

1.2 Heart failure

Context

This data item examines hospitalisations for heart failure in people of all ages based on their place of residence. Heart failure is a chronic condition that occurs when the heart becomes weaker and less effective at pumping blood around the body. Symptoms of chronic heart failure include fluid accumulation in the body and breathlessness.

The most common cause of heart failure is underlying coronary heart disease, usually accompanied by a history of myocardial infarction (heart attack). Other causes include hypertension, idiopathic cardiomyopathy and valvular heart disease. Risk factors for these conditions and heart failure include age, family history, smoking, poor diet, obesity, diabetes, high cholesterol, excessive alcohol consumption and inadequate physical activity.¹ People admitted to hospital with acute heart failure often have comorbidities with shared risk factors, such as renal disease, diabetes and pulmonary disease.²

The prevalence of heart failure in Australia is estimated at 1–2%.³ The rates are higher among Aboriginal and Torres Strait Islander Australians, women, and people living in rural and remote areas.³ The prevalence of heart failure rises steeply with age, and is rare in people younger than 50 years.⁴ Two-thirds of Australian adults with heart failure are aged 65 years or over.⁵

The age-standardised prevalence of diagnosed heart failure for Aboriginal and Torres Strait Islander Australians is 1.7 times the prevalence for other Australians.⁶ Central Australian Aboriginal and Torres Strait Islander communities have extremely high rates of heart failure: a prevalence of 5% was found in a recent study, and 65% of these cases were previously undiagnosed.⁷ This suggests a large unidentified burden of heart failure among Aboriginal and Torres Strait Islander Australians.⁷

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Aboriginal and Torres Strait Islander Australians have higher rates than other Australians of risk factors for heart failure, including hypertension, coronary heart disease, chronic kidney disease, rheumatic heart disease, metabolic syndrome, diabetes and obesity.⁶ Psychological distress is also more common among Aboriginal and Torres Strait Islander Australians; this increases the risk of coronary heart disease independently of health behaviours.^{8,9} Aboriginal and Torres Strait Islander Australians with heart failure also have worse disease severity and increased mortality at younger ages than other Australians with heart failure.⁶

The rate of hospitalisations for heart failure in Australia is close to the average for countries in the Organisation for Economic Co-operation and Development (240 and 244 per 100,000 people, respectively, in 2015).¹⁰

Effective management of heart failure involves multidisciplinary care across the acute and primary care sectors, and a combination of strategies, including¹¹:

- Non-pharmacological approaches, such as physical activity programs, and fluid or dietary management
- Pharmacotherapy, including diuretics, angiotensin-converting enzyme inhibitors and beta-blockers
- Surgical procedures and supportive devices – for example, coronary artery bypass graft surgery, or cardiac resynchronisation therapy with or without insertion of an implantable cardiac defibrillator.

About the data

Data are sourced from the National Hospital Morbidity Database, and include both public and private hospitals. Rates are based on the number of hospitalisations for heart failure (based on the potentially preventable hospitalisation specification) per 100,000 people in 2014–15. Because a record is included for each hospitalisation, rather than for each patient, patients hospitalised more than once in the financial year will be counted more than once. The full data specification is available from the Australian Institute of Health and Welfare.¹²

The analysis and maps are based on the residential address of the patient and not the location of the hospital. Rates are age and sex standardised to allow comparison between populations with different age and sex structures. Data quality issues – for example, the recognition of Aboriginal and Torres Strait Islander status in datasets – could influence the variation seen.

What do the data show?

Magnitude of variation

In 2014–15, there were 55,511 hospitalisations for heart failure, representing 196 hospitalisations per 100,000 people (the Australian rate).

The number of hospitalisations for heart failure across 324[†] local areas (Statistical Area Level 3 – SA3) ranged from 90 to 632 per 100,000 people. The rate was **7.0 times as high** in the area with the highest rate compared to the area with the lowest rate. The number of hospitalisations varied across states and territories, from 169 per 100,000 people in the Australian Capital Territory to 344 in the Northern Territory (Figures 1.8–1.11).

After the highest and lowest 10% of results were excluded and 260 SA3s remained, the number of hospitalisations per 100,000 people was 2.1 times as high in the area with the highest rate compared to the area with the lowest rate.

Rates by SA3 for two additional years, 2012–13 and 2013–14, are available online at www.safetyandquality.gov.au/atlas.

Analysis by remoteness and socioeconomic status

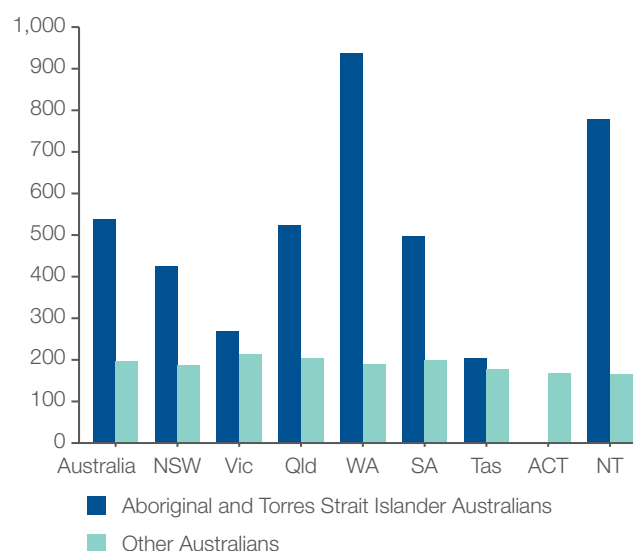
Three SA3s in remote parts of Australia (Bourke – Cobar – Coonamble, Alice Springs, and Kimberley) had hospitalisation rates that were more than double the national rate.

Rates of hospitalisation for heart failure were markedly higher in remote areas than in other areas. Rates increased with socioeconomic disadvantage, particularly in major cities (Figure 1.12).

Analysis by Aboriginal and Torres Strait Islander status

The rate for Aboriginal and Torres Strait Islander Australians (537 per 100,000) was 2.7 times as high as the rate for other Australians (197 per 100,000 people). Rates were higher among Aboriginal and Torres Strait Islander Australians than other Australians in all states and territories (Figure 1.7).

Figure 1.7: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by state and territory and Indigenous status, 2014–15



The data for Figure 1.7 are available at www.safetyandquality.gov.au/atlas.

[†] There are 333 SA3s. For this item, data were suppressed for nine SA3s due to a small number of hospitalisations and/or population in an area.

Notes:

Some of the published SA3 rates were considered more volatile than others. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Data for ACT (Aboriginal and Torres Strait Islander Australians) have been suppressed.

Data by Indigenous status should be interpreted with caution as hospitalisations for Aboriginal and Torres Strait Islander patients are under-enumerated and there is variation in the under-enumeration among states and territories.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

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Interpretation

Potential reasons for the variation include differences in:

- The prevalence of risk factors for heart failure, such as coronary heart disease, rheumatic fever and rheumatic heart disease, diabetes, hypertension, smoking, obesity, kidney disease and psychological distress
- Implementation of cardiac rehabilitation programs that include education, psychosocial support, exercise training and optimal pharmacotherapy¹³
- Access to evidence-based multidisciplinary heart failure services in the community
- Socioeconomic disadvantage; heart failure appears to be more prevalent among people living in lower socioeconomic areas, and in rural and remote areas²
- Health literacy about medications, adherence to medications and ability to afford medications
- The quality of both hospital and community care, which can be affected by suboptimal communication between clinicians
- Access to evidence-based multidisciplinary heart failure services in the community
- The quality, efficiency and effectiveness of primary health care; these may be lower for Aboriginal and Torres Strait Islander Australians
- Access to dialysis; in areas with large Aboriginal and Torres Strait Islander populations requiring dialysis for kidney disease, inadequate access to dialysis may worsen heart failure and contribute to hospitalisation numbers¹⁴
- Diagnostic error.

Variations between areas may not directly reflect the practices of the clinicians who are based in these areas. Area boundaries reflect where people live, rather than where they obtain their health care. Patients may travel outside their local area to receive care.

Expansion of the Northern Territory Integrated Cardiac Network Service in 2013–14 may have reduced hospitalisations for heart failure in 2014–15. The Victorian policy Heart Health: Improved Services and Better Outcomes for Victorians, which was released in 2014–15, may also have reduced hospitalisations for heart failure in 2014–15.

Common reasons for hospitalisation with acute heart failure are infection, non-adherence to medication, and non-adherence to dietary and fluid restrictions, each of which accounted for about one-fifth of hospitalisations in a recent study in New South Wales and the Australian Capital Territory.² The high rates of non-adherence emphasise the need for management interventions.² Rates of prescription for ACE inhibitors and beta-blockers among patients admitted to hospital for heart failure are also lower than recommended, suggesting that uptake of evidence-based guidelines could be improved.²

Readmissions make a substantial contribution to hospitalisations for people with heart failure. Rates of readmission within 30 days, for any cause, among people with heart failure ranged from 13% to 30% in a recent Victorian study.¹⁵ Factors that increase the risk of readmission for heart failure include male gender, socioeconomic disadvantage and being admitted from an aged care setting.¹⁶ A recent study of hospitalisations with acute heart failure in New South Wales and the Australian Capital Territory found that 11% of patients were residents of aged care homes.²

Case study: Telephone support for heart failure patients

In Australia, heart failure is more common in rural and remote areas than in cities, but access to multidisciplinary and community-based care and its benefits is limited in rural and remote areas.¹⁷ A randomised trial of usual care compared with usual care plus telephone support was conducted with 405 patients with heart failure. Approximately half the practices involved in the trial were in rural or remote locations, and the remainder were in outer metropolitan areas without access to multidisciplinary heart failure care.

The intervention included an automated telemedicine system that asked patients questions about their clinical status, medical management and social issues. Patients dialled into this system at least once a month, and a heart failure specialist nurse was alerted of signs or symptoms that warranted intervention. Patients were able to contact the telemedicine system or nurse for advice at any time. Patients and clinicians were also given resources to support heart failure management. The nurse could implement a diuretic algorithm if the patient was not able to access their general practitioner.

Patients in the intervention group had a 30% lower rate of death or hospitalisation than the usual care group over the one-year trial ($P = 0.01$), and saw their general practitioner half as often as those in the usual care group. The increased access to a heart failure nurse by telephone may also reduce anxiety and improve the quality of life of patients.¹⁷ Telephone support may be an effective way to improve outcomes in rural and remote patients, particularly those with heart failure.¹⁷

Addressing variation

Reducing the rate of risk factors for heart failure, such as hypertension, coronary heart disease, rheumatic fever and rheumatic heart disease, diabetes, smoking and obesity, is vital for reducing hospitalisations for heart failure.¹⁸

Best-practice management of people with chronic heart failure involves evidence-based, multidisciplinary care. This can be delivered in a range of settings, including in the patient's home and via telemedicine.¹⁸

Educating patients about self-management may reduce the risk of heart failure complications – for example, managing fluid intake, increasing physical activity levels, reducing salt intake and managing weight.¹⁸ Addressing psychosocial factors is an important aspect of supporting patients to make these changes.¹⁸

Strategies to reduce the readmission rate include offering a heart failure service within hospitals to provide specialist input within 24–48 hours of hospitalisation; providing clear information to patients and carers about self-management, and ensuring that they understand it; and ensuring effective transition to community care.¹⁹

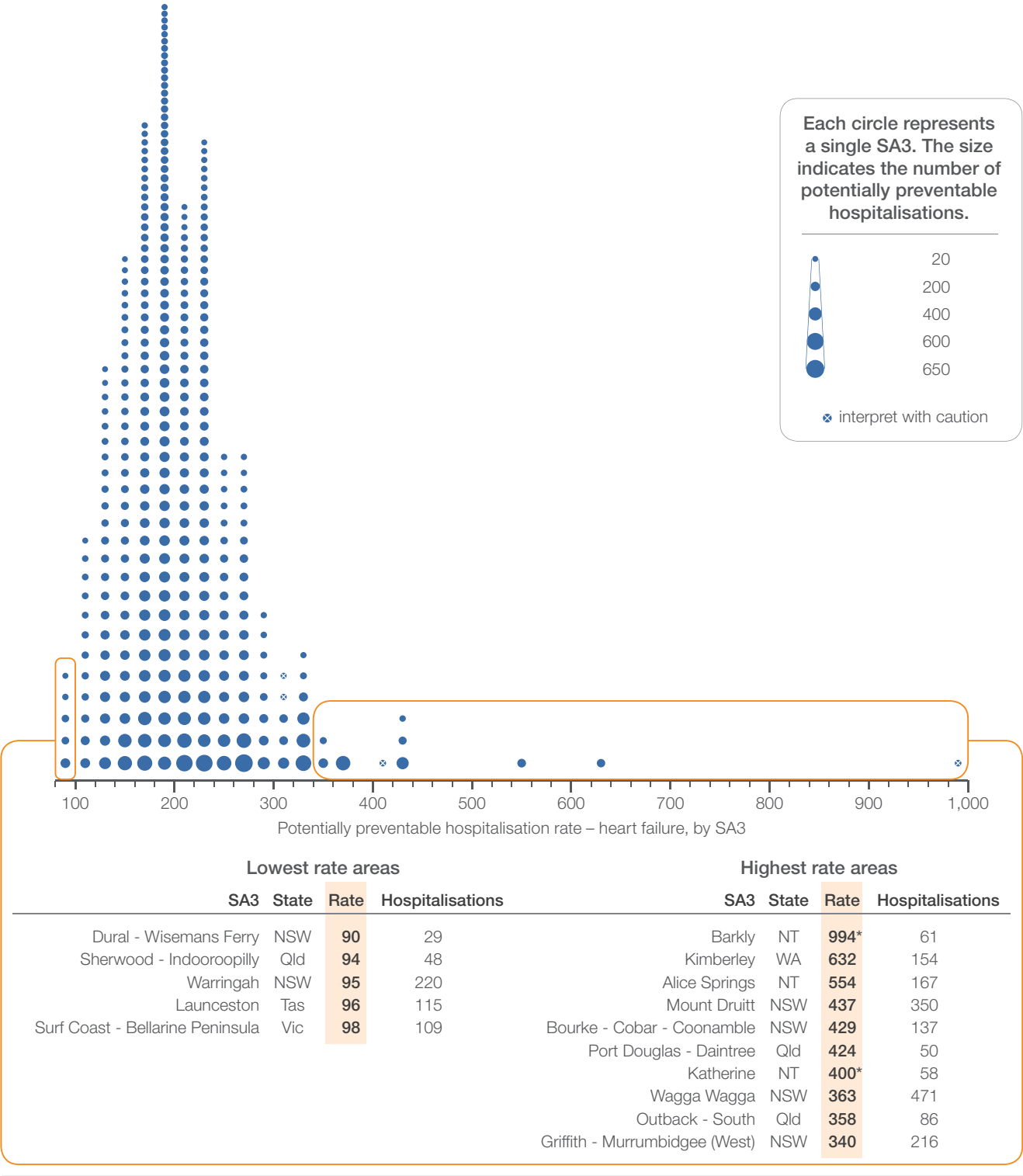
Promising models of care to reduce readmissions for heart failure include case management and multidisciplinary interventions. Case management by nurse specialists reduced readmissions for heart failure and death from any cause over a one-year period.²⁰ A multidisciplinary model of care for people with heart failure significantly reduces readmissions and death from any cause, and improves patients' quality of life.²¹

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Suggested strategies to improve heart failure management among Aboriginal and Torres Strait Islander Australians include:

- Increasing access to cardiac rehabilitation programs that include education, psychosocial support, exercise training and optimal pharmacotherapy¹³
- Using telemedicine and remote monitoring to improve access for Aboriginal and Torres Strait Islander Australians living in rural and remote locations¹³
- Ensuring follow-up of patients after discharge
- Incorporating family-based and outreach programs into models of care¹³
- Improving prevention, early diagnosis and treatment of rheumatic fever²²
- Preventing progression of kidney disease
- Improving access to dialysis for Aboriginal and Torres Strait Islander communities.

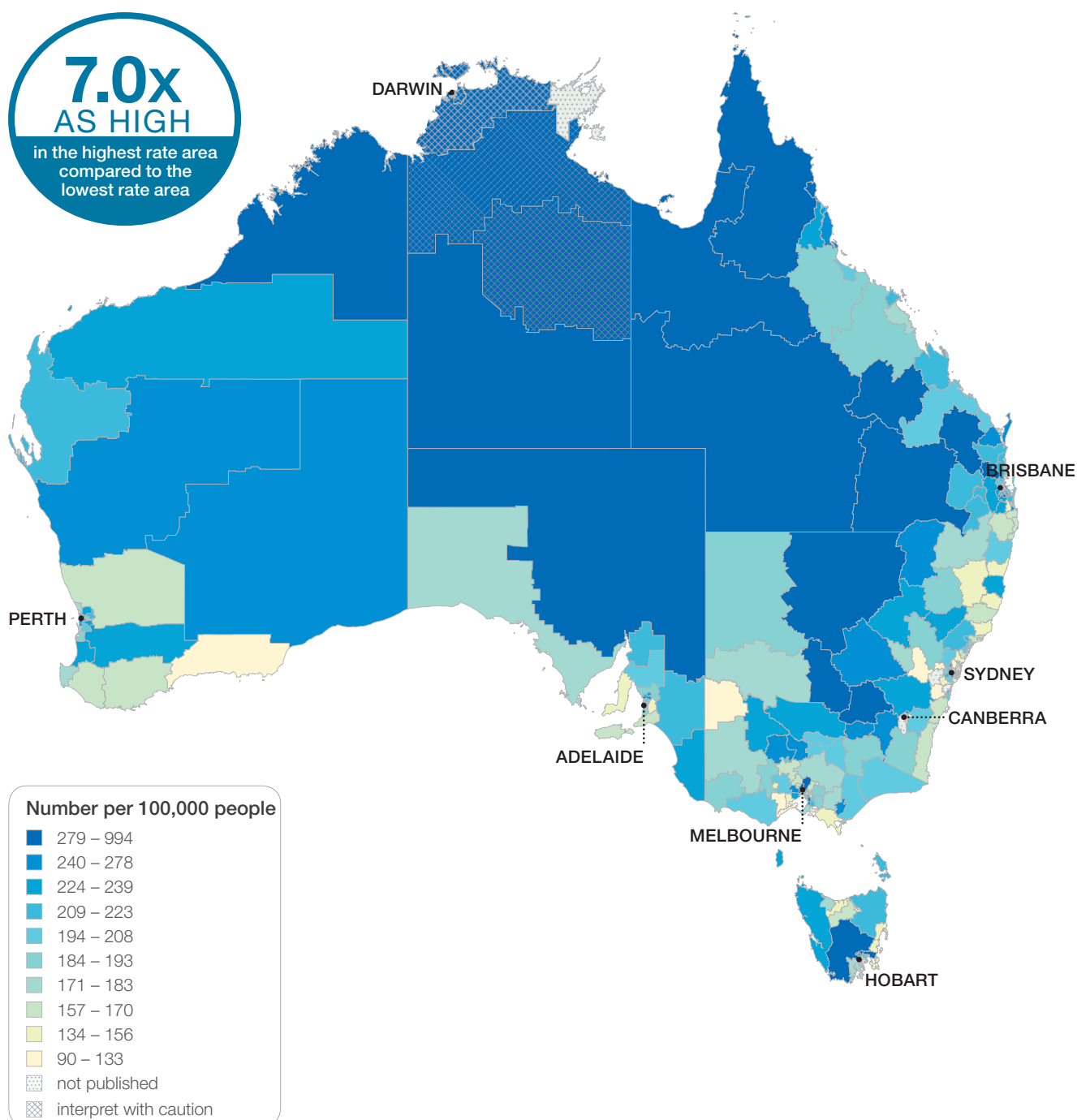
Figure 1.8: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15



Notes:
Rates are age and sex standardised to the Australian population in 2001.
Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.
Crosses and asterisks indicate rates that are considered more volatile than other published rates and should be interpreted with caution. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

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Figure 1.9: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15: Australia map



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

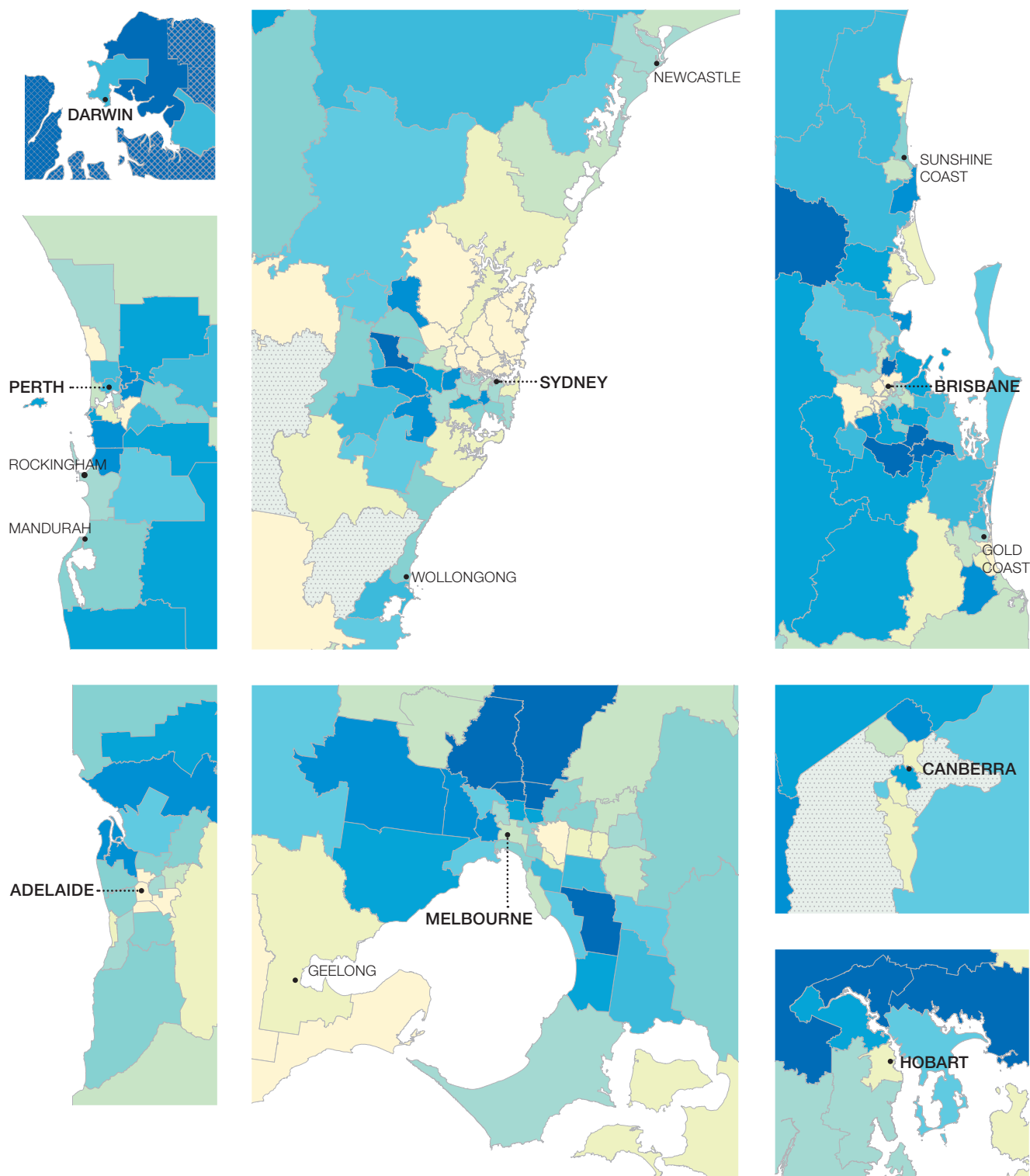
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Hatching indicates a rate that is considered more volatile than other published rates and should be interpreted with caution.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Figure 1.10: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), 2014–15: capital city area maps



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Hatching indicates a rate that is considered more volatile than other published rates and should be interpreted with caution.

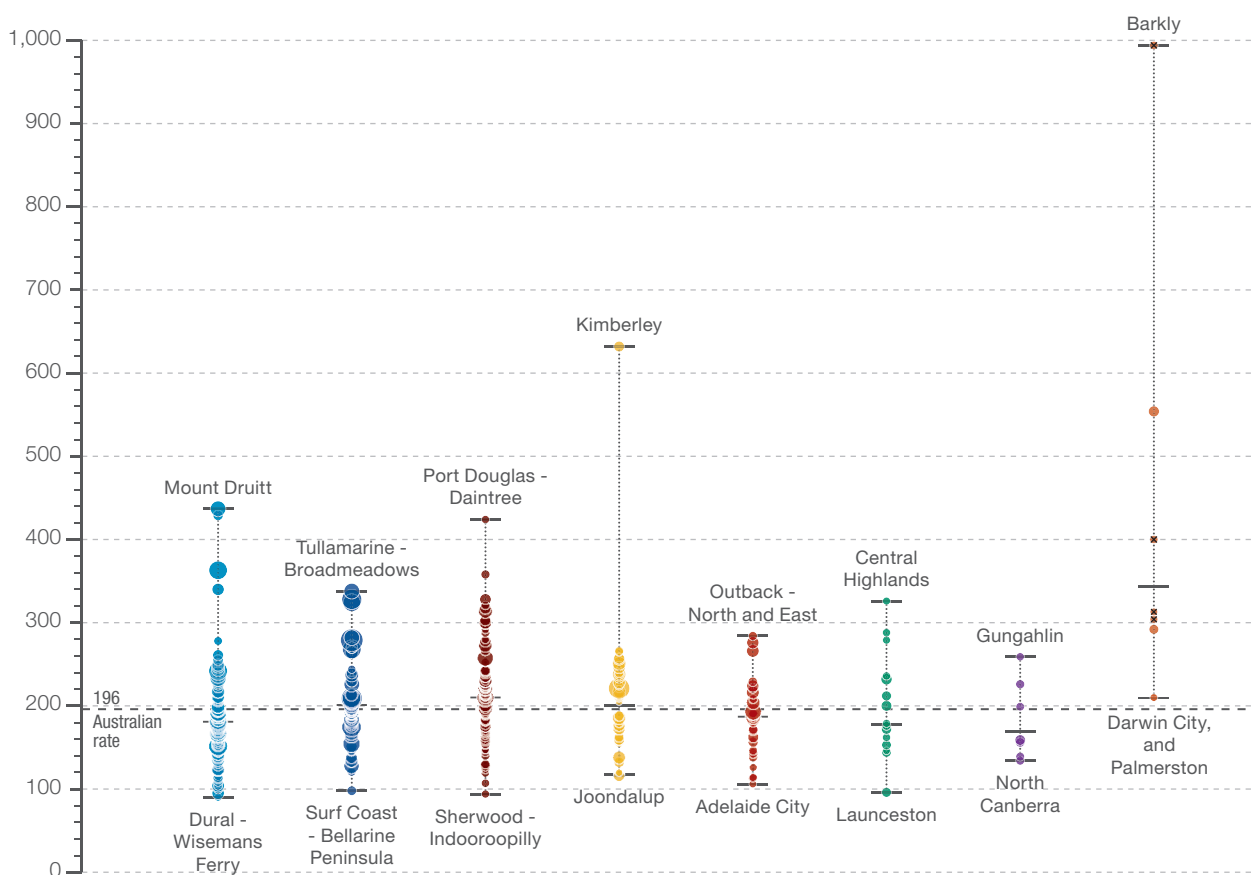
For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

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Figure 1.11: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), state and territory, 2014–15

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Highest rate	437	338	424	632	284	326	259	994*
State/territory	181	201	210	201	187	177	169	344
Lowest rate	90	98	94	117	106	96	134	210
No. hospitalisations	17,394	14,580	10,997	5,355	4,536	1,295	614	572



Each circle represents a single SA3. The size indicates the number of potentially preventable hospitalisations.

✱ interpret with caution

20 200 400 600 650

Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

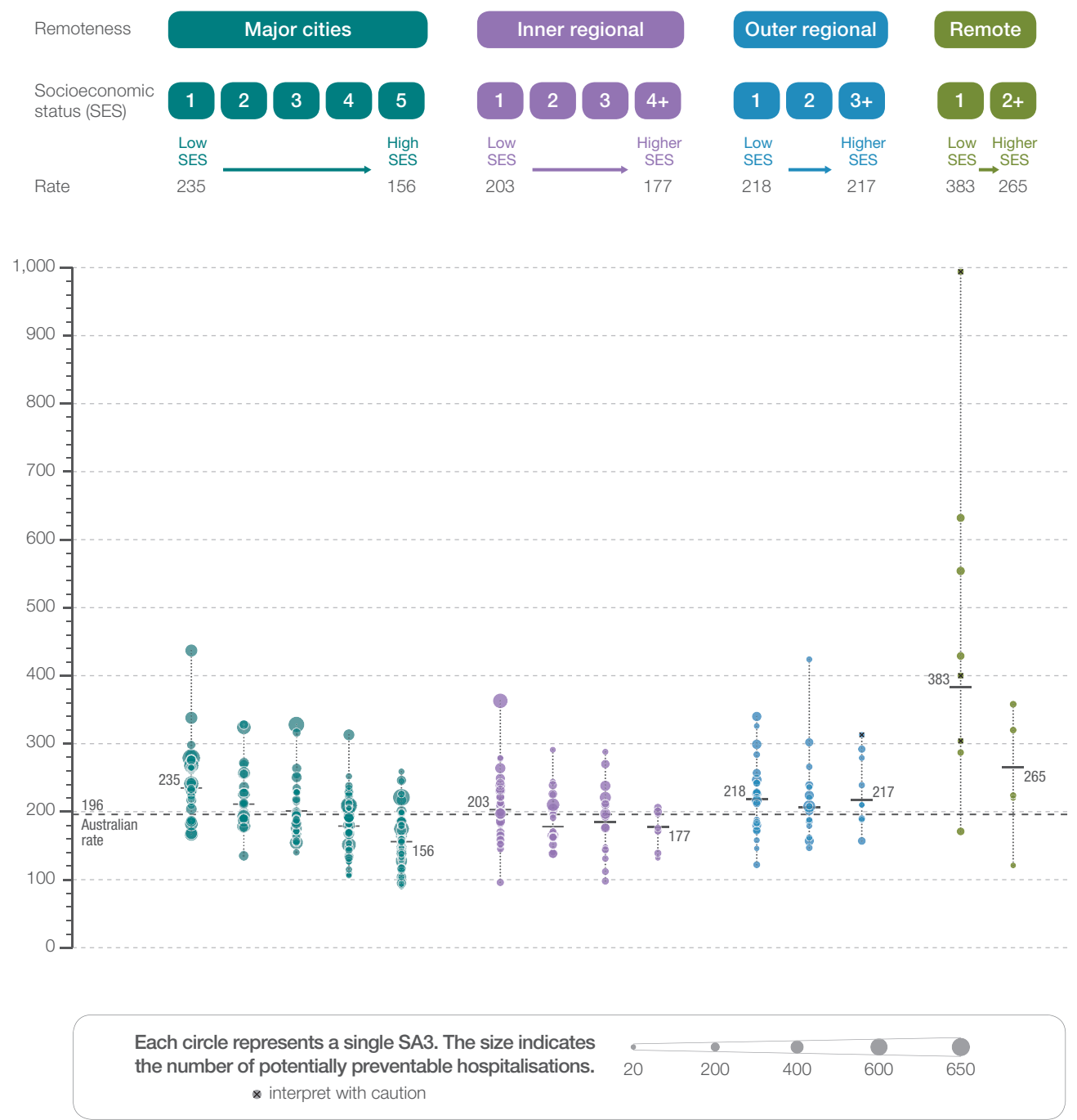
Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Crosses and asterisks indicate rates that are considered more volatile than other published rates and should be interpreted with caution. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

Figure 1.12: Number of potentially preventable hospitalisations – heart failure per 100,000 people, age and sex standardised, by Statistical Area Level 3 (SA3), remoteness and socioeconomic status, 2014–15



Notes:

Rates are age and sex standardised to the Australian population in 2001.

Rates are based on the number of hospitalisations in public and private hospitals (numerator) and people in the geographic area (denominator).

Analysis is based on the patient's area of usual residence, not the place of hospitalisation.

Crosses indicate rates that are considered more volatile than other published rates and should be interpreted with caution.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database 2014–15 and ABS Estimated Resident Population 30 June 2014.

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Resources

- NSW Agency for Clinical Innovation. Clinical services framework for chronic heart failure. Sydney: NACI; 2016.
- Consumer resources for people with heart failure, including specific resources for Aboriginal and Torres Strait Islander Australians.
- National Heart Foundation of Australia, Cardiac Society of Australia and New Zealand (Chronic Heart Failure Guidelines Expert Writing Panel). Guidelines for the prevention, detection and management of chronic heart failure in Australia. Heart Foundation; 2011.
- National Heart Foundation of Australia. Multidisciplinary care for people with chronic heart failure: principles and recommendations for best practice. Heart Foundation; 2010.
- National Heart Foundation of Australia. A systematic approach to chronic heart failure care: a consensus statement. Heart Foundation; 2013.
- National Heart Foundation of Australia. Toolkit for health professionals: improving cardiac rehabilitation and heart failure services. Heart Foundation.
- Recommendations from the Cardiac Society of Australia and New Zealand (CSANZ) arising from the inaugural CSANZ Conference on Indigenous Cardiovascular Health.²²

Australian initiatives

The information in this chapter will complement work already under way to reduce the rate of hospitalisations for heart failure in Australia.

At a national level, this work includes:

- Heart Failure Toolkit – a targeted approach to reducing heart failure readmissions, Heart Foundation¹⁹
- Essential Service Standards for Equitable National Cardiovascular Care (ESSENCE) for Aboriginal and Torres Strait Islander Australians.

Many state and territory initiatives are also in place to reduce the rate of hospitalisations for heart failure, including:

- Northern Territory Heart Failure Initiative – Clinical Audit
- Northern Territory Integrated Cardiac Network Service www.healthinfonet.ecu.edu.au/key-resources/programs-projects?pid=2812
- Queensland Heart Failure Services, Queensland Government
- Victorian Heart Health: Improved Services and Better Outcomes for Victorians policy
- Reducing heart failure admissions, Heart Foundation Victoria and Victorian Government
- PROMETHEUS (Patient Reported Outcome Measure Education Transitions Heart failure Expertise Unifying Systems), pilot implementation of the Heart Foundation Heart Failure Toolkit, Victorian Cardiac Clinical Network
- Reports on hospital readmission rates for heart failure, NSW Bureau of Health Information
- State and territory cardiac networks.

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