions were excluded from the graph.

4.2 Prescribing patterns by medicine class

Antithrombotic medicines

Antithrombotic medicines were used to treat a range of cardiovascular conditions. Overall, they were prescribed by GPs at a significantly lower rate in *Major cities* than in either *Inner* or *Outer regional* areas. Antithrombotic medicines were mostly prescribed for ischaemic heart disease. Prescribing rates of antithrombotic medicines did not differ significantly between regions (Figure 4.1 and Table A6.33).



Note: Error bars show 95% confidence interval.

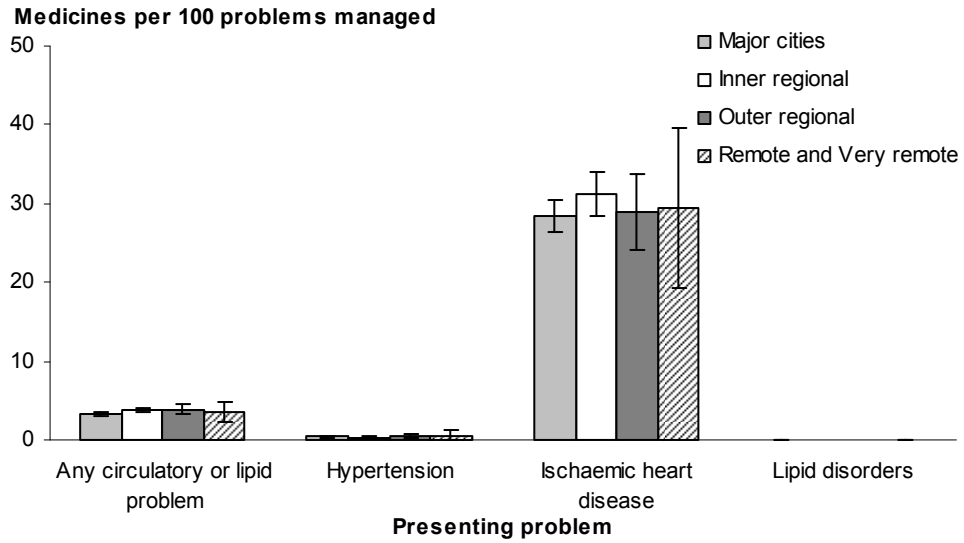
Source: BEACH survey data.

Figure 4.1: Prescribing rate of antithrombotic medicines, by presenting problem and region, 2004–2008

Cardiac therapy medicines

Cardiac therapy medicines were prescribed in the management of any cardiovascular and lipid disorders at a significantly higher rate in *Inner* and *Outer regional* areas than in *Major cities,* although in all regions the number of medicines prescribed was small.

The main use of cardiac therapy medicines was to treat ischaemic heart disease. The prescription rate of cardiac therapy medicines for ischaemic heart disease problems did not differ significantly between regions (Figure 4.2 and Table A6.33).



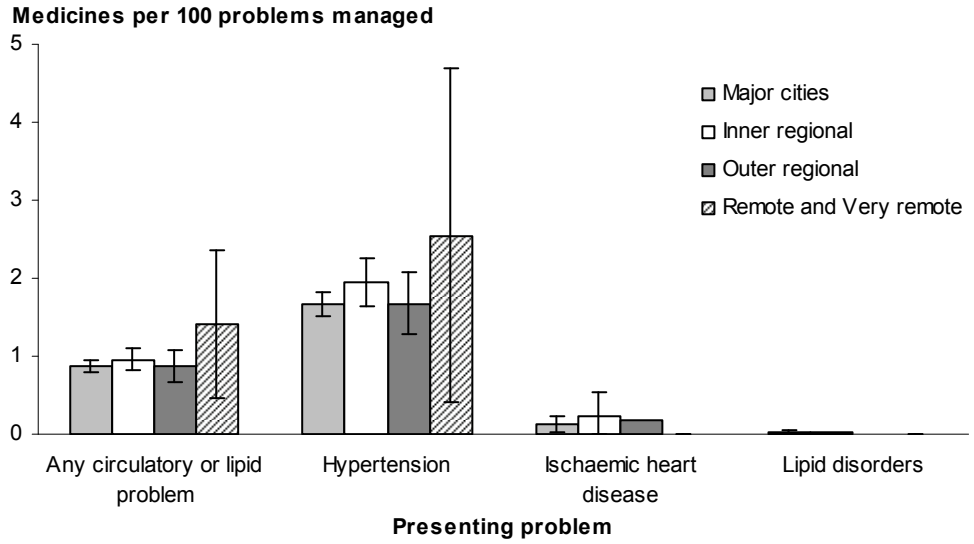
Note: Error bars show 95% confidence interval.

Source: BEACH survey data.

Figure 4.2: Prescribing rate of cardiac therapy medicines, by presenting problem and region, 2004–2008

Antihypertensive medicines

Antihypertensive medicines were mostly prescribed to treat hypertension, but the prescribing rate was low in all regions. The prescribing rate was not significantly different between regions (Figure 4.3 and Table A6.33).



Note: Error bars show 95% confidence interval.

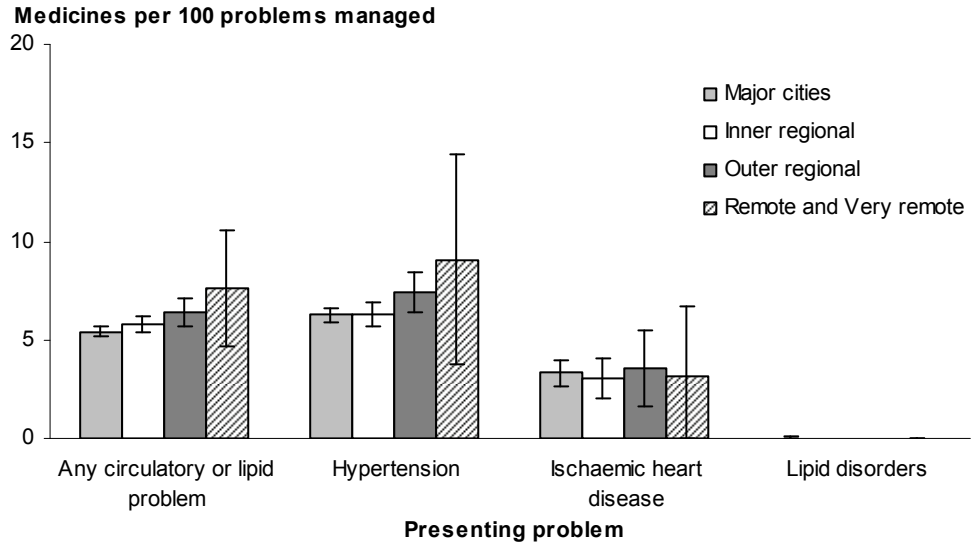
Source: BEACH survey data.

Figure 4.3: Prescribing rate of antihypertensive medicines, by presenting problem and region, 2004–2008

Diuretic medicines

For any circulatory or lipid disorder, diuretic medicines were prescribed at a similar rate across most regions, but were prescribed at a significantly higher rate in *Outer regional* areas than in *Major cities*.

Among circulatory and lipid disorders, diuretic medicines were mostly used to treat hypertension, but were also commonly prescribed in the management of ischaemic heart disease. Prescribing rates for these conditions did not differ significantly between regions (Figure 4.4 and Table A6.33).



Note: Error bars show 95% confidence interval.

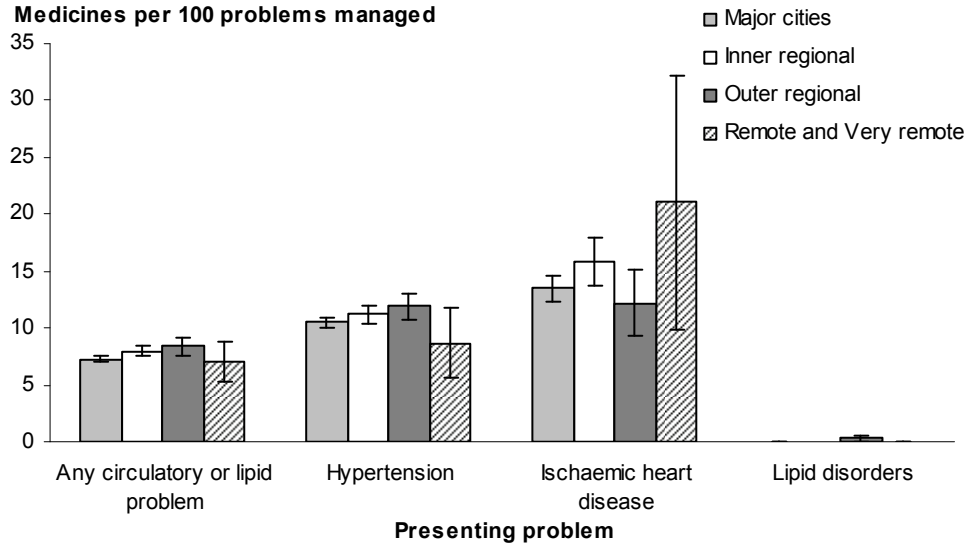
Source: BEACH survey data.

Figure 4.4: Prescribing rate of diuretic medicines, by presenting problem and region, 2004–2008

Beta-blocking agents

Beta-blocking agents were prescribed for any circulatory or lipid disorder at a similar rate across most regions, but were prescribed at a significantly higher rate in *Outer regional* areas than in *Major cities*.

Among circulatory and lipid disorders, beta-blocking agents were mostly prescribed to treat ischaemic heart disease and hypertension. In *Major cities* and *Inner regional* areas these medicines were prescribed at a significantly higher rate for ischaemic heart disease than for hypertension, but in other regions there was no statistically significant difference in the prescription rate for these two conditions. The rate of prescriptions did not differ significantly between regions, when treating either ischaemic heart disease or hypertension (Figure 4.5 and Table A6.33).



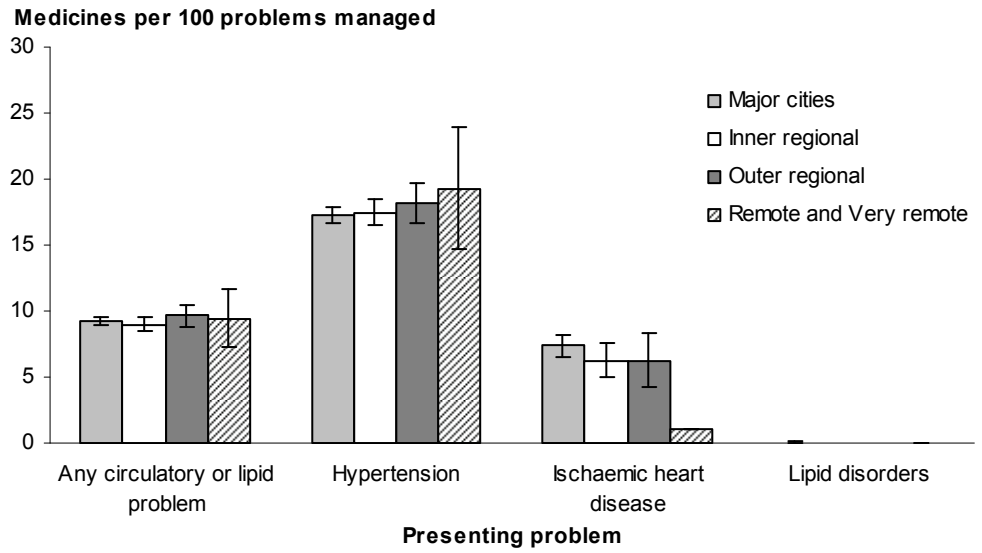
Note: Error bars show 95% confidence interval.

Source: BEACH survey data.

Figure 4.5: Prescribing rate of beta-blocking agents, by presenting problem and region, 2004–2008

Calcium-channel blockers

Calcium-channel blockers were prescribed for any cardiovascular and lipid disorder at a similar rate across regions. Calcium-channel blockers were prescribed mostly to treat hypertension, and were used for this problem at a similar rate across regions. The medicines were also commonly used to treat ischaemic heart disease; again, they were used at a similar rate across regions although numbers in *Remote* and *Very remote* areas were too small to allow the confidence interval around rates to be calculated accurately (Figure 4.6 and Table A6.33).



Note: Error bars show 95% confidence interval.

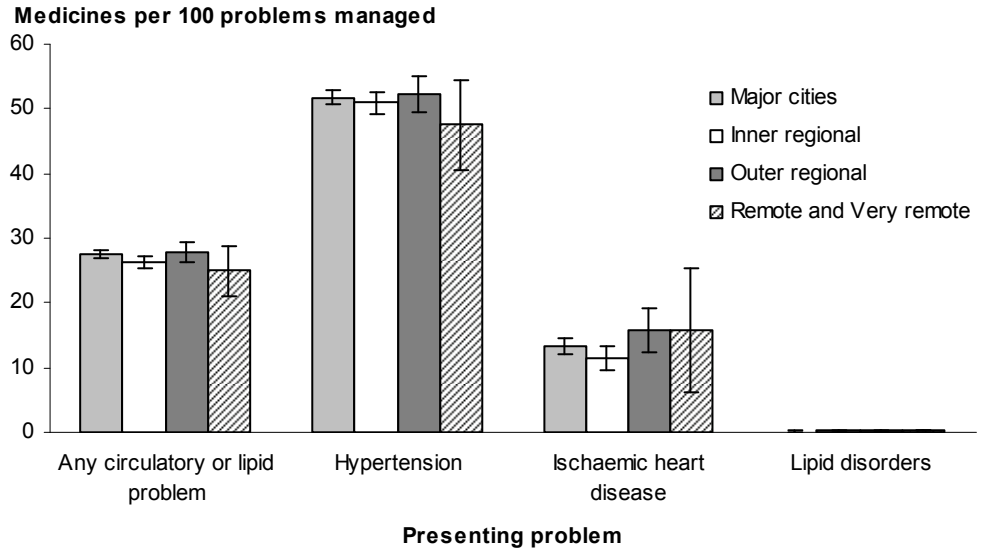
Source: BEACH survey data.

Figure 4.6: Prescribing rate of calcium-channel blockers, by presenting problem and region, 2004–2008

Renin–angiotensin system agents

Renin–angiotensin system agents were commonly used to treat cardiovascular and lipid problems. The rate of medicines prescribed for any cardiovascular or lipid disorder did not differ significantly between regions.

Renin–angiotensin system agents were mostly prescribed to treat hypertension. They were also commonly prescribed to treat ischaemic heart disease. For both these conditions, the rate of prescribed medicines did not differ significantly across regions (Figure 4.7 and Table A6.33).



Note: Error bars show 95% confidence interval.

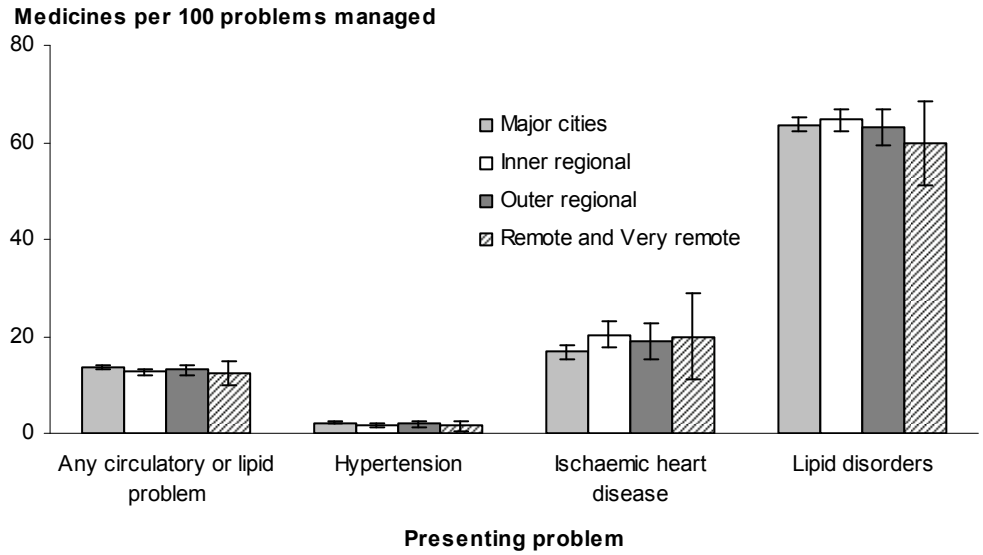
Source: BEACH survey data.

Figure 4.7: Prescribing rate of renin–angiotensin system agents, by presenting problem and region, 2004–2008

Serum-lipid-reducing agents

Serum-lipid-reducing agents were commonly prescribed for any cardiovascular or lipid disorder in all regions. Prescription rates did not differ significantly across regions. As would be expected, serum-lipid-reducing agents were prescribed mostly for lipid disorders. They were prescribed for lipid disorders at a similar rate across regions.

Serum-lipid-reducing agents were also commonly prescribed in managing ischaemic heart disease. When prescribed in this context, prescription rates did not differ significantly between regions (Figure 4.8 and Table A6.33).



Note: Error bars show 95% confidence interval.

Source: BEACH survey data.

Figure 4.8: Prescribing rate of serum-lipid-reducing agents, by presenting problem and region, 2004–2008

4.3 Conclusions

This chapter provided evidence that, in most cases, GP prescription patterns did not differ significantly between regions. Some differences between regions were found. When treating any cardiovascular or lipid disorder, GPs in *Major cities* prescribed cardiac therapy medicines at a lower rate than did GPs in *Inner regional* areas. They also prescribed diuretics and beta-blockers at a lower rate than did GPs in *Outer regional* areas. Antithrombotic medicines were prescribed at a lower rate by GPs in *Major cities* than by GPs in either *Inner* or *Outer regional* areas for these conditions. Some of these differences may be due to differences in the presentation of CVD across different regions. However, in all cases, the differences in prescription rates were small.

These findings support the notion that the differences in medicine supply described in Chapter 3 are largely not due to differences in GP prescribing behaviour. However, GP prescribing behaviour can only affect those patients who are able to attend a GP. The availability of GP services will also have a major effect on the supply of cardiovascular medicines. The supply of GP and other primary health-care services across Australian regions is the focus of the next chapter.

5 Primary health-care services

Key points

- There was a significantly higher rate of GP attendances where any cardiovascular or lipid disorder was managed in *Major cities* compared with any other region. Rates did not differ significantly between other regions.
- Rates of GP attendances where hypertension or lipid disorders were managed were significantly higher in *Major cities* than in other areas. Rates did not differ significantly between other regions.
- Other primary health-care services for chronic diseases, such as GP management plans and health checks, tended to be delivered to patients at the highest rates in *Major cities* and *Inner regional* areas. These services tended to be delivered to patients in *Remote* and *Very remote* areas at a particularly low rate.
- Indigenous Australians access primary health care in different ways to Other Australians, especially through the use of Aboriginal and Torres Strait Islander primary health-care centres.

The supply of cardiovascular medicines differs across regions in Australia, and these differences do not appear to be due to differences in the prescribing behaviour of GPs across regions. Medicine supply might also be affected by the availability of GP and primary health-care services—if patients are unable to access a GP or other primary health-care provider, they are unlikely to be able to obtain prescriptions for cardiovascular medicines.

This chapter provides information on the main providers of primary health care in Australia, where they are located, and how the supply of providers varies by region. A wide range of services are subsidised through Medicare and only a subset of primary health-care services are included in this report. The primary health-care services included in this report were chosen because of their relevance to treating and managing chronic diseases such as CVD. Only Medicare-subsidised primary health-care services are included in this report. See Box 5.1 for a description of the terms used in this chapter.

Box 5.1: Terms used to describe primary health-care services in this chapter

In this chapter, it is important to differentiate between primary health-care services and GP attendances. Note the following terms used in this chapter to describe the services delivered.

Primary health-care services include all the Medicare items of interest in this report. They may be delivered by GPs or other primary health-care providers (see Section 5.1). A complete list of the Medicare items used in this report is provided in Appendix 3.

GP attendances refer specifically to those Medicare services where a GP attends a patient for the treatment or management of a condition. GP attendances form part of primary health-care services above, but are reported separately throughout this chapter. See Appendix 3 for a list of the MBS items used to define GP attendances in this report.

5.1 Who are the key providers of primary health-care services?

In Australia the main providers of primary health-care services are:

- general practitioners
- nurse practitioners
- registered and enrolled nurses
- Aboriginal health workers
- Aboriginal and Torres Strait Islander primary health-care services.

GPs are the first point of contact for the majority of people seeking health care in Australia. They are often the first to see patients with chronic diseases such as CVD, and are largely responsible for the referral to appropriate specialist services, as well as the ongoing management of people with these diseases.

The number of GPs per 100,000 population appears lower in *Inner* and *Outer regional* areas than in *Major cities*. Estimating the number of GPs in *Remote and Very remote* areas is difficult and estimates are uncertain. This is reflected in the differences observed between estimates (Table A6.34).

The number of GPs in a region may not accurately reflect the ability of patients to access a GP. In more remote areas, a higher number of GPs may be required because of the greater geographical dispersion of the population and, possibly, the lower availability of other health-care services.

Although the actual number of GPs is an important measure in itself, it does not take into account the amount of work that each GP undertakes. By looking at supply, which accounts for some estimate of the workload of GPs, a better picture of the availability of primary care services can be captured. GP supply was higher in *Major cities* than in *Inner* or *Outer regional* areas. However, for *Remote* and *Very remote* areas, the national data currently available are limited, with major data sources giving contradictory estimates of supply (Table A6.35).

In most cases patients see a GP within their own region. But, beyond *Major cities*, the proportion of patients who see a GP located in a region outside their region of residence increases (Table A6.36).

Registered and enrolled nurses are also involved in the provision of primary health care in some areas. However, the numbers of nurses per 100,000 population are similar across regions, so would not be expected to affect the provision of primary health care (Table A6.37).

Aboriginal and Torres Strait Islander health workers, although not directly responsible for primary health care, have an important role in facilitating access to primary health care for Indigenous Australians. For example, they can act as interpreters between medical practitioners and patients. They also undertake home visits to patients between medical appointments to monitor patient progress. They often take on the role of educating the community about broader health issues and disease prevention.

According to the ABS Census of population and housing, there were just over 1,000 Aboriginal and Torres Strait Islander health workers employed in Australia in 2006. They were concentrated in the *Remote* and *Very remote* regions of Australia (Table A6.38).

5.2 Primary health-care services for all Australians

Section 5.1 outlined the main providers of primary health-care services in Australia and their supply by region. This section presents information on the number and distribution of general practice services provided by region. The main source of information on services provided by GPs in Australia is Medicare: the Australian Government-funded health insurance scheme that provides free or subsidised health-care services to the Australian population. The Medicare Benefits Schedule (MBS) subsidises the majority of out-of-hospital consultations provided by GPs.

Note that people who hold a Repatriation Health Card from the Department of Veterans Affairs (DVA) can have their GP attendance funded by the DVA. Gold card holders are entitled to the full range of health-care services paid for by the DVA, while White card holders are entitled to the full range of health-care services, but only where the disease or illness is service related. Medical services funded by the DVA are not included in Medicare data and thus are not covered in this report. DVA Repatriation Health Card holders make up an increasing proportion of the population with age, with over one-quarter of those over 85 years holding a card (Table A6.39).

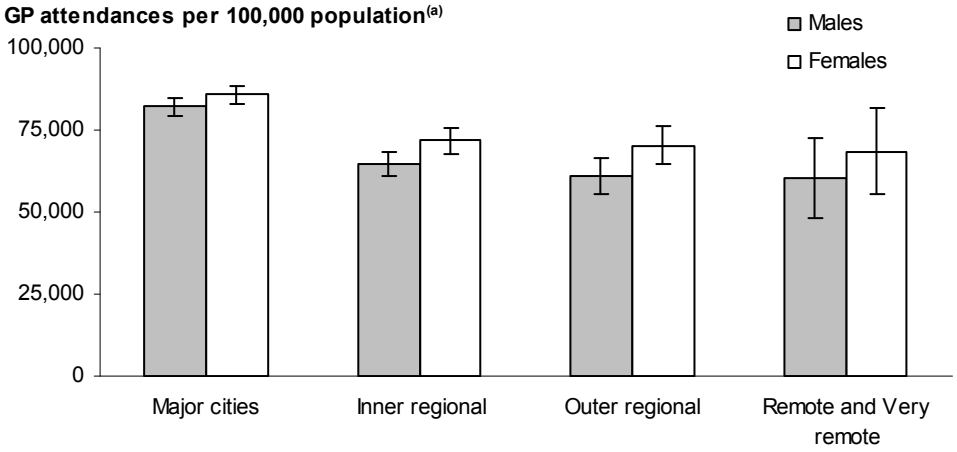
In Medicare data, services are categorised according to items in the MBS. This allows the identification of GP attendances (as distinct from specialist consultations), which provides a reasonable estimate of the volume of attendances by GPs across Australia. Patient characteristics can also be determined because each patient has a unique identifier (the Medicare number). However, the reason for the consultation (or the disease that is diagnosed or treated by the GP) cannot be identified through Medicare data.

For this reason, in this section, the proportion of GP encounters where a cardiovascular problem was managed in the BEACH survey (Tables A6.40–43) are applied to MBS data (Tables A6.44–46) to estimate the total number of GP attendances in the population where a cardiovascular problem was managed. For more information on the methods used to produce these estimates, see Appendix 4.

GP attendances for CVD by region

Between 2004–05 and 2007–08, there were over 396 million Medicare-subsidised GP attendances provided in Australia (Table A6.44). In the BEACH survey of 482,553 GP encounters between 2004 and 2008, a cardiovascular and/or lipid disorder was managed in 88,276 (18.3%) of these encounters (Table A6.40). Applying the crude proportion of GP encounters reported in the BEACH survey to MBS records of GP attendances, it is estimated that there were almost 72 million GP attendances where any cardiovascular or lipid problem was managed from 2004–05 to 2007–08.

Among males and females, the rate of GP attendances where any cardiovascular or lipid disorder was managed was significantly higher in *Major cities* than in any other region. The rate of GP attendances where any cardiovascular or lipid disorder was managed did not differ significantly between males and females in any region (Figure 5.1 and Table A6.47).



(a) Age-standardised rates.

Notes

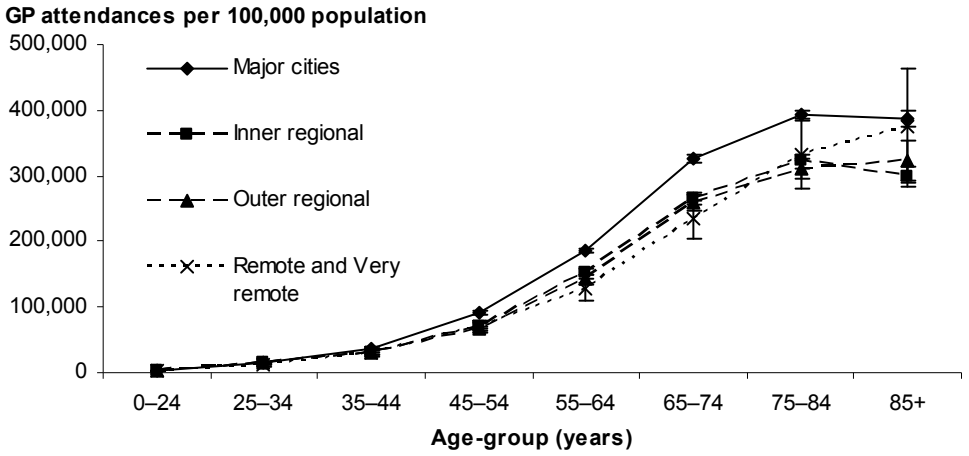
1. The estimated number of services is based on the proportion of encounters with a cardiovascular or lipid disorder in the BEACH survey of general practice activity, multiplied by the total number of Medicare services for GP attendances, as reported by the DoHA.
2. Error bars show 95% confidence intervals.

Sources: MBS/Medicare and BEACH survey of general practice activity.

Figure 5.1: Rate of GP attendances where any cardiovascular or lipid problem was managed, by sex and remoteness area, 2004–05 to 2007–08

The rate of GP attendances where any cardiovascular or lipid condition was managed increased significantly with age, before decreasing among those aged 85 years and over. This may reflect the GP attendances funded through DVA in more elderly patients, which are not included in this report.

The rate of GP attendances where any cardiovascular or lipid condition was managed was significantly higher in *Major cities* than in any other region for patients aged 55–74 years. Among patients older than 74 years, the rate of GP attendances in *Major cities* was significantly greater than in *Inner* or *Outer regional* areas, but not significantly different from the rate in *Remote* and *Very remote* areas (Figure 5.2 and Table A6.48).



Notes

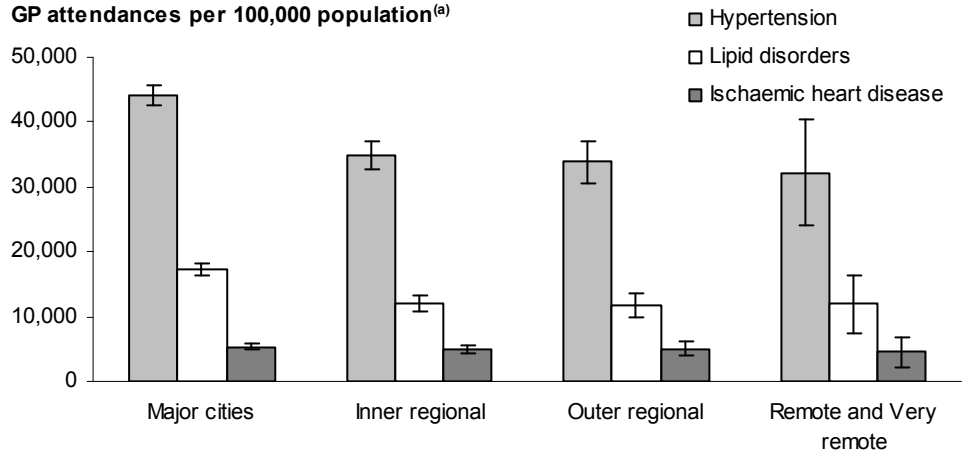
1. The estimated number of services is based on the proportion of encounters with a cardiovascular or lipid disorder in the BEACH survey of general practice activity, multiplied by the total number of Medicare services for GP attendances, as reported by the DoHA.
2. Error bars show 95% confidence interval.

Sources

MBS/Medicare and BEACH survey of general practice activity.

Figure 5.2: Rate of GP attendances where any cardiovascular or lipid problem was managed, by age and remoteness area, 2004–05 to 2007–08

GP attendances where hypertension was managed occurred at a significantly higher rate than attendances where lipid disorders or ischaemic heart disease were managed in all regions. The rate of GP attendances where hypertension was managed was significantly higher in *Major cities* than in any other region. GP attendances where a lipid disorder was managed occurred at a higher rate in *Major cities* than in *Inner* or *Outer regional* areas, but were not significantly different to the encounter rates in *Remote* and *Very remote* areas. Ischaemic heart disease was managed less often by GPs compared with the other cardiovascular conditions studied. Rates of GP attendances where ischaemic heart disease was managed did not differ significantly between regions (Figure 5.3 and Table A6.47).



(a) Age-standardised rates.

Notes

1. The estimated number of services is based on the proportion of encounters with a cardiovascular or lipid disorder in the BEACH survey of general practice activity, multiplied by the total number of Medicare services for GP attendances, as reported by the DoHA.
2. Error bars show 95% confidence interval.

Sources

MBS/Medicare and BEACH survey of general practice activity.

Figure 5.3: Rate of GP attendances where a cardiovascular or lipid problem was managed, by problem managed at encounter and remoteness area, 2004–05 to 2007–08

Other primary health-care services by region

The majority of the Medicare-subsidised services provided by GPs in Australia were GP attendances; that is, a service where a GP attends a patient for the treatment or management of a condition (see Box 5.1). In addition to this role, GPs also provided a range of other primary health-care services. The services presented here are not a comprehensive list of all Medicare services for chronic disease. Rather, they are the services that give the best insight into the primary health-care efforts to prevent and manage chronic CVD. Box 5.2 describes the services presented in this section. Note that, unlike the last section, the data presented in this section refer to all chronic diseases, because it is impossible to tease out services specifically for CVD.

Box 5.2: Other primary health-care services provided by GPs

GP management plans and team care arrangements

GP management plans (GPMPs) and team care arrangements (TCAs) are comprehensive documents that set out and enable evidence-based management of a patient's health and care needs. These services can be claimed once a year, or more frequently if there is a significant change in the patient's clinical condition. The recommended frequency, allowing for variation in a patient's needs is once every 2 years with regular reviews recommended every 6 months. If a patient receives both a GPMP and a TCA, they may be eligible for monitoring, support or Aboriginal Health services to be provided by a practice nurse or Aboriginal Health Worker.

A total of 2,155,376 Medicare-subsidised GPMP or TCA services were provided in 2007–08. A practice nurse or Aboriginal Health Worker-provided monitoring, support or Aboriginal health services resulting from the GPMP/TCA for 115,819 Medicare-subsidised services.

Domiciliary medication management review

A domiciliary medication management review (DMMR) is a service where, in collaboration with a GP, a pharmacist comprehensively reviews a patient's medication regimen in a home visit. The result of the review includes a suggested medication management strategy for the patient. DMMRs are aimed at patients where quality use of medicines may be an issue, often due to the co-morbidities of the patient, the complexity of their medicine regime, or the characteristics of their medicines.

In 2007–08, 75,590 Medicare-subsidised domiciliary medication management review services were provided in Australia.

Diabetes cycle of care

A diabetes cycle of care is a series of assessments provided to patients with established diabetes over a period of between 11 and 13 months. It includes an assessment of the patient's physical signs, including blood pressure and measures of HbA1, as well as checks of the patient's body mass index (BMI) and other risk factors such as diet and physical inactivity.

In 2007–08, there were 255,220 of these Medicare-subsidised services provided.

Health-care assessments

A health-care assessment is an assessment of a patient's health and physical, psychological and social function. The assessment also considers whether preventative health care and education should be offered to improve the patient's health and physical, psychological and social function.

Although not specifically aimed at patients with chronic conditions, health-care assessments were developed under the former Extended Primary Care (EPC) program, which was designed to provide more preventative care and improve coordination of care for people with chronic conditions and complex health needs. A range of health-care assessments are available to specific population sub-groups who most require assessments of this kind. They include health-care assessments of older patients (75 years and over), a 45-year old health assessment (patients aged 45–49 years), and an assessment of permanent residents of aged-care facilities.

In 2007–08, Medicare subsidised 282,057 assessments of older patients, 110,373 45-year old health assessments, and 57,495 assessments of permanent aged-care facility residents.

The rate at which these other primary health-care services were delivered to the Australian population in 2007–08 is shown in Table 5.1. See also Tables A6.45 and A6.46.

Table 5.1 shows that:

- GPMPs and TCAs occurred at the highest rate in *Inner regional* areas and *Major cities*, and at a lower rate in *Outer regional* and especially *Remote* and *Very remote* areas.
- Practice nurse- or Aboriginal Health Care Worker-provided services to support GPMP/TCAs occurred rarely in all regions, but were especially rare in *Remote* and *Very remote* areas.
- Domiciliary medication management reviews and diabetes cycles of care were delivered at similar rates in *Major cities* and *Inner* and *Outer regional* areas, but at a substantially lower rate in *Remote* and *Very remote* areas.
- Health-care assessments were generally delivered at similar rates in *Major cities* and *Inner regional* areas, with rates in *Outer regional* areas being slightly lower. Rates in *Remote* and *Very remote* areas were substantially lower, but this may be partially explained by the availability of health-care assessment items specifically designed for Aboriginal and Torres Strait Islander people. Because Indigenous Australians make up a substantial proportion of the population in more remote areas, this may account for the lower use of services not tailored to this population. More information of health-care assessments of Indigenous Australians is provided in Section 5.3.

Table 5.1: Other primary health-care services delivered by GPs, by service type and remoteness area, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote
			Services per 1,000 population	
GP management plan/ team care arrangements	103	111	86	64
Nurse/ Aboriginal Health Care Worker provided service	5	8	8	3
Domiciliary medication management review	4	4	4	2
Diabetes cycle of care	12	15	13	7
Health-care assessments				
Health-care assessment of older person[(a)]	215	225	203	133
45-year old health check[(b)]	74	79	58	39
Health-care assessment of aged-care facility resident[(c)]	22	19	17	16

(a) Rates calculated on population aged 75 years and over only.

(b) Rates calculated on population aged 45–49 years only.

(c) Rates calculated on population aged 65 years and over only.

Note: See Table A3.3 for MBS item numbers.

Source: MBS/ Medicare.

5.3 Primary health-care services for Indigenous Australians

How do Aboriginal and Torres Strait Islander people access primary health care?

Aboriginal and Torres Strait Islander people can receive a Medicare-subsidised GP attendance or other primary health-care service just as Other Australians do. In addition, Indigenous Australians also commonly access primary health-care services through Aboriginal and Torres Strait Islander primary health-care service centres. These service centres are important providers of primary health care to Indigenous people.

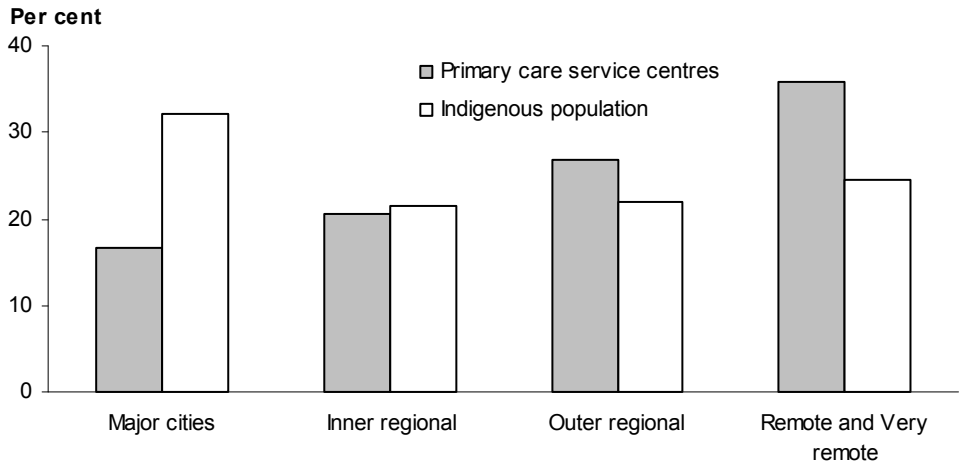
Many of these service centres are funded by the Australian Government but may also be funded by other sources (including state and territory governments). They can provide a range of services, including clinical health care, but also services such as community support (for example, transport to medical services, homelessness support, advocacy, aged care programs or palliative care), preventative programs, screening programs, substance use services and pharmaceutical services. Although they can also provide services to non-Indigenous people, the majority of services are provided to Indigenous Australians.

Only those service centres funded by the Australian Government are included in this report. The main source of information on the services provided by Australian Government-funded service centres is the Service Activity Reporting (SAR) survey (see Appendix 5).

Where are Australian Government funded Aboriginal and Torres Strait Islander primary health-care service centres located?

In 2006–07 data were available from 145 of the 147 Australian Government-funded Aboriginal and Torres Strait Islander primary health-care service centres eligible to complete the SAR. The service centres were spread across regions, with the highest number located in *Outer Regional* areas (39 centres, 27% of all centres).

Based on the population distribution of Aboriginal and Torres Strait Islander people at 30 June 2006, there were more Australian Government-funded centres in *Outer regional*, *Remote* and *Very remote* regions than would be expected, and fewer in *Major cities*. The proportion of the population and Australian Government-funded centres was similar for *Inner regional* areas. This reflects the greater availability of alternative mainstream primary health-care services in *Major cities* (Figure 5.4 and Table 6.49). Note that only the Australian Government-funded service centres are included here, so the true number of Aboriginal and Torres Strait Islander primary health-care service centres will be underestimated.



Note: Indigenous population as at 30 June 2006.

Source: ABS and SAR 2006–07 unpublished data from the DoHA.

Figure 5.4: Distribution of Australian Government-funded Aboriginal and Torres Strait Islander primary health-care services and Aboriginal and Torres Strait Islander population, by region, 2006–07

What types of care do Australian Government-funded Aboriginal and Torres Strait Islander health-care service centres provide?

The type of care provided by Australian Government-funded Aboriginal and Torres Strait Islander health-care service centres differs by region, as seen in Table 5.2. A high proportion of health-care service centres in *Remote* and *Very remote* areas provided diagnosis and treatment of illness/disease, in addition to management of diabetes, CVD and other chronic diseases. Australian Government-funded health-care centres in these areas were also more likely to offer 24-hour emergency care and clinical consultations in the home. This may reflect a greater reliance of the population in these areas on the care provided by the service centres.

Table 5.2: Proportion of Australian Government-funded Aboriginal and Torres Strait Islander health-care services providing a service activity, by remoteness area and service activity type, 2006–07

Service activity type	Major cities	Inner regional	Outer regional	Remote and Very remote
	Percentage of services providing activity			
Diagnosis and treatment of illness/disease	71	87	74	94
Management of diabetes	71	83	79	90
Management of cardiovascular disease	67	77	74	87
Management of other chronic illness	75	87	82	94
24-hour emergency care	21	10	13	54
Clinical consultations in home	71	70	62	90
Health promotion/education	88	100	97	94
Well person checks	75	67	74	83
Access to cardiovascular screening	54	57	54	81
Arrangements for free provision of pharmaceuticals	46	70	77	81
Arrangements for writing scripts for pharmaceuticals	63	80	59	71

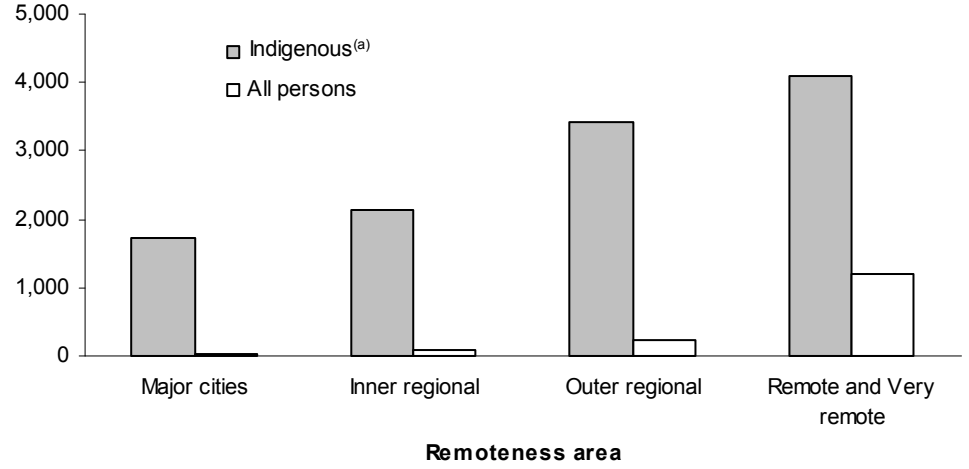
Source: ABS and SAR 2006–07 unpublished data from the DoHA.

Who received care from Australian Government-funded Aboriginal and Torres Strait Islander primary health-care service centres?

In 2006–07, Australian Government-funded Aboriginal and Torres Strait Islander primary health-care service centres provided over 1.6 million episodes of care. The rate of episodes of care increased with remoteness, being highest in *Remote* and *Very remote* areas.

The majority of services were provided to Indigenous Australians—over 90% in *Major cities* and *Remote* and *Very remote* areas. This was reflected in the rate of services provided by population: services were provided to Indigenous Australians at a much higher rate compared with All Australians.

The rate of services provided to Indigenous Australians also increased markedly with remoteness—Indigenous Australians in *Remote* and *Very remote* areas received episodes of care at over twice the rate of Indigenous Australians in *Major cities* (Figure 5.5 and Table A6.50).



(a) Indigenous rates calculated from the Indigenous population at 30 June 2006.

Source: SAR 2006–07 unpublished data from the DoHA.

Figure 5.5: Rate of episodes of care provided by Australian Government-funded Aboriginal and Torres Strait Islander health service centres, by remoteness area and Indigenous status, 2006–07

GP attendances and services for Indigenous people funded through Medicare

Reporting the supply of primary health-care services to Aboriginal and Torres Strait Islander people is difficult using Medicare data. The number of patients receiving Medicare-funded services identified as Indigenous Australians in Medicare data is substantially lower than would be expected from the Australian population

It is not clear how much of this under-count is due to the under-identification of Indigenous patients using Medicare and how much is due to Indigenous Australians either under-using Medicare services, or using alternative services. But, given the mismatch between the distribution of Indigenous Australians in the population compared with Medicare patients, the rates of Medicare service use among Indigenous Australians are not reported here because they could be highly misleading.

However, there are a range of health-care assessment services designed specifically for Indigenous Australians that are available through Medicare. These services are reported below.

Health-care assessments for Indigenous Australians

A number of health-care assessment services are available for Indigenous Australians. These are similar to the health-care assessments described in Section 5.2, but apply to different age groups to reflect the different age structure of Indigenous populations in Australia. Note that rates in this section are calculated using the relevant Indigenous population.

Health-care assessments for Indigenous Australians were provided at the highest rate to patients in *Remote* and *Very remote* areas. Health-care assessments of older Indigenous Australians were the most common Indigenous health-care assessment in all areas. In *Remote* and *Very remote* Australia, child health checks were provided at a rate substantially greater than the adult health checks (Table 5.3).

Table 5.3: Health-care assessments for Indigenous Australians, by remoteness area and assessment type, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote
		Services per 1,000 population		
Aboriginal and Torres Strait Islander child health check[(a)]	24	39	70	138
Aboriginal and Torres Strait Islander adult health check[(b)]	26	47	62	91
Older Aboriginal or Torres Strait Islander Health check[(c)]	65	91	112	165

(a) Indigenous Australians age 0–14 years.

(b) Indigenous Australians aged 15–54 years.

(c) Indigenous Australians aged 55 years and over.

Source: MBS/Medicare.

5.4 Conclusions

In this chapter, we reported that the rate of GP attendances where any cardiovascular or lipid disorder was managed was significantly higher in *Major cities* than in other areas. Similarly, the rate of GP attendances where either hypertension or lipid disorders were managed was significantly higher in *Major cities* than for any other area. The rate of GP attendances where hypertension was managed was significantly higher than the rate for lipid disorders or ischaemic heart disease across all regions.

Patients in *Remote* and *Very remote* regions received other primary health-care services such as GP management plans and health-care assessments at a substantially lower rate than patients in other areas.

Indigenous Australians received primary health care through different sources compared with Other Australians. Over 1.6 million episodes of care were provided through Australian Government-funded Aboriginal and Torres Strait Islander primary health-care service centres in 2006–07, mostly to Indigenous Australians. Measuring the use of Medicare-funded primary health-care services by Indigenous Australians was not possible because of data limitations.

6 Conclusions

6.1 Main findings

Need for cardiovascular medicines and primary health-care services

Overall, patient health tended to be poorer in more remote areas, with measures of life expectancy and wellbeing decreasing with remoteness. However, the prevalence of CVD did not follow such a straightforward pattern. The prevalence of CVD was highest in *Inner regional* areas, but there was no significant difference in CVD prevalence between *Major cities* and *Other* (*Outer regional* and *Remote*) areas. Because of data limitations, it was not possible to estimate the prevalence in *Very remote* areas.

Rates of death and hospitalisation with CVD were highest in *Remote* and *Very remote* areas. Because hospitalisations and deaths from CVD typically eventuate after long periods with the diseases or risk factors, these measures may indicate less access to, or less effective, primary health care in *Very remote* areas.

Cardiovascular medicines

Government-subsidised cardiovascular medicines were generally dispensed at the highest rate to patients in *Inner regional* areas. Patients in *Remote* and *Very remote* areas were highly reliant on Section 100 arrangements for their supply of cardiovascular medicines, with up to one-third of cardiovascular medicines supplied through these arrangements in some cases.

Estimating the supply of medicines to *Remote* and *Very remote* areas is problematic. The age structure of the population in *Remote* and *Very remote* areas is different from other regions, making it important to age-standardise the supply of medicines to describe the supply accurately. However, age-standardisation precludes including Section 100 medicines, which will result in a substantially underestimation of the rate of medicine supply to *Remote* and *Very remote* areas. As a result, it is difficult to compare accurately the supply of medicines in *Remote* and *Very remote* areas with the supply to other regions.

Prescribing patterns by GPs were generally similar across regions. Where differences did exist, they were small.

Primary health-care services

It is difficult to accurately assess the true availability of primary health-care service providers by region in Australia. The supply of GPs appears to be higher in *Major cities* than in *Inner* or *Outer regional* areas, but it is difficult to reliably estimate the supply in *Remote* and *Very remote* areas.

In *Major cities,* the rate of GP attendances where any cardiovascular or lipid disorder was managed was significantly higher than in other areas. The rate of GP attendances where

hypertension was managed and where lipid disorders were managed were also both significantly higher in *Major cities* than in any other area. The rate of GP attendances where hypertension was managed was significantly higher than the rate for lipid disorders and ischaemic heart disease across all regions.

Primary health-care services that might be expected to be most relevant to preventing and managing chronic diseases like CVD, such as GP management plans and health-care assessments, were supplied to patients in *Remote* and *Very remote* regions at a substantially lower rate than in other areas. In the case of health-care assessments, some of this difference may be partially explained by the availability of health-care assessment items specifically designed for Aboriginal and Torres Strait Islander people. Because Indigenous Australians make up a substantial proportion of the population in more remote areas, it may account for the lower use of services not tailored to this population.

6.2 Main findings for Indigenous Australians

The supply of primary health care and cardiovascular medicines to Indigenous Australians is very different from that of Other Australians.

Need for cardiovascular medicines and primary health-care services

Indigenous Australians had significantly higher rates of death and hospitalisation with CVD than did Other Australians. Prevalence of CVD among Indigenous Australians was significantly higher than in non-Indigenous Australians, but the prevalence of the disease among Indigenous Australians did not differ by region.

Indigenous Australians make up a large proportion of the population in more remote areas, suggesting these regions will have a higher need for cardiovascular medicines and primary health-care services.

Cardiovascular medicines

The observed high contribution of Section 100 cardiovascular medicines to overall prescription rates in *Remote* and *Very remote* areas is important because Section 100 arrangements were introduced to improve the access of Indigenous Australians to medicines. The high contribution of Section 100 medicines to the overall supply of cardiovascular medicines in *Remote* and *Very remote* areas shows that Section 100 medicines are a key source of medicines for Indigenous Australians in these areas. It also shows that Indigenous Australians in these areas access medicines in a very different way from people in other parts of the country.

Reporting the supply of PBS/RPBS-subsidised cardiovascular medicines to Indigenous Australians was not possible because of data limitations. For the same reason, it was not possible to report on the prescribing patterns of GPs when treating Aboriginal and Torres Strait Islander people. This represents an important gap in our understanding of the supply of cardiovascular medicines to Indigenous Australians.

Primary health-care services

There are a number of primary health providers dedicated to servicing Indigenous Australians. Aboriginal and Torres Strait Islander health workers are mostly based in *Remote* and *Very remote* areas. Australian Government-funded Aboriginal and Torres Strait Islander health service centres are more common, relative to the Indigenous population, in areas away from *Major cities* or *Inner regional* areas.

Analysis of the use of primary health-care services is hampered by the under-identification of Indigenous Australians in Medicare and BEACH data. As a result, it was not possible to estimate the proportion of GP attendances that encountered a cardiovascular or lipid problem for Indigenous patients. Health-care assessments specifically aimed at Indigenous Australians tended to occur at a higher rate in more remote areas.

6.3 Implications of the main findings

Overall, the findings of this report suggest a complex relationship between increasing remoteness, health outcomes and management of CVD using cardiovascular medicines and primary health-care services.

It is not possible to conclude from the data analysed here that increasing remoteness directly results in poorer health outcomes and management. In many cases, the supply of cardiovascular medicines and primary health-care services were highest in *Inner* and *Outer regional* areas and, in other cases, *Remote* and *Very remote* areas received medicines and primary health-care services at a similar rate to *Major cities*. Similarly, many measures of the supply of primary health-care services did not show a difference across regions.

Despite this, it is possible to draw some conclusions about the relationship between remoteness and the supply of cardiovascular medicines and care.

The supply of cardiovascular medicines does not always reflect the need for cardiovascular management and care

People in the most remote areas tend to have worse cardiovascular health. People in these areas have higher rates of death and hospitalisation from CVD, and also tend to have lower life expectancy and overall wellbeing.

For a number of medicine classes, this is reflected in higher rates of medicine supply in *Inner* and *Outer regional* areas. A notable exception to this pattern occurs with serum-lipid-reducing agents, where the supply of these medicines decreases with increasing remoteness.

The crude supply of cardiovascular medicines to these *Remote* and *Very remote* areas appears lower than in other regions, even when Section 100 medicines are included. However, because the crude supply does not adjust for the population age structure of different regions, this apparent under-supply may simply reflect the younger age structure of *Remote* and *Very remote* areas.

GP prescribing patterns do not account for differences in cardiovascular medicine supply

For most medicine classes, GPs prescribed cardiovascular medicines in a similar pattern across all regions. Although in some cases the prescription patterns in *Major cities* differed by a significant (albeit small) amount from *Inner* or *Outer regional* areas, the prescription patterns in *Remote* and *Very remote* areas did not differ significantly from any other region.

GP availability does not appear to restrict medicine supply

The rate of GP attendances where any cardiovascular or lipid disorder was managed was significantly higher in *Major cities* than in any other area. Similarly, the rates of GP attendance where hypertension was managed and where lipid disorders were managed were both significantly higher in *Major cities* than any other area. Outside *Major cities*, the rates of GP attendance were similar across regions.

These findings appear in contrast to the pattern of cardiovascular medicine supply. The rate of dispensed cardiovascular medicines tended to be highest in *Inner* and *Outer regional* areas, although these regions had a significantly lower rate of GP encounters with cardiovascular or lipid disorders than *Major cities*. This appears to suggest that, in these regions, the supply of cardiovascular medicines is not restricted by the availability of GPs.

In *Remote* and *Very remote* areas, the rate of GP attendances for any cardiovascular and lipid disorder was similar to that of *Inner* and *Outer regional* areas. The supply of cardiovascular medicines in these areas is difficult to compare with other regions for the reasons explained above. As a result, it is difficult to relate GP attendance and medicine supply in the most remote areas of Australia.

Patients in *Remote* and *Very remote* regions access medicines and primary health care differently

Although it may be unclear whether patients in *Remote* and *Very remote* regions receive the same supply of medicines and primary health care as those in other regions, it is clear that they access this care in different ways. Patients in *Remote* and *Very remote* regions rely heavily on Section 100 to receive their medicines, with up to one-third of the dispensed medicine rate supplied under these arrangements.

Australian Government-funded Aboriginal and Torres Strait Islander health-care service centres in *Remote* and *Very remote* areas were substantially more likely than those in other areas to provide services such as the diagnosis and treatment of disease and illness, 24-hour emergency care and clinical consultations in the home. This may suggest that patients who access these service centres in more remote regions rely on them more as their primary place of treatment. It also implies that the availability of traditional health resources, such as GP clinics and hospitals, is lower in these areas.

6.4 Data limitations

In many cases, the limitations of the data sources used in this report hampered the interpretation of results.

Identification of Indigenous Australians

Many data sources in this report did not reliably identify Indigenous patients. Identification of Indigenous patients is critical to an analysis of this type for two reasons. Firstly, Indigenous patients commonly have poorer health outcomes than Other Australians, so will inevitably be a population of interest. Secondly, Indigenous Australians make up a large proportion of the overall population in *Remote* and *Very remote* areas, so must be considered in any regional analysis.

Registers of deaths and hospitalisations could not be used to compare Indigenous Australians with Other Australians across regions, because the accuracy of Indigenous identification changes with remoteness area. The Indigenous status of the treated patient is also not reliably recorded in the BEACH survey of general practice.

The proportion of Indigenous Australians identified in Medicare data is much lower than would be expected given the population distribution of Indigenous Australians. It is not clear whether this is due to Indigenous Australians under-identifying, or to Indigenous Australians using government-subsidised medicines and health services at lower rates than Other Australians. It also raises questions about whether findings based on those patients who do identify as Indigenous could be considered as representative of the whole Indigenous population, given the small size of the sample.

As a result of these limitations, only limited conclusions can be drawn about the supply of cardiovascular medicines and primary health care to Indigenous Australians. The conclusions that have been drawn are based on imperfect data, and should be interpreted cautiously.

Data quality in *Very remote* areas

It is not possible to report *Very remote* regions separately because many of the data sources used in this report have a limited ability to collect information from the most remote regions in Australia. The main measure of disease prevalence in Australia, the National Health Survey (NHS), does not sample from *Very remote* areas. As a result, it is not possible to estimate CVD prevalence in these areas, making it impossible to relate the primary health care provided to *Very remote* areas to the underlying need. Data limitations also precluded reporting the medicine supply to *Very remote* areas, because of the relatively few observations involved.

These limitations are especially problematic in the context of the current report, because it would be expected that *Very remote* areas would be the areas where adequate supply of medicines and primary health-care services would be hardest to achieve. The inability to report CVD prevalence and medicine supply to these areas limits the usefulness of this report.

Difficulty in separating the effects of remoteness from the effect of Indigenous status

A major difficulty in interpreting the results of this study is that geographic remoteness is closely related to Indigenous status— that is, as remoteness increases, so does the proportion of Indigenous Australians within that region. This complicates the interpretation of results— is a particular finding due to the remoteness of the area, or the higher proportion of Indigenous Australians in that area, or a combination of the two?

Disentangling the effect of Indigenous status from the effect of remoteness was especially difficult given the under-identification of Indigenous Australians described above. As a result, conclusions in this report relating to remoteness should be considered with the view that the Indigenous status of the region's population may also affect the result.

Absence of suitable reference standards

This report used measures of health and cardiovascular risk factors to relate the supply of cardiovascular medicines and primary health care to the underlying need for these services across different regions. However, this can only broadly approximate whether the supply of medicines or primary health-care services to a region is adequate. No suitable standards of appropriate medicine or primary health care supply exist with which to compare the results of this report.

For this reason, the analyses in this report compare regions relative to each other. But this should not suggest that where a rate in one region is higher than others it is necessarily ideal or adequate. It could be the case that even those regions with the highest rates of medicine or primary health care supply do not meet the needs of the people living in these areas. Similarly, the comparisons used in this report have no way to tell if the supply of medicines and primary health-care services to a region is greater than required.

Lack of information about the condition managed or treated

Many of the data sources of cardiovascular care used in this report are not able to supply information on the condition managed or treated at the time of care. The main sources of information on medicine supply (PBS/RPBS and Section 100) and primary health-care services (MBS) do not record the underlying condition a medicine or service was used to manage or treat.

This problem was addressed to some extent by using BEACH data to estimate the proportion of medicines and GP attendances likely to be used in encounters with cardiovascular or lipid disorders. However, having a record for every prescription or GP attendance of the condition being treated would greatly add to the ability of PBS/RPBS and MBS data to describe the supply of medicines and primary health-care services.

Lack of access to linked data

The supply of cardiovascular medicines and the supply of primary health-care services for CVD are closely related. However, this report could only link them crudely, at the population level. Considerable insights would be gained by comparing medicine supply and primary service use at the individual level.

Although this could be achieved by linking the PBS/RPBS and MBS data sets, such a link would be subject to strict privacy guidelines under Section 135AA of the *National Health Act 1953* and may not be allowed.

6.5 Future directions

There are a number of developments that may improve our understanding of the supply of cardiovascular medicines and primary health-care services by region.

Although the identification of Indigenous Australians was low in many data sources used for this report, in many cases it is improving with time. In the Medicare and Pharmaceutical Benefits Data Systems, Indigenous status is now back-dated. This means that when a person identifies themselves as Indigenous, their previous records are updated to reflect this fact. As a result, Indigenous identification in Medicare data is improving over time. A number of studies have also been conducted on BEACH data to try to better understand why Indigenous status is under-identified in that data set.

It is hoped that with better identification, more accurate analysis of the supply of cardiovascular medicines and primary health-care services to Indigenous Australians will be possible. Better identification of Indigenous Australians may also enable future research to better separate the effects of Indigenous status and remoteness.

It is also hoped that new data measures will become available to better assess the health of Australians across regions. An example of this is the forthcoming biomedical survey, which will include physical measurements of risk factors such as blood pressure, blood lipids and overweight and obesity, rather than relying on self-report. This would substantially improve the reliability of measurements of cardiovascular risk factors, and would improve the ability to relate the supply of medicines and primary health care to the underlying needs of the population.

Finally, linkage within and between data sources would substantially improve future research in this area. If possible, linkage between the Medicare and Pharmaceutical Benefits Data Systems would allow much better understanding of the relationship between the supply of GP services and the supply of cardiovascular medicines. Further into the future, the introduction of e-health records may allow much more detailed linkages across a wider array of health service providers. It is hoped that, with these linkages, a much more detailed understanding of the relationship between patient need and the supply of cardiovascular medicines and primary health-care services across regions will be possible.

Appendix 1: Methods

Statistical methods

Prevalence

Prevalence refers to the number or proportion (of cases, instances, and so on) present in a population at a given time. See the section on populations below.

Crude rates

A crude rate is defined as the number of events over a specified period divided by the total population. See the section on populations below.

Age-specific rates

Age-specific rates are calculated by dividing the number of cases occurring in each specified age group by the corresponding population in the same age group, expressed as a number per 100,000 persons. See the section on populations below.

Age-standardised rates

Age-standardisation is a method used to eliminate the effect of differences in population age structures when comparing rates for different periods of time, and/or different geographic areas and/or different population groups.

There are two methods of age-standardisation: direct and indirect. For this report, the indirect method is used to report Indigenous death and hospitalisation data in Chapter 2.

Direct age-standardisation

This method of age-standardisation is generally used when the population under study is large and the age-specific rates can be reliably estimated. The calculation of direct age-standardised rates consists of three steps:

Step 1: Calculate the age-specific rate for each age group.

Step 2: Calculate the expected number of cases in each age group by multiplying the age-specific rates by the corresponding standard population for each age group.

Step 3: Sum the expected number of cases in each age group and divide this sum by the total of the standard population to give the age-standardised rate.

Indirect age-standardisation

The indirect age-standardisation method is recommended for use when calculating rates for small populations where fluctuations in age-specific rates can affect the reliability of rates

calculated using the direct method. This method produces a measure (standardised rate ratio) that is a comparison of the number of observed cases compared with the number expected if the age-specific rates of the standard population are applied to the study population.

Calculation of standardised rate ratios uses the following steps:

Step 1: Derive the observed number of events for the study population (for example, the *Remote* and *Very remote* population) by age and sex.

Step 2: Calculate the age-specific rates for each age group in the standard population (for example, the *Major cities* population)

Step 3: Multiply the observed number of events in each age and sex group by the corresponding age-specific rates in the standard population to get the expected number in each age and sex group.

Step 4: Sum the age-specific expected numbers for each sex to derive the total expected number of events for the study population.

Step 5: The standardised rate ratio is then calculated by dividing the total observed events by the total expected events.

In this report, the standardised rate ratio is assessed using a 95% confidence interval. If the 95% confidence interval includes the value 1.0, this indicates that there was no difference between the rate of event experienced by the study population and the standard population. If the upper limit of the 95% confidence interval is greater than 1.0 this indicates more cases than expected, and if the lower limit is less than 1.0, this indicates fewer cases than expected. For example, a ratio of 0.5 would indicate the area had half the rate in *Major cities*, and a ratio of 2.0 would indicate the area had double the rate in *Major cities*.

For this report, comparisons of prevalence rates between geographic areas for All Australians were made with the *Major cities* population as the standard population. Comparisons of prevalence, deaths and hospitalisation rates between geographic areas for Indigenous Australians were made with non-Indigenous Australians in *Major cities* as the standard population in the prevalence analysis, non-Indigenous Australians in the analysis of deaths, and Other Australians in the hospitalisation analysis.

Significance testing

The observed value of a rate may vary because of the influence of chance and natural variation. Therefore to provide an approximate indication of whether two rates are statistically different, between geographic areas or Indigenous and non-Indigenous Australians, 95% confidence intervals have been calculated, and significant differences highlighted.

Calculation of confidence intervals depends on whether the data source is population data (including data from the AIHW National Hospital Morbidity Database) or survey data (including data from the ABS National Health Survey and the ABS National Aboriginal Torres Strait Islander Health Survey).

Calculation of confidence intervals for population data

Confidence intervals for rates were calculated on the basis of the number of observed events using the square-root transform described in Breslow & Day (1987). This method has been used where observed and expected cases have been actual counts.

$$\text{Ratio} \times 1 \pm \left[\frac{1.96}{2 \times \text{observed events}^{0.5}} \right]^2$$

Calculation of confidence intervals for survey data

This method has been used where the available data are weighted estimates based on survey data.

The standard error of the estimated for O/E (Kendall & Stuart 1969) is calculated as:

$$SE = \sqrt{\left[\left[\left(O/E\right)^2 \times VAR_e\right] + VAR_o\right) / E^2\right]}$$

where:

- O/E = ratio of the observed to expected number of cases
- O = the number of synthetic observed rates. The ABS provided weighted estimates of the total number of cases (synthetic numbers), based on the number of cases in the survey and a weighting factor
- E = the number of synthetic expected cases (based on the numbers of synthetic observed cases)
- VAR_o = the variance for the synthetic total number of observed cases.

The variance is the square of the standard error associated with the observed or expected number, calculated by the ABS and provided with the base data they had provided:

$$VAR_e = \sum \left(pop/POP\right)^2 \times \left(SE_e\right)^2$$

where:

- pop = the study population in a specific age group
- POP = the standard population in a specific age group
- SE_e = the standard error of the expected synthetic number of cases in the area in a specific age group.

The lower 95% confidence limit = $\left(O/E\right) - \left(1.96 \times SE\right)$.

The upper 95% confidence limit = $\left(O/E\right) + \left(1.96 \times SE\right)$.

Where the confidence intervals of two rates do not overlap, the corresponding rates are considered to statistically significantly different from each other; that is, there is at least 95% confidence that the change in a rate is greater than that which could be explained by chance.

As with all statistical comparisons, care should be exercised in interpreting the results. In cases where differences for a health condition in the population are not statistically

significant, this can be due to the fact that there is actually little difference, or because the numbers of cases or observations are so small it is difficult to discern any real statistically significant difference. Judgment should be exercised in deciding whether or not the significant or non-significant difference is of any practical significance.

Population data used in this report

Overall population

Population data are used throughout this report to calculate rates. The population data used are estimated resident populations (ERPs) derived from the ABS Census of Population and Housing (see Appendix 5). ERPs adjust Census data to add people missed by the Census and people overseas on census night, and to remove overseas visitors. In between census years, the ERPs are updated using indicators of population change such as deaths, births and net migration. The ERPs used in this report are based on the 2006 Census.

The population for each calendar year is reported as at 30 June of that year. Many data sources in this report are stratified by financial year. In such cases, the population year used is for the calendar year at the beginning of the relevant financial year. So, for example, to calculate the population rate of medicine use in the 2007–08 financial year, the population from 30 June 2007 would be used.

Indigenous population

Australia's Indigenous population is calculated from the Census, and uses ERPs as described above. However, because of the smaller Indigenous population it is not possible to break down the Indigenous population by age, sex and remoteness area between census years accurately. Therefore, all calculations of Indigenous rates in this report use the Indigenous populations as at 30 June 2006.

Reporting Indigenous data

Death and hospitalisation data

Reporting Indigenous death and hospitalisation data are problematic because of the under-identification of Indigenous Australians in these databases. Not all states in Australia are able to report the Indigenous status of patients in their death and hospitalisation data accurately. In this report, data on Indigenous deaths and hospitalisations were limited to the following states (based on the patient's state of usual residence).

Deaths

These were reported from New South Wales, Queensland, Western Australia, South Australia and Northern Territory.

Hospitalisations

These were reported from New South Wales, Victoria, Queensland, Western Australia, South Australia and Northern Territory.

The AIHW does not recommend disaggregating Indigenous death and hospitalisation data by remoteness area. There are thought to be large differences in the identification of Indigenous Australians by region, with identification generally better in more remote areas than in major centres. As a result, it is likely that Indigenous rates in major centres would be under-estimated, and comparisons between regions would be misleading.

Prevalence

The main source of disease prevalence data for the overall population is the National Health Survey (NHS). The NHS is not suitable for reporting prevalence in Indigenous Australians because it does not sample from *Very remote* communities, which have a high proportion of Indigenous residents.

As a result, all reporting of disease prevalence in Indigenous Australians in this report uses data from the NATSIHS. This survey does collect data from *Very remote* areas to ensure a representative sample. See Appendix 5 for more information about these data sources.

Geographical classification

The Australian Standard Geographical Classification (ASGC)

The ASGC is a classification system developed by the ABS to group Australian regions into six areas, called remoteness areas, based on their distance from major population centres and services. The six remoteness areas are:

- *Major cities*
- *Inner regional*
- *Outer regional*
- *Remote*
- *Very remote*
- *Migratory*

Data from *Migratory* areas are not analysed in this report. In some cases, regions are collapsed together to allow sufficient numbers for analysis. The boundaries of the different remoteness areas are re-drawn after each Census to account for changes to available services and population change. The remoteness areas used in this report are based on the 2006 Census.

Appendix 2: Analysis of medicine supply in this report

Cardiovascular medicines

Cardiovascular medicines are those medicines used to treat or prevent CVD or its risk factors. In this report, we have used the medicine names and groupings of the Anatomical Therapeutic Chemical (ATC) classification of medicines.

Developed by the World Health Organization, the ATC classification is the Australian standard for classifying medicines. The ATC classification groups medicines according to the system on which they act and their chemical, pharmacological and therapeutic properties. Under the ATC classification, medicines used to prevent and treat CVD belong in the 'Cardiovascular system' and the 'Blood and blood-forming organs' groups.

In this report, medicines are divided down to the ATC classification Level 2. Note that at this level, ATC classes contain many different medicines. Even though their broad therapeutic use is similar, the medicines may vary in their clinical indications and effects. Some medicines within a class may be used more than others.

Medicines in the ATC class C05, 'Vasoprotectives' are not included in this report because they are not used to treat chronic CVD. Medicines in the ATC class C04, 'Peripheral vasodilators' are included in counts of total cardiovascular medicine supply, but are not reported separately because they are supplied in very small numbers. A complete list of the medicine classes included in this report is shown in Table 3.1.

How do patients obtain cardiovascular medicines in Australia?

Patients in Australia can obtain cardiovascular medicines through a number of sources.

Over the counter

For medicines that do not require a doctor's prescription, patients can purchase the medicine directly from a pharmacist or other retailer.

Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme (PBS) subsidises the cost of a wide range of prescribed medicines. The PBS is described in detail below.

Repatriation Pharmaceutical Benefits Scheme

The Repatriation Pharmaceutical Benefits Scheme (RPBS) is very similar to the PBS, but provides assistance to eligible veterans and their dependants.

Private prescriptions

When a doctor prescribes a medicine that is not listed on the PBS, a patient may purchase the medicine at the full price without government subsidy. This is known as a *private prescription*.

Doctor's bag

The doctor's bag refers to those medicines a doctor may keep in a well-secured bag for use in emergencies and home visits. The medicines for the doctor's bag are provided under the PBS.

Section 100 medicines for Indigenous Australians

Section 100 medicines refer to arrangements designed to improve the access of Indigenous Australians to PBS medicines. Details of the scheme are given in Box A2.1 below.

Box A2.1: Section 100 medicines for Indigenous Australians

In 1999, the Australian Government introduced changes under Section 100 of the National Health Act of 1953 intended to improve the access of Indigenous Australians to PBS medicines.

Under these arrangements, patients attending approved remote area Aboriginal or Torres Strait Islander Health Services are able to get medicines from an on-site dispensary at the health service, without the need for a prescription form and without charge.

Section 100 arrangements are being extended to Aboriginal Health Services in non-remote areas. However, this report only includes figures on those Section 100 medicines dispensed in remote areas because the change is still taking effect at the time of writing.

Section 100 medicines are an important source of medicines for Indigenous Australians, benefiting approximately 36% of the Aboriginal and Torres Strait Islander population (Kelaher et al. 2004).

Section 100 medicines are dispensed in packs, which are equivalent to a single PBS prescription. In this report, medicines supplied under Section 100 arrangements will be referred to in terms of 'prescriptions'.

Information on prescriptions under Section 100 arrangements are collected separately from the Pharmaceutical Benefits Data System. In this chapter, medicines dispensed under Section 100 arrangements to patients in *Remote* and *Very remote* areas are included where available. But, because these medicines are dispensed without prescriptions, no patient age or sex information is collected. Therefore, it is not possible to include Section 100 medicines in any analysis by age or sex.

Section 100 medicines are an important source of medicines for people living in *Remote* and *Very remote* areas. Failure to include Section 100 medicines in analyses will under-count the supply of medicines to these areas. For those analyses in this report that do not include Section 100 medicines, be mindful of the effect this will have on the reported supply of medicines to *Remote* and *Very remote* areas.

What is the Pharmaceutical Benefits Scheme?

Under the PBS and RPBS, the Australian Government makes payments to subsidise the cost of medicines regarded as necessary and/or life-saving (see Box A2.2).

The extent to which medicines are subsidised depends on the patient's entitlement category. General patients paid the first $33.30 for each PBS prescription item as at 1 January 2010. For concessional patients (people with low incomes and sickness beneficiaries who hold a health care card) the payment was $5.40 per prescription item. Patients on the RPBS pay the same amount as concessional patients. These copayments are increased on 1 January each year, generally in line with Consumer Price Index increases.

Individuals and families are protected from large overall expenses for PBS/RPBS-listed medicines by safety nets. For the 2010 calendar year, once a general patient and/or their immediate family had spent $1,281.30, the patient copayment per item decreased to the concessional rate of $5.40. For concessional patients, the $5.40 copayment was not required once their expenditure in the calendar year exceeded $324.00. For an example of how much different patients pay for their medicines under the PBS/RPBS, see Table A2.1.

The PBS/RPBS covers a wide range of medicines used to treat serious and life-threatening conditions. The PBS also collects good quality data on prescriptions through the PBS data system. As a result, PBS/RPBS data are one of the main sources of information on medicines prescribed in Australia. Most of the analyses of medicine use in this report are based on PBS/RPBS data.

However, there are a number of limitations to the medicine supply PBS/RPBS data can describe, and how it can compare medicine supply between regions. These limitations are described in detail in the next section.

Box A2.2: The Pharmaceutical Benefits Scheme and the Repatriation Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme (PBS) subsidises the cost of a wide range of prescription medicines, providing Australians with access to necessary and cost-effective medicines at an affordable price. The Repatriation Pharmaceutical Benefits Scheme (RPBS) provides assistance to eligible war veterans and dependants. It is generally similar to the PBS for concessional beneficiaries (see below), but covers a somewhat broader range of pharmaceuticals. In this report, unless otherwise specified, 'PBS' refers to both the PBS and RPBS.

Medicines are added to the PBS after the Pharmaceutical Benefits Advisory Committee considers the medical conditions for which the medicine has been approved for use in Australia by the Therapeutic Goods Administration, its clinical effectiveness, its safety and its cost-effectiveness compared with other treatments. Once the committee has recommended a medicine, the price is negotiated between the manufacturer and the Australian Government Department of Health and Ageing, and the Australian Government then considers the listing.

Australian residents and visitors from countries with reciprocal Health Care Agreements are eligible for PBS benefits.

Limitations of PBS/RPBS data

Coverage of PBS/RPBS data

The Pharmaceutical Benefits Data System covers only a proportion of the total supply of cardiovascular medicines. A prescription for a medicine will only be recorded in this database if all the following conditions are met:

- The medicine is listed on the PBS/RPBS.
  - Records of prescriptions for other medicines (private prescriptions, see above), are not collected by the Pharmaceutical Benefits Data System.
- The medicine is prescribed by a doctor
  - Records of medicines that do not require a prescription (over the counter medicines, see above) are not collected by the Pharmaceutical Benefits Data System.
- The patient fills the prescription

- The Pharmaceutical Benefits Data System is a record of medicines *dispensed* to patients. If the patient does not fill their prescription, no medicine is dispensed and no record is collected by the data system.

- The Australian Government pays a subsidy for the medicine.

The last point is especially important—only those prescriptions for which the government has paid a subsidy are collected on the Pharmaceutical Benefits Data System. Whether the government pays a subsidy for a particular prescription will depend on the cost of the medicine, as well as the entitlement category of the patient and the corresponding copayment threshold. Table A2.1 gives examples of a number of cardiovascular medicines, and how these factors affect whether the record is collected by the Pharmaceutical Benefits Data System.

Table A2.1: Effect of copayment threshold and medicine cost on Pharmaceutical Benefits Data System collection, by patient entitlement category, 2010

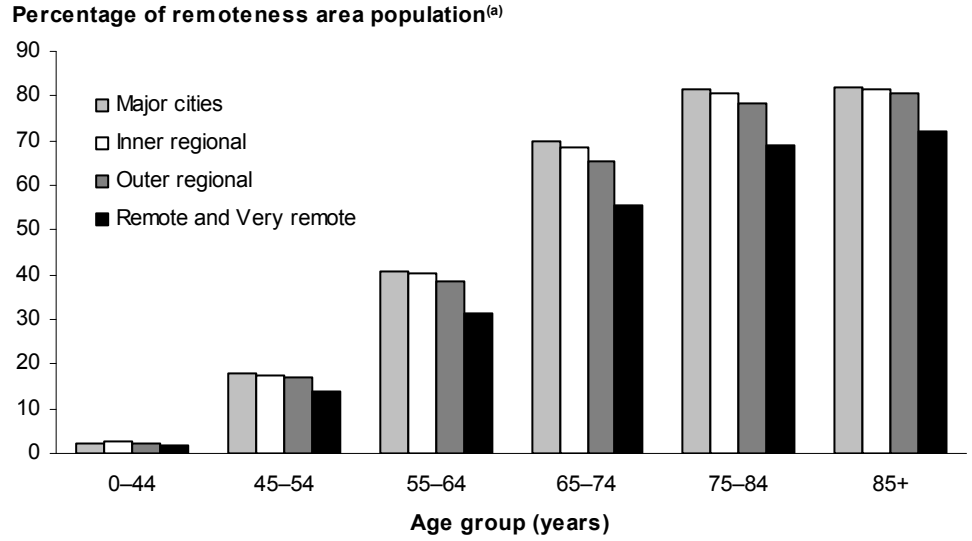
		Low cost medicine (Aspirin)		Medium cost medicine (Simvastatin)		High cost medicine (Metoprolol succinate)	
PBS price for medicine[(a)]		**$8.10**		**$25.04**		**$109.60**	
Patient entitlement category	**Copayment threshold[(a)]**	**Amount paid by patient**	**Will a record appear on the PBS/RPBS data system?**	**Amount paid by patient**	**Will a record appear on the PBS/RPBS data system?**	**Amount paid by patient**	**Will a record appear on the PBS/RPBS data system?**
General patient	$33.30	$8.10	No	$25.04	No	$33.30	Yes
Concessional patient	$5.40	$5.40	Yes	$5.40	Yes	$5.40	Yes
General patient on safety net	$5.40	$5.40	Yes	$5.40	Yes	$5.40	Yes
Concessional patient on safety net	$0.00	$0.00	Yes	$0.00	Yes	$0.00	Yes
General patient on safety net	$5.40	$5.40	Yes	$5.40	Yes	$5.40	Yes
Patient receiving Section 100 medicines	N/A	$0.00	No	$0.00	No	$0.00	No

(a) As at 1 January 2010.

As Table A2.1 shows, prescriptions dispensed to general patients will not appear in the Pharmaceutical Benefits Data System, except for the most expensive medicines. Therefore, the Pharmaceutical Benefits Data System may substantially under-count prescriptions to general patients. Because general patients are typically younger, the younger age groups

may be under-counted by PBS/RPBS data. Although younger patients may be less likely to need cardiovascular medicines, it is also the case that those younger patients that do use these medicines will often not be counted by the Pharmaceutical Benefits Data System.

Although the Pharmaceutical Benefits Data System does have poorer coverage of general patients, it appears that coverage is similar across remoteness areas. The proportion of the population who are dispensed PBS/RPBS-subsidised cardiovascular medicines is similar in *Major cities*, *Inner regional* and *Outer regional* areas. Although the proportion of the population receiving PBS/RPBS-subsidised cardiovascular medicines is lower in *Remote* and *Very Remote* areas, this may be partly due to Section 100 medicines (see above) not being included (Figure A2.1).



(a) Population in 2007

Note: Medicines supplied under Section 100 are not included.

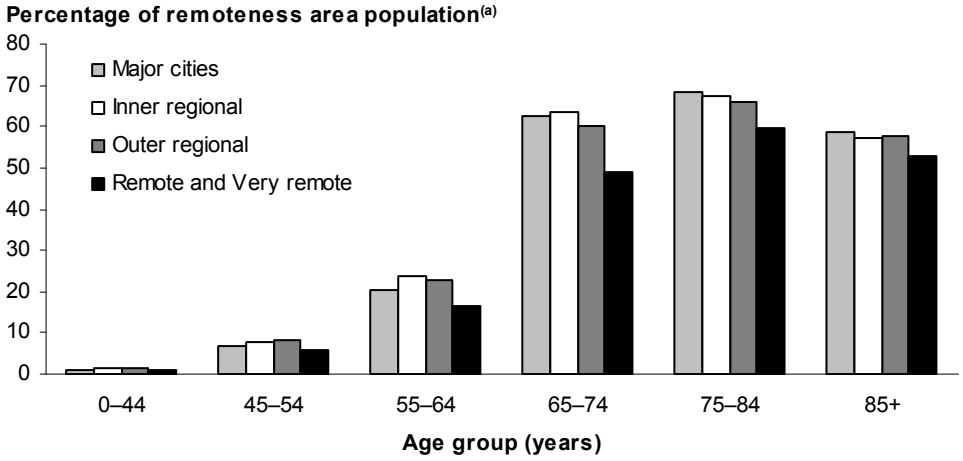
Sources

Derived from ABS 2006 and AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure A2.1: Patients dispensed PBS/RPBS-subsidised cardiovascular medicines as a proportion of the population in each remoteness area by age, 2007–08

The analysis from Figure A2.1 was repeated using only concessional PBS/RPBS patients. Because people in *Inner* and *Outer regional* areas tend to have lower incomes and higher rates of unemployment (Table A6.51), more people in these areas could be eligible for a concession card. It is therefore possible that more people in these regions would be eligible for concessional PBS/RPBS prescriptions, which would inflate the number of people collected in PBS/RPBS data in these regions.

There is some evidence for this effect, especially among people aged 55–64 years in *Inner* and *Outer regional* areas. However, the effect is small and would probably not have a large effect on the overall rate of region. Again, the coverage of the PBS/RPBS was lower in *Remote* and *Very remote* areas, probably due to patients in these areas using Section 100 arrangements to receive cardiovascular medicines (Figure A2.2).



(a) Population in 2007.

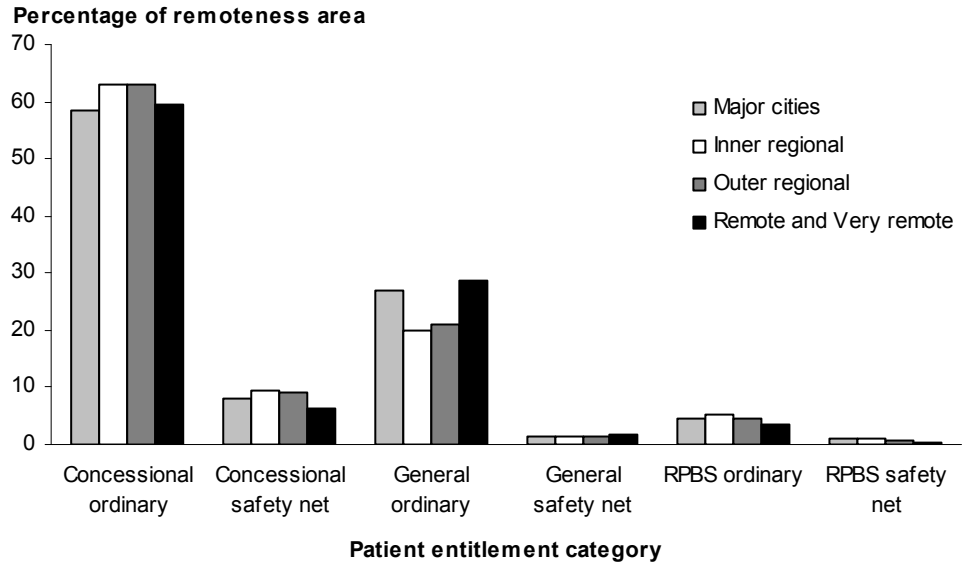
Note: Medicines supplied under Section 100 are not included.

Sources

Derived from ABS 2006 and AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Figure A2.2: Concessional patients dispensed PBS/RPBS-subsidised cardiovascular medicines as a proportion of the population in each remoteness area by age, 2007–08

Another point to note is that patients can change their entitlement category over time. General patients can gain or lose concessional status, and patients who meet the safety net requirements will return to their normal status when a new calendar year commences. In this report, a patient's entitlement category refers to their first recorded entitlement category during the study period. The patient entitlement category is not expected to affect comparisons between remoteness areas, because the distribution of patients in each entitlement category is broadly similar across regions (Figure A2.3, Table A6.6).



Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System

Figure A2.3: Patient entitlement category of patients receiving a PBS/RPBS-subsidised prescription for cardiovascular medicines, by remoteness area, 2007–08

Information on the supply of medicines

As described above, the Pharmaceutical Benefits Data System records those PBS/RPBS-subsidised prescriptions that are dispensed to patients. However, it cannot provide information about how patients use the medicines they are dispensed. In particular, PBS/RPBS data does not record:

- whether the patient takes any or all of the medicine they are dispensed
- whether the patient holds a prescription that they have not filled
- what condition the medicine was prescribed for:
  - Some cardiovascular medicines may be used to treat other conditions.
  - Some medicines from other classes may be used to treat CVD.

Information on the condition a medicine is prescribed for is collected by the BEACH survey. These data show that the majority of cardiovascular medicines prescribed by GPs are prescribed for cardiovascular conditions (Table 3.2). More information on the conditions that cardiovascular medicines are prescribed for is given in Chapter 4.

Note that these limitations apply equally to patients in all regions, and so do not affect comparisons between remoteness areas.

Missing information

There are two main sources of missing information in PBS/RPBS data, which complicate analysis.

Missing Personal Identifier Number (PIN)

Personal Identifier Numbers (PINs), based on the patient's Medicare number, are used in the Pharmaceutical Benefits Data System to identify individual patients. Where a patient was unable to supply a Medicare number at the time of filling the prescription, the PIN was coded as missing. Records with a missing PIN are excluded from this report, because the prescription records for individual patients could not be identified.

In 2007–08 there were over 635,000 cardiovascular prescription records with a missing PIN; that is, 0.9% of all cardiovascular prescription records in that year. All records with missing PINs also had missing remoteness area data (see below).

Missing remoteness area data

In some cases, it was not possible to concord a patient's residential postcode to an ASGC remoteness area. In these cases, the patient was assigned a remoteness area of *'Missing'*. Records with missing remoteness area data are not reported separately, but they are included in counts of total prescriptions across regions. It does appear that records with missing remoteness area data disproportionately occur in remote areas and among Indigenous patients. This is discussed further in the section 'Issues with reporting the use of the PBS/RPBS by Aboriginal and Torres Strait Islander people', below.

The number of cardiovascular prescriptions with missing remoteness area data is small compared with the total number of cardiovascular prescriptions (0.36% in 2007–08). However, this proportion is greater than the number of prescriptions from *Very remote* areas (0.29% of all cardiovascular prescriptions in 2007–08). For this reason, analyses of medicine supply combine data from *Remote* and *Very remote* areas into one category.

Issues with reporting the use of the PBS/RPBS by Aboriginal and Torres Strait Islander people

A number of issues with PBS/RPBS data make it difficult to measure the use of the PBS/RPBS by Aboriginal and Torres Strait Islander people accurately.

Identification of Aboriginal and Torres Strait Islander people in the Pharmaceutical Benefits Data System

Aboriginal and Torres Strait Islander people may choose to identify themselves as such using the Voluntary Indigenous Identifier (VII) on their Medicare record. The VII is back-dated, so that if an individual identifies themselves as Indigenous all previous records are updated to reflect this status.

Despite these steps, it seems likely that the number of Aboriginal and Torres Strait Islander people using the PBS/RPBS to obtain cardiovascular medicines is substantially under-counted. The proportion of PBS/RPBS patients identified as Indigenous is substantially lower than the proportion of Indigenous people in the community. Although

some of this difference may be due to the lower use of the PBS/RPBS by Aboriginal and Torres Strait Islander people, it is also likely that under-identification accounts for a substantial part.

Section 100 medicines

Section 100 arrangements are an important source of medicines for Aboriginal and Torres Strait Islander people in remote areas. However, because of the limitations with Section 100 data collection described previously, it is not possible to include Section 100 medicines in analyses by age or sex. Those analyses in this report that do not include Section 100 data will under-count the supply of medicines to Aboriginal and Torres Strait Islander people.

Records with missing remoteness area data

Those records with missing remoteness area data are likely to disproportionately occur among records of Indigenous Australians and in *Remote* and *Very remote* regions. Classification to a remoteness area in the Pharmaceutical Benefits Data System is based on the patient's postcode. However, because of their isolation, many remote Indigenous communities use a post office box rather than a postcode to record residence. As a result, many Indigenous patients in remote areas could not be allocated to a remoteness area.

Records with missing remoteness area data are not included in analyses of medicine supply by region. These analyses will under-count the supply of medicines to remote areas and Indigenous Australians.

Appendix 3: Codes used in this report

Anatomical Therapeutic Chemical (ATC) classification

ATC codes are used in this report to classify medicines from PBS/RPBS data and from the BEACH survey. A complete list of the medicine classes included in this report is shown in Table 3.1.

International Classification of Disease (ICD-10) codes

Australia uses the International Statistical Classification of Diseases and Related Health Conditions, Tenth Revision (ICD-10) classification for coding of causes of death. Note that only the underlying cause of death is analysed in this report.

For hospital diagnoses and procedures, these codes have been modified for Australia. Hospital data use the ICD-10-AM classification (International Statistical Classification of Diseases and Related Health Conditions, Tenth Revision, Australian Modification). Details of the codes used in this report are given below (Table A3.1).

Table A3.1: ICD-10 and ICD-10-AM disease codes used in this report

Disease codes	ICD-10 and ICD-10-AM codes
Cardiovascular disease	I00–I99
Coronary heart disease	I20–I25
Cerebrovascular disease	I60–I69
Stroke	I60–I64

International Classification of Primary Care- Version 2 (ICPC-2) codes

The ICPC-2 is the Australian national standard for reporting health data from general practice, and is used by the BEACH survey to classify the problem managed at encounter. A list of the ICPC-2 codes used in this report is given in Table A3.2.

Table A3.2: ICPC-2 codes used in this report

ICPC-2 code	Description
Circulatory and lipid disorders[(a)]	
K01	Pain, heart
K02	Pressure/tightness of heart
K03	Pain, cardiovascular not otherwise specified
K04	Palpitations/awareness of heart
K05	Irregular heartbeat, other
K06	Prominent veins

(continued)

Table A3.2 (continued): ICPC-2 codes used in this report

ICPC-2 code	Description
K07	Swollen ankles/oedema
K22	Risk factor for cardiovascular disease
K24	Fear of heart disease
K25	Fear of hypertension
K27	Fear of cardiovascular disease, other
K28	Limited function/disability cardiovascular
K29	Cardiovascular symptom/complaint, other
K30	Cardiovascular check-up, complete
K31	Cardiovascular check-up, partial
K32–K49	Problems labelled as diagnostic, screening and preventive procedures of the cardiovascular system
K50–K59	Problems labelled as medication, treatment or procedures of the cardiovascular system
K60–K69	Problems labelled in terms of test results, administrative action, referrals etc, associated with the cardiovascular system
K70	Cardiovascular system infection
K71	Rheumatic fever/heart disease
K73	Congenital anomaly cardiovascular
K74	Ischaemic heart disease with angina
K75	Acute myocardial infarction
K76	Ischaemic heart disease without angina
K77	Heart failure
K78	Atrial fibrillation/flutter
K79	Paroxysmal tachycardia
K80	Cardiac arrhythmia not otherwise specified
K81	Heart/arterial murmur not otherwise specified
K82	Pulmonary heart disease
K83	Heart valve disease not otherwise specified
K84	Heart disease, other
K85	Elevated blood pressure
K86	Hypertension, uncomplicated
K87	Hypertension, complicated
K88	Postural hypotension (low blood pressure)
K89	Transient cerebral ischaemia
K90	Stroke/cerebrovascular accident
K91	Cerebrovascular disease (excl heart/brain)
K92	Atherosclerosis/peripheral vascular disease
K93	Pulmonary embolism
K94	Phlebitis and thrombophlebitis

(continued)

Table A3.2 (continued): ICPC-2 codes used in this report

ICPC-2 code	Description
K95	Varicose veins of leg
K96	Haemorrhoids
K99	Cardiovascular disease, other
T93	Lipid disorder
Hypertension	
K86	Hypertension, uncomplicated
K87	Hypertension, complicated
Ischaemic heart disease	
K74	Ischaemic heart disease with angina
K75	Acute myocardial infarction
K76	Ischaemic heart disease without angina
Lipid disorders	
T93	Lipid disorder

(a) Cardiovascular neoplasm and hypertension in pregnancy are excluded but lipid disorders are included.

Medicare Benefits Schedule (MBS) codes

The MBS is a listing of the Medicare services subsidised by the Australian Government. More information on Medicare is given in Appendix 5. A list of the MBS items included in this report is shown in Table A3.3.

Table A3.3: MBS codes used in this report

MBS service	MBS group	MBS Item number
GP attendance	A1, A2, A22, A23	All
GP management plan/ team care arrangement	A15	All
Nurse/ Aboriginal health worker provided service	M2	10997
Aboriginal/ Torres Strait Islander Health service provided by eligible Aboriginal health worker for chronic and complex condition	M3	10950
Domiciliary medication management review	A17	All
Diabetes cycle of care	A18, A19	All
Health-care assessment of older person (75 years and over)	A14	700 and 702
45 year-old health check	A14	717
Health-care assessment of aged care facility resident	A14	712
Indigenous MBS services		
Older Aboriginal or Torres Strait Islander health check (55 years and over)	A14	704 and 706
Aboriginal or Torres Strait Islander child health check (0–14 years old)	A14	708
Aboriginal and Torres Strait Islander adult health check (15–54 years old)	A14	710

Appendix 4: Estimating GP attendances for cardiovascular problems

The data presented in Section 5.2 estimated the population rate of GP attendances for patients with a cardiovascular or lipid disorder using Medicare data weighted by BEACH estimates. This appendix will detail the methods used to create these estimates.

Data sources

Medicare data

Medicare collects information about the number and type of services provided to patients that are subsidised by the Australian Government under Medicare arrangements. Among the services subsidised under Medicare are GP attendances.

The Medicare data collect information on patient characteristics such as age, sex and Indigenous status. However, it does not record what problems were managed during the GP attendance.

Bettering the Evaluation and Care of Health (BEACH) survey of general practice

BEACH is an ongoing national survey looking at aspects of general practice in Australia, conducted by the General Practice Statistics and Classification Unit (an AIHW collaborating unit within the Family Medicine Research Centre, University of Sydney).

BEACH began in April 1998 and involves a random sample of approximately 1,000 GPs per year, each of whom records details regarding 100 consecutive patient encounters. It collects information on the characteristics of the GPs in the survey, the patients seen by those GPs, the reasons people seek medical care, the problems managed (such as CVD) and, for each problem managed, the medications prescribed, advised, provided, clinical treatments and procedures provided, referrals to specialists and allied health services, and test orders, including pathology and imaging.

Method for creating estimates

The BEACH data estimate the proportion of GP encounters where a cardiovascular or lipid problem was managed. By applying these proportions to Medicare records of GP attendances, it is possible to estimate the number of GP attendances where a cardiovascular or lipid problem was encountered.

The BEACH estimates were applied only to those Medicare services that were a GP attendance (MBS item numbers A1, A2, A22 and A23). Medicare services from 2004–05 to 2007–08 were summed to reflect the fact that the BEACH data used were aggregated from January 2004 to December 2008.

The BEACH proportions used were the proportion of GP encounters where any of the problems encountered were cardiovascular or lipid problems. The proportions used for calculations were age, sex and region specific to correct for differences in age and sex structure across regions.

Population rates were estimated as follows:

1. Age-, sex- and region-specific BEACH proportions were applied to the relevant Medicare records to derive an estimate of the number of Medicare-subsidised GP attendances where a cardiovascular or lipid problem was encountered.
2. The estimated number of GP encounters from step 1 were applied to the relevant Australian populations to derive age- and sex-specific rates of GP attendances for cardiovascular or lipid disorders. Note that the populations used were aggregated across 2004–2007 to reflect the aggregated Medicare and BEACH data.
3. The age- and sex-specific rates calculated in step 2 were applied to a standard population (Australia 2001) to estimate the expected number of GP attendances that encountered a cardiovascular or lipid disorder in the standard population.
4. The age- and sex-specific expected number of GP attendances were summed together and then divided by the standard population to calculate the age-standardised rate of GP attendances where a cardiovascular or lipid disorder was encountered. An example of these calculations can be seen below in Table A4.1.

These estimates are repeated for sex and region. They are also repeated for hypertension, ischaemic heart disease and lipid disorder. Population rates are recalculated using the upper and lower confidence limits from the BEACH proportion estimates to derive the confidence interval for the population rates.

Table A4.1: Example of calculations to produce estimates of the number of GP attendances for male patients with a cardiovascular or lipid disorder per 100,000 population in Major cities

Age group (years)	Number of Medicare-subsidised GP attendances for any condition	Proportion of GP encounters where a cardiovascular or lipid disorder was managed	Estimated number of GP attendances for patients with cardiovascular or lipid disorder	Population	Age specific rates (per 100,000 population)	Standard population	Estimated number in standard population
	Medicare	BEACH	Medicare number of attendances x BEACH proportion	2004–2007 Australian Major cities population		Australian 2001 population	Age specific rates x Standard population
0–24	32,573,163	0.01	330,436	9,615,063	3,437	6,641,299	228,238
25–34	12,584,558	0.05	615,564	4,275,639	14,397	2,873,334	413,674
35–44	14,814,085	0.11	1,626,559	4,202,117	38,708	2,970,997	1,150,016
45–54	16,023,577	0.21	3,415,519	3,730,517	91,556	2,658,955	2,434,438
55–64	16,695,655	0.31	5,215,766	2,881,421	181,014	1,830,632	3,313,694
65–74	14,816,045	0.38	5,644,083	1,736,206	325,081	1,320,824	4,293,753
75–84	10,668,814	0.39	4,169,609	1,088,203	383,165	849,386	3,254,547
85+	2,527,646	0.35	874,270	274,607	318,371	265,229	844,413
Total						**19,410,656**	**15,932,773**

Age-standardised rate

= total estimated number in the standard population ÷ total standard population

= 15,932,773 ÷ 19,410,656

= **82,083** GP attendances where a cardiovascular or lipid disorder was managed per 100,000 population

Appendix 5: Main data sources

ABS Census of population and housing

The Census of population and housing is undertaken by the Australian Bureau of Statistics (ABS) and aims to measure accurately the number of people in Australia on census night, their key characteristics and the dwellings in which they live.

The Census is conducted every 5 years. The last Census was conducted on 8 August 2006.

ABS National Health Survey (NHS)

The NHS is conducted by the ABS to obtain national information on the health status of Australians, their use of health services and other actions people had taken for their health, and health-related aspects of their lifestyle. The 2004–05 survey collected information from a sample of 25,900 people across all ages from all states and territories from August 2004 to June 2005. One adult and one child (where applicable) from each sampled dwelling were included in the survey.

ABS National Aboriginal and Torres Strait Islander Health Survey (NATSIHS)

The NATSIHS is conducted by the ABS to obtain national information on the health of Indigenous Australians, their use of health services and health-related aspects of their lifestyle. The 2004–05 survey collected information from a sample of 10,439 persons (about 1 in 45 of the total Indigenous population) from all states and territories, including *Remote* and *Very remote* areas, from August 2004 to July 2005.

AIHW Medical Labour Force Survey

The AIHW Medical labour force surveys are annual surveys of all registered medical practitioners in each state and territory. Data are collated, cleaned and weighted by the AIHW each year.

Survey responses are weighted to all registered medical practitioners in each jurisdiction, with adjustments made for those registered in more than one jurisdiction.

Response rates to the Medical labour force surveys have been declining over time and are very low in some jurisdictions (for example, in 2007 the response rate for the NT was 27.1%, and in WA, 54.2%). In addition, the collection methodology and questionnaire vary across jurisdictions. As a result, estimates from this survey at a regional level should be treated with some caution.

A primary health-care practitioner is self-defined in the AIHW survey, based on several questions on employment, role and hours worked in up to three jobs. GPs are those who report that they were employed at the time of the survey as a GP, and whose main area of clinical practice was primary health care. It excludes those GPs that spend most of their time

as an educator or researcher. It includes vocationally registered GPs, GP trainees and other GPs.

See AIHW 2009a for more detail.

AIHW Mortality Database

This database contains information on the cause of death supplied by the medical practitioner certifying the death or by a coroner. Registration of deaths is the responsibility of the state and territory registrars of births, deaths and marriages. Registrars provide the information to the ABS for coding of the cause of death, which is then provided to the AIHW. In this report, death data relate only to the underlying cause of death.

AIHW Hospital Morbidity Database

This database contains demographic, diagnosis, procedure and duration-of-stay information on episodes of care for patients admitted to hospital. The collection is maintained by the AIHW using data supplied by state and territory health authorities.

Throughout this report the term 'hospitalisation' is used to refer to a hospital separation. In most cases a hospital separation will equate to an episode of hospitalisation, but in some cases, such as where a patient transfers between hospitals or changes their care type, this can be misleading.

AIHW Nursing and Midwifery Labour Force Survey

The AIHW Nursing and Midwifery Labour Force Survey is a survey of all registered and enrolled midwives and nurses in each state and territory. Data are collated, cleaned and weighted by the AIHW, usually each year. The latest published data are for 2007.

Survey responses are weighted to all registered and enrolled midwives and nurses in each jurisdiction, with adjustments made for those registered or enrolled in more than one jurisdiction.

Response rates to the surveys have been declining over time and are very low in some jurisdictions (for example, in 2007, the response rate for the Northern Territory was only 28.7%, and for Queensland, 33.9%). The overall response rate was 49.6%. In addition, the collection methodology and questionnaire varies across jurisdictions. As a result, estimates from this survey at a regional level should be treated with some caution.

A registered nurse/midwife is a person on the register maintained by the state or territory nurses and midwives board or council in each state or territory. The minimum educational requirement for a registered nurse or midwife is a 3-year degree from a higher education institution or equivalent from a recognised hospital-based program.

An enrolled nurse is a nurse who is on the roll maintained by the nursing/midwifery registration board in each state and territory. The minimum educational requirement for an enrolled nurse is a 1-year diploma from a Vocational Education and Training provider, or equivalent from a recognised hospital-based program. Enrolled nurses usually work with registered nurses to provide patients with basic nursing care, and undertake less complex procedures than registered nurses.

The measure of workload used in the survey is full-time equivalent (FTE). FTE is calculated by: 'the number of employed nurses in a particular category' multiplied by 'the average hours worked by employed nurses in the category' divided by 'the standard working week hours (35)'.

See AIHW 2009b for more detail.

Bettering the Evaluation and Care of Health (BEACH) survey of general practice

See Appendix 4 for more information on this data source.

Medicare data

Medicare data contains information on all medical practitioners who have provided at least one Medicare service during the year and who have had at least one Medicare service processed during the same year.

In Medicare data, a GP is defined as someone whose major specialty at 30 June of the reference year was general practice who provided at least one Medicare service during the year (DoHA 2008a). As a result, the headcount figure includes several thousand medical practitioners who provide only small numbers of services through Medicare each year. The methodology has been changed to reflect active GPs more accurately.

Medicare data do not capture all GP services. Only services provided in the private sector and subsidised through MBS are included.

Full-time workload equivalent (FWE) is a measure of medical workforce supply that takes into account the differing working patterns of doctors. FWE is calculated by dividing each doctor's Medicare billing by the average billing of full-time doctors for the year. A GP with 50% of the average billing for full-time GPs is counted as 0.5, a GP billing at the average is counted as 1.0, and a GP billing at 150% of the average is counted as 1.5.

Because FWE is based on the number and value of claims processed by Medicare, it may not capture the full extent of medical service provision in rural and remote communities because it does not include services provided in emergency care and Aboriginal Health Services by GPs.

See DoHA 2008b for more detail.

Pharmaceutical Benefits Data System

Held at the Australian Government Department of Health and Ageing (DoHA), the Pharmaceutical Benefits Data System is used to monitor expenditure and use of prescription medicines subsidised by the Pharmaceutical Benefits Scheme (PBS) and the Repatriation PBS (RPBS). The database contains information pertinent to the payment of claims for pharmaceuticals from Medicare Australia for medicines subsidised by the PBS and the RPBS. Inpatient hospital prescribing is not included. The data are based on the date of supply or dispensing of prescriptions.

Service Activity Reporting (SAR) questionnaire

The SAR collects information from Aboriginal and Torres Strait Islander primary health-care services that receive any Australian Government funding. Many of these services also receive funds from other sources (e.g. state or territory governments).

The SAR is a joint data collection project of the National Aboriginal Community Controlled Health Organisation (NACCHO) and the Office of Aboriginal and Torres Strait Islander Health (OATSIH). The data collected in the SAR relate to health oriented activities during the 12 month period, resulting from **all** funding sources. A separate process is undertaken via the Drug and Alcohol Service Report to gather and present information from Australian Government-funded Aboriginal and Torres Strait Islander substance use services.

See DoHA & NACCHO 2008 for further details.

Appendix 6: Detailed statistical tables

Table A6.1: Prevalence of cardiovascular diseases by region, 2004–05

Condition	Major cities	Inner regional	Other regions[a]	Major cities	Inner regional	Other regions[a]
	Crude rate (per cent)			Standardised rate ratio[b] (95% CI)		
All CVD	23.7	29.1	26.6	1.00	1.11 (1.03–1.19)*	1.05 (0.95–1.15)
Coronary heart disease	4.0	5.9	4.5	1.00	1.30 (1.08–1.52)*	1.04 (0.79–1.28)
Stroke	1.4	2.2	1.8	1.00	1.37 (0.99–1.74)	1.18 (0.74–1.61)

(a) Includes *Outer regional* and *Remote* areas. *Very remote* areas are not included.

(b) This measure compares the observed prevalence of CVD in the populations of *Inner regional* areas and Other regions with the prevalence that would be expected if the age-sex-specific prevalence rate in *Major cities* applied in those regions.

Notes

1. Based on self-reported information. These results relate to people aged 20 years or over.
2. These results have been adjusted for age and sex.
3. In this table statistically significant differences are marked with *.

Source: AIHW analysis of ABS 2004–05 National Health Survey.

Table A6.2: Deaths from cardiovascular diseases per 100,000 population, by disease type and remoteness area, 2006

	Major cities	Inner regional	Outer regional	Remote and Very remote
	Deaths per 100,000 population (95% CI)			
All cardiovascular disease	185 (183–187)	225 (221–230)	245 (238–252)	261 (243–280)
Coronary heart disease	93 (91–94)	114 (110–117)	125 (120–130)	134 (121–149)
Stroke	35 (34–36)	41 (40–43)	41 (38–43)	44 (37–52)

Note: Age-standardised rates.

Source: AIHW National Mortality Database.

Table A6.3: Hospital separations with principal diagnoses of CVD per 100,000 population, by remoteness area and admission status, 2006–07

	Major cities	Inner regional	Outer regional	Remote and Very remote
	Separations per 100,000 population (95% CI)			
All separations	2,059 (2,052–2,066)	2,296 (2,282–2,309)	2,320 (2,299–2,340)	2,499 (2,448–2,551)
Urgent admission status	1,089 (1,083–1,094)	1,233 (1,223–1,243)	1,363 (1,347–1,378)	1,694 (1,651–1,737)

Note: Age-standardised rates.

Source: AIHW National Hospital Morbidity database.

Table A6.4: Prevalence of CVD in Indigenous Australians by region, 2004–05

	Non-Indigenous Australians in Major cities	Major cities	Inner regional	Outer regional	Remote and Very remote
			Indigenous Australians		
Standardised rate ratio[(a)] (95% CI)	**1.0**	1.33 (1.11–1.56)	1.41 (1.13–1.70)	1.27 (1.02–1.53)	1.56 (1.31–1.80)
Crude prevalence (per cent)[(b)]	**23.4**	20.8	22.9	21.4	25.7

(a) This measure compares the observed prevalence of CVD in the Indigenous populations living in various regions with the prevalence that would be expected if the prevalence rate of non-Indigenous people in *Major cities* applied to those populations. These results have been adjusted for age and sex.

(b) These results have not been adjusted for age and sex.

Note: Based on self-reported information. These results relate to people aged 20 years or over.

Source: AIHW analysis of ABS 2004–05 NATSIHS.

Table A6.5: Standardised mortality and hospitalisation ratios for Indigenous Australians, by disease type, 2006 and 2006–07.

	All CVD	Coronary heart disease	Stroke
2006 Standardised mortality ratio (95% CI) [(a)]	1.97 (1.81–2.14)	2.16 (1.91–2.40)	1.52 (1.18–1.85)
2006–07 Standardised hospitalisation ratio (95% CI) [(b)]	1.81 (1.77–1.85)	2.60 (2.51–2.68)	2.10 (1.92–2.27)

(a) Only includes deaths from New South Wales, Queensland, Western Australia, South Australia and Northern Territory.

(b) Only includes hospital separations from New South Wales, Victoria, Queensland, Western Australia, South Australia and Northern Territory.

Sources: AIWH National Mortality Database, AIWH National Hospital Morbidity Database.

Table A6.6: Medicine packs[(a)] dispensed by remote area Aboriginal Health Services under Section 100 arrangements, by year and medicine class, 2005–2008

	Calendar year			
Medicine class	**2005**	**2006**	**2007**	**2008**
B01—Antithrombotic medicines	27,819	30,014	36,230	41,022
C01—Cardiac therapy medicines	9,999	10,437	11,171	11,608
C02—Antihypertensive medicines	1,127	1,285	1,643	1,818
C03—Diuretic medicines	11,182	11,305	11,934	12,339
C07—Beta-blocking agents	24,298	25,564	29,666	31,396
C08—Calcium-channel blockers	25,199	24,072	26,868	27,700
C09—Renin–angiotensin system agents	113,508	120,498	139,879	147,571
C10—Serum-lipid-reducing agents	61,552	68,197	83,799	92,970
Any cardiovascular medicine	**274,686[(b)]**	**291,372**	**341,190**	**366,424**

(a) Medicines dispensed under Section 100 arrangements are supplied as 'packs'. A Section 100 pack is equivalent to a PBS prescription item.

(b) Includes two packs of C04–Peripheral vasodilator medicines.

Source: Medicare Australia.

Table A6.7: Characteristics of patients who received a PBS/RPBS-subsidised prescription for any cardiovascular medicine, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	119,695	32,302	15,283	3,183	1,248	171,711
45–54 years	188,745	56,501	27,112	5,202	2,049	279,609
55–64 years	310,164	103,800	48,206	8,106	3,167	473,443
65–74 years	309,816	113,896	50,550	7,327	2,143	483,732
75–84 years	223,915	78,097	32,108	4,099	857	339,076
85+ years	61,728	19,602	7,730	892	172	90,124
Male total	**1,214,063**	**404,198**	**180,989**	**28,809**	**9,636**	**1,837,695**
Females						
0–44 years	100,186	29,045	13,311	2,564	974	146,080
45–54 years	156,636	48,554	23,192	4,110	1,560	234,052
55–64 years	310,675	104,846	46,022	6,905	2,470	470,918
65–74 years	340,659	119,871	50,519	6,566	1,697	519,312
75–84 years	303,153	98,362	38,936	4,561	912	445,924
85+ years	131,066	40,469	15,717	1,709	326	189,287
Female total	**1,342,375**	**441,147**	**187,697**	**26,415**	**7,939**	**2,005,573**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	8.1	9.3	8.9	6.2	3.4	8.4
Concessional ordinary	58.3	62.9	63.1	59.4	51.1	59.8
General safety net	1.5	1.3	1.4	1.6	1.2	1.5
General ordinary	26.8	20.0	21.1	28.8	40.7	24.9
RPBS safety net	0.9	1.0	0.8	0.4	0.2	0.9
RPBS ordinary	4.4	5.4	4.7	3.5	3.5	4.6

(a) Excludes 3,520 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.8: Characteristics of patients who received a PBS/RPBS-subsidised prescription for antithrombotic medicines, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	12,145	3,601	1,794	419	174	18,133
45–54 years	24,459	8,221	4,112	795	306	37,893
55–64 years	62,435	23,778	11,087	1,766	633	99,699
65–74 years	106,388	41,943	18,410	2,490	679	169,910
75–84 years	111,952	40,349	15,921	1,876	381	170,479
85+ years	37,446	12,002	4,482	466	89	54,485
Male total	**354,825**	**129,894**	**55,806**	**7,812**	**2,262**	**550,599**
Female						
0–44 years	16,434	4,513	1,983	433	264	23,627
45–54 years	17,323	6,012	2,971	579	289	27,174
55–64 years	44,637	17,298	7,522	1,070	412	70,939
65–74 years	88,645	33,624	13,807	1,687	463	138,226
75–84 years	126,595	42,903	16,302	1,779	359	187,938
85+ years	67,913	21,349	7,853	795	158	98,068
Female total	**361,547**	**125,699**	**50,438**	**6,343**	**1,945**	**545,972**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	19.3	20.6	20.0	15.3	8.6	19.6
Concessional ordinary	56.0	57.8	59.5	62.7	63.6	56.9
General safety net	1.9	1.5	1.8	2.3	2.2	1.8
General ordinary	11.7	7.9	8.5	12.0	19.1	10.5
RPBS safety net	2.9	3.1	2.5	1.6	0.5	2.9
RPBS ordinary	8.2	9.0	7.8	6.0	6.0	8.3

(a) Excludes 2,280 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.9: Median number of PBS/RPBS-subsidised prescriptions dispensed per patient, by medicine class, remoteness area and sex, 2007–08

	Major cities		Inner regional		Outer regional		Remote and Very remote		All Australia	
Medicine class	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
B01—Antithrombotic medicines	5	4	4	3	4	3	4	3	5	4
C01—Cardiac therapy medicines	4	4	4	4	4	4	3	3	4	4
C02—Antihypertensive medicines	4	4	4	4	4	4	4	4	4	4
C03—Diuretic medicines	3	3	3	3	3	3	3	3	3	3
C07—Beta-blocking agents	6	6	6	7	6	7	6	7	6	7
C08—Calcium-channel blockers	9	11	10	11	10	11	9	10	10	11
C09—Renin–angiotensin system agents	11	12	11	12	11	12	10	11	11	12
C10—Serum-lipid-reducing agents	11	11	11	11	11	11	10	10	11	11
Any cardiovascular medicine	12	13	14	14	13	14	12	12	13	13

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.10: Rate of PBS/RPBS-subsidised prescriptions for antithrombotic medicines dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	1,189	1,371	1,329	993	1,238
45–54 years	15,323	16,054	15,628	12,069	15,528
55–64 years	55,003	58,786	54,436	39,496	55,717
65–74 years	170,845	174,473	159,043	125,027	170,133
75–84 years	308,787	306,505	275,039	215,646	304,112
85+ years	367,762	349,204	319,317	234,757	358,199
Males overall	**35,343**	**43,613**	**37,251**	**19,887**	**36,910**
Females					
0–44 years	1,294	1,555	1,402	1,000	1,357
45–54 years	7,664	9,013	9,670	7,384	8,204
55–64 years	29,677	34,795	33,761	27,045	31,321
65–74 years	109,311	114,361	108,999	88,813	110,487
75–84 years	233,109	234,912	219,589	184,815	232,138
85+ years	292,363	283,552	270,211	230,355	288,424
Females overall	**30,362**	**35,961**	**30,644**	**15,796**	**31,265**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.11: Prescriptions for antithrombotic medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	3,944,528	1,357,837	558,077	100,142	16,865	5,977,449
2005–06	4,193,328	1,442,080	591,572	106,440	20,227	6,353,647
2006–07	4,445,663	1,536,887	628,809	116,106	23,894	6,751,359
2007–08	4,745,620	1,655,618	678,885	128,143	24,041	7,232,307
			Prescriptions per 100,000 population			
2004–05	28,641	34,332	29,086	20,912	—	29,702
2005–06	30,049	35,897	30,484	22,196	—	31,157
2006–07	31,391	37,619	31,963	24,162	—	32,622
2007–08	32,875	39,829	34,062	26,428	—	34,325

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.12: Characteristics of patients who received a PBS/RPBS-subsidised prescription for cardiac therapy medicines, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	17,964	4,836	2,039	414	119	25,372
45–54 years	8,238	3,365	1,598	256	92	13,549
55–64 years	24,570	10,100	4,658	745	242	40,315
65–74 years	49,855	20,058	8,868	1,245	317	80,343
75–84 years	59,067	22,071	8,736	1,009	188	91,071
85+ years	22,549	7,509	2,851	306	45	33,260
Male total	**182,243**	**67,939**	**28,750**	**3,975**	**1,003**	**283,910**
Females						
0–44 years	14,665	3,858	1,581	289	95	20,488
45–54 years	6,325	2,500	1,174	204	68	10,271
55–64 years	17,344	7,221	3,104	456	156	28,281
65–74 years	38,667	15,123	6,231	814	198	61,033
75–84 years	66,734	23,177	8,852	968	178	99,909
85+ years	45,426	14,438	5,533	573	96	66,066
Female total	**189,161**	**66,317**	**26,475**	**3,304**	**791**	**286,048**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	21.7	22.6	22.2	17.9	13.0	21.9
Concessional ordinary	56.0	57.5	59.5	62.7	64.2	56.8
General safety net	2.7	1.9	2.1	2.8	4.0	2.5
General ordinary	8.9	6.1	6.1	8.9	11.8	8.0
RPBS safety net	3.3	3.5	2.9	1.9	0.8	3.2
RPBS ordinary	7.5	8.4	7.3	5.8	6.2	7.6

(a) Excludes 1,255 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.13: Rate of PBS/RPBS-subsidised prescriptions for cardiac therapy medicines dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	623	730	629	435	642
45–54 years	3,924	5,043	4,745	2,900	4,243
55–64 years	18,338	21,936	20,398	14,392	19,375
65–74 years	71,267	75,216	68,747	55,161	71,911
75–84 years	151,974	157,246	143,687	112,520	152,063
85+ years	231,388	234,017	215,118	177,263	230,137
Males overall	**15,751**	**20,383**	**17,250**	**8,930**	**16,697**
Females					
0–44 years	483	543	484	319	494
45–54 years	2,446	3,254	3,383	2,353	2,720
55–64 years	11,241	14,371	13,698	11,018	12,232
65–74 years	48,205	52,647	50,322	44,003	49,523
75–84 years	124,954	131,230	126,971	104,604	126,462
85+ years	219,904	228,172	217,557	195,195	221,517
Females overall	**16,107**	**19,737**	**16,733**	**8,454**	**16,752**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.14: Prescriptions for cardiac therapy medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	2,510,777	903,039	365,066	57,412	10,059	3,846,353
2005–06	2,415,831	869,642	353,354	55,989	10,771	3,705,587
2006–07	2,327,773	840,820	341,515	54,688	11,297	3,576,093
2007–08	2,304,194	835,520	339,376	53,877	10,373	3,543,340
			Prescriptions per 100,000 population			
2004–05	18,231	22,833	19,027	11,989	—	19,112
2005–06	17,312	21,647	18,208	11,676	—	18,171
2006–07	16,436	20,581	17,360	11,381	—	17,280
2007–08	15,962	20,100	17,027	11,111	—	16,817

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.15: Characteristics of patients who received a PBS/RPBS-subsidised prescription for antihypertensive medicines, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	7,455	3,196	1,214	152	65	12,082
45–54 years	2,959	1,080	478	75	26	4,618
55–64 years	10,619	4,269	1,830	277	88	17,083
65–74 years	24,126	9,427	4,002	528	187	38,270
75–84 years	20,720	7,629	3,156	372	94	31,971
85+ years	4,833	1,735	724	75	18	7,385
Male total	**70,712**	**27,336**	**11,404**	**1,479**	**478**	**111,409**
Females						
0–44 years	4,447	1,685	765	123	36	7,056
45–54 years	2,685	1,067	469	63	18	4,302
55–64 years	6,343	2,527	958	146	29	10,003
65–74 years	10,928	4,106	1,533	194	32	16,793
75–84 years	12,309	4,090	1,480	188	26	18,093
85+ years	4,228	1,396	521	48	5	6,198
Female total	**40,940**	**14,871**	**5,726**	**762**	**146**	**62,445**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	20.8	20.8	19.9	16.4	12.3	20.6
Concessional ordinary	67.3	68.0	69.7	73.9	74.0	67.8
General safety net	4.2	3.0	3.2	4.3	5.0	3.8
General ordinary	1.3	0.8	0.8	1.0	1.7	1.2
RPBS safety net	1.9	2.1	1.7	0.9	0.3	1.9
RPBS ordinary	4.6	5.4	4.7	3.5	6.7	4.8

(a) Excludes 211 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.16: Rate of PBS/RPBS-subsidised prescriptions for antihypertensive medicines dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
			Prescriptions per 100,000 population		
Males					
0–44 years	612	990	727	292	687
45–54 years	1,257	1,529	1,291	843	1,312
55–64 years	6,121	7,326	6,337	4,610	6,405
65–74 years	25,606	27,075	24,301	16,920	25,738
75–84 years	36,691	38,002	35,363	29,442	36,852
85+ years	29,120	33,741	32,549	24,620	30,447
Males overall	**4,561**	**6,161**	**5,151**	**2,574**	**4,903**
Females					
0–44 years	359	521	455	284	397
45–54 years	1,020	1,370	1,452	516	1,127
55–64 years	3,746	4,576	4,052	3,215	3,957
65–74 years	12,746	14,008	11,542	10,190	12,901
75–84 years	20,149	20,728	18,725	18,079	20,150
85+ years	16,205	17,878	17,541	15,626	16,690
Females overall	**2,973**	**3,814**	**3,107**	**1,703**	**3,130**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.17: Prescriptions for antihypertensive medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	500,746	191,027	78,097	11,853	2,157	783,880
2005–06	489,506	187,299	76,472	11,754	2,368	767,399
2006–07	497,143	190,435	76,894	11,718	2,682	778,872
2007–08	542,980	207,254	82,787	12,313	2,552	847,886
			Prescriptions per 100,000 population			
2004–05	3,636	4,830	4,070	2,475	—	3,895
2005–06	3,508	4,662	3,941	2,451	—	3,763
2006–07	3,510	4,661	3,909	2,439	—	3,763
2007–08	3,761	4,986	4,154	2,539	—	4,024

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.18: Characteristics of patients who received a PBS/RPBS-subsidised prescription for diuretic medicines, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[a]			
Males						
0–44 years	3,426	1,198	565	139	47	5,375
45–54 years	7,121	2,881	1,424	254	100	11,780
55–64 years	20,986	8,935	4,387	790	247	35,345
65–74 years	44,520	18,641	8,747	1,383	328	73,619
75–84 years	57,301	21,790	9,251	1,213	230	89,785
85+ years	25,284	8,794	3,539	411	69	38,097
Male total	**158,638**	**62,239**	**27,913**	**4,190**	**1,021**	**254,001**
Females						
0–44 years	14,176	3,745	1,590	268	87	19,866
45–54 years	14,827	5,823	2,715	415	124	23,904
55–64 years	37,123	15,706	7,088	1,112	297	61,326
65–74 years	68,233	27,676	12,221	1,719	370	110,219
75–84 years	91,234	32,864	13,343	1,747	274	139,462
85+ years	58,329	19,801	7,931	870	130	87,061
Female total	**283,922**	**105,615**	**44,888**	**6,131**	**1,282**	**441,838**
			Patient entitlement category by remoteness area[b] (per cent)			
Concessional safety net	23.8	24.4	24.0	20.2	13.0	23.9
Concessional ordinary	60.7	61.0	62.8	67.7	73.2	61.2
General safety net	3.5	2.6	3.0	4.0	5.0	3.3
General ordinary	2.1	0.9	0.7	0.8	2.1	1.6
RPBS safety net	3.0	3.3	2.7	1.6	0.9	3.0
RPBS ordinary	6.9	7.7	6.8	5.6	5.8	7.1

(a) Excludes 1,287 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.19: Rate of PBS/RPBS-subsidised prescriptions for diuretic medicines dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	229	302	265	266	249
45–54 years	2,472	3,116	2,993	2,381	2,679
55–64 years	9,605	11,861	11,747	9,564	10,405
65–74 years	36,380	39,880	39,952	36,019	37,791
75–84 years	78,884	84,413	81,274	74,721	80,530
85+ years	135,945	147,229	141,632	114,917	138,862
Males overall	**8,314**	**11,175**	**10,057**	**5,932**	**9,023**
Females					
0–44 years	764	762	659	399	748
45–54 years	4,212	5,548	5,567	3,642	4,628
55–64 years	14,529	19,020	19,004	15,990	16,063
65–74 years	47,253	54,492	55,928	51,814	50,023
75–84 years	89,318	98,990	99,344	102,845	92,660
85+ years	148,115	165,391	171,361	161,248	154,096
Females overall	**13,450**	**17,599**	**15,957**	**9,143**	**14,444**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.20: Prescriptions for diuretic medicines dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	1,663,167	621,037	269,775	50,418	7,864	2,612,261
2005–06	1,608,788	602,560	261,978	48,935	8,367	2,530,628
2006–07	1,566,129	589,929	254,930	48,553	9,112	2,468,653
2007–08	1,577,134	599,623	258,290	48,481	8,200	2,491,728
			Prescriptions per 100,000 population			
2004–05	12,076	15,703	14,060	10,528	—	12,980
2005–06	11,528	14,999	13,500	10,205	—	12,410
2006–07	11,058	14,440	12,958	10,104	—	11,928
2007–08	10,926	14,425	12,959	9,999	—	11,826

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.21: Characteristics of patients who received a PBS/RPBS-subsidised prescription for beta-blocking medicines, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	9,817	3,634	1,853	372	167	15,843
45–54 years	18,625	7,259	3,746	680	261	30,571
55–64 years	49,210	20,061	9,601	1,566	585	81,023
65–74 years	82,010	32,664	14,513	2,169	580	131,936
75–84 years	69,678	25,526	10,169	1,322	263	106,958
85+ years	18,710	5,912	2,233	248	43	27,146
Male total	**248,050**	**95,056**	**42,115**	**6,357**	**1,899**	**393,477**
Females						
0–44 years	12,260	4,959	2,262	367	158	20,006
45–54 years	16,253	6,482	3,231	580	213	26,759
55–64 years	44,290	18,512	8,565	1,276	384	73,027
65–74 years	79,650	31,832	13,930	1,887	428	127,727
75–84 years	91,384	31,778	12,732	1,552	281	137,727
85+ years	41,154	13,011	4,924	533	82	59,704
Female total	**284,991**	**106,574**	**45,644**	**6,195**	**1,546**	**444,950**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	17.0	17.5	16.4	13.0	6.4	17.0
Concessional ordinary	69.1	69.6	71.5	74.4	79.4	69.6
General safety net	4.1	3.3	3.6	5.2	4.8	3.9
General ordinary	2.2	1.6	1.6	2.5	4.1	2.0
RPBS safety net	1.8	1.9	1.4	0.9	0.4	1.8
RPBS ordinary	5.7	6.2	5.4	4.1	5.0	5.7

(a) Excludes 1,104 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.22: Rate of PBS/RPBS-subsidised prescriptions for beta-blocking agents dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	1,054	1,481	1,545	959	1,186
45–54 years	11,076	14,193	14,472	10,696	12,165
55–64 years	41,055	50,611	49,365	36,530	44,282
65–74 years	131,911	142,365	134,830	117,474	135,010
75–84 years	181,795	191,258	176,981	163,732	183,686
85+ years	168,575	168,937	154,318	125,344	167,066
Males overall	**23,678**	**32,090**	**28,898**	**17,083**	**25,796**
Females					
0–44 years	1,032	1,649	1,612	918	1,203
45–54 years	8,875	12,096	12,799	9,782	10,002
55–64 years	36,430	47,919	48,792	38,385	40,423
65–74 years	122,751	143,278	147,682	129,916	130,527
75–84 years	186,292	204,763	208,461	200,512	192,860
85+ years	186,698	196,955	196,847	181,769	189,948
Females overall	**27,318**	**36,694**	**33,994**	**19,067**	**29,693**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.23: Prescriptions for beta-blocking agents dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	3,395,632	1,297,709	576,879	108,748	20,406	5,399,374
2005–06	3,497,327	1,340,959	593,355	111,296	22,242	5,565,179
2006–07	3,543,215	1,366,836	598,286	114,034	23,792	5,646,163
2007–08	3,687,050	1,431,384	626,139	118,810	22,212	5,885,595
			Prescriptions per 100,000 population			
2004–05	24,655	32,812	30,066	22,709	—	26,829
2005–06	25,062	33,380	30,575	23,209	—	27,290
2006–07	25,019	33,457	30,411	23,731	—	27,282
2007–08	25,542	34,434	31,415	24,503	—	27,933

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.24: Characteristics of patients who received a PBS/RPBS-subsidised prescription for calcium-channel blockers, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	8,382	2,767	1,275	242	85	12,751
45–54 years	21,882	7,738	3,537	658	209	34,024
55–64 years	56,088	20,734	9,365	1,481	505	88,173
65–74 years	84,012	31,379	13,585	1,895	478	131,349
75–84 years	69,035	23,416	9,394	1,137	218	103,200
85+ years	17,056	5,009	1,975	224	39	24,303
Male total	**256,455**	**91,043**	**39,131**	**5,637**	**1,534**	**393,800**
Females						
0–44 years	6,939	2,290	1,163	215	74	10,681
45–54 years	17,950	6,343	3,097	570	199	28,159
55–64 years	53,566	19,996	8,870	1,313	419	84,164
65–74 years	94,162	34,400	14,626	1,834	431	145,453
75–84 years	107,325	34,916	13,888	1,547	307	157,983
85+ years	44,386	13,285	5,178	536	108	63,493
Female total	**324,328**	**111,230**	**46,822**	**6,015**	**1,538**	**489,933**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	15.5	16.2	15.8	11.8	7.6	15.6
Concessional ordinary	66.2	67.2	68.4	69.9	67.5	66.7
General safety net	3.9	3.1	3.2	4.0	5.1	3.7
General ordinary	7.0	5.4	5.4	8.7	14.4	6.5
RPBS safety net	1.6	1.8	1.4	0.7	0.5	1.6
RPBS ordinary	5.7	6.4	5.8	4.8	4.9	5.8

(a) Excludes 1,066 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.25: Rate of PBS/RPBS-subsidised prescriptions for calcium-channel blockers dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	874	1,200	1,123	633	956
45–54 years	12,046	14,802	13,724	9,496	12,785
55–64 years	48,486	57,791	52,697	36,493	50,971
65–74 years	171,357	174,569	159,012	123,696	170,346
75–84 years	236,833	229,384	211,378	171,196	232,040
85+ years	213,759	195,957	185,507	146,560	206,810
Males overall	**29,582**	**37,697**	**32,620**	**17,326**	**31,276**
Females					
0–44 years	754	1,016	1,089	668	835
45–54 years	10,510	13,101	13,955	10,049	11,431
55–64 years	51,232	61,240	60,107	44,725	54,428
65–74 years	180,276	191,589	187,237	154,337	183,726
75–84 years	278,841	283,886	281,894	241,448	280,298
85+ years	277,325	273,055	274,493	233,139	276,151
Females overall	**39,397**	**48,401**	**43,346**	**22,323**	**41,276**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.26: Prescriptions for calcium-channel blockers dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	5,317,515	1,836,311	794,666	135,817	25,952	8,110,261
2005–06	5,265,419	1,824,880	786,863	130,675	27,217	8,035,054
2006–07	5,269,898	1,834,380	783,835	130,759	29,516	8,048,388
2007–08	4,991,446	1,792,094	755,312	123,168	22,800	7,684,820
			Prescriptions per 100,000 population			
2004–05	38,610	46,430	41,417	28,361	—	40,300
2005–06	37,732	45,426	40,547	27,250	—	39,402
2006–07	37,211	44,901	39,843	27,211	—	38,890
2007–08	34,578	43,112	37,896	25,402	—	36,473

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.27: Characteristics of patients who received a PBS/RPBS-subsidised prescription for renin–angiotensin system agents, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	28,023	9,279	4,793	984	355	43,434
45–54 years	62,054	22,049	10,945	1,977	653	97,678
55–64 years	141,615	53,691	25,231	3,998	1,342	225,877
65–74 years	205,682	76,597	34,142	4,918	1,387	322,726
75–84 years	150,245	52,097	21,572	2,776	585	227,275
85+ years	36,717	11,528	4,544	531	95	53,415
Male total	**624,336**	**225,241**	**101,227**	**15,184**	**4,417**	**970,405**
Females						
0–44 years	23,409	8,181	4,196	837	319	36,942
45–54 years	59,895	20,852	10,333	1,783	598	93,461
55–64 years	150,765	56,010	24,987	3,642	1,149	236,553
65–74 years	217,591	78,320	33,601	4,334	1,057	334,903
75–84 years	204,146	66,790	26,530	3,140	605	301,211
85+ years	81,371	25,435	9,915	1,100	203	118,024
Female total	**737,177**	**255,588**	**109,562**	**14,836**	**3,931**	**1,121,094**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	12.0	12.8	12.3	9.4	5.6	12.2
Concessional ordinary	71.3	71.9	72.9	75.0	74.2	71.7
General safety net	4.1	3.2	3.4	4.4	4.3	3.9
General ordinary	6.3	5.0	5.2	6.7	11.0	5.9
RPBS safety net	1.2	1.4	1.1	0.6	0.3	1.2
RPBS ordinary	5.0	5.8	5.1	3.9	4.5	5.2

(a) Excludes 2,224 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.28: Rate of PBS/RPBS-subsidised prescriptions for renin–angiotensin system agents dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	3,695	4,910	5,051	3,107	4,057
45–54 years	43,902	52,448	52,795	37,002	46,688
55–64 years	150,809	179,189	168,347	118,980	159,109
65–74 years	488,834	492,885	459,384	366,484	485,968
75–84 years	598,702	586,565	558,185	471,850	591,288
85+ years	516,906	506,502	483,413	392,035	510,983
Males overall	**83,767**	**107,389**	**96,559**	**53,470**	**89,269**
Females					
0–44 years	3,253	4,628	4,802	3,063	3,668
45–54 years	43,225	51,993	54,828	38,905	46,311
55–64 years	169,709	199,841	195,874	144,427	179,224
65–74 years	494,405	513,556	504,193	420,273	500,146
75–84 years	627,305	640,767	628,720	561,749	630,814
85+ years	580,943	594,480	600,216	551,729	586,117
Females overall	**103,003**	**127,552**	**115,287**	**61,870**	**108,400**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.29: Prescriptions for renin–angiotensin system agents dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	13,866,110	4,768,093	2,100,872	419,862	85,808	21,240,745
2005–06	13,844,201	4,827,028	2,125,082	420,068	89,338	21,305,717
2006–07	13,158,503	4,695,722	2,043,415	417,017	82,860	20,397,517
2007–08	13,505,844	4,888,700	2,108,461	426,156	72,107	21,001,268
			Prescriptions per 100,000 population			
2004–05	100,681	120,559	109,495	87,675	—	105,544
2005–06	99,207	120,156	109,505	87,598	—	104,479
2006–07	92,912	114,939	103,869	86,782	—	98,560
2007–08	93,562	117,606	105,787	87,890	—	99,674

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.30: Characteristics of patients who received a PBS/RPBS-subsidised prescription for serum-lipid-reducing agents, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	Missing region	All regions
			Number of patients[(a)]			
Males						
0–44 years	64,496	14,786	7,547	1,740	729	89,298
45–54 years	142,627	39,413	19,143	3,841	1,546	206,570
55–64 years	232,206	72,090	33,443	5,845	2,355	345,939
65–74 years	205,796	70,396	30,967	4,573	1,365	313,097
75–84 years	137,452	44,130	17,484	2,243	460	201,769
85+ years	26,646	7,143	2,670	310	58	36,827
Male total	**809,223**	**247,958**	**111,254**	**18,552**	**6,513**	**1,193,500**
Females						
0–44 years	30,176	7,982	4,071	979	397	43,605
45–54 years	94,273	26,109	12,972	2,481	985	136,820
55–64 years	204,667	62,994	28,098	4,469	1,671	301,899
65–74 years	213,561	69,690	29,538	3,923	1,071	317,783
75–84 years	175,637	51,798	20,605	2,400	486	250,926
85+ years	48,269	12,261	4,638	547	86	65,801
Female total	**766,583**	**230,834**	**99,922**	**14,799**	**4,696**	**1,116,834**
			Patient entitlement category by remoteness area[(b)] (per cent)			
Concessional safety net	10.1	11.9	11.3	7.8	3.8	10.5
Concessional ordinary	50.0	54.0	53.6	49.0	41.0	51.1
General safety net	1.4	1.2	1.3	1.4	1.0	1.3
General ordinary	34.1	27.3	29.1	38.6	51.3	32.4
RPBS safety net	1.0	1.2	0.9	0.5	0.2	1.0
RPBS ordinary	3.4	4.3	3.8	2.7	2.7	3.6

(a) Excludes 2,070 patients with missing age or sex information.

(b) Percentages expressed as proportion of remoteness area total.

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.31: Rate of PBS/RPBS-subsidised prescriptions for serum-lipid-reducing agents dispensed, by remoteness area, age and sex, 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote	All regions
	Prescriptions per 100,000 population				
Males					
0–44 years	8,599	7,728	7,928	5,965	8,373
45–54 years	116,534	106,397	103,005	80,158	112,906
55–64 years	286,626	266,839	246,659	195,890	277,472
65–74 years	481,870	439,854	403,407	326,358	461,905
75–84 years	531,542	479,906	435,142	371,132	508,604
85+ years	376,461	313,187	280,455	233,888	352,811
Males overall	**106,437**	**116,045**	**103,961**	**64,134**	**107,584**
Females					
0–44 years	3,781	3,943	4,198	3,171	3,866
45–54 years	68,096	64,707	68,077	57,257	67,634
55–64 years	233,491	223,308	218,408	183,617	230,007
65–74 years	448,716	419,136	407,235	346,211	437,560
75–84 years	506,914	461,487	451,433	401,790	491,661
85+ years	335,337	275,218	269,631	257,746	316,660
Females overall	**99,023**	**106,374**	**97,011**	**57,212**	**99,747**

Note: Does not include medicines dispensed under Section 100 arrangements.

Source: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System.

Table A6.32: Prescriptions for serum-lipid-reducing agents dispensed, by remoteness area and year, 2004–05 to 2007–08

	Major cities	Inner regional	Outer regional	Remote and Very remote[(a)]	Missing region	Australia
			Number of prescriptions			
2004–05	11,703,154	3,613,795	1,559,790	295,146	68,111	17,239,996
2005–06	12,529,775	3,884,094	1,684,279	317,785	79,866	18,495,799
2006–07	13,484,672	4,178,346	1,813,998	352,286	94,637	19,923,939
2007–08	14,831,559	4,624,850	2,005,351	388,185	96,744	21,946,689
			Prescriptions per 100,000 population			
2004–05	84,976	91,373	81,294	61,632	—	85,665
2005–06	89,787	96,684	86,791	66,269	—	90,700
2006–07	95,216	102,275	92,207	73,312	—	96,272
2007–08	102,746	111,259	100,614	80,058	—	104,161

(a) *Remote* and *Very remote* areas include medicines supplied under Section 100 arrangements.

Sources: AIHW analysis of data supplied by the DoHA from the Pharmaceutical Benefits Data System; Medicare Australia.

Table A6.33: Medicines prescribed per 100 problems managed, by ATC medicine class, problem type and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
ATC medicine class	**Problem managed**	**Medicines prescribed per 100 problems managed (95% CI)**				
B01—Antithrombotic medicines	Any cardiovascular or lipid problem	5.5 (5.3–5.8)	6.4 (5.9–6.9)	7.0 (6.0–8.0)	5.9 (4.3–7.6)	5.9 (5.6–6.1)
	Hypertension	0.4 (0.3–0.4)	0.4 (0.3–0.5)	0.5 (0.3–0.7)	0.3 (—)	0.4 (0.3–0.4)
	Ischaemic heart disease	13.1 (12.0–14.3)	11.7 (9.8–13.6)	13.0 (10.0–16.0)	11.6 (4.4–18.7)	12.8 (11.9–13.8)
	Lipid disorders	0.1 (0.0–0.1)	0.1 (0.0–0.3)	—	—	0.1 (0.0–0.1)
C01—Cardiac therapy medicines	Any cardiovascular or lipid problem	3.3 (3.1–3.5)	3.8 (3.5–4.1)	3.9 (3.4–4.5)	3.6 (2.2–4.9)	3.5 (3.3–3.6)
	Hypertension	0.4 (0.4–0.5)	0.3 (0.2–0.4)	0.5 (0.3–0.7)	0.4 (0.0–1.2)	0.4 (0.4–0.5)
	Ischaemic heart disease	28.4 (26.4–30.5)	31.3 (28.4–34.1)	28.9 (24.1–33.7)	29.5 (19.3–39.7)	29.3 (27.7–30.9)
	Lipid disorders	0.0 (0.0–0.1)	—	0.1 (—)	—	0.0 (0.0–0.1)
C02—Antihypertensive medicines	Any cardiovascular or lipid problem	0.9 (0.8–1.0)	1.0 (0.8–1.1)	0.9 (0.7–1.1)	1.4 (0.5–2.4)	0.9 (0.8–1.0)
	Hypertension	1.7 (1.5–1.8)	2.0 (1.7–2.3)	1.7 (1.3–2.1)	2.6 (0.4–4.7)	1.7 (1.6–1.9)
	Ischaemic heart disease	0.1 (0.0–0.2)	0.2 (0.0–0.5)	0.2 (—)	—	0.2 (0.0–0.3)
	Lipid disorders	0.0 (0.0–0.1)	—	—	—	0.0 (0.0–0.1)

(continued)

Table A6.33 (continued): Medicines prescribed per 100 problems managed, by ATC medicine class, problem type and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
ATC medicine class	**Problem managed**	**Medicines prescribed per 100 problems managed (95% CI)**				
C03—Diuretic medicines	Any cardiovascular or lipid problem	5.4 (5.2–5.7)	5.8 (5.4–6.2)	6.4 (5.7–7.2)	7.7 (4.7–10.6)	5.6 (5.4–5.8)
	Hypertension	6.3 (5.9–6.6)	6.3 (5.7–6.9)	7.4 (6.4–8.5)	9.1 (3.7–14.4)	6.5 (6.2–6.8)
	Ischaemic heart disease	3.3 (2.7–4.0)	3.1 (2.1–4.0)	3.6 (1.6–5.5)	3.2 (0.0–6.7)	3.3 (2.8–3.8)
	Lipid disorders	0.0 (0.0–0.1)	—	—	—	0.0 (0.0–0.1)
C07—Beta-blocking agents	Any cardiovascular or lipid problem	7.3 (7.0–7.6)	8.0 (7.5–8.5)	8.4 (7.6–9.1)	7.1 (5.4–8.9)	7.5 (7.3–7.8)
	Hypertension	10.5 (10.1–11.0)	11.2 (10.4–12.0)	11.9 (10.7–13.1)	8.7 (5.6–11.7)	10.8 (10.4–11.1)
	Ischaemic heart disease	13.5 (12.3–14.6)	15.8 (13.7–17.9)	12.2 (9.3–15.0)	21.1 (9.9–32.2)	14.0 (13.0–15.0)
	Lipid disorders	0.0 (0.0–0.1)	—	0.3 (0.0–0.6)	—	0.0 (0.0–0.1)
C08—Calcium-channel blockers	Any cardiovascular or lipid problem	9.3 (9.0–9.6)	9.0 (8.5–9.5)	9.7 (8.9–10.5)	9.4 (7.2–11.6)	9.3 (9.0–9.5)
	Hypertension	17.3 (16.7–17.9)	17.5 (16.5–18.5)	18.1 (16.6–19.6)	19.3 (14.7–23.9)	17.4 (16.9–17.9)
	Ischaemic heart disease	7.4 (6.5–8.2)	6.3 (5.0–7.6)	6.3 (4.2–8.3)	1.1 (—)	6.9 (6.3–7.6)
	Lipid disorders	0.1 (0.0–0.1)	—	—	—	0.0 (0.0–0.1)

(continued)

Table A6.33 (continued): Medicines prescribed per 100 problems managed, by ATC medicine class, problem type and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
ATC medicine class	**Problem managed**	**Medicines prescribed per 100 problems managed (95% CI)**				
C09—Renin–angiotensin system agents	Any cardiovascular or lipid problem	27.4 (26.8–28.0)	26.2 (25.2–27.1)	27.9 (26.3–29.5)	25.0 (21.2–28.9)	27.2 (26.7–27.7)
	Hypertension	51.8 (50.8–52.8)	51.0 (49.3–52.6)	52.4 (49.6–55.1)	47.5 (40.5–54.6)	51.6 (50.8–52.5)
	Ischaemic heart disease	13.3 (12.1–14.5)	11.4 (9.5–13.2)	15.7 (12.2–19.2)	15.8 (6.2–25.4)	13.1 (12.1–14.1)
	Lipid disorders	0.1 (0.1–0.2)	0.2 (0.1–0.4)	0.2 (0.0–0.5)	0.4 (—)	0.2 (0.1–0.2)
C10—Serum-lipid-reducing agents	Any cardiovascular or lipid problem	13.7 (13.3–14.1)	12.7 (12.2–13.3)	13.1 (12.1–14.1)	12.3 (9.8–14.8)	13.4 (13.1–13.7)
	Hypertension	2.1 (1.9–2.4)	1.6 (1.3–1.9)	1.9 (1.4–2.5)	1.6 (0.5–2.6)	2.0 (1.9–2.2)
	Ischaemic heart disease	16.8 (15.4–18.3)	20.3 (17.6–22.9)	18.9 (15.1–22.7)	20.0 (11.0–29.0)	17.9 (16.7–19.1)
	Lipid disorders	63.7 (62.3–65.0)	64.7 (62.5–66.9)	63.1 (59.5–66.7)	59.9 (51.3–68.6)	63.8 (62.7–64.9)

Note: Sum of sample size for regions is less than total for Australia.

Source: BEACH survey.

Table A6.34: Number of employed primary health-care medical practitioners and general practitioners per 100,000 population, by remoteness area, 2007 and 2006–07

	Major cities	Inner regional	Outer regional	Remote and Very remote
			Number per 100,000 population	
Primary health-care practitioners (AIHW estimates, 2007 data)	113	95	89	108
General practitioners (Medicare estimates, 2006–07 data)	124	117	116	184

Notes

1. AIHW data refer to primary health-care practitioners (mostly GPs) who spent most of their working hours in a clinical role.
2. Medicare data refer to general practitioners who billed Medicare at least once in 2006–07.
3. Care should be taken when interpreting AIHW 2007 figures for *Remote* and *Very remote* areas owing to the relatively small number of employed medical practitioners who stated that their main job was located in this region and the low response rate for the Northern Territory in 2007 (27.1%).

Sources: AIHW 2009a; DoHA 2008a.

Table A6.35: Supply of employed primary health-care medical practitioners and general practitioners 2007 and 2006–07, by remoteness area

	Major cities	Inner regional	Outer regional	Remote	Very remote
Full time equivalent (based on 45-hour week) per 100,000 population[(a)]	95	85	84	106[(c)]	
Full-time workload equivalent per 100,000 population[(b)]	97	83	74	68	47

(a) Based on AIHW 2007 estimates. Based on primary health-care practitioner working a 45-hour week. These data aggregate *Remote* and *Very remote* areas together.

(b) Based on Medicare 2006–07 estimates. Full-time workload equivalent is calculated by dividing each doctor's Medicare billing by the average billing of full-time doctors for the year. A GP with 50% of the average billing for full-time doctors is counted as 0.5, a doctor billing at the average is counted as one, and a doctor billing at 150% of the average is counted as 1.5.

(c) This estimate is for the combined *Remote* and *Very remote* areas.

Notes

1. AIHW data refer to primary health-care practitioners (mostly GPs) who spent most of their working hours in a clinical role. Medicare data refer to general practitioners who billed Medicare at least once in 2006–07.
2. Care should be taken when interpreting AIHW 2007 figures for *Remote* and *Very remote* areas owing to the relatively small number of employed medical practitioners who stated that their main job was located in this region and the low response rate for the Northern Territory in 2007 (27.1%).

Sources: AIHW 2009a; DoHA 2008a

Table A6.36: Region of residence for patient compared with region of GP practice for patients with a cardiovascular or lipid problem, 2004–2008

		Region of practice				
		Major cities	Inner regional	Outer regional	Remote	Very remote
		Percentage of row[(a)]				
Region of patient	Major cities	**98.9**	0.8	0.2	0.0	0.0
	Inner regional	7.2	**91.3**	1.4	0.1	0.0
	Outer regional	1.9	7.3	**89.9**	0.5	0.3
	Remote	3.8	2.4	7.9	**84.7**	1.2
	Very remote	1.8	1.3	5.8	3.8	**87.4**

(a) Percentages may not sum to 100 because of cases with missing region data.

Source: BEACH survey.

Table A6.37: Number of registered and enrolled nurses per 100,000 population, by remoteness area, 2007

	Major cities	Inner regional	Outer regional	Remote	Very remote
Nurses per 100,000 population	1,144	1,331	1,269	1,281	1,040

Source: AIHW 2009b.

Table A6.38: Number of Aboriginal and Torres Strait Islander health workers per 100,000 population, by remoteness area, 2006

	Major cities	Inner regional	Outer regional	Remote	Very remote
Aboriginal and Torres Strait Islander health workers per 100,000 population	1	4	10	50	190

Source: ABS Census of Population and Housing.

Table A6.39: Proportion of the Australian population with a DVA Health Repatriation Card, 2008

Age (years)	<55	55–59	60–64	65–69	70–74	75–79	80–84	85+	Total
DVA card type	Percentage of Australian population								
Gold	0.0	0.6	1.7	1.0	1.7	4.2	15.9	24.2	**1.1**
White	0.1	0.5	0.6	0.3	0.2	0.3	1.6	1.7	**0.2**
Total	**0.2**	**1.2**	**2.3**	**1.3**	**1.9**	**4.5**	**17.5**	**25.8**	**1.3**

Note: As at 28 June 2008

Source: DVA 2008.

Table A6.40: GP encounters where any cardiovascular or lipid problem was managed, per 100 encounters, by age, sex and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
				Number per 100 encounters		
Males	0–24 years	1.0 (0.9–1.1)	1.0 (0.8–1.3)	0.9 (0.5–1.2)	2.4 (1.4–3.4)	1.0 (0.9–1.1)
	25–34 years	4.9 (4.5–5.3)	5.3 (4.4–6.2)	6.0 (4.6–7.3)	7.2 (4.1–10.2)	5.1 (4.7–5.4)
	35–44 years	11.0 (10.4–11.5)	11.1 (10.1–12.1)	11.9 (10.3–13.4)	14.3 (10.3–18.4)	11.1 (10.7–11.6)
	45–54 years	21.3 (20.6–22.0)	20.5 (19.2–21.8)	18.7 (17.1–20.3)	24.6 (20.6–28.6)	21.0 (20.4–21.5)
	55–64 years	31.2 (30.5–32.0)	29.8 (28.5–31.1)	28.7 (26.8–30.7)	29.2 (25.1–33.3)	30.6 (29.9–31.2)
	65–74 years	38.1 (37.2–39.0)	36.0 (34.5–37.4)	35.2 (33.0–37.5)	34.3 (29.4–39.3)	37.2 (36.5–37.9)
	75–84 years	39.1 (38.1–40.1)	35.4 (33.7–37.0)	32.9 (30.6–35.2)	37.0 (29.7–44.3)	37.6 (36.8–38.4)
	85+ years	34.6 (33.0–36.2)	31.9 (29.3–34.5)	33.1 (28.8–37.4)	36.2 (21.8–50.7)	33.9 (32.6–35.2)
	Males overall	**19.7 (19.3–20.1)**	**20.9 (20.2–21.6)**	**19.7 (18.7–20.8)**	**19.5 (17.2–21.8)**	**19.9 (19.5–20.2)**
Females	0–24 years	1.0 (0.9–1.2)	1.3 (1.1–1.6)	0.7 (0.5–0.9)	0.7 (0.2–1.1)	1.1 (1.0–1.2)
	25–34 years	3.1 (2.8–3.3)	3.4 (2.9–3.9)	3.4 (2.6–4.1)	3.3 (2.1–4.5)	3.1 (2.9–3.3)
	35–44 years	6.9 (6.6–7.3)	6.9 (6.3–7.6)	7.6 (6.6–8.6)	9.1 (6.9–11.3)	7.0 (6.7–7.3)
	45–54 years	15.7 (15.2–16.2)	15.4 (14.5–16.3)	16.0 (14.6–17.5)	17.3 (13.6–20.9)	15.7 (15.2–16.1)
	55–64 years	26.8 (26.2–27.5)	27.0 (25.8–28.1)	26.6 (24.9–28.4)	25.9 (21.4–30.3)	26.8 (26.2–27.3)
	65–74 years	35.6 (34.8–36.4)	33.6 (32.2–35.0)	33.8 (31.7–36.0)	33.3 (28.0–38.7)	34.8 (34.2–35.5)
	75–84 years	38.3 (37.4–39.2)	37.8 (36.3–39.2)	36.3 (34.1–38.5)	38.2 (31.8–44.6)	38.0 (37.3–38.7)
	85+ years	35.2 (33.8–36.5)	31.4 (29.3–33.5)	32.3 (28.5–36.1)	39.8 (30.8–48.8)	34.2 (33.1–35.3)
	Females overall	**17.1 (16.7–17.4)**	**18.1 (17.5–18.7)**	**17.3 (16.3–18.3)**	**14.4 (12.5–16.3)**	**17.2 (16.9–17.5)**
Persons	0–24 years	1.0 (1.0–1.1)	1.2 (1.0–1.4)	0.8 (0.6–1.0)	1.4 (0.9–2.0)	1.1 (1.0–1.1)
	25–34 years	3.7 (3.5–3.9)	4.0 (3.5–4.4)	4.2 (3.5–4.9)	4.6 (3.3–5.9)	3.8 (3.6–4.0)
	35–44 years	8.5 (8.2–8.8)	8.4 (7.9–9.0)	9.3 (8.4–10.2)	11.2 (9.1–13.3)	8.6 (8.3–8.8)
	45–54 years	18.0 (17.5–18.4)	17.4 (16.6–18.2)	17.1 (16.0–18.2)	20.7 (17.8–23.7)	17.8 (17.4–18.2)
	55–64 years	28.7 (28.2–29.3)	28.2 (27.3–29.1)	27.6 (26.1–29.1)	27.5 (24.2–30.9)	28.4 (28.0–28.9)
	65–74 years	36.7 (36.0–37.3)	34.6 (33.5–35.8)	34.5 (32.8–36.2)	33.8 (29.6–38.0)	35.9 (35.3–36.4)
	75–84 years	38.6 (37.9–39.4)	36.8 (35.5–38.0)	34.8 (32.9–36.6)	37.6 (31.7–43.5)	37.8 (37.2–38.4)
	85+ years	35.0 (33.8–36.1)	31.6 (29.9–33.3)	32.6 (29.5–35.8)	38.5 (29.5–47.4)	34.1 (33.2–35.0)
	Persons overall	**18.1 (17.8–18.5)**	**19.3 (18.7–19.8)**	**18.3 (17.4–19.2)**	**16.7 (14.8–18.5)**	**18.3 (18.0–18.6)**
Sample size: Number of encounters		**328,676**	**93,696**	**41,692**	**8,475**	**482,553**

Note: Sum of sample sizes for regions is less than for total for Australia. Cells marked '—' indicate where a rate could not be calculated, or was rounded to zero.

Source: BEACH survey.

Table A6.41: GP encounters where hypertension was managed, per 100 encounters, by age, sex and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
				Number per 100 encounters		
Males	0–24 years	0.2 (0.1–0.2)	0.2 (0.1–0.2)	0.2 (0.1–0.4)	0.6 (0.1–1.1)	0.2 (0.1–0.2)
	25–34 years	1.7 (1.5–1.9)	2.1 (1.5–2.7)	2.2 (1.3–3.0)	3.6 (1.4–5.8)	1.8 (1.6–2.0)
	35–44 years	4.5 (4.2–4.9)	5.1 (4.4–5.8)	5.1 (4.1–6.0)	7.1 (4.3–9.9)	4.7 (4.5–5.0)
	45–54 years	11.2 (10.7–11.8)	10.9 (10.0–11.8)	10.0 (8.7–11.2)	12.9 (10.1–15.8)	11.1 (10.7–11.5)
	55–64 years	17.4 (16.8–18.1)	15.7 (14.7–16.7)	15.4 (13.9–16.9)	14.0 (10.8–17.2)	16.8 (16.2–17.3)
	65–74 years	20.7 (20.0–21.5)	18.2 (17.1–19.3)	19.0 (17.2–20.8)	16.9 (12.7–21.2)	19.9 (19.3–20.5)
	75–84 years	19.7 (18.9–20.5)	14.7 (13.5–15.8)	14.7 (13.0–16.4)	12.7 (6.7–18.7)	18.0 (17.4–18.7)
	85+ years	14.1 (13.0–15.3)	10.6 (8.9–12.3)	13.6 (10.4–16.9)	18.8 (8.6–29.1)	13.4 (12.5–14.3)
	Males overall	**10.0 (9.7–10.3)**	**10.0 (9.5–10.5)**	**9.8 (9.1–10.5)**	**9.1 (7.4–10.8)**	**10.0 (9.7–10.2)**
Females	0–24 years	0.1 (0.1–0.2)	0.2 (0.1–0.3)	0.1 (0.0–0.2)	0.1 (—)	0.1 (0.1–0.2)
	25–34 years	0.7 (0.6–0.8)	1.1 (0.8–1.3)	1.1 (0.7–1.6)	0.9 (0.3–1.6)	0.8 (0.7–0.9)
	35–44 years	2.8 (2.6–3.0)	2.9 (2.5–3.3)	3.5 (2.9–4.2)	4.4 (2.8–5.9)	2.9 (2.7–3.1)
	45–54 years	7.9 (7.5–8.2)	8.3 (7.6–9.0)	8.5 (7.4–9.7)	9.5 (6.7–12.4)	8.0 (7.7–8.3)
	55–64 years	15.1 (14.5–15.6)	15.2 (14.2–16.1)	14.9 (13.5–16.2)	14.5 (10.3–18.7)	15.0 (14.6–15.5)
	65–74 years	21.4 (20.8–22.1)	20.4 (19.2–21.7)	19.8 (17.9–21.6)	17.8 (13.7–21.9)	20.9 (20.4–21.5)
	75–84 years	22.0 (21.2–22.7)	20.8 (19.6–22.1)	18.8 (16.9–20.7)	22.6 (16.2–29.0)	21.4 (20.8–22.0)
	85+ years	17.8 (16.7–18.9)	14.6 (13.1–16.1)	15.4 (12.5–18.2)	21.2 (12.4–30.1)	17.0 (16.1–17.8)
	Females overall	**9.2 (8.9–9.5)**	**9.8 (9.4–10.3)**	**9.2 (8.5–9.9)**	**7.7 (6.0–9.3)**	**9.3 (9.1–9.5)**
Persons	0–24 years	0.1 (0.1–0.2)	0.2 (0.1–0.3)	0.2 (0.1–0.2)	0.3 (0.1–0.6)	0.2 (0.1–0.2)
	25–34 years	1.1 (1.0–1.2)	1.4 (1.1–1.6)	1.5 (1.1–1.9)	1.8 (0.9–2.7)	1.2 (1.1–1.3)
	35–44 years	3.4 (3.3–3.6)	3.7 (3.4–4.1)	4.1 (3.6–4.7)	5.5 (3.9–7.0)	3.6 (3.4–3.8)
	45–54 years	9.2 (8.9–9.5)	9.3 (8.7–9.9)	9.1 (8.2–10.0)	11.1 (8.8–13.5)	9.3 (9.0–9.5)
	55–64 years	16.1 (15.6–16.6)	15.4 (14.6–16.2)	15.1 (14.0–16.2)	14.2 (11.3–17.2)	15.8 (15.4–16.2)
	65–74 years	21.1 (20.6–21.7)	19.4 (18.5–20.4)	19.4 (17.9–20.9)	17.4 (14.1–20.7)	20.5 (20.0–20.9)
	75–84 years	21.0 (20.4–21.7)	18.2 (17.3–19.2)	16.9 (15.5–18.4)	17.6 (12.0–23.3)	20.0 (19.5–20.5)
	85+ years	16.6 (15.7–17.5)	13.2 (12.0–14.4)	14.7 (12.3–17.1)	20.3 (13.1–27.6)	15.8 (15.1–16.5)
	Persons overall	**9.5 (9.3–9.8)**	**9.9 (9.5–10.3)**	**9.5 (8.8–10.1)**	**8.3 (6.8–9.9)**	**9.6 (9.4–9.8)**
Sample size: Number of encounters		**328,676**	**93,696**	**41,692**	**8,475**	**482,553**

Note: Sum of sample sizes for regions is less than for total for Australia. Cells marked '—' indicate where a rate could not be calculated, or was rounded to zero.

Source: BEACH survey.

Table A6.42: GP encounters where ischaemic heart disease was managed, per 100 encounters, by age, sex and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
				Number per 100 encounters		
Males	0–24 years	—	—	—	—	—
	25–34 years	0.1 (0.0–0.1)	0.2 (0.0–0.4)	0.4 (0.1–0.8)	1.0 (0.0–2.0)	0.1 (0.1–0.2)
	35–44 years	0.4 (0.3–0.5)	0.4 (0.2–0.6)	0.9 (0.3–1.5)	0.4 (—)	0.4 (0.3–0.5)
	45–54 years	1.2 (1.0–1.4)	1.2 (0.8–1.5)	1.3 (0.8–1.7)	1.5 (0.4–2.5)	1.2 (1.1–1.3)
	55–64 years	2.5 (2.3–2.8)	2.7 (2.3–3.1)	2.7 (2.1–3.3)	3.2 (1.9–4.6)	2.6 (2.4–2.8)
	65–74 years	4.1 (3.8–4.5)	4.2 (3.6–4.7)	4.2 (3.3–5.0)	2.9 (1.4–4.5)	4.1 (3.9–4.4)
	75–84 years	4.7 (4.3–5.1)	5.1 (4.4–5.8)	4.5 (3.4–5.5)	4.0 (1.8–6.2)	4.8 (4.4–5.1)
	85+ years	4.4 (3.7–5.0)	4.7 (3.6–5.9)	5.5 (3.5–7.5)	1.5 (—)	4.5 (4.0–5.0)
	Males overall	**1.8 (1.7–1.9)**	**2.2 (2.0–2.3)**	**2.1 (1.8–2.4)**	**1.6 (1.2–2.0)**	**1.9 (1.8–1.9)**
Females	0–24 years	—	—	—	—	—
	25–34 years	—	—	—	—	—
	35–44 years	0.1 (0.0–0.1)	0.1 (0.1–0.2)	0.1 (0.0–0.2)	0.4 (0.0–0.9)	0.1 (0.1–0.1)
	45–54 years	0.4 (0.3–0.4)	0.3 (0.2–0.5)	0.5 (0.3–0.8)	1.3 (0.3–2.3)	0.4 (0.3–0.4)
	55–64 years	0.8 (0.6–0.9)	1.0 (0.8–1.2)	0.9 (0.5–1.2)	0.5 (0.0–1.1)	0.8 (0.7–0.9)
	65–74 years	1.7 (1.5–1.9)	2.0 (1.7–2.4)	1.6 (1.1–2.0)	2.3 (0.8–3.8)	1.7 (1.6–1.9)
	75–84 years	2.8 (2.5–3.1)	2.8 (2.4–3.3)	3.2 (2.4–4.0)	2.3 (0.5–4.2)	2.8 (2.6–3.1)
	85+ years	3.3 (2.8–3.7)	3.4 (2.7–4.1)	3.6 (2.2–5.0)	2.7 (0.0–5.6)	3.3 (3.0–3.7)
	Females overall	**0.8 (0.8–0.9)**	**1.0 (0.9–1.1)**	**0.9 (0.7–1.1)**	**0.8 (0.4–1.1)**	**0.9 (0.8–0.9)**
Persons	0–24 years	—	—	—	—	—
	25–34 years	0.0 (0.0–0.1)	0.1 (0.0–0.1)	0.2 (0.0–0.3)	0.4 (0.0–0.7)	0.1 (0.0–0.1)
	35–44 years	0.2 (0.1–0.2)	0.2 (0.1–0.3)	0.4 (0.2–0.7)	0.4 (0.0–0.8)	0.2 (0.2–0.3)
	45–54 years	0.7 (0.6–0.8)	0.7 (0.5–0.8)	0.8 (0.6–1.1)	1.4 (0.6–2.2)	0.7 (0.6–0.8)
	55–64 years	1.5 (1.4–1.6)	1.7 (1.5–2.0)	1.7 (1.4–2.0)	1.9 (1.1–2.6)	1.6 (1.5–1.7)
	65–74 years	2.7 (2.6–2.9)	3.0 (2.6–3.3)	2.8 (2.3–3.3)	2.6 (1.5–3.7)	2.8 (2.6–2.9)
	75–84 years	3.6 (3.4–3.8)	3.8 (3.4–4.2)	3.8 (3.1–4.5)	3.2 (1.6–4.7)	3.6 (3.4–3.8)
	85+ years	3.6 (3.2–4.0)	3.9 (3.2–4.5)	4.3 (3.0–5.6)	2.2 (0.1–4.3)	3.7 (3.4–4.0)
	Persons overall	**1.2 (1.1–1.3)**	**1.5 (1.4–1.6)**	**1.4 (1.2–1.6)**	**1.1 (0.8–1.4)**	**1.3 (1.2–1.3)**
Sample size: Number of encounters		**328,676**	**93,696**	**41,692**	**8,475**	**482,553**

Note: Sum of sample sizes for regions is less than for total for Australia. Cells marked '—' indicate where a rate could not be calculated, or was rounded to zero.

Source: BEACH survey.

Table A6.43: GP encounters where lipid disorders were managed, per 100 encounters, by age, sex and remoteness area, 2004–2008

		Major cities	Inner regional	Outer regional	Remote and Very remote	Australia
		Number per 100 encounters				
Males	0–24 years	0.1 (0.1–0.1)	—	0.1 (0.0–0.2)	—	0.1 (0.1–0.1)
	25–34 years	1.1 (0.9–1.2)	1.0 (0.7–1.4)	1.4 (0.7–2.1)	1.0 (0.0–2.0)	1.1 (0.9–1.2)
	35–44 years	3.4 (3.1–3.7)	3.3 (2.7–3.9)	3.2 (2.5–4.0)	4.8 (2.5–7.0)	3.4 (3.1–3.6)
	45–54 years	6.3 (5.9–6.7)	5.1 (4.4–5.8)	4.2 (3.4–5.0)	4.1 (2.2–5.9)	5.8 (5.5–6.1)
	55–64 years	7.9 (7.5–8.3)	7.7 (7.0–8.4)	7.2 (6.2–8.3)	6.9 (4.4–9.4)	7.8 (7.4–8.1)
	65–74 years	7.6 (7.2–8.1)	6.2 (5.5–6.9)	6.5 (5.3–7.6)	6.6 (3.9–9.2)	7.1 (6.8–7.5)
	75–84 years	5.2 (4.8–5.6)	4.2 (3.5–4.8)	3.7 (2.7–4.6)	4.7 (0.5–8.9)	4.8 (4.5–5.1)
	85+ years	1.8 (1.4–2.2)	1.1 (0.5–1.6)	1.4 (0.5–2.3)	1.5 (—)	1.6 (1.3–1.9)
	Males overall	**4.1 (3.9–4.3)**	**4.0 (3.7–4.2)**	**3.8 (3.4–4.2)**	**3.7 (2.6–4.8)**	**4.0 (3.9–4.2)**
Females	0–24 years	0.1 (0.1–0.1)	0.1 (0.0–0.2)	—	—	0.1 (0.1–0.1)
	25–34 years	0.4 (0.3–0.5)	0.2 (0.1–0.3)	0.3 (0.1–0.5)	0.4 (0.0–0.8)	0.4 (0.3–0.4)
	35–44 years	1.3 (1.1–1.4)	0.9 (0.6–1.1)	1.2 (0.8–1.6)	1.9 (0.7–3.1)	1.2 (1.1–1.3)
	45–54 years	3.8 (3.6–4.1)	3.1 (2.7–3.5)	3.5 (2.8–4.1)	3.4 (1.7–5.0)	3.6 (3.4–3.8)
	55–64 years	7.2 (6.9–7.6)	6.6 (6.0–7.2)	7.5 (6.4–8.5)	7.2 (4.9–9.6)	7.1 (6.8–7.4)
	65–74 years	7.6 (7.2–8.0)	6.2 (5.5–6.8)	6.2 (5.2–7.2)	6.9 (4.6–9.3)	7.1 (6.8–7.5)
	75–84 years	5.4 (5.0–5.7)	4.3 (3.7–4.9)	3.5 (2.8–4.3)	7.6 (4.1–11.2)	5.0 (4.7–5.3)
	85+ years	2.1 (1.8–2.4)	1.6 (1.1–2.1)	0.8 (0.3–1.4)	0.9 (—)	1.9 (1.6–2.1)
	Females overall	**3.3 (3.1–3.4)**	**3.0 (2.8–3.2)**	**3.0 (2.7–3.3)**	**2.9 (2.2–3.7)**	**3.2 (3.1–3.3)**
Persons	0–24 years	0.1 (0.1–0.1)	0.1 (0.0–0.1)	0.1 (0.0–0.1)	—	0.1 (0.1–0.1)
	25–34 years	0.6 (0.6–0.7)	0.5 (0.3–0.6)	0.7 (0.4–1.0)	0.6 (0.1–1.1)	0.6 (0.5–0.7)
	35–44 years	2.1 (1.9–2.2)	1.8 (1.5–2.0)	2.0 (1.6–2.4)	3.1 (1.8–4.4)	2.0 (1.9–2.2)
	45–54 years	4.8 (4.6–5.1)	3.9 (3.5–4.3)	3.8 (3.2–4.3)	3.7 (2.5–4.9)	4.5 (4.3–4.7)
	55–64 years	7.5 (7.2–7.8)	7.1 (6.6–7.6)	7.4 (6.5–8.2)	7.1 (5.2–9.0)	7.4 (7.2–7.7)
	65–74 years	7.6 (7.3–8.0)	6.2 (5.7–6.7)	6.3 (5.5–7.1)	6.7 (4.6–8.9)	7.1 (6.9–7.4)
	75–84 years	5.3 (5.0–5.6)	4.3 (3.8–4.7)	3.6 (2.9–4.3)	6.2 (2.7–9.6)	4.9 (4.7–5.2)
	85+ years	2.0 (1.8–2.3)	1.4 (1.0–1.8)	1.0 (0.6–1.5)	1.1 (—)	1.8 (1.6–2.0)
	Persons overall	**3.6 (3.5–3.7)**	**3.4 (3.2–3.6)**	**3.3 (3.0–3.6)**	**3.3 (2.4–4.1)**	**3.5 (3.4–3.6)**
Sample size: Number of encounters		**328,676**	**93,696**	**41,692**	**8,475**	**482,553**

Note: Sum of sample sizes for regions is less than for total for Australia. '—' indicates where a rate could not be calculated, or was rounded to zero.

Source: BEACH survey.

Table A6.44: Number of Medicare-subsidised GP attendances, by region, 2004–05 to 2007–08

Region	Males	Females	Total
		Number of attendances	
Major cities	120,703,593	166,903,518	**287,607,110**
Inner regional	29,544,693	41,043,135	**70,587,828**
Outer regional	13,859,830	18,313,085	**32,172,915**
Remote and Very remote	2,639,328	3,363,257	**6,002,585**
Total	**166,747,445**	**229,622,994**	**396,370,439**

Source: MBS/Medicare.

Table A6.45: Primary health-care services provided by GPs, nurses and Aboriginal and Torres Strait health workers, by remoteness area of patient, 2007–08

Service name	MBS group	MBS Item number	Major cities	Inner regional	Outer regional	Remote and Very remote	Not stated	Total
			Number of services					
GP attendances	A1, A2, A22, A23	All	75,235,881	18,716,445	8,405,021	1,542,709	30,343	**103,930,400**
GP management plan/ team care arrangement	A15	All	1,491,072	461,050	171,593	31,194	467	**2,155,376**
Domiciliary medication management review	A17	All	51,006	16,799	6,984	775	25	**75,590**
Diabetes cycle of care	A18, A19	All	166,105	60,326	25,221	3,527	40	**255,220**
Health-care assessment of older person	A14	700 and 702	189,881	65,659	24,334	2,139	45	**282,057**
Older Aboriginal or Torres Strait Islander health check	A14	704 and 706	778	770	1,037	1,713		**4,298**
Aboriginal or Torres Strait Islander child health check	A14	708	1,506	1,703	3,086	6,207	1	**12,504**
Aboriginal and Torres Strait Islander adult health check	A14	710	2,448	2,722	3,724	6,552	1	**15,446**
Health-care assessment of aged care facility resident	A14	712	40,347	11,764	4,715	651	18	**57,495**
45-year old health check	A14	717	75,694	24,507	8,753	1,388	32	**110,373**
Total GP services			**77,254,717**	**19,361,745**	**8,654,469**	**1,596,856**	**30,973**	**106,898,760**
Nurse/ Aboriginal health worker-provided service	M2	10997	65,124	33,742	15,328	1,590	35	**115,819**
Aboriginal/ Torres Strait Islander Health service provided by eligible Aboriginal health worker for chronic and complex condition	M3	10950		63	8	10		**81**

Note: Columns may not sum to totals because of rounding.

Source: MBS/Medicare.

Table A6.46: Primary health-care attendances per 1,000 population, by service type and remoteness area, 2007–08

MBS service	MBS group	MBS Item number	Major cities	Inner regional	Outer regional	Remote	Very remote
			Attendances per 1,000 population				
GP attendance	A1, A2, A22, A23	All	5,212	4,503	4,217	3,497	2,584
GP management plan/ team care arrangement	A15	All	103	111	86	69	56
Nurse/ Aboriginal health worker-provided service	M2	10997	5	8	8	3	3
Aboriginal/ Torres Strait Islander Health service provided by eligible Aboriginal health worker for chronic and complex condition	M3	10950	0.00	0.02	0.00	0.03	0.01
Domiciliary medication management review	A17	All	4	4	4	2	1
Diabetes cycle of care	A18, A19	All	12	15	13	8	5
Health-care assessment of older person[(a)]	A14	700 and 702	215	225	203	138	115
45-year old health check[(b)]	A14	717	74	79	58	41	35
Health-care assessment of aged care facility resident[(c)]	A14	712	22	19	17	16	16
Health-care assessments for Indigenous Australians							
Older Aboriginal or Torres Strait Islander health check[(d)]	A14	704 and 706	65	91	112	216	135
Aboriginal or Torres Strait Islander child health check[(e)]	A14	708	24	39	70	155	128
Aboriginal and Torres Strait Islander adult health check[(f)]	A14	710	26	47	62	113	78

(a) Population rates calculated on people aged 75 years and over only.

(b) Population rates calculated on people aged 45–49 years old only.

(c) Population rates calculated on people aged 65 years and over only.

(d) Population rates calculated on Indigenous people aged 55 years and over only.

(e) Population rates calculated on Indigenous people aged 0–14 years only.

(f) Population rates calculated on Indigenous people aged 15–54 years only.

Source: MBS/ Medicare.

Table A6.47: GP attendances for cardiovascular and lipid disorders, by sex, remoteness area and condition type, 2004–05 to 2007–08

		Major cities	Inner regional	Outer regional	Remote and Very remote
		GP attendances per 100,000 population[(a)] (95% CI)			
All circulatory and lipid disorders	Males	82,083	64,525	61,027	60,295
		(79,511–84,662)	(60,820–68,232)	(55,734–66,318)	(48,330–72,260)
	Females	85,737	71,862	70,367	68,508
		(83,186–88,290)	(67,923–75,804)	(64,429–76,313)	(55,334–81,687)
	Persons	84,048	68,381	65,874	64,562
		(82,061–86,040)	(65,464–71,298)	(61,515–70,237)	(54,525–74,600)
Hypertension	Males	41,772	30,690	30,143	27,612
		(39,855–43,700)	(28,056–33,319)	(26,282–33,996)	(18,557–36,670)
	Females	45,863	38,567	37,248	37,092
		(43,933–47,809)	(35,631–41,499)	(32,772–41,722)	(26,080–47,950)
	Persons	44,066	34,890	33,798	32,230
		(42,547–45,583)	(32,747–37,032)	(30,534–37,070)	(23,979–40,480)
Ischaemic heart disease	Males	7,295	6,391	6,509	5,021
		(6,554–8,041)	(5,272–7,503)	(4,699–8,318)	(2,143–7,374)
	Females	3,725	3,600	3,575	3,745
		(3,231–4,208)	(2,846–4,331)	(2,361–4,748)	(776–6,892)
	Persons	5,370	4,929	5,067	4,497
		(4,910–5,821)	(4,233–5,616)	(3,887–6,235)	(2,112–6,900)
Lipid disorders	Males	17,320	12,315	11,514	10,638
		(16,087–18,547)	(10,653–13,959)	(9,074–13,953)	(5,218–15,773)
	Females	17,040	11,947	12,150	13,545
		(15,882–18,186)	(10,356–13,549)	(9,797–14,455)	(7,787–19,044)
	Persons	17,163	12,097	11,806	11,986
		(16,259–18,075)	(10,864–13,332)	(9,995–13,619)	(7,380–16,297)

(a) Age-standardised rates.

Note: The estimated number of services is based on the proportion of encounters with a cardiovascular or lipid disorder in the BEACH survey of general practice activity, multiplied by the total number of Medicare services for GP attendances, as reported by the DoHA.

Sources: MBS/Medicare and BEACH survey of general practice activity.

Table A6.48: Estimated number of GP attendances where any cardiovascular or lipid problem was managed, per 100,000 population, by age-group and region, 2004–05 to 2007–08

Age group (years)	Major cities	Inner regional	Outer regional	Remote and Very remote
	GP attendances per 100,000 population (95% CI)			
0–24	3,871	3,501	2,146	3,020
	(3,570–4,171)	(3,005–3,997)	(1,600–2,695)	(1,843–4,195)
25–34	15,189	14,385	13,904	11,022
	(14,373–16,020)	(12,759–16,022)	(11,555–16,263)	(7,912–14,132)
35–44	37,284	29,962	31,114	30,532
	(35,945–38,632)	(27,951–31,964)	(27,996–34,217)	(24,887–36,186)
45–54	91,659	71,499	67,230	69,968
	(89,432–93,873)	(68,233–74,757)	(62,831–71,628)	(59,889–80,032)
55–64	185,652	153,067	143,094	126,569
	(182,011–189,314)	(147,995–158,143)	(135,512–150,702)	(111,234–141,892)
65–74	326,945	265,023	258,905	234,552
	(320,987–332,935)	(256,483–273,547)	(245,843–271,966)	(205,441–263,683)
75–84	392,302	322,601	310,592	333,630
	(384,794–399,828)	(311,903–333,323)	(294,251–326,946)	(280,982–386,295)
85+	387,079	299,142	322,482	376,408
	(374,283–399,848)	(282,740–315,514)	(291,282–353,692)	(288,705–464,179)

Note: The estimated number of services is based on the proportion of encounters with a cardiovascular or lipid disorder in the BEACH survey of general practice activity, multiplied by the total number of Medicare services for GP attendances, as reported by the DoHA.

Sources: MBS/Medicare and BEACH survey of general practice activity.

Table A6.49: Distribution of Australian Government-funded Aboriginal and Torres Strait Islander primary health-care services and Aboriginal and Torres Strait Islander population, by region, 2006–07

	Major cities	Inner regional	Outer regional	Remote and Very remote
	Per cent			
Primary care service centres	16.6	20.7	26.9	35.9
Indigenous population	32.1	21.4	21.9	24.6

Note: Indigenous population as at 30 June 2006.

Source: ABS and SAR 2006–07 unpublished data from the DoHA.

Table A6.50: Rate of episodes of care provided by Aboriginal and Torres Strait Islander health service centres, by remoteness area and Indigenous status, 2006–07

	Indigenous[(a)]	All persons
	Episodes of care per 1,000 population	
Major cities	1,717	22
Inner regional	2,122	73
Outer regional	3,418	231
Remote and Very remote	4,097	1,198

(a) Indigenous rates calculated from the Indigenous population at 30 June 2006.

Source: SAR 2006–07 unpublished data from DoHA.

Table A6.51: Unemployment rate and individual weekly income, by remoteness area, 2006

	Major cities	Inner regional	Outer regional	Remote and Very remote
		Per cent		
Unemployment rate	5.1	5.9	5.3	4.3
Individual weekly income				
$1–$399	25.7	31.1	29.6	26.4
$400–$999	25.8	25.9	26.1	21.8
$1000 or more	15.9	10.8	10.7	13.2

Note: Individual weekly income for people aged 15 years and over. People with negative or no weekly income not shown here so columns will not sum to 100.

Source: ABS Census of Population and Housing 2006.

Glossary

Aboriginal health worker

A person employed to liaise between medical professionals and Indigenous patients to improve the quality of health services provided.

Aboriginal and Torres Strait Islander primary health-care service centres

Primary health-care service centres operated by Aboriginal communities. They can be large multi-functional services employing several medical practitioners and providing a wide range of services. They can also be small services without medical practitioners, which rely on Aboriginal health workers and/or nurses to provide the bulk of primary care services, often with a preventive, health education focus.

Anatomical Therapeutic Chemical (ATC) classification

An international standard for classifying medicines based on system on which a medicine acts and the chemical, pharmacological and therapeutic properties of the medicine.

Angina

Temporary chest pain or discomfort when the heart's own blood supply is inadequate to meet extra needs, such as during exercise.

Antihypertensive medicines

A class of medicines that act to lower a patient's blood pressure. Note that antihypertensive medicines are one of a range of medicine classes that in this manner—for more information see Box 3.2.

Antithrombotic medicines

A class of medicines that act by preventing the formation of blood clots, or dissolving existing clots.

Atherosclerosis

A process in which fatty and fibre-like deposits build up on the inner walls of arteries, often forming *plaques* that can then cause blockages. It is the main underlying condition in *heart attack, angina,* peripheral vascular disease and *stroke.*

Australian Standard Geographical Classification (ASGC) remoteness area

A grouping of areas with similar characteristics based on their distance from major population centres and key services.

BEACH (Bettering the Evaluation and Care of Health) survey

A survey looking at aspects of general practice in Australia. For more information, see Appendix 4.

Beta-blocking agents

A class of medicines that suppress certain signals to the heart to reduce the work the heart does. These medicines are useful in treating high blood pressure and *heart failure*.

Blood cholesterol

Fatty substance produced by the liver and carried by the blood to supply the rest of the body. Its natural function is to supply material for cell walls and for steroid hormones, but if levels in the blood become too high this can lead to *atherosclerosis* and heart disease.

Calcium-channel blockers

A class of medicines that block a specific conduction pathway in the heart, causing a reduction in the work of the heart. These medicines are used to treat *angina* and high blood pressure.

Cardiovascular disease

Any disease of the circulatory system, namely the heart (cardio) or blood vessels (vascular). Includes, for example, *heart attack, coronary heart disease, angina, heart failure, rheumatic fever, rheumatic heart disease, peripheral vascular disease* and *stroke.*

Cardiac therapy medicines

A class of medicines used to treat conditions such as arrhythmias, angina and heart failure.

Cerebrovascular disease

Any disorder of the blood vessels supplying the brain or its covering membranes. The major form of cerebrovascular disease is *stroke*.

Circulatory system

The heart along with the blood vessels, comprising the system that circulates blood around the body to supply oxygen and nutrients to all body tissues and to carry away waste products. Also known as the cardiovascular system.

Coronary heart disease

The primary feature of this disease is insufficient blood supply to the heart itself. The two major clinical forms are *heart attack* (the insufficient blood supply is sudden and extreme) and *angina*. The underlying problem is *atherosclerosis*: a complex process where fatty and fibre-like deposits build up on the inner walls of the arteries, often forming plaques. Coronary heart disease is also known as ischaemic heart disease. See also *heart attack* and *angina*.

Diabetes

A condition in which the body cannot use its main energy source: the sugar glucose.

Diuretic medicines

A class of medicines that increases the rate of urination in order to reduce blood pressure. This is useful in treating high blood pressure and *heart failure*.

General practitioner (GP)

A medical practitioner who provides comprehensive and continuing care to patients and their families within the community.

Heart attack

A life-threatening emergency that occurs when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot, resulting in injury or necrosis (death) of heart tissue. The medical term commonly used for a heart attack is *myocardial infarction*.

Heart failure

A condition where the heart functions less effectively in pumping blood around the body. It can result from a variety of diseases and conditions that impair or overload the heart: notably *heart attack*, high blood pressure or a damaged heart valve. People with mild heart failure may have few symptoms, but in more severe cases it can result in chronic tiredness, reduced capacity to undertake physical activity and shortness of breath.

Hypertension

High blood pressure.

Medicare

The national, government-funded scheme that subsidises the cost of personal medical services for all Australians and aims to help them afford medical care.

Medical Benefits Schedule (MBS)

A listing of the Medicare services subsidised by the Australian Government.

Myocardial infarction

See *heart attack*.

Nurse practitioner

A registered nurse, who is educated and authorised to function autonomously and collaboratively in an advanced and extended clinical role.

Over-the-counter medicines

Private, non-prescription medicines that can be purchased from pharmacies, supermarkets and other retail outlets.

Peripheral vasodilators

A medicine that widens the blood vessels.

Pharmaceutical Benefits Scheme (PBS)

The national, government-funded scheme that subsidises the cost of a wide range of pharmaceutical medicines for all Australians to help them afford standard medicines.

Plaque

A localised area of *atherosclerosis*, especially when raised or built up, which may cause blockages in arteries.

Primary health-care practitioner

In the AIHW Medical Labour Force Survey (AIHW 2009a), primary care practitioners are defined as medical practitioners who reported that they were employed at the time of the survey, they spent most of their time working as clinicians in the week before the survey, and their main area of clinical practice was primary or general care.

Primary health-care services

Clinical services, mostly provided by *GPs*, but also by practice nurses and community health-care workers, with the aim of caring for the sick, preventing illness and promoting good health.

Private prescriptions

A prescription for a medicine that is not listed on the *PBS*. The patient purchases the medicine at the full price without a government subsidy.

Registered and enrolled nurses

A registered nurse is a nurse or midwife who is on the register maintained by the state or territory nursing and midwifery board or council in each state or territory. An enrolled nurse is a nurse who is on the roll maintained by the nursing and midwifery registration board in each state and territory. Enrolled nurses usually work with registered nurses to provide patients with basic nursing care. Enrolled nurses carry out less complex procedures than registered nurses.

Renin–angiotensin system agents

A class of medicines that act to block the renin–angiotensin system, which has the effect of reducing blood pressure. These medicines are useful in treating high blood pressure and *heart failure*.

Repatriation Pharmaceutical Benefits Scheme (RPBS)

This scheme provides assistance to eligible veterans (with recognised war or service-related disabilities) and their dependents to obtain pharmaceuticals listed on the *PBS* or a supplementary repatriation list, at the same cost as patients entitled to the concessional payment under the *PBS*.

Section 100 medicines

Medicines provided under Section 100 of the *National Health Act of 1953.* These arrangements allow patients who attend an approved remote area Aboriginal or Torres Strait Islander Health Service to receive medicines without charge and without the need for a prescription. For more information, see Box A2.1.

Serum-lipid-reducing agents

A class of medicines that act to control a patients blood cholesterol level. This is important for people who have, or who are at risk of developing cardiovascular disease.

Stroke

A condition where an artery supplying blood to the brain suddenly becomes blocked or bleeds. It often causes paralysis of parts of the body normally controlled by that part of the brain, or speech problems and other symptoms.

Voluntary Indigenous Identifier (VII)

A registry of Medicare patients where Aboriginal and Torres Strait Islander people may choose to identify themselves as such on Medicare (and so *MBS* and *PBS*/*RPBS*) records.

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