



South Australian Aboriginal Cardiovascular Health Profile

for the

South Australian Aboriginal Heart and Stroke Plan 2017-2021

June 2016

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South Australian Aboriginal Cardiovascular Health Profile for the South Australian Aboriginal Heart and Stroke Plan 2017-2021.

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The SAHMRI community acknowledges and pays respect to the traditional custodians of the area now called South Australia.

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Preface

The first peoples of Australia, the Aboriginal and Torres Strait Islander peoples were living strong and well within what is now called South Australia. In large part, this was a consequence of maintaining strong connections to Law, Country, culture, family, ceremony, and Spirit prior to the dispossession and dispersal of these first peoples of Australia. The policies that led to the active disempowerment and disenfranchisement of Aboriginal people are directly linked to the types of differential outcomes that can be seen in Aboriginal housing, employment and education outcomes now. Furthermore, these differential outcomes are related in mutually causal ways to the disparities in health status that currently characterise Aboriginal cardiovascular health in South Australia. It is worth noting that poor health and wellbeing also leads to a reduced economic base for Aboriginal families and communities in South Australia, and that the strength of a community's economic base is itself a determinant of health. These dynamics are important considerations for a strategic, state-wide approach to cardiovascular care in South Australia.

Introduction

Since 2009 in South Australia there have been a variety of activities focussed on cardiovascular disparities as experienced by Aboriginal people with the aim of reducing inequalities in accessing care. Despite the efforts of a range of committed organisations and individuals, there remains a lack of coherence, coordination and coverage of heart and stroke care for Aboriginal people across the State. As a result poor cardiovascular outcomes for Aboriginal people continue to be experienced.

The South Australian Aboriginal Heart and Stroke Plan 2017-2021, funded by SA Health, was completed on 30 June 2016. It is South Australia's response to Australian Health Ministers Advisory Council's (AHMAC) National Better Cardiac Care for Aboriginal and Torres Strait Islander project.

Three distinct documents are available: The SA Aboriginal Cardiovascular Health Profile 2016, The SA Aboriginal Heart and Stroke Gap Analysis, and The SA Aboriginal Heart and Stroke Plan 2017-2021.

The SA Aboriginal Cardiovascular Health Profile 2016 (this document)

The **SA Aboriginal Cardiovascular Health Profile 2016** documents the cardiovascular health of Aboriginal people in SA, the service availability, and service activity. The Profile provides the evidence for the development of the SA Aboriginal Heart and Stroke Gap Analysis and Plan, and provides a baseline for future monitoring and evaluation. The document includes information on demographics, risk factor prevalence, impact of heart disease and stroke, service activity by sector and against national indicators, and patient flow through the system.

The SA Aboriginal Heart and Stroke Gap Analysis

The **SA Aboriginal Heart and Stroke Gap Analysis** identified gaps in the cardiovascular health care system for Aboriginal clients. The Gap Analysis was informed by the SA Aboriginal cardiovascular disease profile 2016 and extensive consultation with community members, service providers and policy makers. The document provides an overview of the current status, details gaps, and documents recommendations.

The SA Aboriginal Heart and Stroke Plan 2017-2021

The **SA Aboriginal Heart and Stroke Plan 2017-2021** details strategies to improve the heart and stroke care for Aboriginal people in SA and to reduce cardiovascular morbidity and mortality. The Plan includes needs driven, evidence based service provision across the continuum of care and recognises that there are some key enablers that are vital if the services are to be effectively implemented. The Plan has been informed by the Profile and the Gap Analysis.

The SA Aboriginal Cardiovascular Profile 2016

The profile has been designed in two main sections with a series of detailed appendices that provide detailed supporting data.

Section 1: Why does South Australia need an Aboriginal Heart and Stroke Plan?

The first section provides highlights of key data in South Australia describing Aboriginal CVD prevalence, risk factors, co-morbidities, self-reported CVD prevalence, hospitalisation, procedures and self-discharge rates. It provides the rationale as to why an Aboriginal Heart and Stroke Plan is needed and why it needs to be implemented in SA.

Section 2: The ESSENCE Indicators

The second section uses the ESSENCE indicators to structure a contemporary picture of SA services and outcomes.

The Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander people (ESSENCE) were developed in 2012, and the ESSENCE Measurement Indicators were developed in 2015. The Essential Service Standards for Equitable National Cardiovascular Care for Aboriginal and Torres Strait Islander people (ESSENCE) Measurement and Outcome Indicators were established to guide the development and implementation of policies that serve to reduce the gap in life expectancy experienced by Aboriginal and Torres Strait Islander peoples. There are 22 indicators covering 43 measures.

The ESSENCE Measurement Indicators are separated into two sections - ESSENCE Service Standard Indicators and the ESSENCE Cardiovascular Outcome Indicators. Data is presented for 28 of the 43 measures that the study team was able to access data for. It was not possible to report on the remaining 15 measures at this stage.

Section 3: The Appendices

The third section provides detailed data to underpin the profile and the plan. It covers demographics of the South Australian Aboriginal population, a profile on CVD risk factors, a profile CVD prevalence, hospitalisations and service activity across the state for prevention activities, clinical suspicion of disease, acute episode and ongoing care. It then provides details from the mapping of all related services across the state, the methodology covering the data analysis and the detailed data tables for the Section 1 and 2 of the profile.

The Project Team acknowledges the many sources that provided data to help inform this comprehensive profile. These include:

- SA Health, specially ISSAC, EDDC, SA Aboriginal Health Survey, the Cardiac Rehabilitation Minimum Data Set, SA RHD Register the Perinatal statistics collection data;
- Cause of Death Unit;
- Royal Flying Doctor Service;
- Coronary Angiogram Database of South Australia (CADOSA); and
- the Heart Foundation (SA Division).

See Appendix 3 Acknowledgements 3 for full acknowledgements.

Section 1: Why does South Australia need an Aboriginal Heart and Stroke Plan?

1.1 The extent and impact of premature passing from cardiovascular disease

Cardiovascular diseases represent the largest cause of death for Aboriginal South Australians (26%), with coronary heart disease accounting for over half of all Aboriginal cardiovascular deaths (56%) (see Figure 1). Stroke, incorporating ischaemic, haemorrhagic and non-specified, account for 14% of all deaths. Cardiomyopathy, pulmonary heart disease, hypertension, chronic heart failure and rheumatic heart disease account for smaller proportions.

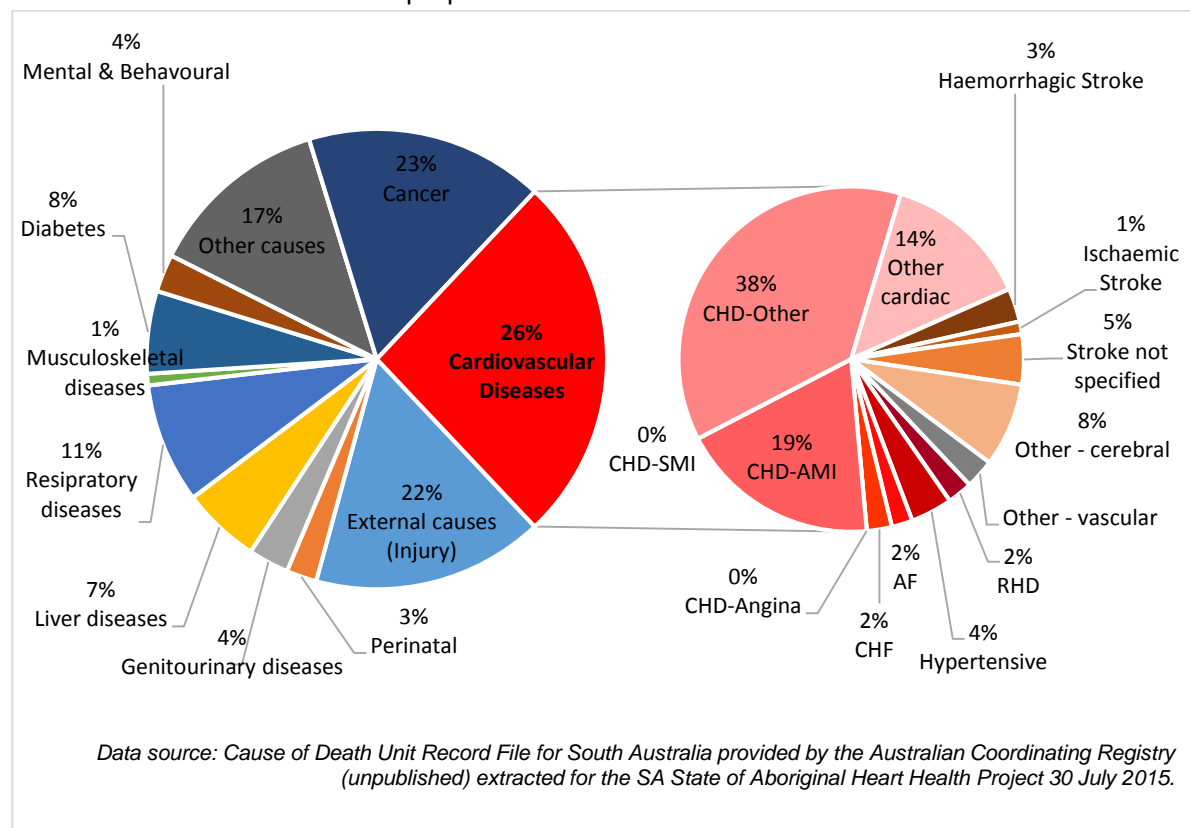


Figure 1: Aboriginal deaths 2006-2012, SA, by primary cause of death, cardiovascular cause disaggregated by cardiovascular condition

The age at which Aboriginal people pass away due to cardiovascular diseases is dramatically different from the non-Aboriginal population, with peaks at 45 and 55 years of age for Aboriginal people, and a single peak at 85 years of age for non-Aboriginal people (see Figure 2).

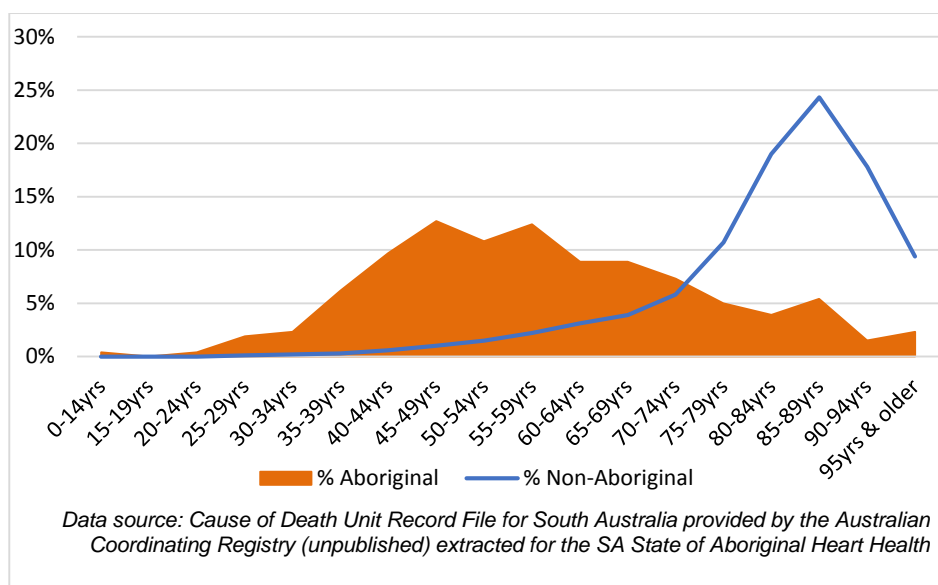


Figure 2: Deaths from CVD (I00-I99), by Aboriginal status and age, SA 2006-2012

As seen in Figure 3, cardiovascular mortality accounts for a significant proportion of age-specific mortality from age 40 for the Aboriginal population in South Australia, and is the single largest cause of death between the ages of 40 and 70. This is compared to cardiovascular mortality accounting for a significant proportion of mortality from 75 years and upwards in the non-Aboriginal population.

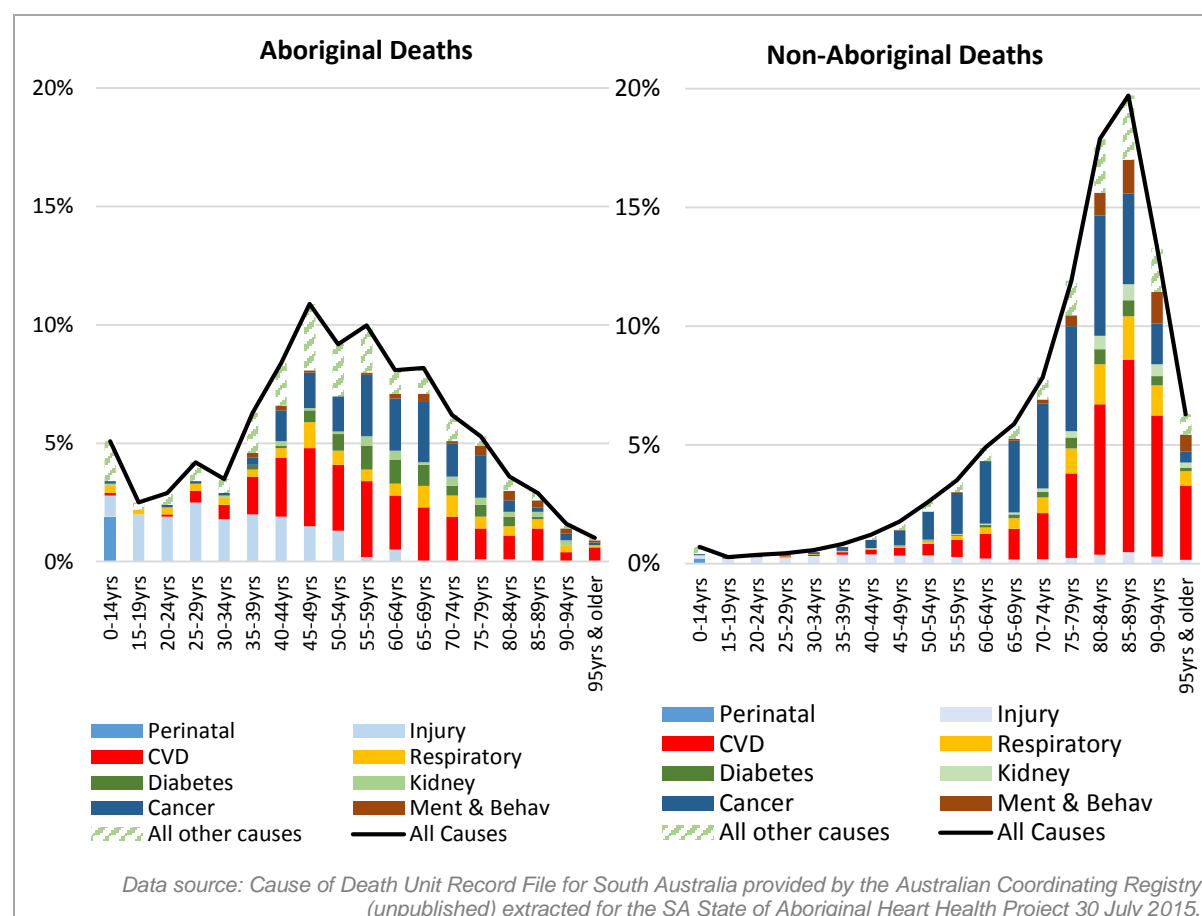


Figure 3: Mortality by major cause category, by Aboriginal status and age, SA, January 2006 – December 2012

1.2 Age profile

This pattern of cardiovascular mortality leads to an age distribution for Aboriginal people that is radically different from non-Aboriginal people. In SA, the Aboriginal population accounts for 2.3% of the population, totalling 37,408 persons. The Aboriginal population is young, with a mean age of 22 years, compared to the non-Aboriginal population where the mean age is 39 years. Figure 4 shows this distribution by age and sex.

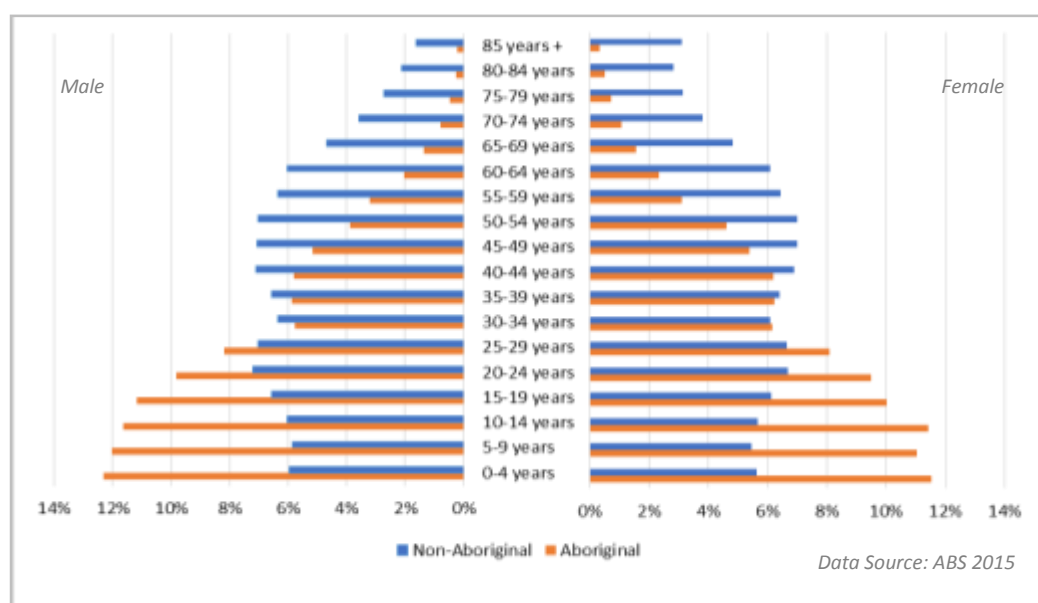


Figure 4: South Australian age distribution (5 year age brackets), by Aboriginal status and sex

The loss of so many people at such young ages has repercussions for the social infrastructure and cultural capital available within Aboriginal communities across South Australia. This is largely as a consequence of losing future Elders, potential community leaders, parents, grandparents and role models, as well as substantial losses of cultural knowledge and economic potential. The passing of key individuals can be devastating for entire South Australian communities.

For more information see Appendix 5.

1.3 Self-reported general health status

This assessment of general health considers how people rate their health. Aboriginal people are less likely to report their health as excellent or very good, and more likely to report health as fair or poor. Over 30% SA Aboriginal respondents aged 45 years and over reported having fair or poor overall health.

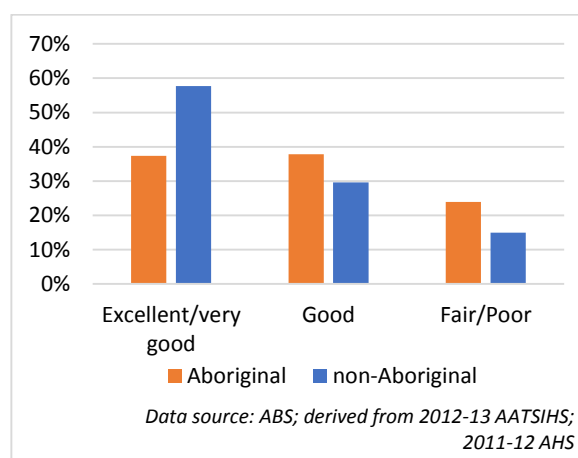


Figure 5: Self-assessed overall health status, by Aboriginal status

1.4 Risk factors of cardiovascular disease

The risk factors for developing cardiovascular diseases are multiple and complex. They include:

modifiable risk factors that can usually be controlled by lifestyle modification and/or medication: high blood pressure, high blood cholesterol, cigarette smoking, physical inactivity, poor nutrition, being overweight, psychological distress, diabetes, chronic kidney disease, low birth weight

and

non-modifiable risk factors: family history, age, sex

Cardiovascular risk should be considered within Aboriginal concepts of health and wellbeing which include the physical, psychological and community wellbeing, and within the context burden of co-morbidities such as diabetes, kidney disease and cancer.

Aboriginal people are significantly more likely to be experiencing higher rates for a number of cardiovascular risks factors, when compared to non-Aboriginal people. Aboriginal people carry a profile of significant cardiovascular risk burden from young ages.

Smoking: (discussed in detail on page 25 of the SA Aboriginal Cardiovascular Health Profile)

Smoking prevalence is more than double in the Aboriginal population (42.1%) compared to the non-Aboriginal population (17.5%). The smoking rate stays high for the Aboriginal population. There are more current smokers among Aboriginal males than females.

Smoking during pregnancy: (discussed in detail on page 25 of the SA Aboriginal Cardiovascular Health Profile)

The current smoker rate for Aboriginal women at first antenatal visit is 51 %, more than 2 and a half times higher for Aboriginal women when compared to non-Aboriginal women. The percent of women who quit before first visit are the same for Aboriginal and non-Aboriginal women (5.4%).

Nutrition: (discussed in detail on page 26 of the SA Aboriginal Cardiovascular Health Profile)

Ten percent of Aboriginal people meet recommended fruit and vegetable nutritional guidelines, compared to 8% of non-Aboriginal people.

Physical activity: (discussed in detail on page 27 of the SA Aboriginal Cardiovascular Health Profile)

Aboriginal people are more likely to be doing the recommended levels of physical activity compared to non-Aboriginal people (Aboriginal: 52% vs non-Aboriginal: 39%). However, there is significant variation by sex. Aboriginal females are more likely to be meeting these recommendations than non-Aboriginal females. Aboriginal males are more than 30% less likely to be achieving sufficient physical activity compared to non-Aboriginal males.

Obesity:

Body mass index (BMI): is the most common measure of overweight and obesity. Fifty-six percent of Aboriginal people are overweight or obese, compared to 58% of non-Aboriginal people. However, the 2012 SA Aboriginal health survey found that almost 80 percent of Aboriginal people are overweight or obese, with over 50 percent alone obese.

Waist circumference: reflects mainly subcutaneous abdominal fat storage and has been shown to positively correlate to disease risk. Aboriginal females are more likely to be at a substantially increased risk (Aboriginal females: 70%, non-Aboriginal females: 51%). There is little difference between Aboriginal and non-Aboriginal males (42.5% versus 40.5%).

Stress and worry (psychological distress):

For both males and females, Aboriginal persons report significantly higher levels of psychological distress than non-Aboriginal persons. Aboriginal people are significantly more likely to have experienced a family stressor in the past 12 months when compared to non-Aboriginal people.

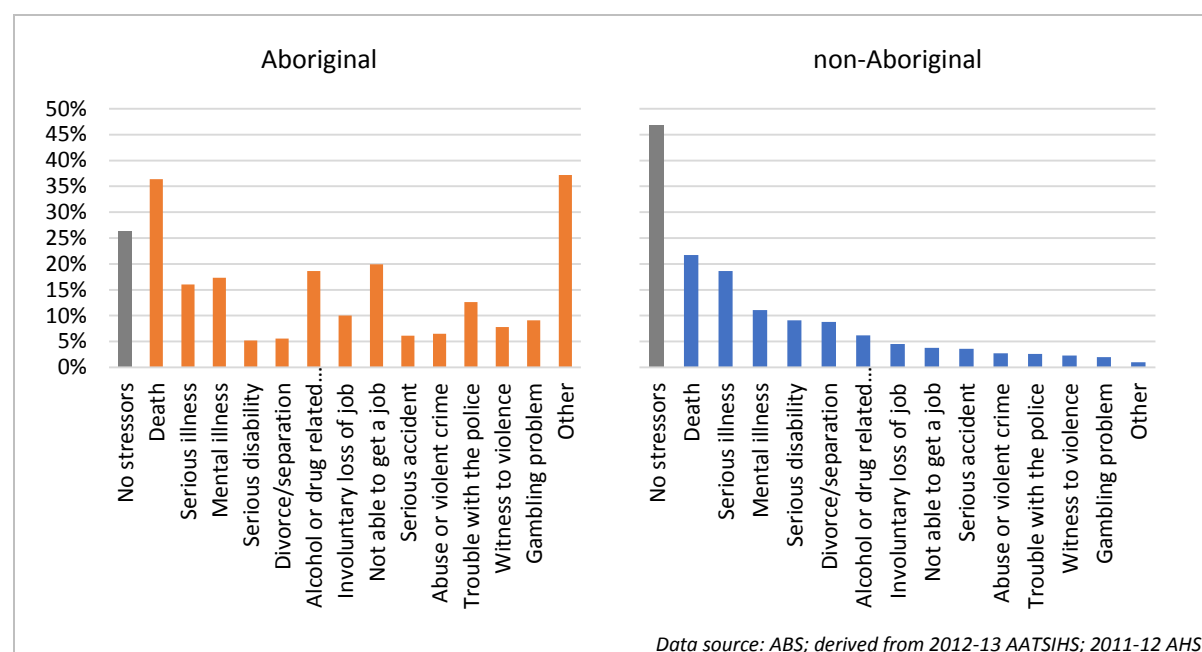


Figure 6: Family stressors reported by SA Aboriginal and non-Aboriginal respondents

Please note for information on blood pressure see self-reported high blood pressure and hypertension hospitalisations (Page 14 and 51). For more information on all the risk factors see Appendix 6.

1.5 Self-reported comorbidities

The majority of Aboriginal South Australians reported having three or more long term health conditions (35.7%; n=12,700). Aboriginal people are significantly more likely to have been diagnosed with diabetes (sometimes reported at high sugar) (17.4%) and/or chronic kidney disease (21.6%) than non-Aboriginal people (6.8% and 10.7% respectively). Rates of diabetes are 40% in some remote SA communities.

For more information on all the risk factors see Appendix 6.

1.6 Self-reported prevalence of cardiovascular disease

As demonstrated, Aboriginal people in South Australia experience a high burden of cardiovascular risk. This high burden of risk, particularly at young ages, contributes to the premature onset of cardiovascular disease.

The overall prevalence of cardiovascular disease in South Australia, as reported by the Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS) and Australian Health Survey (AHS), is lower for Aboriginal SA than non-Aboriginal (23% vs 30%).

Aboriginal people experience onset of cardiovascular disease at young ages. Two in five Aboriginal people aged 35-44 report having a cardiovascular disease (including hypertension) (see Figure 7). Almost four in five people aged 55 years and over report having a cardiovascular disease.

There are significant differences between males and females, particularly within younger age groups. The protection of being female before the age of 45, typically seen in Caucasian populations, is reversed in the Aboriginal population, particularly between the ages of 15 to 34 and 45 to 54.

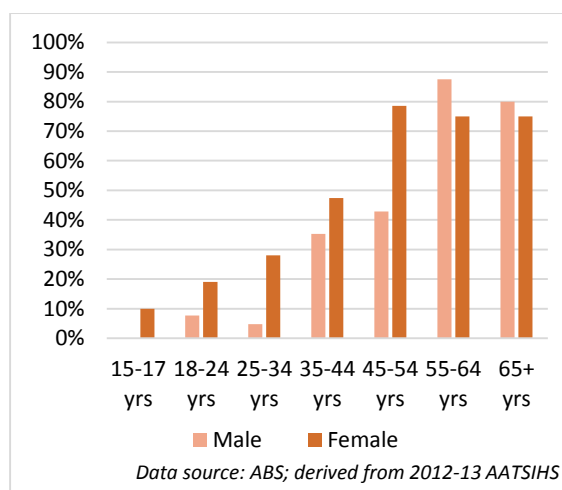


Figure 7: Prevalence of cardiovascular disease¹ in the South Australian Aboriginal population aged 15 years and over, by age and sex

Despite the high burden of cardiovascular disease prevalence in the community, less than 20% of the adult population have annual adult health checks. There are also concerns about the management of cardiovascular disease in the community.

1.7 Accessing hospital

Between January 2006 and December 2012, the RFDS undertook 137 primary evacuations from SA for people identified as Aboriginal. The majority were evacuated to Alice Springs (n=113). Many of the primary evacuations to Alice Springs were from APY lands communities (see Table 1).

There were also evacuations to South Australian centres, with Port Augusta receiving the greatest number.

There were 424 inter-hospital transfers from country SA. Of these 424 transfers, 287 (approximately 70%) were to Adelaide and 91 to Alice Springs.

Table 1: RFDS primary evacuations by evacuation and receiving locations

		Primary evacuation* from:						
		SA						
		APY lands	Marla	Mt Davies	Oak Valley	Yalata Mission	Other	Total
Evacuation to:	NT	82	13	7	0	0	11	113
	SA	0	0	0	10	6	8	24
	Port Augusta	0	0	...	9	6	...	20
	Total	82	13	...	10	...	26	137
Primary evacuation* refers to retrieval from point with no medical facility.								
Data source: RFDS Unit Record data provided by RFDS (unpublished) extracted for the SA Aboriginal Heart and Stroke Plan, 16 Sept 2015								

¹ Cardiovascular disease is defined in the AATSIHS and AHS as “Diseases of circulatory system”, including the following ICD-10 codes: I01-I15, I20-I52, I60-I89, I95, I97-I99, R00-R01, R07.2, R60

For the emergency presentations to ED departments, 58% of these were by ambulance (including air ambulance; helicopter; and ambulance service), similar to the non-Aboriginal population. However, there is significant variation between hospitals. For more information see Appendix 10.

1.8 Hospitalisations for cardiovascular disease

Aboriginal people account for 2.2% of all hospitalisations in SA for a principal diagnosis of cardiovascular disease, with 4,053 separations over the 5 year period from July 2010-June 2015.

Females are disproportionately over-represented in the Aboriginal cohort presenting to SA hospitals, accounting for 47% of Aboriginal separations, compared to 43% in the non-Aboriginal population. The age profile of hospitalisation for a principal diagnosis of cardiovascular disease is significantly different between the Aboriginal and non-Aboriginal population. The greatest proportion of Aboriginal people are hospitalised between the ages of 45 and 60, compared to 75 years and over in the non-Aboriginal population (see Figure 8).

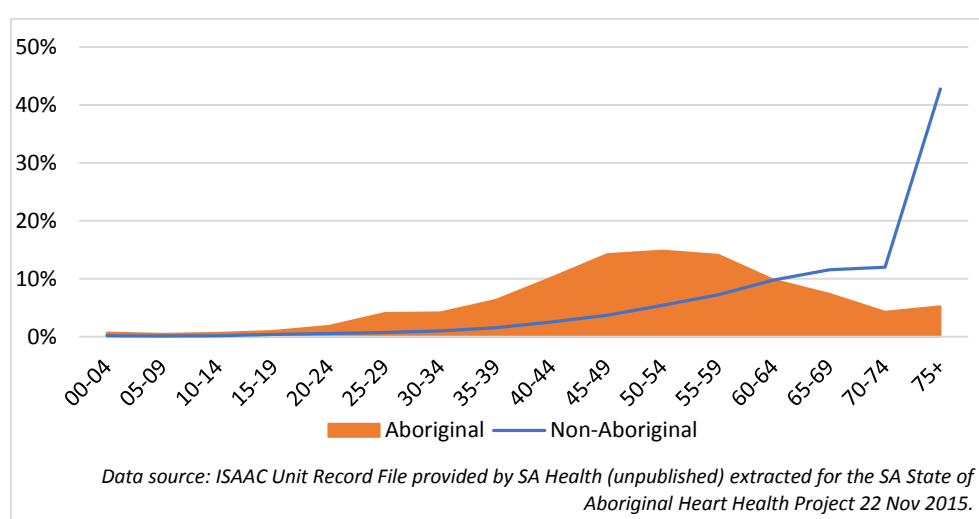


Figure 8: All hospital admissions for a principal diagnosis of CVD, July 2010-June 2015, by Aboriginal status and age

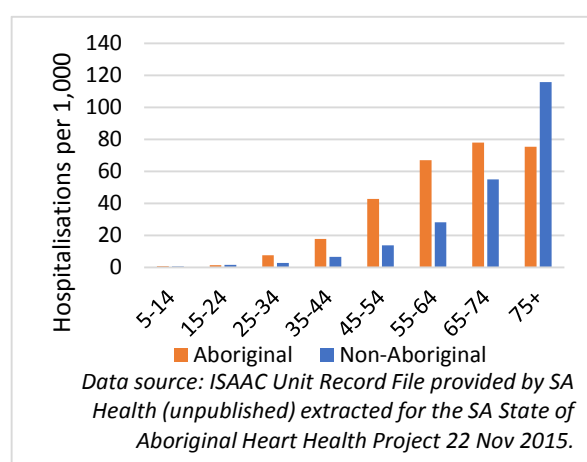


Figure 9: Age-specific hospitalisation rate for CVD, by Aboriginal status, July 2010 - June 2015

After adjusting for age, the Aboriginal hospitalisation rate for principal diagnosis of CVD was 26.0 per 1,000, compared to 16.7 per 1,000 non-Aboriginal people, meaning Aboriginal people were 60% more likely to be hospitalised for a principal diagnosis of CVD.

The hospitalisation rate for Aboriginal people was substantially higher than the non-Aboriginal comparison for ages 25 to 74. The greatest relative disparity is in the 45-54 age group (Aboriginal: 42.8 per 1,000 vs non-Aboriginal: 13.8 per 1,000). There are also substantial differentials for the age groups 25-34, 35-44, 55-64 and 65-74 (see Figure 9).

Between July 2005-June 2007 and July 2013-June 2015, the hospitalisation rate for Aboriginal people has dropped in some age groups (15-24, 45-54, and 55-64), but increased in other age groups (5-14, 25-34, 35-44, 65-74 and 75+). This is compared to the non-Aboriginal hospitalisation rate which decreased in the age groups 55 and over. Hospitalisation rates remain substantially higher in the Aboriginal population in ages under 75 (see Figure 10).

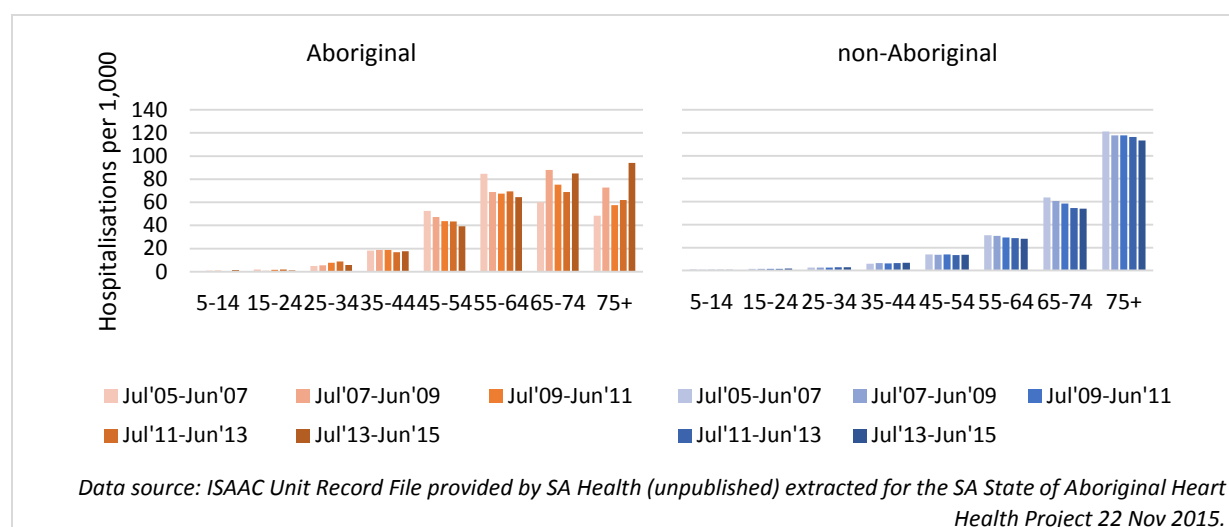


Figure 10: Age-specific hospitalisation rates for people with a principal diagnosis of CVD, by Aboriginal status and years, July 2005 - June 2015

Hospitalisation for hypertension indicates poorly managed disease in primary health. The hospitalisation rate for Aboriginal people for hypertension is significantly greater than the non-Aboriginal rate (see Figure 11). Of particular concern is the high rate of hospitalisation in the 35-65 year old age groups (see Figure 12).

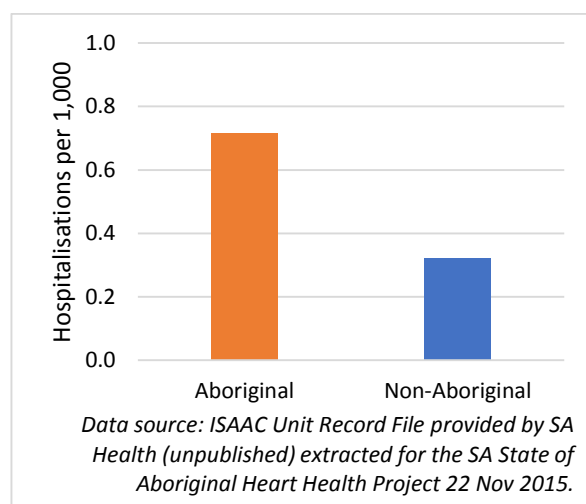


Figure 11: Age-standardised hospitalisation rate for hypertension, by Aboriginal status, July 2005 - June 2015

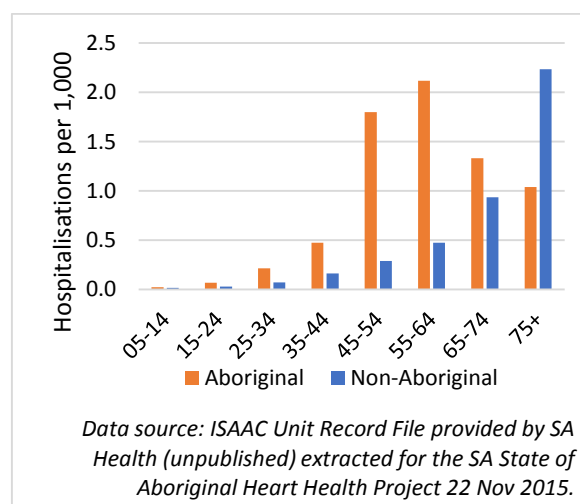


Figure 12: Age-specific hospitalisation rate for hypertension, by Aboriginal status, July 2005 - June 2015

Hospitalisation rates for other cardiovascular conditions are reported in Section 2 (Cardiovascular Outcome Indicators).

The number of hospitalisations by hospital varies across the state (see Figure 13 and Figure 14). In total there were 4,053 South Australian hospital admissions for Aboriginal people with a principal diagnosis of cardiovascular disease for the period July 2010-June 2015.

Of all hospital separations for Aboriginal people in South Australian hospitals, 69% were South Australian residents, while Northern Territory residents made up 27% of Aboriginal separations to South Australian hospitals. Approximately 7 in 10 hospital admissions for Aboriginal people were emergency admissions. The Aboriginal population is 8% more likely to have an emergency admission for a hospital separation with a principal diagnosis of cardiovascular disease than the non-Aboriginal population.

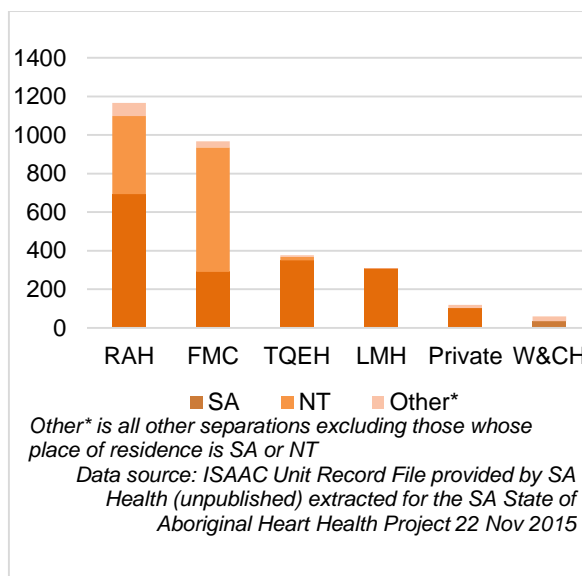


Figure 13: Aboriginal separations – Metropolitan Hospitals, with a principal diagnosis CVD, July 2010-June 2015, by state/territory of residence: Royal Adelaide Hospital (RAH), Flinders Medical Centre (FMC), The Queen Elizabeth Hospital (TQEH), Lyell McEwin Hospital (LMH), Private and Women's and Children's Hospital (W&CH)

Port Augusta has substantially more hospital separations in Country Health SA Local Health Network than any other country centre (see Figure 14).

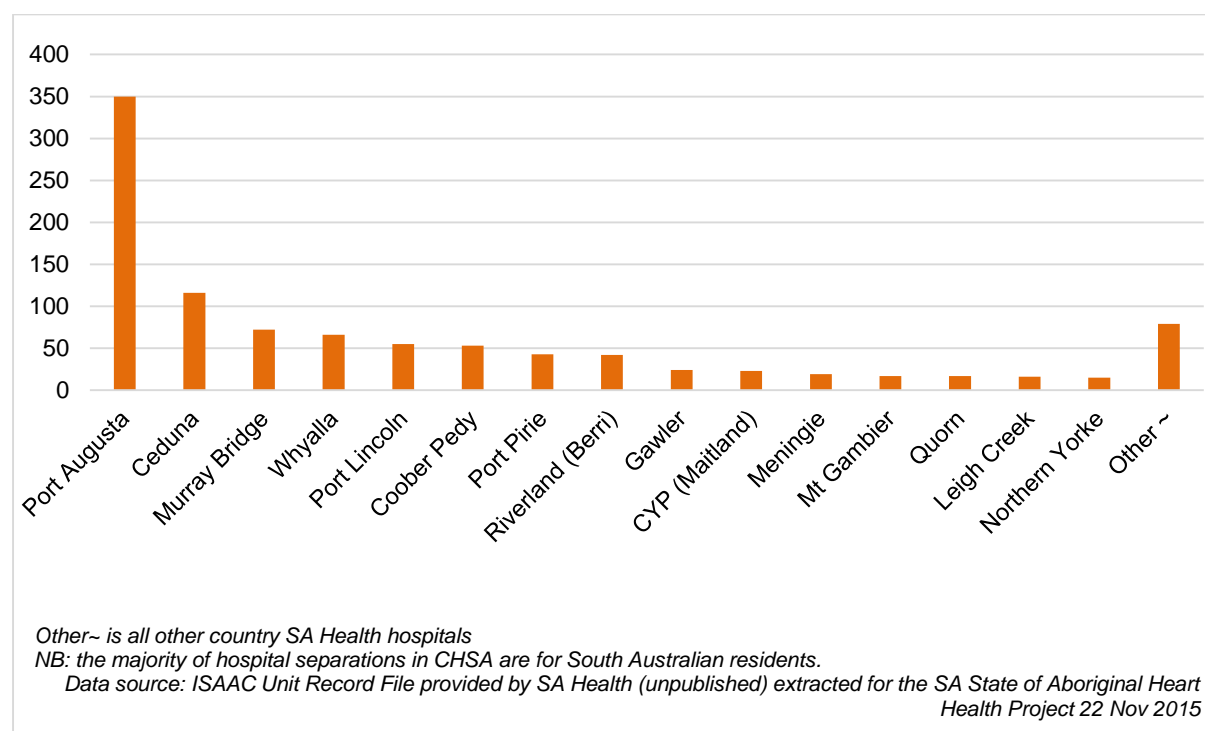


Figure 14: Aboriginal separations – Country Hospitals, with a principal diagnosis cardiovascular disease (CVD), July 2010-June 2015

For more information see Appendix 10.

1.9 Hospital procedures

Coronary angiography: Between July 2010-June 2015, Aboriginal people had 1138 hospitalisations with a coronary angiography procedure recorded. Almost 80% of coronary angiographies were undertaken in Aboriginal people aged 35-64. Eighty-seven percent of coronary angiographies are done for a principal diagnosis of coronary heart disease for Aboriginal separations. Of the 1138 Aboriginal separations who received a coronary angiography, 51% were South Australian residents, an additional 43% were Northern Territory residents. Flinders Medical Centre and the Royal Adelaide Hospital undertake more angiographies for Aboriginal people from the Northern Territory than for Aboriginal South Australians (see Figure 15).

Percutaneous coronary interventions (PCI): Between July 2010-June 2015, Aboriginal people had 511 hospitalisations with a percutaneous coronary intervention (PCI) recorded. Eighty-three percent of PCIs were undertaken in Aboriginal people aged 35-64. Sixty-six percent of all procedures were for a principal diagnosis of acute myocardial infarction. Fifty-one percent of PCIs for Aboriginal people were undertaken for Northern Territory residents. Flinders Medical Centre (45%) and the Royal Adelaide Hospital (36%) undertook the majority of angiographies for Aboriginal people. At Flinders Medical Centre, 78% of the Aboriginal patients are Northern Territory residents. At the Royal Adelaide Hospital, 45% of Aboriginal patients are Northern Territory residents. This is in contrast to the Lyell McEwin Hospital and The Queen Elizabeth Hospital (see Figure 16).

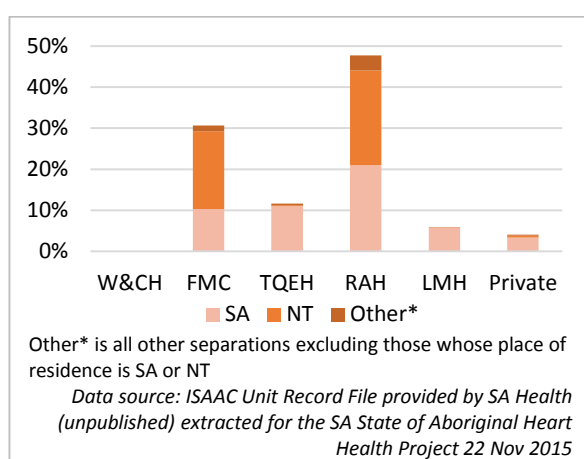


Figure 15: Aboriginal hospitalisations receiving a Coronary Angiography, July 2010 - June 2015, by hospital and state of residence

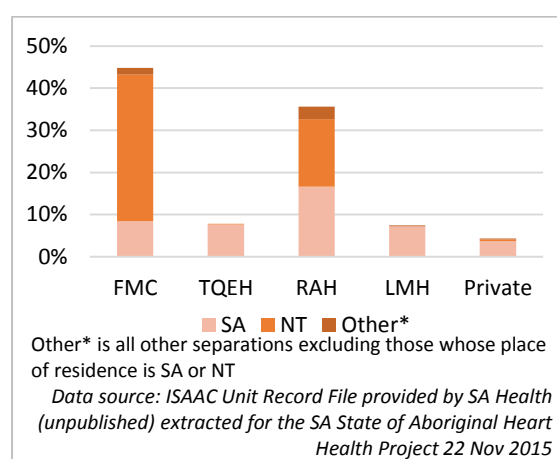


Figure 16: Aboriginal hospitalisations receiving a percutaneous coronary intervention, July 2010 - June 2015, by hospital and state of residence

Coronary Artery Bypass Grafts (CABG):

Between July 2010-June 2015, 352 Aboriginal hospitalisations with a principal diagnosis of CVD had a coronary artery bypass graft. Eighty-six percent of coronary artery bypass grafts were undertaken in Aboriginal people aged 35-64.

Sixty-five percent of all coronary artery bypass grafts for Aboriginal separations were undertaken at Flinders Medical Centre, 34% at Royal Adelaide Hospital, and 2% in private hospitals. 28% of all coronary artery bypass grafts were undertaken for Aboriginal people from South Australia, compared to 70% for Aboriginal residents of the Northern Territory. Flinders Medical Centre undertook 81% of all procedures for Aboriginal Northern Territory separations (see Figure 17).

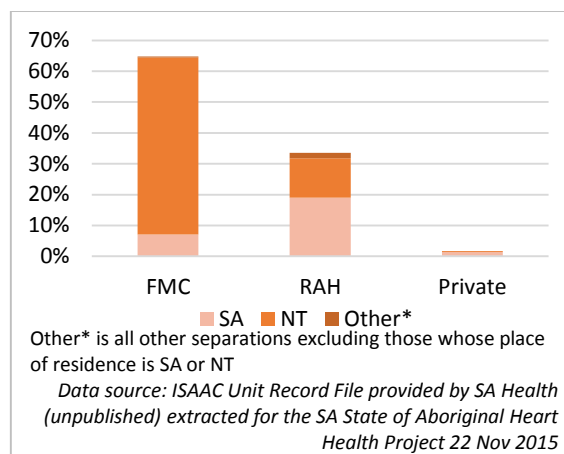


Figure 17: Aboriginal hospitalisations receiving a coronary artery bypass graft, July 2010 - June 2015, by hospital and state of residence

Mitral and Aortic Valve Surgery: Aboriginal people with a principal diagnosis of CVD had 145 separations involving mitral valve surgery, and 71 involving aortic valve surgery recorded (July 2010-June 2015). Of the Aboriginal separations, 96% of mitral valve surgery and 87% of aortic valve surgery was performed on people younger than 65. For Aboriginal separations, 79% of mitral surgery and 69% of aortic valve surgery were undertaken from the Northern Territory. Eighty percent all mitral valve surgery, and 63% percent of all aortic valve surgery for Aboriginal separations was undertaken at Flinders Medical Centre.

Thrombolysis for stroke: Between July 2010-June 2015, 7 Aboriginal separations with a principal diagnosis of ischaemic stroke or stroke not specified had received thrombolysis.

For more detail on hospital procedures, see Appendix 10.

1.10 Self-discharge rates

Aboriginal people with a principal diagnosis of cardiovascular disease were more likely to self-discharge than non-Aboriginal people (see Figure 18). After adjusting for age, the rate of self-discharge for Aboriginal adults was 36.5 per 1,000 hospitalisations, compared to 9.4 per 1,000 for non-Aboriginal hospitalisations.

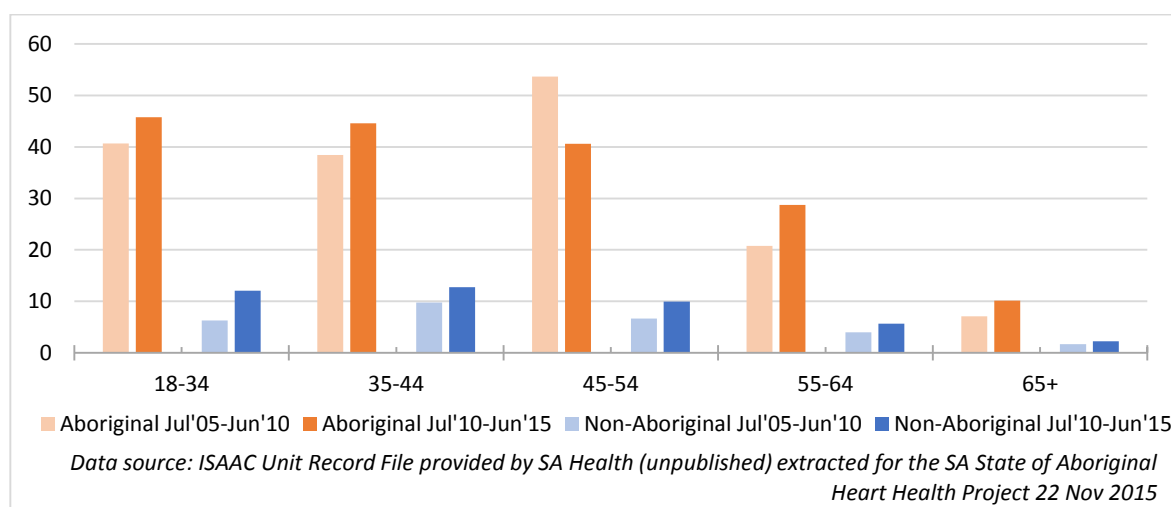


Figure 18: Self-discharge rate per 1,000 hospitalisations for separations with a principal diagnosis of CVD, by Aboriginal status, age and year, July 2005 - June 2015

Section 2: ESSENCE Measurement Indicators

2.1 ESSENCE Service Standard Indicators

The table below provides a guide to all the ESSENCE Measurement and Outcome Indicators. There are 22 indicators covering 43 measures. In this CVD Profile data is presented for 28 of the 43 measures. At this stage it was not possible to report on the remaining 15 measures. It is anticipated that the ESSENCE Indicators will become part of a monitoring dashboard for South Australia.

	Indicator and measures	Degree reported
Societal health	Indicator 1: Socioeconomic determinants	
	1a. Household crowding	✓
	1b. Attainment of Year 12 education or equivalent	✓
	1c. Workforce participation (i) Employment to population ratio (ii) Unemployment rate (iii) Labour force participation rate	✓
	Indicator 2: Comprehensive primary health care	
	2a. Aboriginal and Torres Strait Islander access to primary health care relative to need	×
	Indicator 3: Health behaviours	
	3a. Rate of current smokers	✓
	3b. Tobacco smoking during pregnancy	✓
	3c. People meeting guidelines for adequate intake of fruit and vegetables	●
	3d. Adults meeting sufficient levels of physical activity	✓
Maintaining health and managing risk	Indicator 4: Smoking cessation	
	4a. Smokers receiving nicotine replacement therapy	×
	Indicator 5: Risk assessment	
	5a. Absolute cardiovascular risk assessment for people aged 35 years and over	×
	5b. MBS Health Assessments within the previous 12 months	●
	5c. People with relevant Medicare-listed diagnostic items claimed in the previous 12 months	●
	Indicator 6: Risk management	
	6a. Hypertension: Antihypertensive medications prescribed	×
	6b. Documented evidence of primary care practitioner follow-up for people with elevated risk of cardiac disease	×
	Indicator 7: Secondary prevention and management of Acute Rheumatic Fever and Rheumatic Heart Disease	
	7a. People indicated for and who receive BPG secondary prophylaxis	✓
	7b. Priority 1 and 2 Rheumatic Heart Disease (RHD) cases receiving serial echocardiography	✓
Care of acute disease	Indicator 8: Rapid assessment	
	8a. Coronary Heart Disease: electrocardiogram (ECG) performed within 10 minutes of arrival for STEMI	●
	8b. Acute exacerbation of Chronic Heart Failure (CHF): Receipt of echocardiography in the index admission	×
	8c. Stroke: Brain scan within: ` <ul style="list-style-type: none"> (i) one hour presentation for thrombolysis eligible patients; (ii) three hours for all other patients 	×
	Indicator 9: Timely treatment	
	9a. Coronary Heart Disease (CHD): STEMI patients receiving thrombolysis or Percutaneous Coronary Intervention (PCI)	●

Ongoing care of disease	9b. Coronary Heart Disease (CHD): STEMI patients receiving fibrinolysis within 30 minutes of hospital arrival	●
	9c. Stroke: Presentation and intravenous thrombolysis within 4.5 hours of symptom onset	●
	Indicator 10: Specialised care	
	10a. Coronary Heart Disease (CHD) and Stroke: Acute Coronary Syndrome (ACS) and stroke patients admitted into a cardiac or stroke unit: (i) Cardiac unit; (ii) Stroke unit	x
	Indicator 11: Discharge medications	
	11a. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF), Stroke: Patients discharged with appropriate, condition-specific medications: (i) CHD: aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate; (ii) CHF: ACEI or A2RA and beta-blocker; (iii) Haemorrhagic stroke: antihypertensive medication; (iv) Ischaemic stroke: statin therapy, antihypertensive and/or antithrombotic medication	●
	11b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF), Stroke: Patients prescribed medications remaining on them at 12 months: (i) CHD: aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate; (ii) CHF: ACEI or A2RA and beta-blocker; (iii) Haemorrhagic stroke: antihypertensive medication; (iv) Ischaemic stroke: statin therapy, antihypertensive and/or antithrombotic medication	x
	Indicator 12: Coordination from hospital to community	
	12a. Coronary Heart Disease (CHD), Stroke and Rheumatic Heart Disease (RHD): individualised care plan: (i) Care plan for Acute Coronary Syndrome (ACS); (ii) Care plan for Stroke; (iii) Care plan for RHD	x
	12b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Rheumatic Heart Disease (RHD): Review by a primary health care professional within one week of discharge	x
	Indicator 13: Rehabilitation	
	13a. Stroke: Rehabilitation therapy within 48 hours of initial assessment	x
	13b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Stroke: Patients referred to an appropriate condition-specific rehabilitation or other secondary prevention program: (i) Acute Coronary Syndrome (ACS) patients; (ii) Chronic Heart Failure patients; (iii) Stroke patients	●
	13c. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Stroke: Patients completing an appropriate condition-specific rehabilitation or other secondary prevention program: (i) Acute Coronary Syndrome (ACS) patients; (ii) CHF patients; (iii) Stroke patients	●
Systems of care	Indicator 14: Integrated regional clinical network	
	14a. Integrated regional clinical network scorecard	✓
	Indicator 15: Rheumatic Heart Disease (RHD) control programme	
	15a. Rheumatic Heart Disease (RHD) control programme scorecard	✓
	Indicator 16: Surgical procedures registry	
	16a. Services with a surgical procedures registry	x

✓ = measured as specified in ESSENCE Measurement Indicators specification guide

● = measured in part/measured, but not as specified in ESSENCE Measurement Indicators specification guide

x = not measured

Indicator 1: Socioeconomic determinants

1a. Household crowding

Description: Proportion of people, of all ages, who live in overcrowded houses.

In 2010, Australia adopted the Canadian National Occupancy Standards (CNOS)² for overcrowding. Under the Canadian National Occupancy Standards, the house is considered overcrowded if at least one additional bedroom was required to meet the standards of: (a) no more than two people per bedroom; (b) parents or couples may share a bedroom; (c) children under five of same sex or opposite sex may share a bedroom; (d) children under 18 of the same sex can share a bedroom; (e) a child aged five to 17 years should not share a bedroom with a child under five of the opposite sex; or (f) single adults aged 18 years and over and any unpaired children require a separate bedroom.

The proportion of Aboriginal households meeting the above criteria, and thus being classified as overcrowded, increases exponentially from 14% in Adelaide and inner regional SA to 51% in very remote SA. Non-Aboriginal figures for overcrowding do not vary by remoteness and are under 5% across the state (see Figure 19).

There has been some reduction in the rate of overcrowding from 2001 to 2011 for Aboriginal and non-Aboriginal people, across all remoteness levels (see Figure 20).

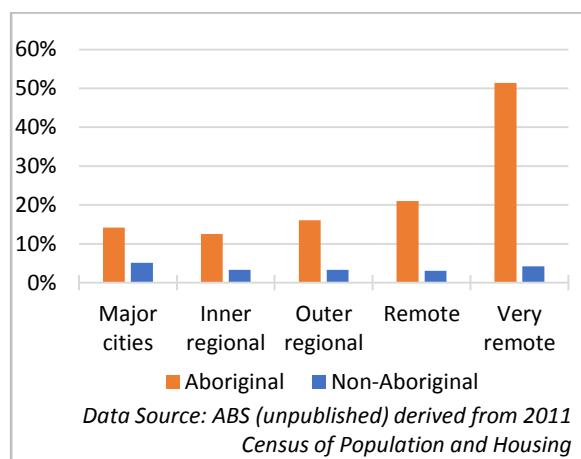


Figure 19: Overcrowding in SA Aboriginal and non-Aboriginal households, by remoteness

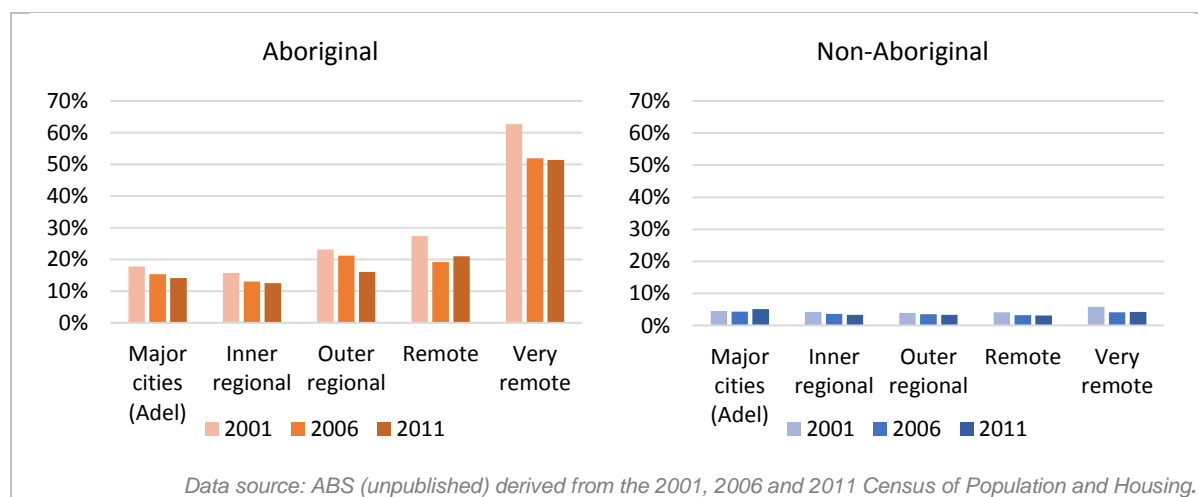


Figure 20: Overcrowding in SA Aboriginal and non-Aboriginal households over time, by remoteness

² AIHW (Australian Institute of Health and Welfare) 2005. Indigenous housing needs 2005: a multi-measure needs model. Cat. no. HOU 129. Canberra: AIHW

1b. Attainment of Year 12 education or equivalent

Description: Proportion of the 20-24 year old population having attained at least a Year 12 or equivalent or Australian Qualifications Framework Certificate level II or above.

Education is a clear indicator of socioeconomic status and an important measure for health literacy. Overall, Aboriginal persons aged 20 to 24 years of age are less likely to have attained a year 12 (or equivalent) level of education when compared to non-Aboriginal persons. There were only slight differences found between males and females.

Aboriginal attainment of year 12 is still significantly lower when compared to non-Aboriginal for all four Local Health Networks (see Figure 21).

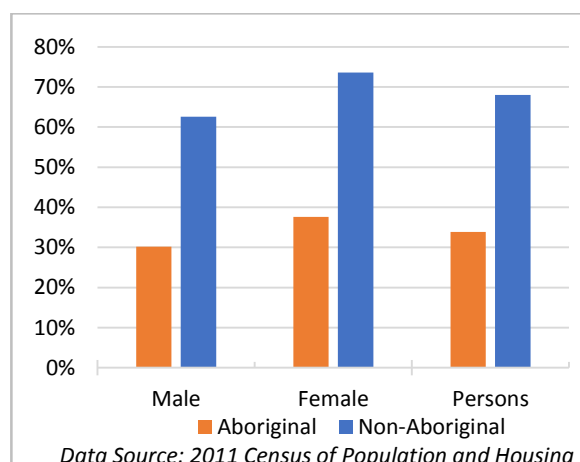


Figure 21: Year 12 attainment or equivalent for 20-24 year olds, by Aboriginal status and sex

There are also differences by sex between Local Health Networks (LHNs). The percentage of Aboriginal females aged 20 to 24 years of age attaining year 12 education is higher than Aboriginal males all four Local Health Networks. (see Figure 22).

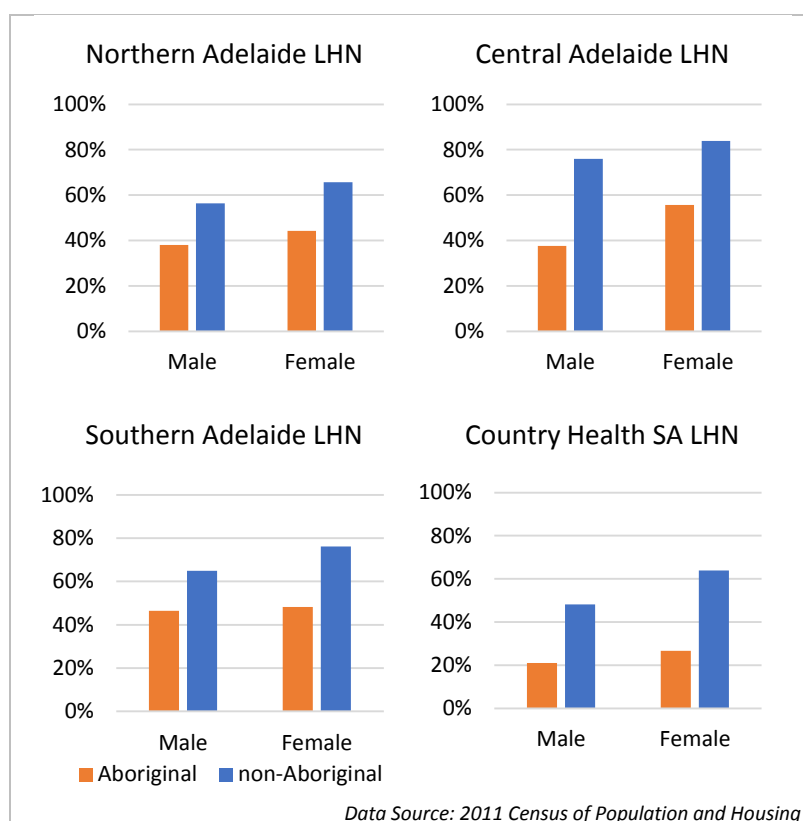


Figure 22: Year 12 attainment or equivalent for 20-24 year olds, by LHN, Aboriginal status and sex

1c. Workforce participation

- i. Employment to population ratio
- ii. Unemployment rate
- iii. Labour force participation rate

Description: The level of workforce participation as measured by employment, unemployment and labour force participation rates.

Aboriginal people aged 15-64 in SA are less likely to be in the labour force, less likely to be employed, and more likely to be unemployed (see Figure 23).

Unemployment rates for Aboriginal persons in the workforce were consistently higher across all Local Health Networks (LHNs), while employment to population ratio, and labour force participation rates were consistently lower, when compared to non-Aboriginal persons (see Figure 24 and Figure 25).

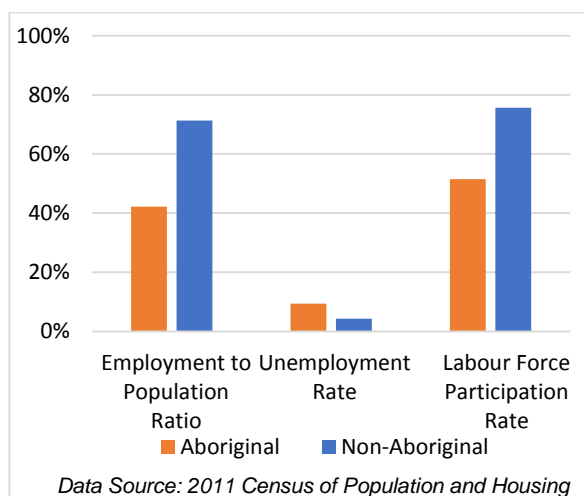


Figure 23: Workforce participation by employment rate, unemployment rate and labour force participation rate, SA, 2011, by Aboriginal status and sex

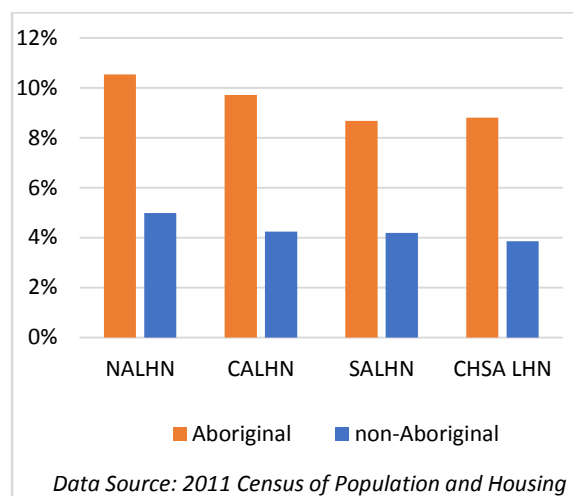


Figure 24: Unemployment, by Aboriginal status and LHN

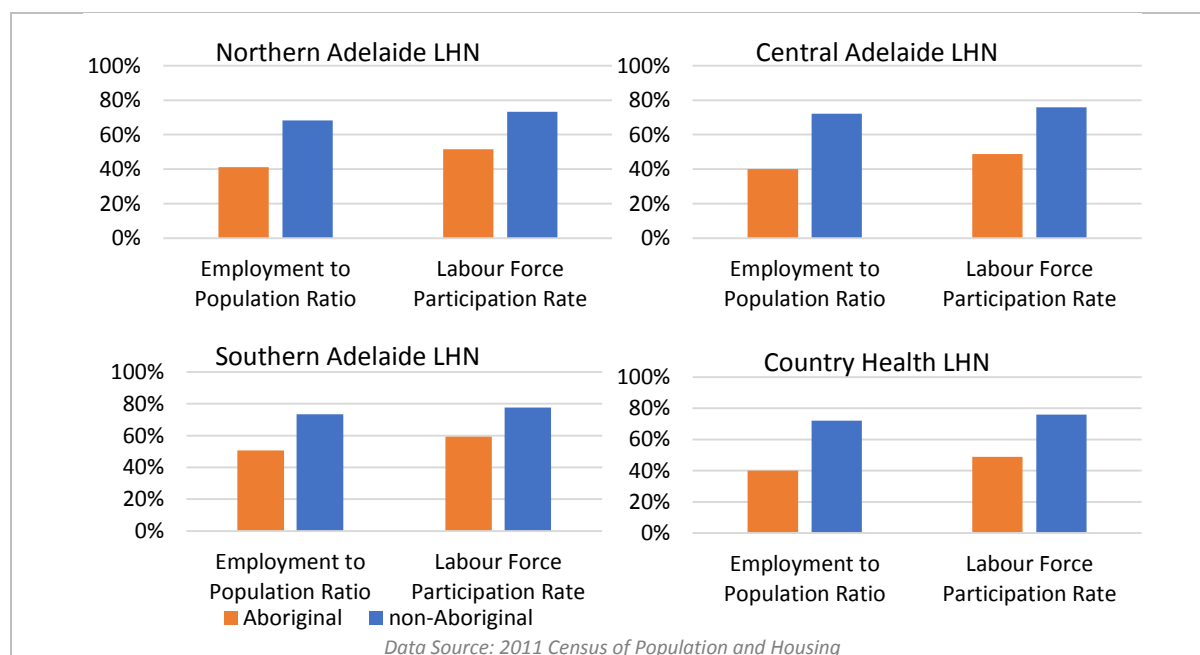


Figure 25: Workforce participation, by Aboriginal status and LHN

Indicator 2: Comprehensive primary health care

2a. Aboriginal and Torres Strait Islander access to primary health care relative to need

This measure requires development.

There is ongoing work to develop a measure for this indicator, being undertaken by the Australian Institute of Health and Welfare and the Aboriginal and Torres Strait Islander Health Performance Framework. For information on this measure as specified by the Australian Institute of Health and Welfare, refer to the report, Access to primary health care relative to need for Indigenous Australians³.

³ Australian Institute of Health and Welfare 2014. Access to primary health care relative to need for Indigenous Australians. Cat. no. IHW 128. Canberra: AIHW

Indicator 3: Health behaviours

3a. Rate of current smokers

Description: Proportion of people aged 15 years and over who are current smokers, by Indigenous status.

Smoking status has been collected from three SA data collections: the Australian Aboriginal and Torres Strait Islander Health Survey (AATISHS); the South Australian Aboriginal Health Survey (SAAHS); and the Australian Health Survey (AHS).

Figure 26 shows the higher percentage of Aboriginal males and females currently smoking, when compared to non-Aboriginal. Current and daily smoking was three times as likely in the Aboriginal as non-Aboriginal population. Whereas the smoking rate stays high for the Aboriginal population, the data show that smoking rates are low for young and older non-Aboriginal SA.

The majority of non-Aboriginal SA reported having never smoked (51.3%) while those reporting having never smoked ranged from 36.4% to 46.3% for the Aboriginal population.

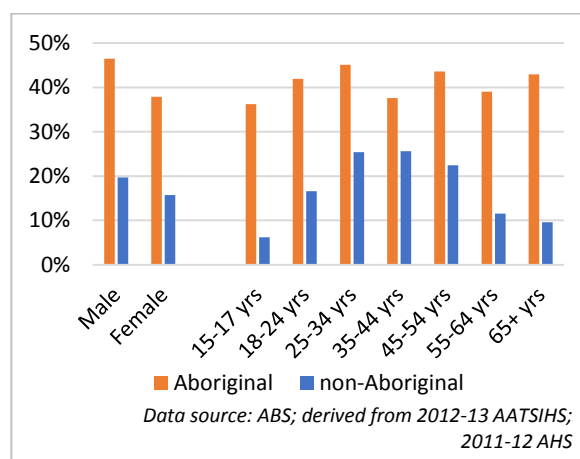


Figure 26: SA current smoking, by Aboriginal status and sex; and Aboriginal status and age, 15 years and over

3b. Tobacco smoking during pregnancy

Description: Proportion of mothers who smoked during pregnancy, by Indigenous status.

Rates of recorded current smoking at first antenatal visit during pregnancy are higher for both Aboriginal than non-Aboriginal females recorded in the AATSIHS and AHS. The current smoker rate for Aboriginal women at first antenatal visit is 50%. Rates of current smoking are more than 2 and a half times higher for Aboriginal women when compared to non-Aboriginal women. The percent of women who quit before first visit are the same for Aboriginal and non-Aboriginal women (5.4%) (see Figure 27).

There is little variation by maternal age in current smokers at first antenatal visit for Aboriginal women, however in the non-Aboriginal women there is a significant reduction in current smoking rate with an increase in maternal age (see Figure 28).

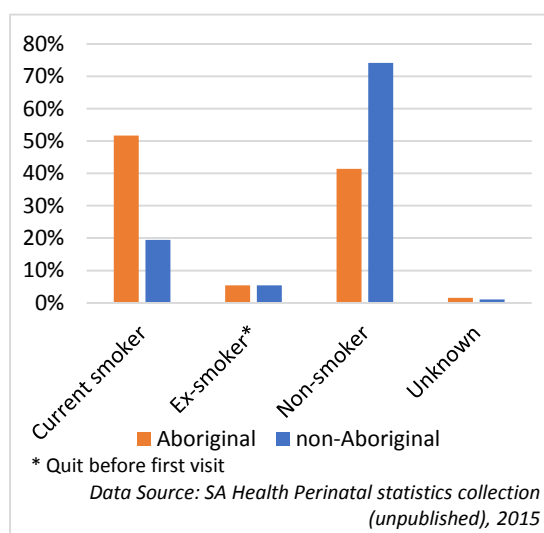


Figure 27: Smoker status at first antenatal visit, by Aboriginal status and smoking status, SA, 15 years and over

Rates of smokers at first antenatal visits are consistent across Local Health Networks (LHNs) for Aboriginal women (see Figure 29). These data were further analysed by Country Health SA LHN sub-region. Current smoking amongst pregnant Aboriginal women at their first antenatal visit was slightly above the Country Health SA LHN average for the Eyre, Flinders and Far North East and South East sub-regions. However, ex-smoking prevalence was higher than the average for the Eyre, Flinders and Far North East and Eyre, Flinders and Far North West sub-regions (see Figure 29). Current smoking was lowest amongst pregnant Aboriginal women in the Yorke and Northern sub-region.

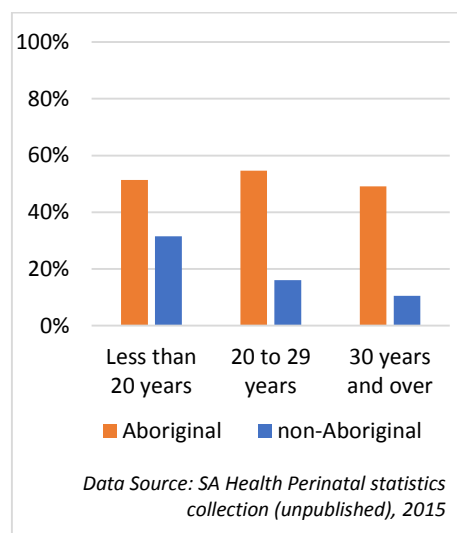


Figure 28: Rate of current smokers at first antenatal visit, by Aboriginal status and maternal age

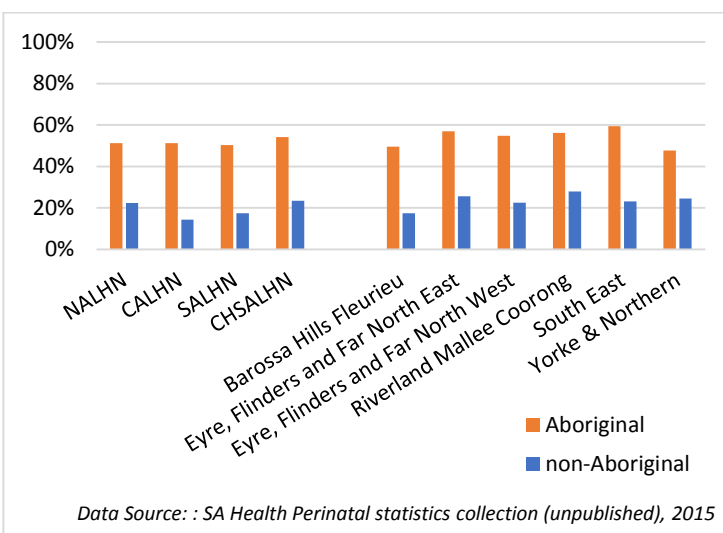


Figure 29: Rate of current smokers at first antenatal visit, by Aboriginal status and region (LHN and CHSALHN sub-regions)

3c. People meeting guidelines for adequate intake of fruit and vegetables

Description: Proportion of Australians meeting NHMRC Australian Dietary Guidelines 2013 for adequate intake of:

- fruit
- vegetables.

Nutritional guidelines are part of the recommended program for the prevention and management of cardiovascular disease. When summarised the National Health and Medical Research Council (NH&MRC) recommends that all adult Australians eat at least 5 serves of vegetables every day and eat at least 2 serves of fruit every day. Ten percent of Aboriginal people meet recommended fruit and vegetable nutritional guidelines, compared to 8% of non-Aboriginal people (see Figure 30).

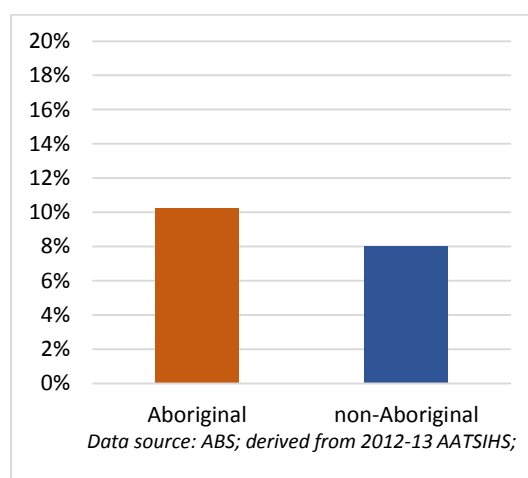


Figure 30: Percentage of people who met recommended guidelines for fruit and vegetable consumption, by Aboriginal status, SA

3d. Adults meeting sufficient levels of physical activity

Description: Adults undertaking sufficient (at least 150 minutes over 5 or more sessions) in a week.

The current National Physical Activity Guidelines for Australian Adults (18 years and over) recommend at least 30 minutes of moderate-intensity physical activity on most, preferably all, days. This has been interpreted from the following three measures and is considered to correlate with good health outcomes:

- performing 150 minutes of physical activity per week
- performing 150 minutes of physical activity over 5 or more sessions per week
- performing 30 minutes of physical activity on 5 days or more days per week

When comparing levels of physical activity between Aboriginal and non-Aboriginal people in South Australia, Aboriginal people are more likely to be doing the recommended levels of physical activity compared to non-Aboriginal people.

However, there is significant variation by sex, with Aboriginal females being more likely to meet these recommendations than non-Aboriginal females (Aboriginal: 51%; non-Aboriginal: 38%), while Aboriginal males are less likely to be achieving sufficient physical activity (Aboriginal: 27%; non-Aboriginal: 40%) (see Figure 31).

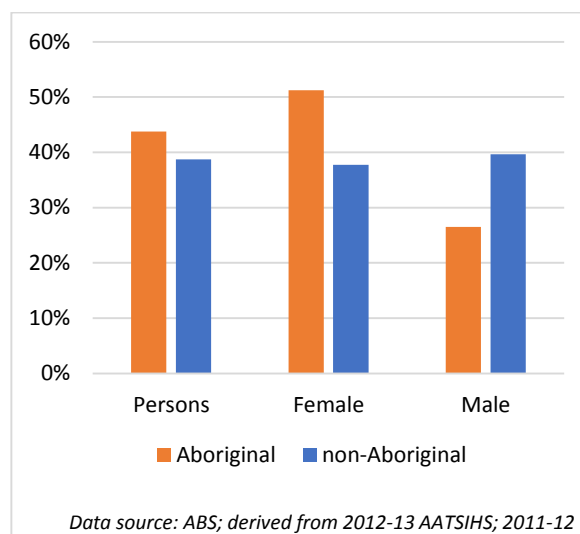


Figure 31: Achieving sufficient physical activity to be beneficial to health, by sex and Aboriginal status

Indicator 4: Smoking cessation

4a. Smokers receiving nicotine replacement therapy

Description: Proportion of clients of health services who have had their smoking status assessed within the last 1 year and identified as a smoker have received a prescription for nicotine replacement therapy.

Measure requires data collection development.

Indicator 5: Risk assessment

5a. Absolute cardiovascular risk assessment for people aged 35 years and over

Description: Proportion of clients with no known cardiovascular disease, aged 35 to 74 years, with information available to calculate their absolute cardiovascular disease risk in the last 2 years.

This measure requires development.

It is anticipated that data will be available from 2017 onwards for primary health care organisations that receive funding from the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people through the National Key Performance Indicators for Aboriginal and Torres Strait Islander primary health care (nKPIs).

There should be reporting of this measure by all primary health care services, not just those funded through the Australian Government Department of Health to provide services primarily to Aboriginal and Torres Strait Islander people.

5b. MBS Health Assessments within the previous 12 months

Description: Proportion of people aged 15 and over who have received a Medicare Benefits Schedule Health Assessment within the previous 12 months.

Receipt of an Aboriginal and Torres Strait Islander adult health check (MBS Item 715) is used as a proxy for risk identification. The update of the adult health check is, on average, around 15 percent for South Australia, with a significant increase since 2011-2012.

At a regional level, the Country SA Primary Health Network has twice the rate of update of adult health checks compared to the Adelaide Primary Health Network. Both regions have seen a doubling in the uptake in 2013-14 from 2011-12 (see Figure 32).

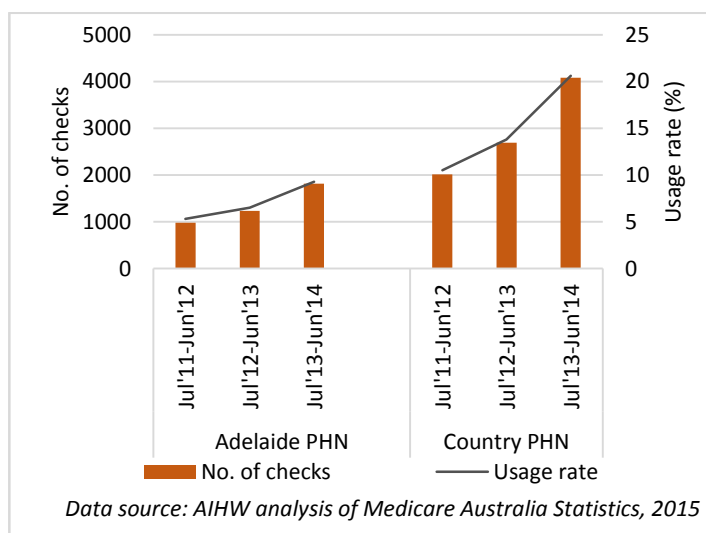


Figure 32: Number and usage rate of Aboriginal and Torres Strait Islander adult health checks for Aboriginal people, 2011-2014, by primary health network.

However, this measure only counts the number of assessments for the population, not the receipt of an assessment for an individual within a 12 month period.

5c. People with relevant Medicare-listed diagnostic items claimed in the previous 12 months

Description: Proportion of people who had relevant Medicare-listed cardiac related diagnostic items claimed in the previous 12 months.

This measure requires development. There is data available through Medicare Benefits Schedule (unpublished data). However, this data would not be able to distinguish whether people are clients of health services.

Indicator 6: Risk management

6a. Hypertension: Antihypertensive medications prescribed

Description: Proportion of Aboriginal and Torres Strait Islander people with a confirmed diagnosis of hypertension (Grade 1-3) who are prescribed antihypertensive medications.

This measure requires development; no data exists.

6b. Documented evidence of primary care practitioner follow-up for people with elevated risk of cardiac disease

Description: Proportion of those Aboriginal and Torres Strait Islander people identified as having elevated risk of cardiac disease in the previous 2 years, with documented evidence of primary care practitioner follow-up, including the proportion commenced on anti-hypertensive and lipid-lowering therapy and proportion of smokers offered an evidence based smoking cessation intervention.

The AIHW has recently released a report detailing measures of care in accordance with this measure:

- Proportion of Aboriginal and Torres Strait Islander people aged 18 and over living in non-remote areas without a current and long-term circulatory condition who were at high risk of cardiac disease who had their blood pressure checked in the previous 2 years.
- Proportion of Aboriginal and Torres Strait Islander people aged 18 and over without a current and long-term circulatory condition who were at high risk of cardiac disease and were current smokers who saw a doctor/health professional or specialist in the previous 12 months and discussed quitting smoking.

As shown in this taken from this report⁴, shows that Aboriginal people at high risk of cardiac disease are likely to receive a blood pressure check in the previous two years (over 80%). Compared to other jurisdictions, the proportion of Aboriginal people in SA with blood pressure checks is high. However, there is no data on the blood pressure result or management strategies adopted (see Source: AIHW 2015⁴

Figure 33).

Less than half of Aboriginal people in SA at high risk discussed quitting smoking in primary care. SA was one of the jurisdictions with the highest proportion (see Source: AIHW 2015⁴

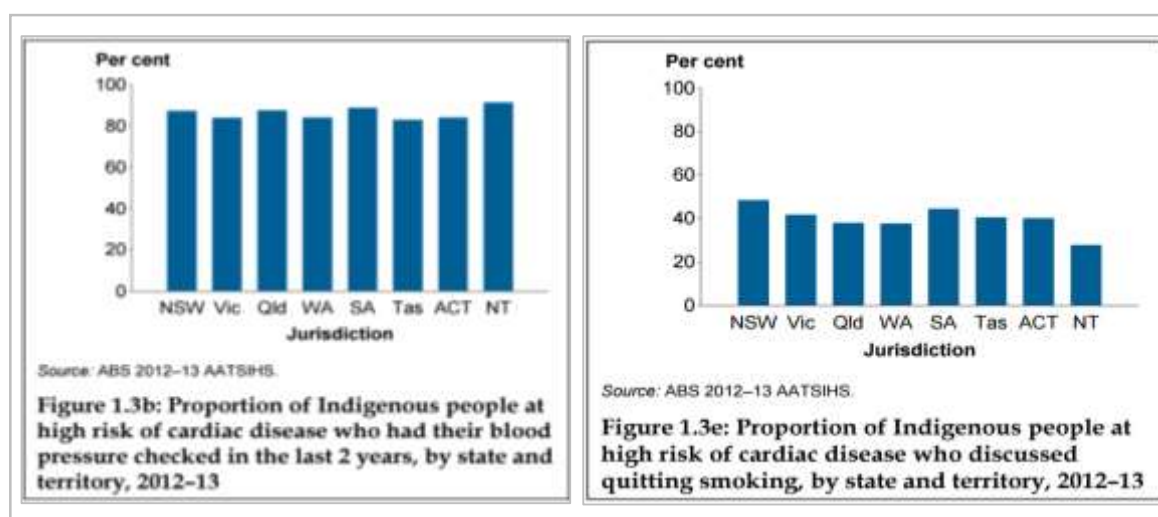


Figure 33).

Source: AIHW 2015⁴

⁴ Australian Institute of Health and Welfare 2015. *Better Cardiac Care measures for Aboriginal and Torres Strait Islander people: first national report 2015*. Cat. no. IHW 156. Canberra: AIHW.

Figure 33: Proportion of Aboriginal and Torres Strait Islander people at high risk of cardiac disease receiving specific management strategies, Australia, by state/territory (Source: AIHW, 2015)

Indicator 7: Secondary prevention and management of Acute Rheumatic Fever and Rheumatic Heart Disease

7a. People indicated for and who receive BPG secondary prophylaxis

Description: Proportion of all people indicated for benzathine penicillin G secondary prophylaxis administration who received <50%, 50-79% and greater than or equal to 80% of scheduled doses in the previous calendar year.

Secondary prophylaxis for acute rheumatic fever has increased since the introduction of the SA RHD register. In 2015, 57% of cases on the register were received 80 percent or greater adherence to benzathine penicillin G (BPG) injection. This increased from an average 80% or greater adherence of 27% in 2013 (see Figure 34).

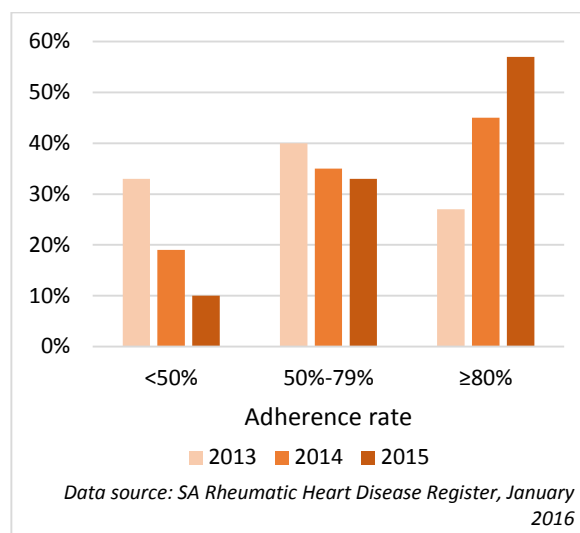


Figure 34: Average benzathine penicillin G adherence rate, SA, 2013-2015

7b. Priority 1 and 2 Rheumatic Heart Disease (RHD) cases receiving serial echocardiography

Description: Echocardiograms performed within designated timeframes for priority level 1 and 2 rheumatic heart disease cases.

Rheumatic Heart Disease (RHD) patients receive regular echocardiography; as at December 2015 58% of priority 1, and 71% of priority 2 cases received screening within guideline recommended timeframes. These levels increased from 2014 (see Figure 35).

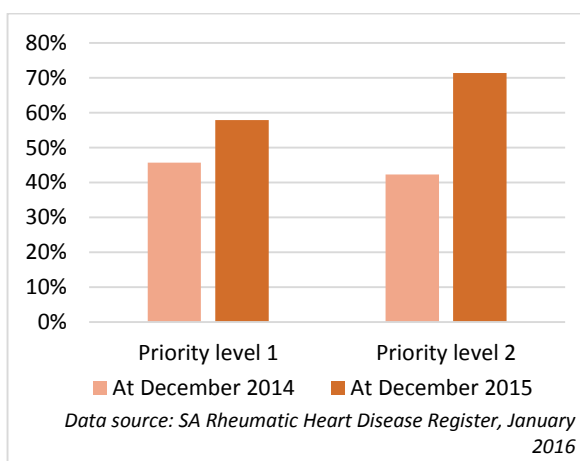


Figure 35: Proportion of priority 1 and priority 2 cases of ARF/RHD receiving serial echo as per guidelines per year

Indicator 8: Rapid assessment

8a. Coronary Heart Disease: electrocardiogram (ECG) performed within 10 minutes of arrival for STEMI

Description: Proportion of emergency department patients presenting with acute chest pain or other symptoms suggestive of acute coronary syndrome, with electrocardiogram performed and analysed before or within 10 minutes of first medical contact.

Aboriginal people presenting to a SA tertiary hospital with a ST elevation myocardial infarction (STEMI) were less likely to have an electrocardiogram (ECG) performed within 10 minutes of arrival (Aboriginal: 30% vs non-Aboriginal: 45%; OR 0.52) (see Figure 36).

Aboriginal people were less likely to have an ECG performed, regardless of their age.

Aboriginal and non-Aboriginal females were less likely to have an ECG performed within 10 minutes.

There is no data available on the timeliness of analysis of ECGs.

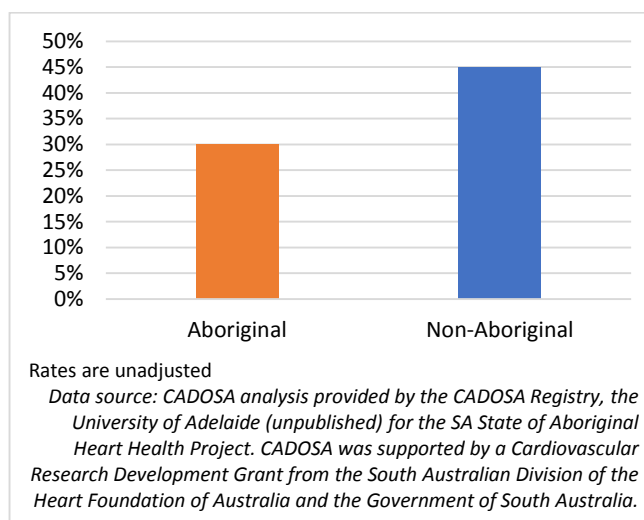


Figure 36: Proportion of STEMI patients who had a diagnostic ECG performed within 10 minutes of first medical contact, by Aboriginal status, January 2012–December 2014

8b. Acute exacerbation of Chronic Heart Failure (CHF): Receipt of echocardiography in the index admission

Description: Proportion of patients with acute exacerbation of heart failure, with an echocardiography performed and analysed within the index admission.

There is no data available for this measure, as echocardiography is not recorded with ISAAC.

8c. Stroke: Brain scan within:

- i. one hour presentation for thrombolysis eligible patients;
- ii. three hours for all other patients.

Description: Brain imaging within:

- i. 1 hour of presentation for thrombolysis eligible patients; and
- ii. 3 hours for all other patients;
of arrival to hospital.

There is no data available for this measure.

Receipt of echocardiography is not recorded with ISAAC.

This data is reported through the National Stroke Audit – Acute Services. The Clinical Audit of hospital care involves the retrospective review of the medical records of consecutive patients admitted to participating hospitals during a defined time frame. However, this is not reported at a state level by Aboriginal status.

Indicator 9: Timely treatment

9a. Coronary Heart Disease (CHD): STEMI patients receiving thrombolysis or Percutaneous Coronary Intervention (PCI)

Description: Proportion of patients with ST elevation myocardial infarction at first emergency contact presenting within 12 hours of symptom onset and receiving fibrinolysis or percutaneous coronary intervention.

This measure is reported through two approaches. This is due to the differing information available in different data sources (CADOSA versus ISAAC datasets).

STEMI receiving thrombolysis or PCI

This measure uses Coronary Angiography Database of South Australia (CADOSA) data.

Seventy-eight percent of Aboriginal patients presenting to a SA tertiary hospital with a ST elevation myocardial infarction (STEMI) received thrombolysis or PCI within the index admission, compared to 94% of non-Aboriginal patients. The proportion of non-Aboriginal patients receiving thrombolysis or PCI was consistent across all age groups, whereas there was significant variation for Aboriginal patients (see Figure 37).

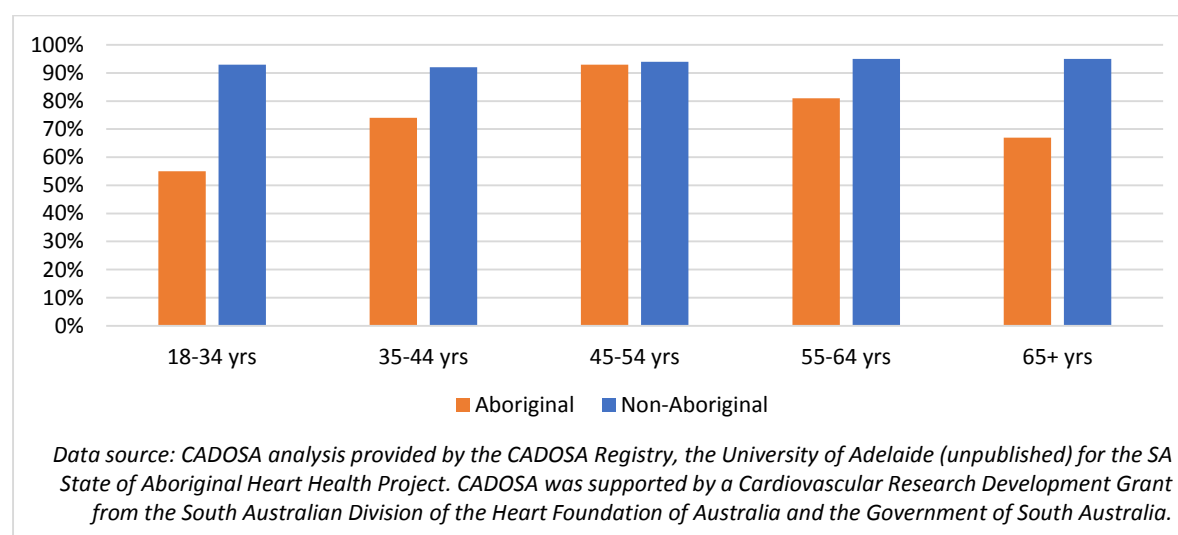


Figure 37: Proportion of people with a STEMI treated with thrombolysis or Percutaneous Coronary Intervention (PCI), by Aboriginal status and age, January 2012- December 2014

STEMI receiving PCI only

This measure uses Integrated South Australian Activity Collection (ISAAC) data.

Aboriginal hospital patients in all age groups other than 65 years and over were less likely than non-Aboriginal patients to receive a Percutaneous Coronary Intervention (PCI). The age groups with the greatest disparity were the 35-44 age group (Aboriginal: 59% vs non-Aboriginal: 80%) and the 55-64 age group (Aboriginal: 58% vs non-Aboriginal: 76%) (see Figure 38).

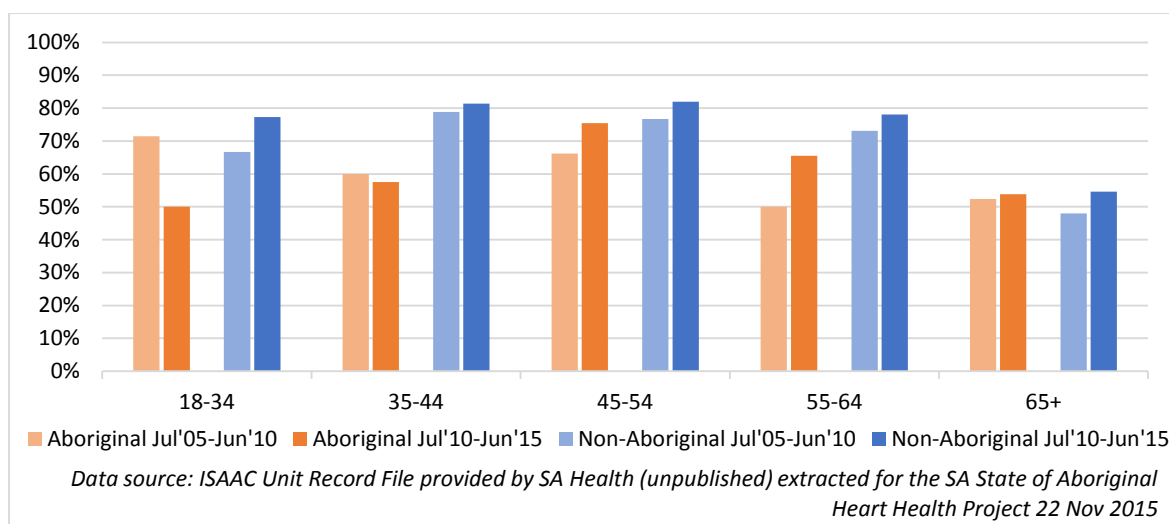


Figure 38: Proportion of people with a STEMI treated by Percutaneous Coronary Intervention (PCI), by Aboriginal status, age and year, July 2005 - June 2015

9b. Coronary Heart Disease (CHD): STEMI patients receiving fibrinolysis within 30 minutes of hospital arrival

Description: Proportion of patients with ST elevation myocardial infarction, whose first emergency clinical contact is within 12 hours of symptom onset, treated with fibrinolysis before or within 30 minutes of hospital arrival.

Aboriginal people presenting to a SA tertiary hospital with a ST elevation myocardial infarction (STEMI) were less likely to receive thrombolysis within 30 minutes of hospital arrival (Aboriginal: 21% vs non-Aboriginal: 26%; OR 0.78; p-value: 0.606) (see Figure 39).

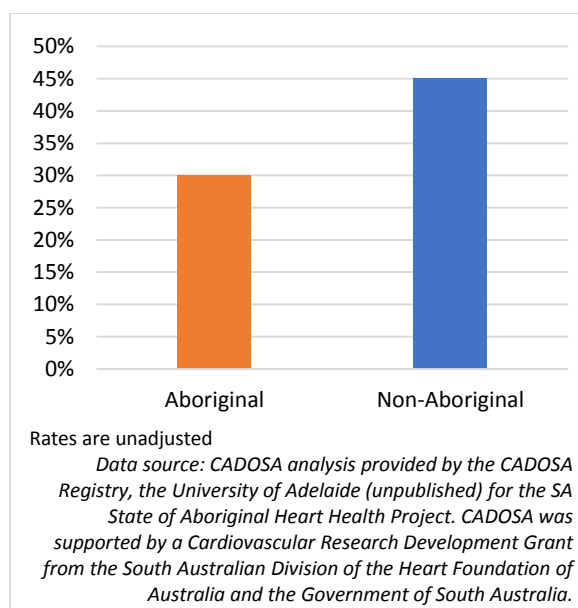


Figure 39: Proportion of STEMI receiving thrombolysis within 30 minutes of hospital arrival, by Aboriginal status, January 2012- December 2014

9c. Stroke: Presentation and intravenous thrombolysis within 4.5 hours of symptom onset

Description: Proportion of patients with ischaemic stroke presenting to hospital within 4.5 hours of symptom onset, with documentation that intravenous thrombolysis was administered.

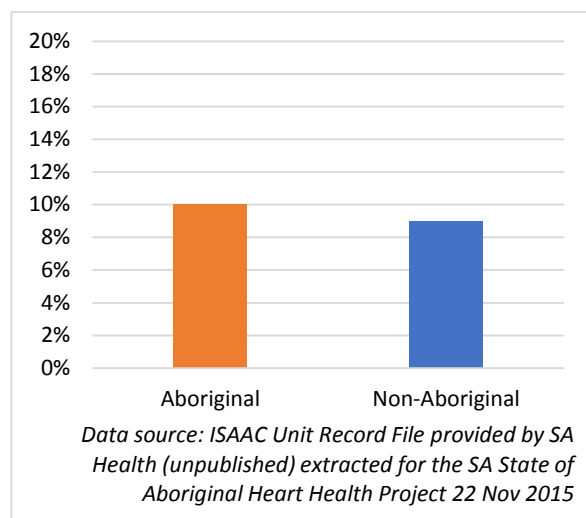


Figure 40: Crude proportion of people with a principal diagnosis of ischaemic stroke receiving thrombolysis (Royal Adelaide Hospital, The Queen Elizabeth Hospital, Flinders Medical Centre and Lyell McEwin Hospital only), by Aboriginal status, July 2011 – June 2015

There were only 60 Aboriginal patients who had a principal diagnosis of stroke (I63-I64) between July 2011 and June 2015, and six of these received thrombolysis. However, the ISAAC database does not record time of symptom onset, therefore we are unable to restrict the measure to include ischaemic stroke patients who presented within a timeframe.

A proxy measure, with inclusion of all ischaemic stroke patients has been used instead. Over a 4 year period (July 2011 – June 2015), there were 60 hospitalisations for Aboriginal people with a principal diagnosis of stroke. Of the 60 Aboriginal hospitalisations, 6 (10%) received thrombolysis. This is compared to 9% of non-Aboriginal hospitalisations (see Figure 40).

Indicator 10: Specialised care

10a. Coronary Heart Disease (CHD) and Stroke: Acute Coronary Syndrome (ACS) and stroke patients admitted into a cardiac or stroke unit:

- i. Cardiac unit;
- ii. Stroke unit.

Description: Proportion of patients with a final diagnosis of acute coronary syndrome or acute stroke who have documented treatment in a cardiac or stroke unit at any time during their hospital stay.

There is poor recording of admitting ward and discharge ward in ISAAC. Therefore it is not currently possible to report against this measure.

Indicator 11: Discharge medications

11a. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF), Stroke: Patients discharged with appropriate, condition-specific medications:

- i. CHD: aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate;
- ii. CHF: ACEI or A2RA and beta-blocker;
- iii. Haemorrhagic stroke: antihypertensive medication;
- iv. Ischaemic stroke: statin therapy, antihypertensive and/or antithrombotic medication.

Description: Proportion of people with a diagnosis of coronary heart disease, chronic heart failure and stroke discharged with medications, as appropriate to the condition.

There is only data available to measure discharge medications for acute coronary syndrome (ACS) patients.

Aboriginal ACS patients were more likely to be discharged with most guideline-recommended medications, compared to non-Aboriginal patients. Aboriginal people were more likely than non-Aboriginal patients to be discharged with: aspirin, other anti-platelet, dual anti-platelet, statin, non-statin lipid lowering medication, ACE inhibitor and beta blockers. Aboriginal patients were less likely to be discharged with angiotensin receptor blocker (ARB), calcium channel blockers, and long acting nitrate (see Figure 41).

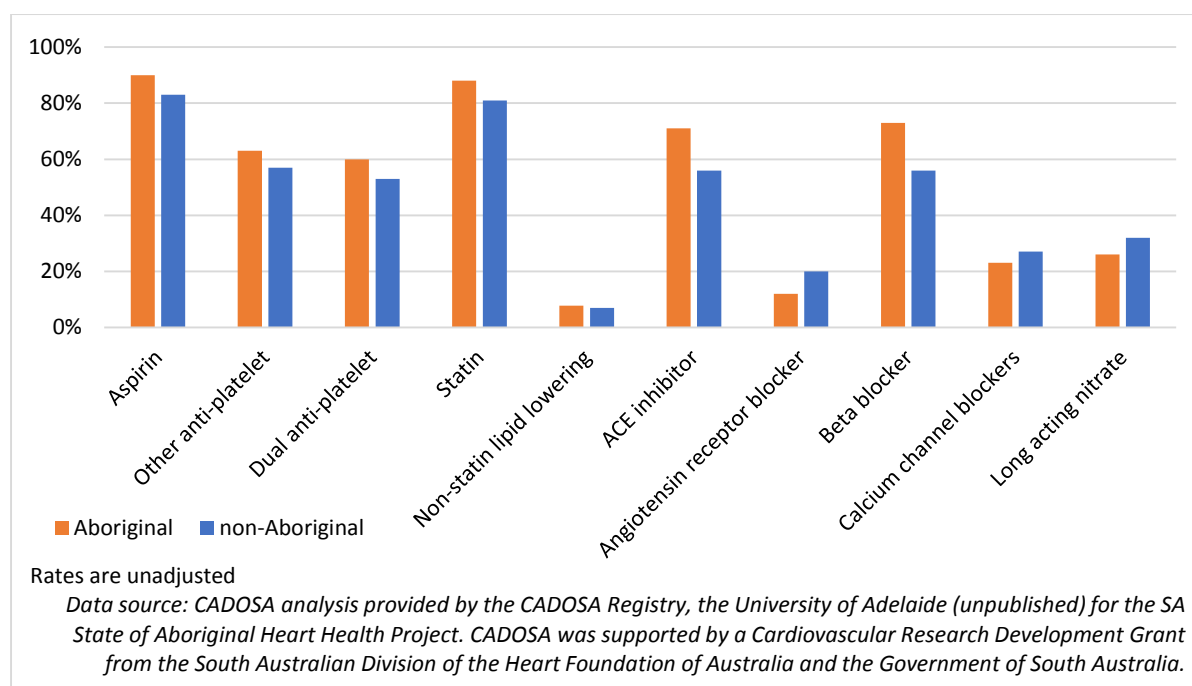


Figure 41: Proportion of Acute Coronary Syndrome patients having discharge medication recorded, by type of medication and Aboriginal status, January 2012- December 2014

11b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF), Stroke: Patients prescribed medications remaining on them at 12 months:

- i. CHD: aspirin or other antiplatelet agent, a statin, an ACE inhibitor or angiotensin receptor blocker, and a beta-blocker, as appropriate;
- ii. CHF: ACEI or A2RA and beta-blocker;
- iii. Haemorrhagic stroke: antihypertensive medication;
- iv. Ischaemic stroke: statin therapy, antihypertensive and/or antithrombotic medication.

Description: Proportion of people with a diagnosis of coronary heart disease, chronic heart failure and stroke discharged with medications, as appropriate to the condition remaining on their medications at 12 months post-discharge.

There is no data to measure 12 month post-discharge medication.

Indicator 12: Coordination from hospital to community

12a. Coronary Heart Disease (CHD), Stroke and Rheumatic Heart Disease (RHD): individualised care plan:

- i. Care plan for Acute Coronary Syndrome (ACS);
- ii. Care plan for Stroke;
- iii. Care plan for RHD.

Description: Proportion of patients with a final diagnosis of acute coronary syndrome or stroke provided with a written, individualised care plan.

This measure requires development; no data exists.

This data is reported through the Australian Stroke Clinical Registry. However, this is not reported at a state level by Aboriginal status.

12b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Rheumatic Heart Disease (RHD):
Review by a primary health care professional within one week of discharge

Description: Proportion of people reviewed by a primary health care professional within 1 week of discharge.

This measure requires development.

Indicator 13: Rehabilitation

13a. Stroke: Rehabilitation therapy within 48 hours of initial assessment

Description: Proportion of patients with a final diagnosis of stroke who commence rehabilitation therapy within 48 hours of initial assessment.

There is no data available for this measure.

This data is reported through the National Stroke Audit – Acute Services. The Clinical Audit of hospital care involves the retrospective review of the medical records of consecutive patients admitted to participating hospitals during a defined time frame. However, this is not reported at a state level by Aboriginal status.

13b. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Stroke: Patients referred to an appropriate condition-specific rehabilitation or other secondary prevention program:

- i. Acute Coronary Syndrome (ACS) patients;
- ii. Chronic Heart Failure patients;
- iii. Stroke patients.

Description: Proportion of acute coronary syndrome, chronic heart failure and stroke patients with documented referral prior to discharge to an appropriate, condition-specific rehabilitation or secondary prevention program.

There is no data on referral to condition-specific rehabilitation for chronic heart failure or stroke. There is data available for coronary heart disease, including acute coronary syndrome.

In the 2 year period January 2013-December 2014, 25 Aboriginal people received a referral to cardiac rehabilitation as an in-patient (28%). This compares to 34% of non-Aboriginal people. Referral to cardiac rehabilitation was higher in country hospitals (46%, n=6) compared to metropolitan hospitals (25%, n=19) (see Figure 42).

Seventy-five percent of Aboriginal people eligible for cardiac rehabilitation were under 65 years old, compared to 47% of non-Aboriginal people.

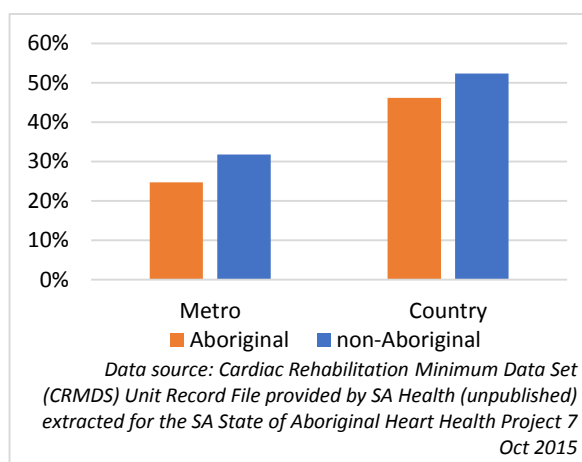


Figure 42: Referral to cardiac rehabilitation program whilst an in-patient (SA patients only), January 2013-December 2014

13c. Coronary Heart Disease (CHD), Chronic Heart Failure (CHF) and Stroke: Patients completing an appropriate condition-specific rehabilitation or other secondary prevention program:

- i. Acute Coronary Syndrome (ACS) patients;
- ii. CHF patients;
- iii. Stroke patients

Description: Proportion of acute coronary syndrome, chronic heart failure & stroke patients with documented completion of an appropriate, condition-specific rehabilitation or an alternative secondary prevention program.

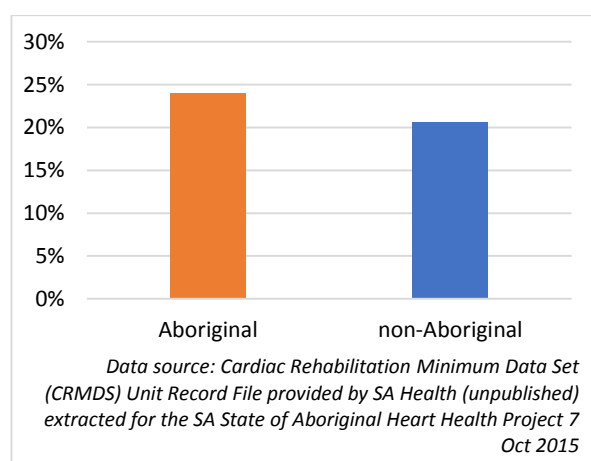


Figure 43: Completion of a cardiac rehabilitation program (referral whilst an in-patient, SA patients only), Jan 2013-Dec 2014

There is no data on referral to condition-specific rehabilitation for chronic heart failure or stroke. There is data available for coronary heart disease, including acute coronary syndrome.

In the two year period between January 2013-December 2014, six Aboriginal people who were referred to cardiac rehabilitation completed their program (24%). This was slightly higher than the non-Aboriginal rate (see Figure 43). Community members voiced concerns about the lack of culturally appropriate cardiac rehabilitation, and the lack of cardiac rehabilitation services that are accessible and appropriate for young people following a cardiac event.

For the following 3 ESSENCE Indicators, score cards have been designed to get a snapshot of current activity against evidence-based features that should be included in the service delivery model.

Indicator 14: Integrated regional clinical network

14a. Integrated regional clinical network scorecard

Description: Number of elements of an integrated regional clinical network which are met by a regional network.

Element:	Degree to which element is met: 1= Very poor 3= Ok 5=Very good	
	Heart	Stroke
Outreach diagnostic and management clinics within 2 hours access by all clients (cardiovascular risk assessment and management). a. Cardiovascular risk assessment b. Cardiovascular risk management	2 2	
24 hour availability of acute cardiac disease/stroke management units and diagnostic advice. a. Diagnostic advice b. Management units	4 4	2 2
Referral pathways and clinical guidelines in place and operational for: a. acute event assessment; b. diagnostic testing; c. hospital/tertiary centre transfers; d. specialist referrals, and; e. follow-up care (including palliative services).	4 3 4 2 2	2 3 3 3 3
A dedicated in-patient cardiac/stroke coordinator working across all services.	1	1
Documented care coordination plan connecting all acute and primary health care providers and allied health practitioners.	2	3
Structured cardiac and stroke rehabilitation programs, led and coordinated by a relevant rehabilitation team, within 2 hours access for all clients.	4	3
Regional network-wide data collection and reporting systems in place.	2	2
Standard medication kits, protocols and stock management systems for acute patients in place at regional and remote centres.	4	4

Indicator 15: Rheumatic Heart Disease (RHD) control programme

15a. Rheumatic Heart Disease (RHD) control programme scorecard

Description: Number of elements of a rheumatic heart disease control programme which are met by a jurisdiction.

Element:	Degree to which element is met: <i>1= Very poor 3= Ok 5=Very good</i>
Ongoing epidemiological surveillance system documented and in place.	4
Benzathine penicillin G adherence register	5
Documented system for clinical follow-up of people with rheumatic heart disease for echocardiography	5
Health practitioner education program documented and in place	4
Community education program documented and in place.	3

Indicator 16: Surgical procedures registry

16a. Services with a surgical procedures registry

Description: Percentage of cardiac services, stroke services and surgical units which undertake cardiac (including valvular surgery) and stroke surgery which have a centralised register.

Further work needs to be done to further develop a comprehensive understanding of current status/activity.

2.2 ESSENCE Cardiovascular Outcome Indicators

	Indicator and measures	Degree reported
Cardiovascular outcome measures	Cardiovascular Outcome Indicator 1: Cardiovascular mortality	
	1a. Cardiovascular mortality rate:	
	i. All cardiovascular (100-199);	
	ii. Coronary Heart Disease (CHD) (120-125);	
	iii. Chronic Heart Failure (CHF) (150);	✓
	iv. Cerebrovascular disease (160-169);	
	v. Acute Rheumatic Fever (ARF) (100-102) and Rheumatic Heart Disease (RHD) (105-109)	
	Cardiovascular Outcome Indicator 2: Coronary Heart Disease	
	2a. Coronary Heart Disease (CHD) (120-125) hospitalisation rate	✓
	2b. Twelve month mortality following hospitalisation for Acute Myocardial Infarction (AMI) (121)	x
	Cardiovascular Outcome Indicator 3: Chronic Heart Failure	
	3a. Chronic Heart Failure (CHF) (150) hospitalisation rate	✓
	Cardiovascular Outcome Indicator 4: Stroke	
	4a. Stroke (I61, I62.9, I63, I64) hospitalisation rate	✓
	4b. Twelve month mortality following hospitalisation for Stroke (I61, I62.9, I63, I64)	x
	Cardiovascular Outcome Indicator 5: Rheumatic Heart Disease	
	5a. Acute Rheumatic Fever (ARF) (100-102) incidence	✓
	5b. Acute Rheumatic Fever (ARF) (100-102) recurrence	✓
	5c. Acute Rheumatic Fever (ARF) (100-102) and Rheumatic Heart Disease (RHD) (105-109) hospitalisation rate:	
	(i) Acute Rheumatic Fever (100-102);	✓
	(ii) Rheumatic Heart Disease (105-109)	
	Cardiovascular Outcome Indicator 6: Hypertension	
	6a. Proportion of population with self-reported or measured hypertension (110)	✓

✓ = measured as specified in ESSENCE Measurement Indicators specification guide

x = not measured

Cardiovascular Outcome Indicator 1: Cardiovascular mortality

1a. Cardiovascular mortality rate:

- i. All cardiovascular (100-199);
- ii. Coronary Heart Disease (CHD) (120-125);
- iii. Chronic Heart Failure (CHF) (150);
- iv. Cerebrovascular disease (160-169);
- v. Acute Rheumatic Fever (ARF) (100-102) and Rheumatic Heart Disease (RHD) (105-109)

Description: Mortality rates for Australians by leading causes of death (ICD-10 [I00-I99]), by Indigenous status.

Cardiovascular mortality rate

There were 259 deaths of Aboriginal South Australians from cardiovascular disease between January 2006 and December 2012.

The crude rate of mortality from cardiovascular disease is 10.4 per 10,000 population for Aboriginal people, compared to 26.3 per 10,000 population for non-Aboriginal people.

However, when looking at age-specific mortality, there are clear differentials. The greatest disparity in death rates exist between the ages of 25 and 54 years. Between aged 25-34, and 45-54, Aboriginal people die from cardiovascular disease at a much higher rate compared non-Aboriginal people. Between the ages of 35-44, Aboriginal people die from cardiovascular disease at 7.8 times the rate of non-Aboriginal people. It is only in the age groups 5-14 and 75 and over where Aboriginal people are less likely to die from cardiovascular disease compared to non-Aboriginal people (see Figure 44).

Age-standardised rate was not calculated due to small numbers.

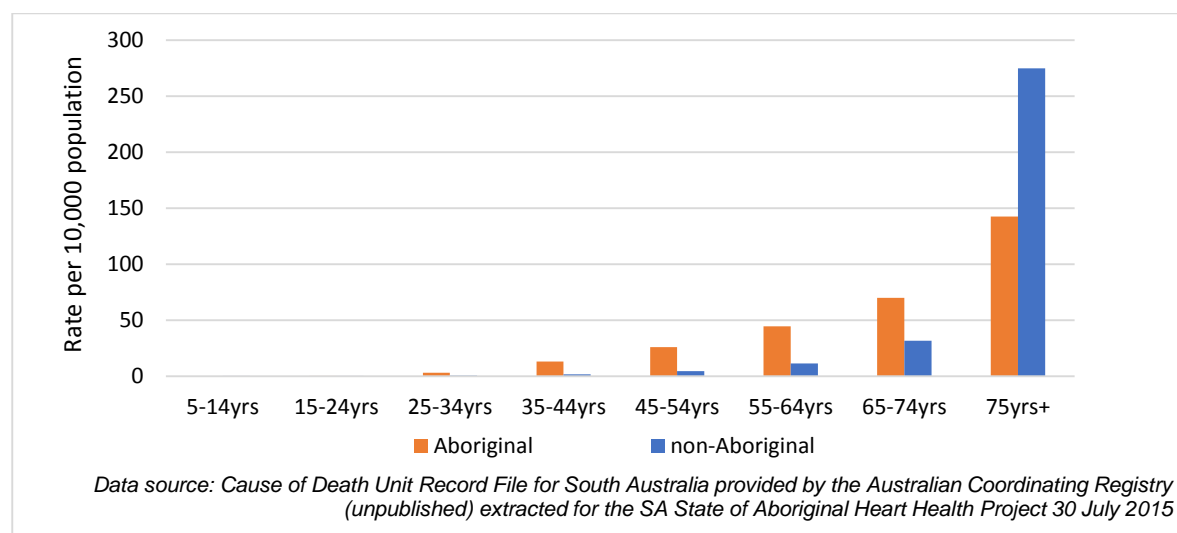


Figure 44: Age-specific cardiovascular mortality rate per 10,000 population, SA, by Aboriginal status, January 2006-December 2012

Coronary Heart Disease (CHD) mortality rate

There were 144 deaths of Aboriginal South Australians from coronary heart disease between January 2006 and December 2012.

The crude rate of mortality from cardiovascular disease is 47.3 per 10,000 population for Aboriginal people, compared to 93.1 per 10,000 population for non-Aboriginal people.

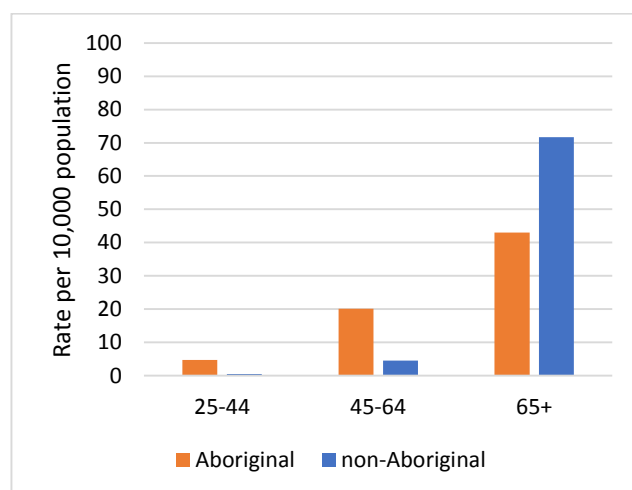


Figure 45: Age-specific CHD mortality rate per 10,000 population, SA, by Aboriginal status, January 2006-December 2012

However, when looking at age-specific mortality, there are clear differentials in young age groups. Aboriginal people aged 25-44 die from coronary heart disease at 8.7 times the rate of non-Aboriginal people. Aboriginal people aged 45-64 die from coronary heart disease at 4.4 times the rate of non-Aboriginal people. It is only in the age groups 65 and over where Aboriginal people are less likely to die from cardiovascular disease compared to non-Aboriginal people (see Figure 45).

An age-standardised rate was not calculated due to small numbers.

Chronic Heart Failure (CHF) mortality rate

There were 6 deaths of Aboriginal South Australians from chronic heart failure between January 2006 and December 2012.

The crude rate of mortality from chronic heart failure is 2 per 10,000 population for Aboriginal people, compared to 12.0 per 10,000 population for non-Aboriginal people.

Age-specific and age-standardised rates were not calculated due to small numbers.

Cerebrovascular disease cardiovascular rate

There were 45 deaths of Aboriginal South Australians from cerebrovascular disease (including stroke) between January 2006 and December 2012.

The crude rate of mortality from cardiovascular disease is 14.8 per 10,000 population for Aboriginal people, compared to 47.4 per 10,000 population for non-Aboriginal people.

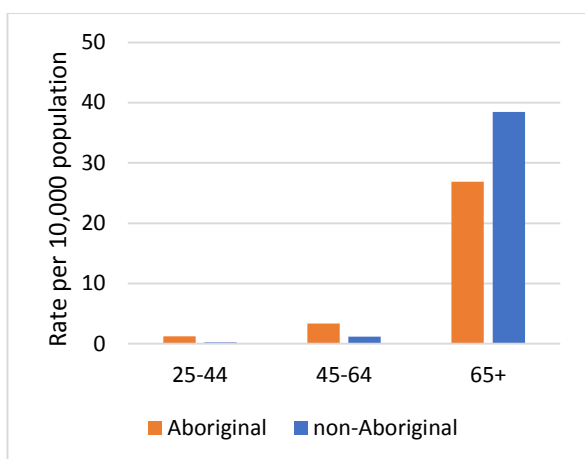


Figure 46: Age-specific cerebrovascular mortality rate per 1,000 population, SA, by Aboriginal status, January 2006-December 2012

However, when looking at age-specific mortality, there are clear differentials between the ages 25 and 64. Aboriginal people aged 25-44 die from cerebrovascular disease at 5.8 times the rate of non-Aboriginal people. Aboriginal people aged 45-64 die from cerebrovascular disease at 2.8 times the rate of non-Aboriginal people. It is only in the age groups 65 and over where Aboriginal people are less likely to die from cerebrovascular disease compared to non-Aboriginal people (see Figure 46).

An age-standardised rate was not calculated due to small numbers.

Acute Rheumatic Fever (ARF) (100-102) and Rheumatic Heart Disease (RHD) (105-109) mortality rate

There were 6 deaths of Aboriginal South Australians from ARF and RHD between January 2006 and December 2012.

The crude rate of mortality from ARF & RHD is 2.0 per 10,000 population for Aboriginal people, compared to 1.2 per 10,000 population for non-Aboriginal people.

Age-specific and age-standardised rates were not calculated due to small numbers.

Cardiovascular Outcome Indicator 2: Coronary Heart Disease

2a. Coronary Heart Disease (CHD) (I20-I25) hospitalisation rate

Description: Hospital separation rates for Coronary Heart Disease (I20-I25) for Australians, by Indigenous status.

Over a 10 year period (July 2005 - June 2015), the hospitalisation rate for Aboriginal females is 5.5 per 1,000, compared to 4.4 per 1,000 for non-Aboriginal females. The hospitalisation rate for Aboriginal males is 6.7 per 1,000, compared to 8.7 per 1,000 for non-Aboriginal males (see Figure 47).

After adjusting for age, Aboriginal hospitalisation rate was 10.9 per 1,000, compared to 5.2 per 1,000 non-Aboriginal people (see Figure 48).

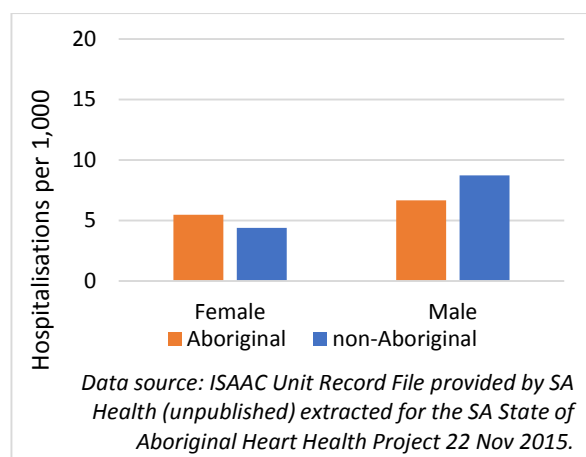


Figure 47: Crude hospitalisation rate for CHD, by Aboriginal status and sex July 2005 - June 2015

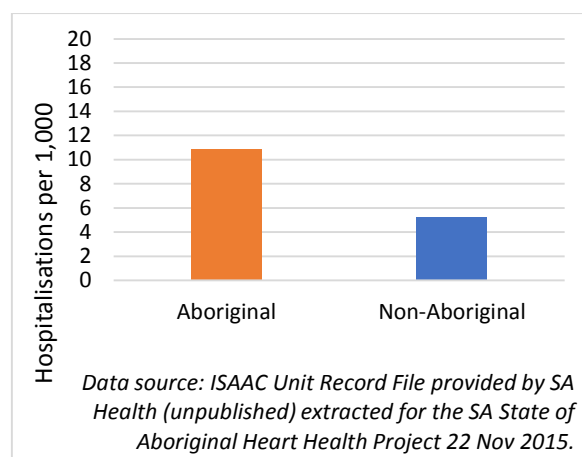


Figure 48: Age-standardised hospitalisation rate for CHD, by Aboriginal status, July 2005 - June 2015

Between July 2005 – June 2007 and July 2013 – June 2015, the hospitalisation rate for Aboriginal people has dropped between the ages 25 and 64. The greatest relative decreases in Aboriginal hospitalisation rate occurred in the younger age groups. The hospitalisation rate has increased in Aboriginal people 65-74 and 75 years and over (see Figure 49).

This is compared to the non-Aboriginal hospitalisation rate which decreased for all age groups. However, hospitalisation rates remain substantially higher in the Aboriginal population, particularly in age groups 35-74. In the 75 years and over age group, the Aboriginal hospitalisation rate has overtaken the non-Aboriginal hospitalisation rate, due to rising rates in the Aboriginal population and falling rates in the non-Aboriginal population.

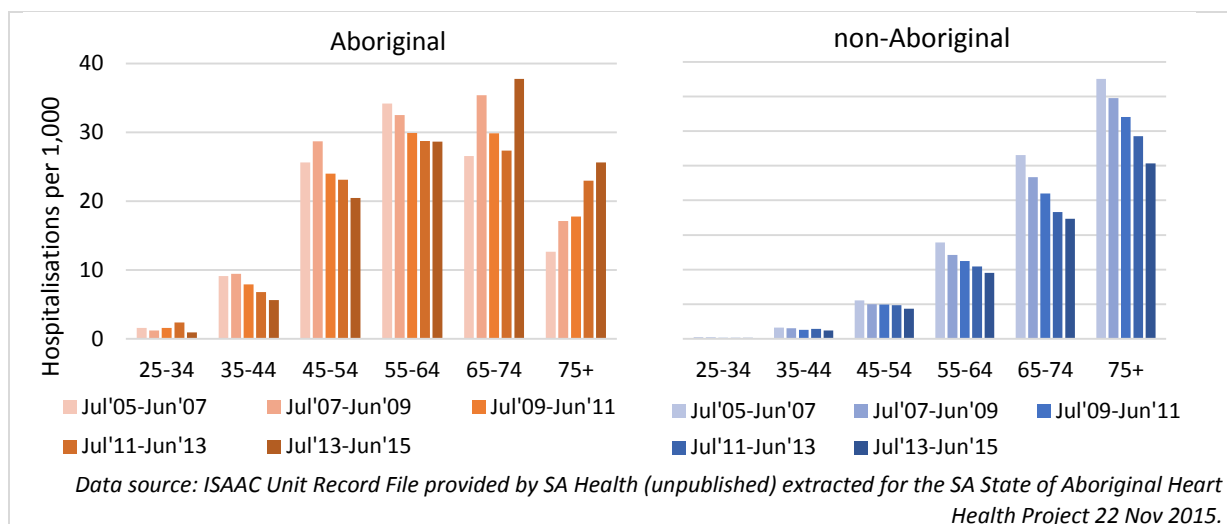


Figure 49: Age-specific hospitalisation rates for people with a principal diagnosis of CHD, by Aboriginal status and years, July 2005 - June 2015

2b. Twelve month mortality following hospitalisation for Acute Myocardial Infarction (AMI) (121)

Description: 12 month mortality rate for people admitted to hospital with acute coronary syndromes.

This measure will be assessed using data linkage.

Cardiovascular Outcome Indicator 3: Chronic Heart Failure

3a. Chronic Heart Failure (CHF) (150) hospitalisation rate

Description: Hospital separation rates for Chronic Heart Failure for Australians, by Indigenous status.

After adjusting for age, Aboriginal hospitalisation rate was 4.1 per 1,000, compared to 1.8 per 1,000 non-Aboriginal people (see Figure 50).

The hospitalisation rate for Aboriginal people was substantially higher than the non-Aboriginal comparison in all age groups other than 75 and over. The greatest relative disparity is in the 35-44 age group (Aboriginal: 2.0 per 1,000 vs non-Aboriginal: 0.1 per 1,000). There are also substantial differentials for the age groups 25-34, 45-54, and 55-64 (see Figure 51).

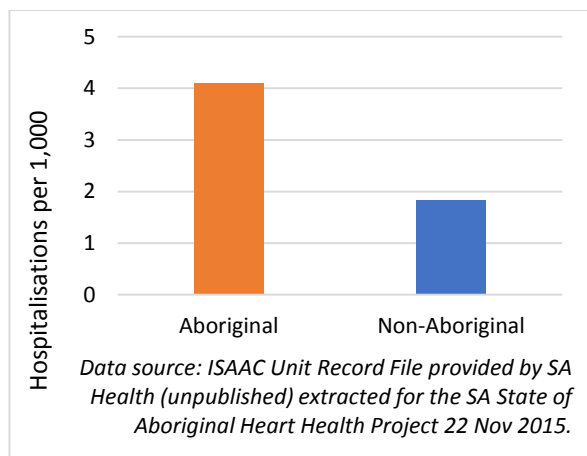


Figure 50: Age-standardised hospitalisation rate for CHF, by Aboriginal status, July 2005 - June 2015

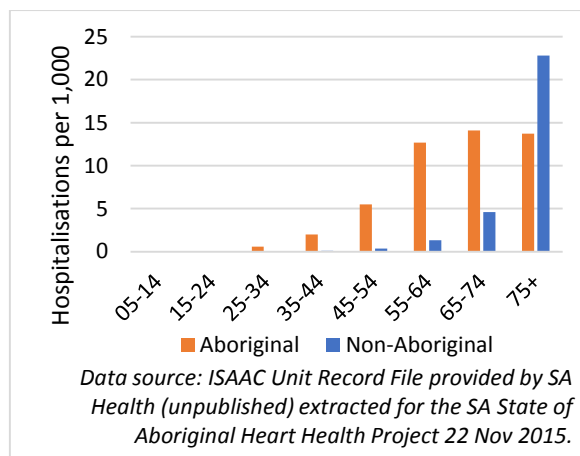


Figure 51: Age-specific hospitalisation rate for CHF, by Aboriginal status, July 2005 - June 2015

Between July 2005 – June 2007 and July 2013 – June 2015, the hospitalisation rate for Aboriginal people has, on average, increased for all age groups. This is compared to the non-Aboriginal hospitalisation rate which remained relatively stable over the 10 year period for all age groups. Hospitalisation rates are substantially higher in the Aboriginal population, particularly in age groups 35-74 (see Figure 52).

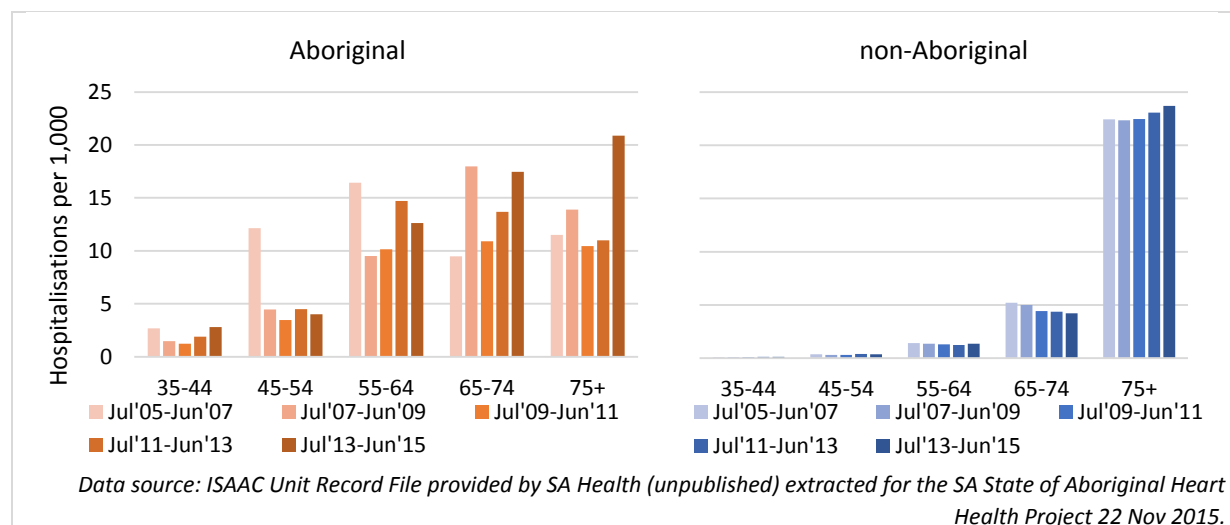


Figure 52: Age-specific hospitalisation rates for people with a principal diagnosis of CHF, by Aboriginal status and years, July 2005 - June 2015

Cardiovascular Outcome Indicator 4: Stroke

4a. Stroke (I61, I62.9, I63, I64) hospitalisation rate

Description: Hospital separation rates for Stroke (I61, I62.9, I63, I64) for Australians, by Indigenous status.

After adjusting for age, Aboriginal hospitalisation rate was 1.8 per 1,000, compared to 1.1 per 1,000 non-Aboriginal people (see Figure 53).

The hospitalisation rate for Aboriginal people was substantially higher than the non-Aboriginal comparison between the ages 25 and 74. There are substantial differences in the hospitalisation rates for age groups 25-34, 35-44, 45-54 and 55-64. The Aboriginal hospitalisation rate is lower in the 75 and over age group (Aboriginal: 8.7 per 1,000 vs non-Aboriginal: 10.5 per 1,000) (see Figure 54).

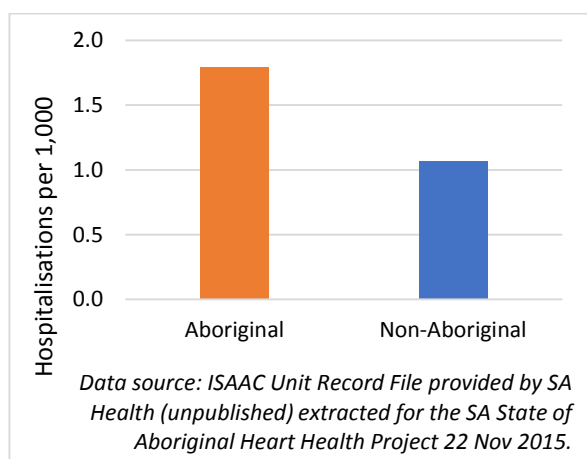


Figure 53: Age-standardised hospitalisation rate for stroke, by Aboriginal status, July 2005 - June 2015

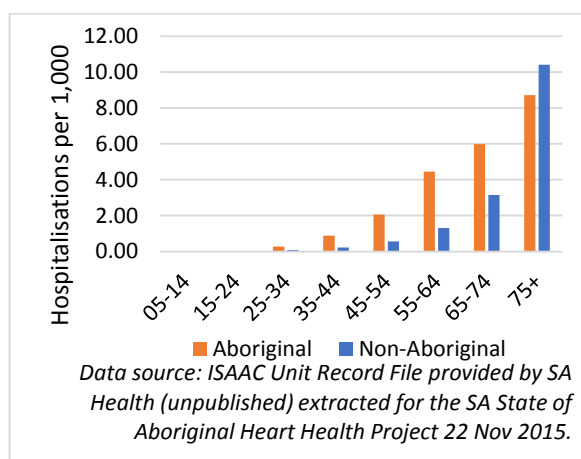


Figure 54: Age-specific hospitalisation rate for stroke, by Aboriginal status, July 2005 - June 2015

Between July 2005 - June 2010 and July 2010 - June 2015, the hospitalisation rate for Aboriginal people has decreased slightly for age groups 35-44, 55-64, and 65-74. This is compared to reductions in hospitalisation rates for non-Aboriginal people in all age groups other than 45-54. Hospitalisation rates are substantially higher in the Aboriginal population, particularly in age groups 35-74 (see Figure 55).

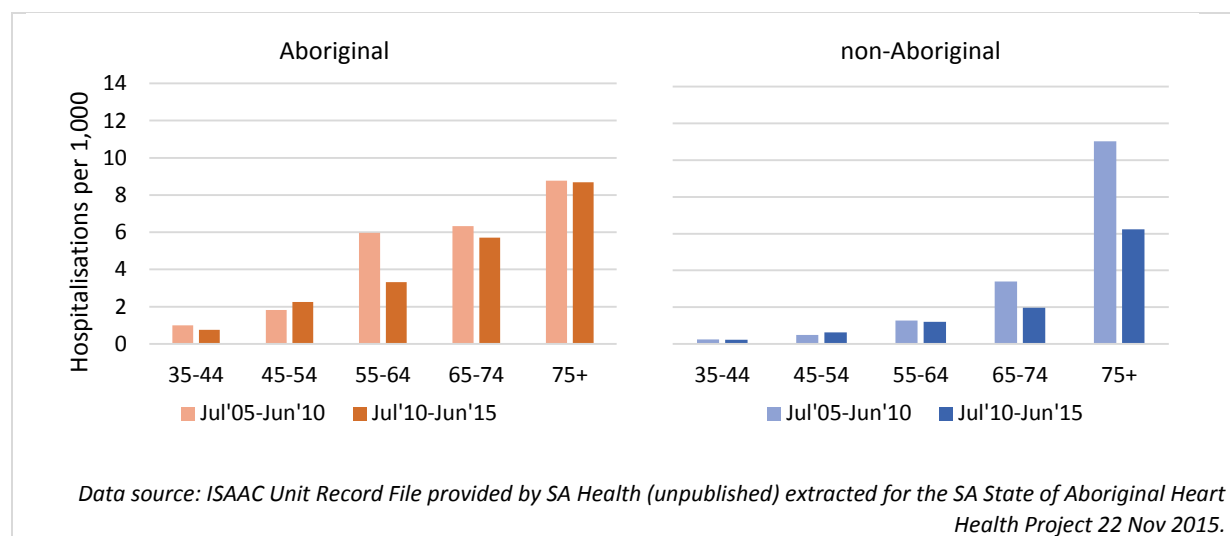


Figure 55: Age-specific hospitalisation rates for people with a principal diagnosis of stroke, by Aboriginal status and years, July 2005 - June 2015

4b. Twelve month mortality following hospitalisation for Stroke (I61, I62.9, I63, I64)

Description: 12 month mortality rate for people admitted to hospital with stroke.

This measure will be assessed using data linkage.

Cardiovascular Outcome Indicator 5: Rheumatic Heart Disease

5a. Acute Rheumatic Fever (ARF) (100-102) incidence

Description: Yearly acute rheumatic fever incidence by episode type, age group and

- i. Sex
- ii. Ethnicity.

The incidence of acute rheumatic fever is between 2 and 4 people per 10,000 population, with an average of 3.3 per 10,000 between January 2013 and June 2015 (see Table 2).

Table 2: Incidence (initial episodes and recurrences) of ARF for Aboriginal people, by year

Year	Incidence of ARF (n)	Incidence rate per 10,000 population
Jan-Dec 2013	12	3.1
Jan-Dec 2014	17	4.3
Jan-June 2015	...	2.0
Total (30 months)	...	3.3

Data source: SA Rheumatic Heart Disease Register provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 18 September 2015

5b. Acute Rheumatic Fever (ARF) (100-102) recurrence

Description: Yearly acute rheumatic fever recurrences:

- i. Proportion of all acute rheumatic fever episodes
- ii. Rate per 100 patient-years for patients prescribed prophylaxis (both oral and benzathine penicillin G).

Recurrences of acute rheumatic fever over the 30 month period was on average 24.2% of all episodes, with a reduction seen between 2013 and 2015 (see Table 3), which is an indicator of timely diagnosis and sustained management.

Table 3: Recurrence of ARF for Aboriginal people, by year

Year	Recurrence as proportion of all ARF episodes (%)
Jan-Dec 2013	41.7
Jan-Dec 2014	17.6
Jan-June 2015	0.0
Total (30 months)	24.2

Data source: SA Rheumatic Heart Disease Register provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 18 September 2015

5c. Acute Rheumatic Fever (ARF) (100-102) and Rheumatic Heart Disease (RHD) (105-109) hospitalisation rate:

- i. Acute Rheumatic Fever (100-102);
- ii. Rheumatic Heart Disease (105-109).

Description:

- i. Hospital separation rates for acute rheumatic fever (100-102) for Australians, by Indigenous status
- ii. Hospital separation rates for rheumatic heart disease (105-109) for Australians, by Indigenous status.

Over a 10 year period (July 2005 - June 2015), there were 32 Aboriginal hospitalisations for ARF. The crude Aboriginal hospitalisation rate for ARF was 0.88 per 1,000 people, compared to 0.02 per 1,000 (see Figure 56).

Due to small numbers, it was not feasible to calculate an age-standardised rate.

The age-specific rate is significantly higher for the Aboriginal population for the age groups 0-19 and 20 and over. The rate is higher for both the Aboriginal and non-Aboriginal populations in the 0-19 age group (see Figure 57).

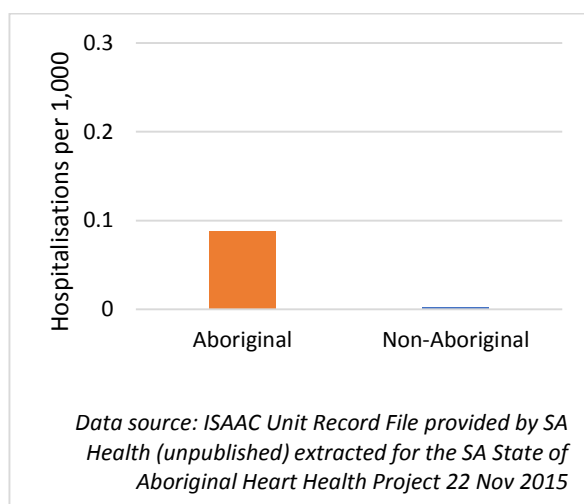


Figure 56: Crude hospitalisation rate for ARF, by Aboriginal status, July 2005 - June 2015

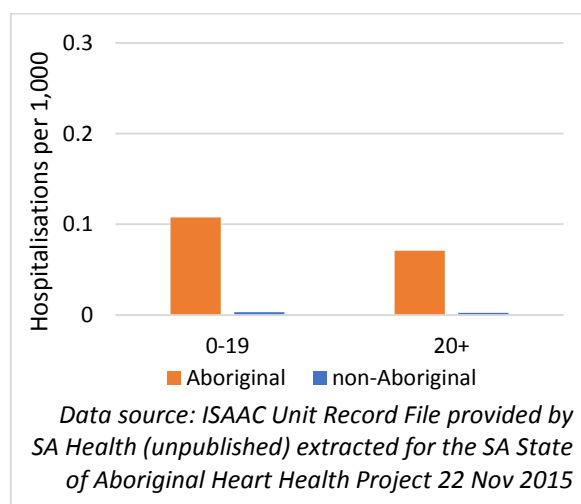


Figure 57: Age-specific hospitalisation rate for ARF, by Aboriginal status, July 2005 - June 2015

Over a 10 year period (July 2005 - June 2015), there were 72 Aboriginal hospitalisations for RHD. The crude Aboriginal hospitalisation rate for ARF was 2.0 per 10,000 people, compared to 1.3 per 10,000 (see Figure 58).

Due to small numbers, it was not feasible to calculate an age-standardised rate.

The age-specific rate is significantly higher for the Aboriginal population for the age groups 0-29 and 30-59 (see Figure 59).

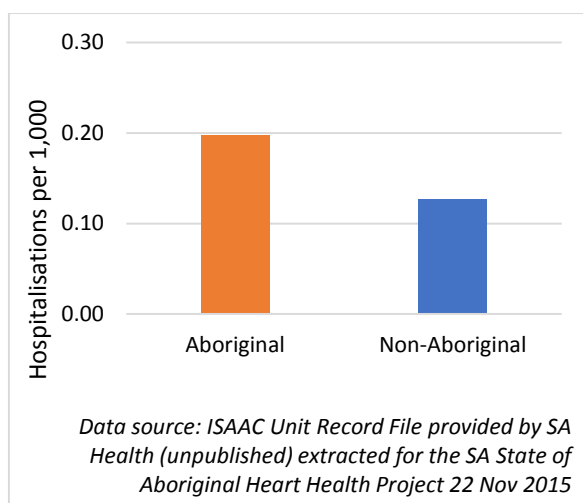


Figure 58: Crude hospitalisation rate for RHD, by Aboriginal status, July 2005 - June 2015

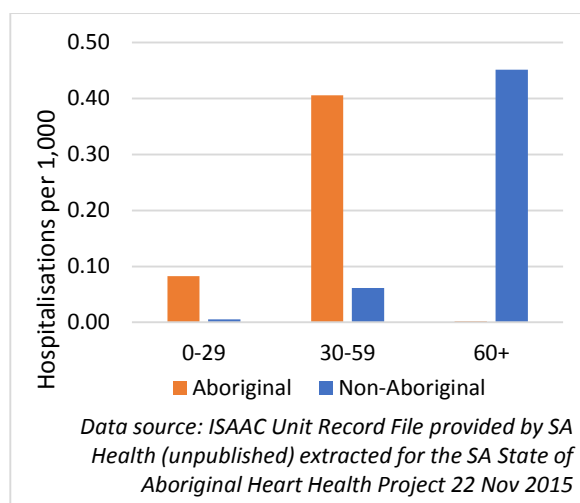


Figure 59: Age-specific hospitalisation rate for RHD, by Aboriginal status, July 2005 - June 2015

Cardiovascular Outcome Indicator 6: Hypertension

6a. Proportion of population with self-reported or measured hypertension (110)

Description: Proportion of adults with a self-reported/measured (as part of survey) high blood pressure

High blood pressure is an important risk factor for heart disease, stroke and other cardiovascular diseases. According to WHO guidelines, a person is defined as having high blood pressure if their systolic or diastolic blood pressure is equal to or greater than 140/90 mmHg.

The crude prevalence of high to severe blood pressure is slightly greater in the Aboriginal population (26% versus 23%). High blood pressure is seen at early ages in the Aboriginal population, with one third of all 35 to 44 year old Aboriginal people having high blood pressure (see Figure 60).

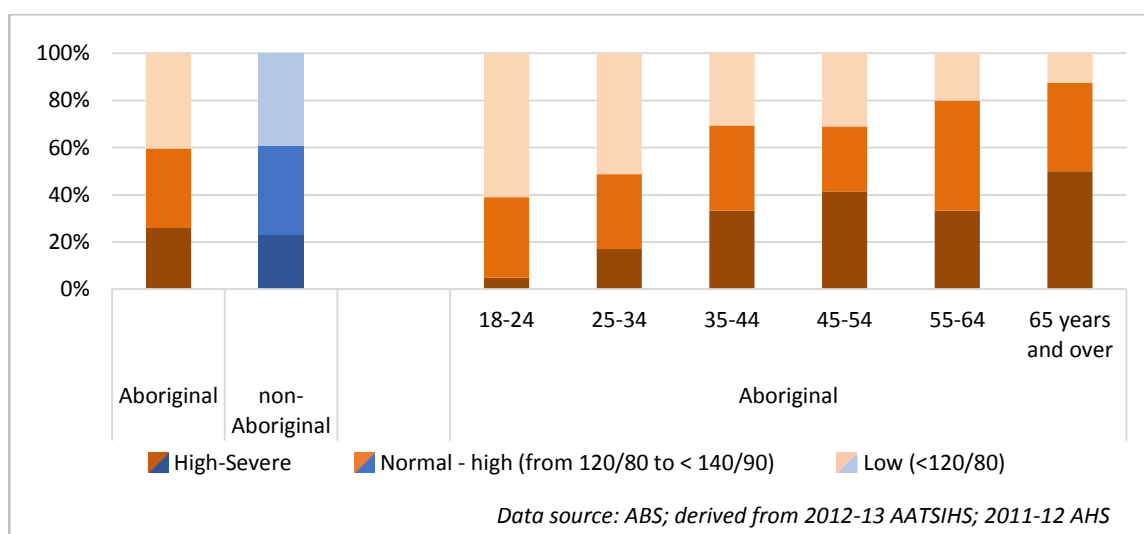


Figure 60: Reported blood pressure, SA, by Aboriginal status, and for Aboriginal people by age

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SA Aboriginal Health Survey

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Integrated South Australian Activity Collection (ISAAC) and Emergency Department Data Collection (EDDC)

The authors wish to thank SA Health for enabling ISAAC and EDDC data to be used for this publication.

SA Health performs many validation checks on the data captured in hospital systems and these data are understood to be of high quality. However, it should be noted that micro-analysis may yield trends that are a factor of different data capture or coding practices rather than a reflection of clinical standards.

Cardiac Rehabilitation Minimum Data Set

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Heart Foundation

The authors wish to thank the Heart Foundation (SA) for providing a report on Heart Foundation Resource Distribution in South Australia 2010-2015.

Appendix 4 Abbreviations

AATSIHS	Australian Aboriginal and Torres Strait Islander Health Survey
ABS	Australian Bureau of Statistics
AHS	Australian Health Survey
AIHW	Australian Institute of Health and Welfare
ARF	Acute Rheumatic Fever
BMI	Body mass index
CALHN	Central Adelaide Local Health Network
CHSALHN	Country Health SA Local Health Network
CHD	Coronary Heart Disease
CKD	Chronic Kidney Disease
CNOS	Canadian National Occupancy Standard
CVD	Cardiovascular Disease
EDDC	Emergency Department Data Collection
HF	Heart Failure
ISAAC	Integrated South Australian Activity Collection
LHN	Local Health Network
MBS	Medical Benefits Scheme
NALHN	Northern Adelaide Local Health Network
NHMRC	National Health and Medical Research Council
PHN	Primary Health Network
RHD	Rheumatic Heart Disease
SA	South Australia
SAAHS	South Australian Aboriginal Health Survey
SALHN	Southern Adelaide Local Health Network
URF	Unit Record File
WHO	World Health Organisation

Appendix 5 The South Australian Aboriginal population

As at 2011 (the last census), the Aboriginal population in South Australia is estimated to be at around 37,000 people.

The age profile of the South Australian Aboriginal population is significantly younger than the non-Aboriginal population. Approximately 75% of the Aboriginal population is under the age of 40, compared to around 50% of the non-Aboriginal population (Table 4 and Figure 61). The distribution by sex is relatively even (Table 4).

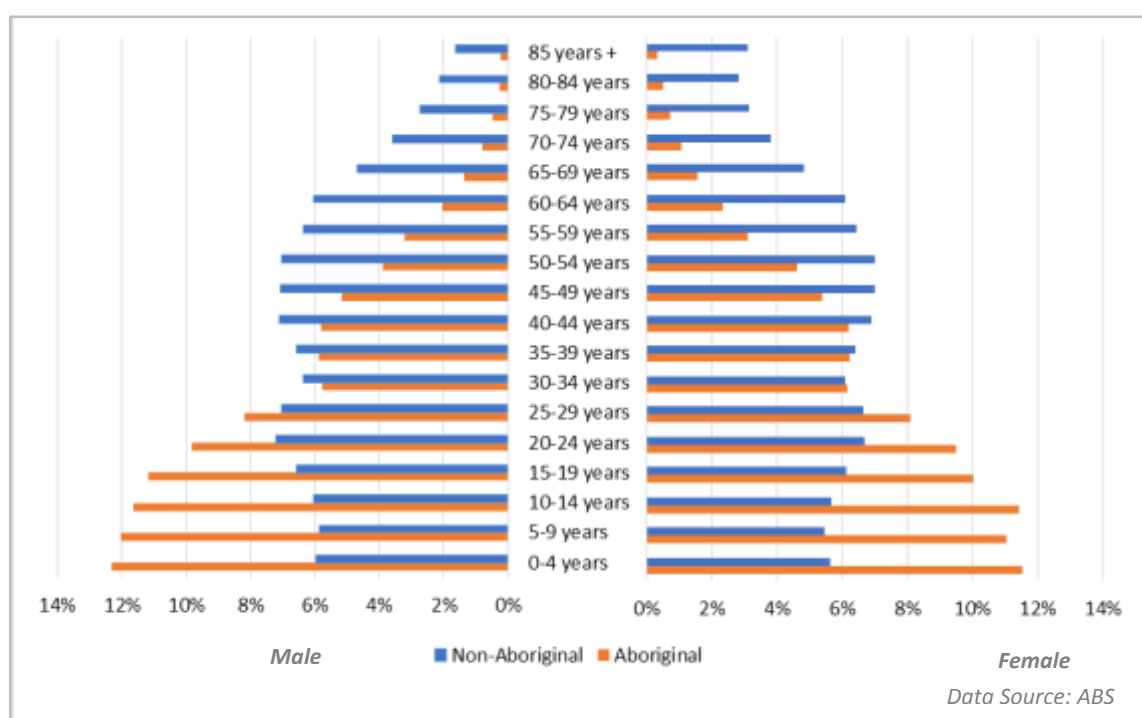


Figure 61: South Australian age distribution (5 year age brackets), by Aboriginal status and sex

Table 4: Aboriginal population distribution, by age and sex, 2011

	Male		Female		Persons	
	n	%	n	%	n	%
0-4 years	2,282	12.3	2,176	11.5	4,458	11.9
5-14 years	4,391	23.7	4,240	22.5	8,631	23.1
15-24 years	3,896	21.0	3,682	19.5	7,578	20.3
25-34 years	2,591	14.0	2,685	14.2	5,276	14.1
35-44 years	2,168	11.7	2,345	12.4	4,513	12.1
45-54 years	1,679	9.0	1,891	10.0	3,570	9.5
55-64 years	970	5.2	1,029	5.5	1,999	5.3
65-74 years	396	2.1	501	2.7	897	2.4
75 years +	181	1.0	305	1.6	486	1.3
Total	18,554	100.0	18,854	100.0	37,408	100.0

Data Source: ABS 2015

Approximately half of Aboriginal South Australians live in the metropolitan Adelaide region. The other half of Aboriginal South Australians live in regional and remote locations. Over 10,000 Aboriginal people live in, or to the north and/or west of Port Augusta (see Figure 62).

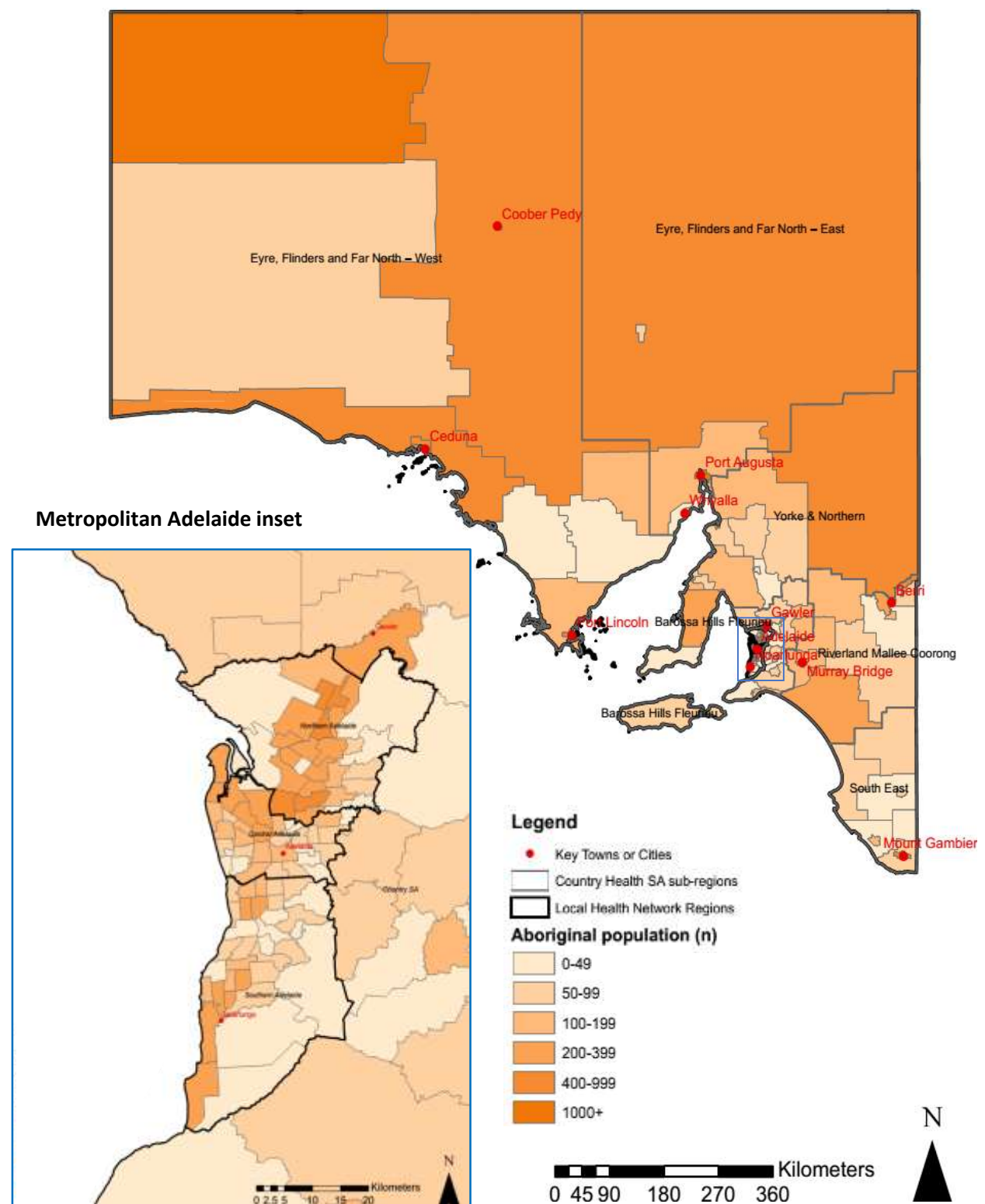


Figure 62: South Australian Aboriginal population distribution, by SA2 level, with Local Health Networks and Country Health SA Local Health Network sub-regions indicated.

Appendix 6 Cardiovascular risk of Aboriginal South Australians

The current cardiovascular risk profile for Aboriginal SA is important in understanding the future burden of disease, and the impact this will have on the health system. A number of measures of risk have been identified here and have been classified into: general health; health behaviours; presence of chronic conditions; and psychological health.

General health considers how people rate their health.

Pregnancy outcomes are an important measure of future cardiovascular risk, particularly birth weight.

Health behaviours including smoking, healthy eating and physical activity are significant risk factors of cardiovascular risk.

Chronic conditions, particularly diabetes and chronic kidney disease, can result in early onset and complications of cardiovascular disease.

Psychological health and wellbeing is emerging as a significant risk factor for cardiovascular health, particularly in Aboriginal communities where intergenerational trauma, stress and worry has a heavy burden.

The key risk factor findings are that:

- Fair/poor overall health status is significantly higher among the Aboriginal population (23.9%) when compared to the non-Aboriginal population (15.0%) and as age increases, Aboriginal people are more likely to report fair or poor overall health status (42.9% of those aged 65 years and over).
- Smoking prevalence is higher in the Aboriginal population (42.1%) than the non-Aboriginal population (17.5%) and Aboriginal males are more likely to be current smokers than Aboriginal females. Whereas smoking rates decline with age in the non-Aboriginal population, current smoking remains high across all age groups (15 to 65 years and over) for Aboriginal people.
- Over one third of Aboriginal South Australians report having three or more long term health conditions (35.7%; n=12,700).
- Three in one hundred Aboriginal people in SA are living with the comorbid burden of diabetes, CKD and CVD (0.3%; n=1,000).
- Aboriginal people are significantly more likely to have experienced a family stressor in the past 12 months when compared to non-Aboriginal people (73.6% to 53.2% respectively) and are three times as likely to suffer from high to very high psychological distress.
- Aboriginal people are more likely to be doing the recommended levels of physical activity compared to non-Aboriginal people, and Aboriginal females are significantly more likely to be meeting these recommendations than Aboriginal males.
- There are no significant differences in the percentage of persons with a BMI of overweight or obese when comparing Aboriginal and non-Aboriginal people.

General Health

General health considers how people rate their health.

There a number of self-reported general health factors that are presented in publically available health datasets. The self-assessed overall health status is one question used to ascertain a general overall measure of health status. Respondents are asked: “In general would you say your health is: Excellent, Very Good, Good, Fair or Poor?”.

Aboriginal people are less likely to report their health as excellent or very good, and more likely to report health as fair or poor (see Figure 63). Over 30% SA Aboriginal respondents aged 45 years and over reported having fair or poor overall health (see Figure 64).

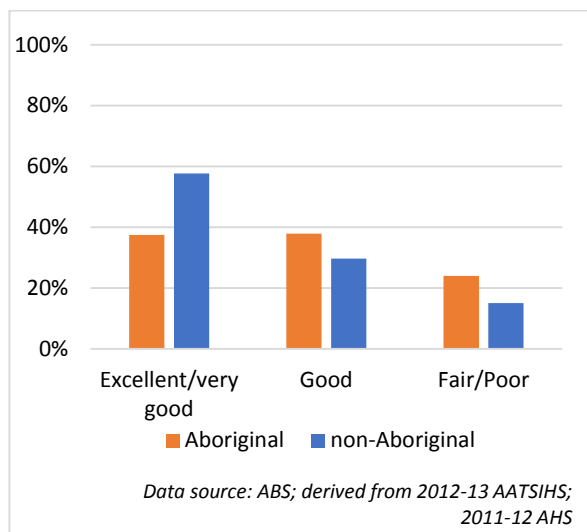


Figure 63: Self-assessed health status (SF-1), by Aboriginal status

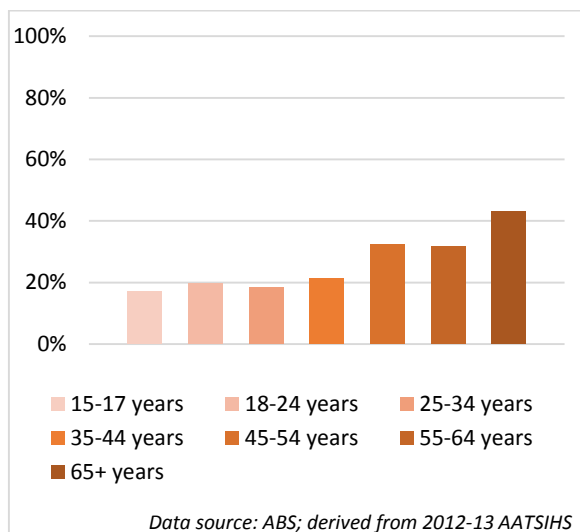


Figure 64: Prevalence of Aboriginal South Australians reporting fair/poor health, by age

Pregnancy outcomes – Low birth weight

Data are provided for birth weight of all live births in SA from 2006 to 2012, by LHN, Aboriginal status and maternal age. From 2006 to 2012 there were 4,244 live births to Aboriginal mothers and 128,711 live births to non-Aboriginal mothers in SA across the four LHNs. 88% of babies born to Aboriginal mothers were 2500 grams or greater, compared to 92.8% of babies born to non-Aboriginal mothers.

At a regional level, babies born to Aboriginal mothers were between 40% to 2 times more likely to be born at a low birth weight (less than 2500 grams). The greatest differential was in Northern Adelaide LHN, and the least differential in Country Health SA LHN (see Figure 65).

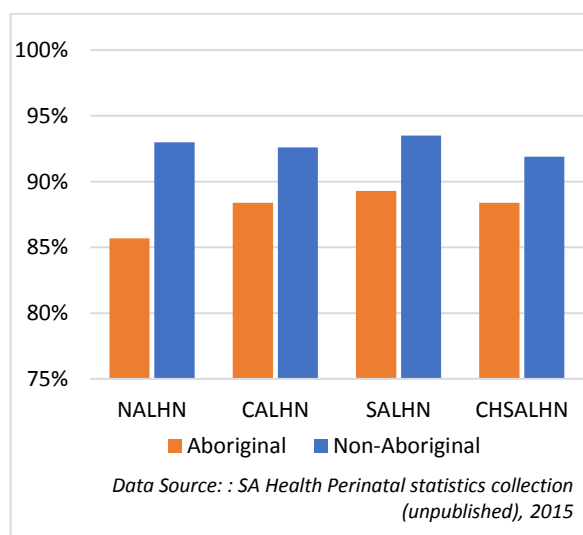


Figure 65: Live births which were at or above 2500 grams, by Aboriginal status (of the mother) and LHN

Smoking

Smoking status has been collected from three SA data collections: the AATISHS; the SAAHS; and the AHS.

Figure 66 shows the higher percentage of Aboriginal males and females currently smoking, when compared to non-Aboriginal. Current and daily smoking was three times as likely in the Aboriginal as non-Aboriginal population (see Figure 66). Whereas the smoking rate stays high for the Aboriginal population, the data show that smoking rates are low for young and older non-Aboriginal SA.

The majority of non-Aboriginal SA reported having never smoked (51.3%) while those reporting having never smoked ranged from 36.4% to 46.3% for the Aboriginal population (see Table 5).

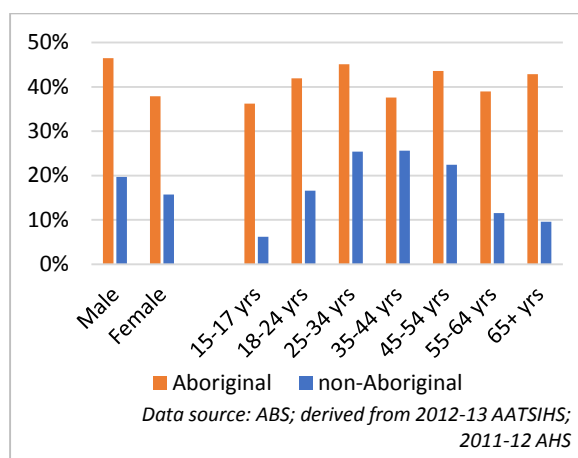


Figure 66: SA current smoking, by Aboriginal status and sex; and Aboriginal status and age, 15 years and over

Table 5: Smoking status by Aboriginal status

	Aboriginal				non-Aboriginal	
	AATSIHS (SA)		SAAHS		AHS (SA)	
	n ('000)	%	n	%	n	%
Daily	9.3	40.3	181	45.4	211.3	15.4
Current smoker	9.7	42.1	193	48.3	241.4	17.5
Ex-smoker	4.9	21.5	26	6.5	408.2	30.8
Never smoked	8.3	36.4	173	46.3	678.1	51.7

¹ Persons aged 15 years and over

Data Source: ABS; AHS, 2011-12, [Smoker status by Persons (Benchmarked weight), State or territory Counting: Persons (Benchmarked weight)]; AATSIHS, 2012-13

There are more current smokers among Aboriginal males than females, and more Aboriginal females reporting they never smoked than Aboriginal males (see Table 6 and Figure 66).

Table 6: Smoker status, by Aboriginal status and sex, proportion of persons (estimate), for 15 years and over, SA,

	Male		Female		Persons	
	Aboriginal	non-Aboriginal	Aboriginal	non-Aboriginal	Aboriginal	non-Aboriginal
Daily	45.5	17.7	35.2	13.9	40.3	15.4
Current smoker	46.5	19.7	37.9	15.7	42.1	17.5
Ex-smoker	21.1	34.9	21.9	26.8	21.5	30.8
Never smoked	32.4	45.1	40.1	57.5	36.4	51.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Data Source: ABS; AHS, 2011-12 [Smoker status by Persons (Benchmarked weight), State or territory and Sex of person (3) Counting: Persons (Benchmarked weight)]; AATSIHS, 2012-2013

Smoking during pregnancy

Rates of recorded current smoking at first antenatal visit during pregnancy are higher for both Aboriginal than non-Aboriginal females recorded in the AATSIHS and AHS. The current smoker rate for Aboriginal women at first antenatal visit is 51 percent. Rates of current smoking are more than 2 and a half times higher for Aboriginal women when compared to non-Aboriginal women. The percent of women who quit before first visit are the same for Aboriginal and non-Aboriginal women (5.4%) (see Figure 67). There is little variation by maternal age in current smokers at first antenatal visit for Aboriginal women, however in the non-Aboriginal women there is a significant reduction in current smoking rate with an increase in maternal age (see Figure 68).

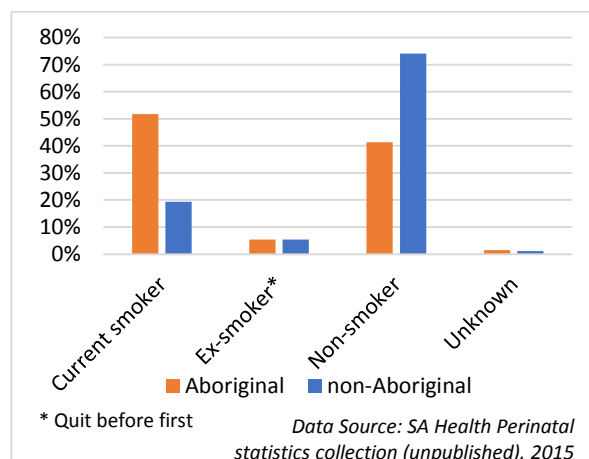


Figure 67: Smoker status at first antenatal visit, by Aboriginal status and smoking status, SA, 15 years and over

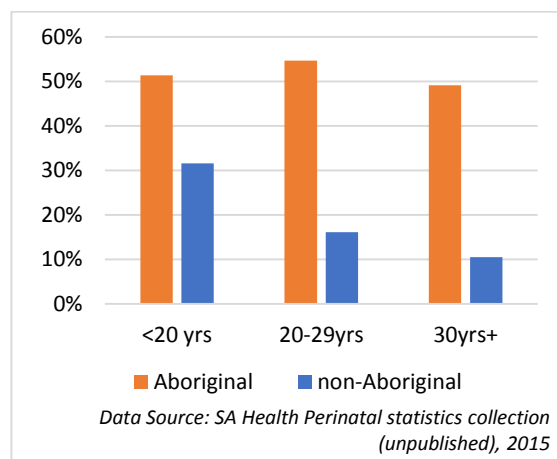


Figure 68: Current smoker at first antenatal visit, by Aboriginal status and maternal age

Rates of smokers at first antenatal visits are consistent across LHN for Aboriginal women (see Figure 69). These data were further analysed by CHSALHN sub-region. Current smoking amongst pregnant Aboriginal women at their first antenatal visit was slightly above the CHSA LHN average for the Eyre, Flinders and Far North East and South East sub-regions. However, ex-smoking prevalence was higher than the average for the Eyre, Flinders and Far North East and Eyre, Flinders and Far North West sub-regions. Current smoking was lowest amongst pregnant Aboriginal women in the Yorke and Northern sub-region (see Figure 69).

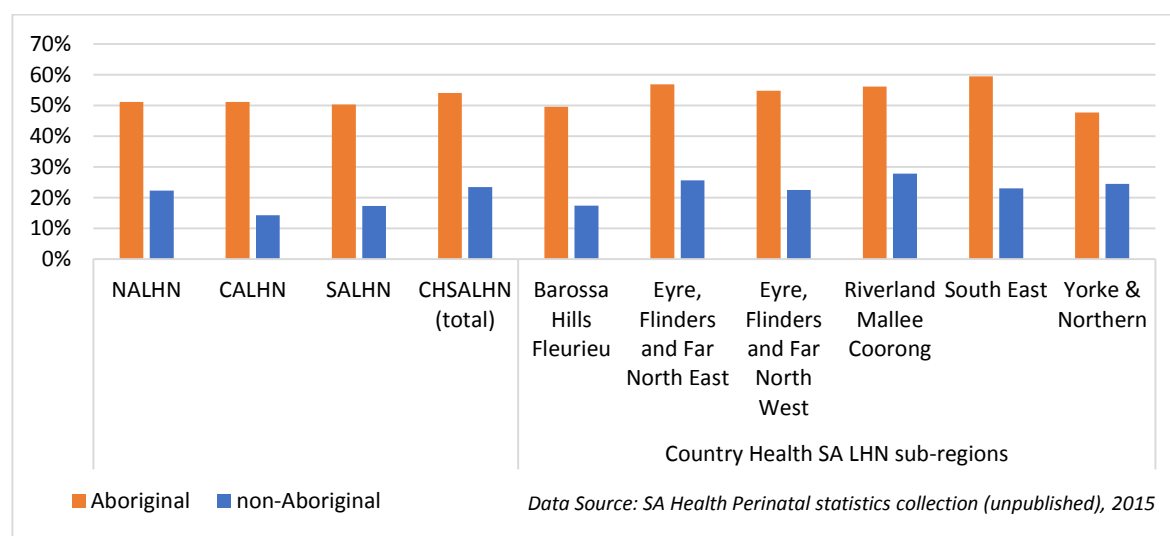


Figure 69: Current smoker at first antenatal visit, by Aboriginal status and LHN

Nutrition

Nutritional guidelines are part of the recommended program for the prevention and management of cardiovascular disease. When summarized the NH&MRC recommends that all adult Australians eat at least 5 serves of vegetables every day and eat at least 2 serves of fruit every day.

10% of Aboriginal people meet recommended fruit and vegetable nutritional guidelines, compared to 8% of non-Aboriginal people (see Figure 70).

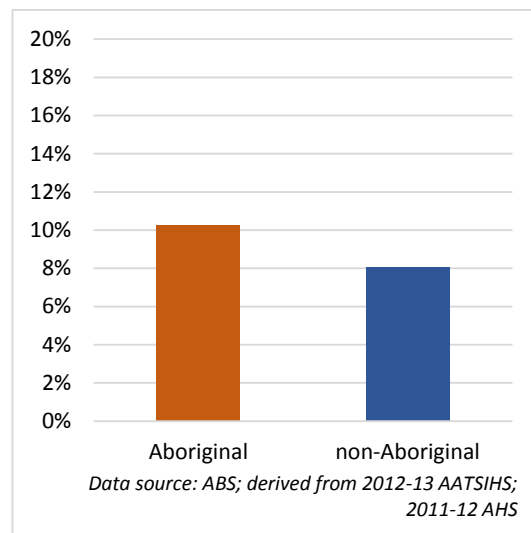


Figure 70: Percentage of people who met recommended guidelines for fruit and vegetable consumption, by Aboriginal status, SA

Physical Activity

The current National Physical Activity Guidelines for Australian adults (18 years and over) recommend at least 30 minutes of moderate-intensity physical activity on most, preferably all, days. This has been interpreted from the following three measures and is considered to correlate with good health outcomes:

- whether met 150 minutes of physical activity per week
- whether met 150 minutes of physical activity over 5 or more sessions per week
- whether met 30 minutes of physical activity on 5 days or more days per week.

When comparing levels of physical activity between Aboriginal and non-Aboriginal people in SA, Aboriginal people are more likely to be doing the recommended levels of physical activity compared to non-Aboriginal people (see Table 7).

However, there is significant variation by sex. Aboriginal females are more likely to be meeting these recommendations than non-Aboriginal females (Aboriginal: 51%; non-Aboriginal: 38%). Aboriginal males are more than less likely to be achieving sufficient physical activity (Aboriginal: 27%; non-Aboriginal: 40%) (see Figure 71).

Table 7: Physical activity levels, by Aboriginal status

	Aboriginal SA				non-Aboriginal SA	
	AATSIHS (SA) ²		SAAHS ²		AHS (SA)	
	n ¹	%	n	%	n ¹	%
Sufficiently active for health	8.9	52.4	189	51.6	484.3	38.7
Insufficiently active/inactive	8.1	47.6	177	48.4	767.9	61.3
Total	17.0	100.0	367	100.0	1252.2	100.0

¹ estimated number of persons ('000)

² persons 15 years and over

Source: ABS; AATSIHS, 2012/13 and SA Health; South Australian Aboriginal Health Survey (unpublished), 2015

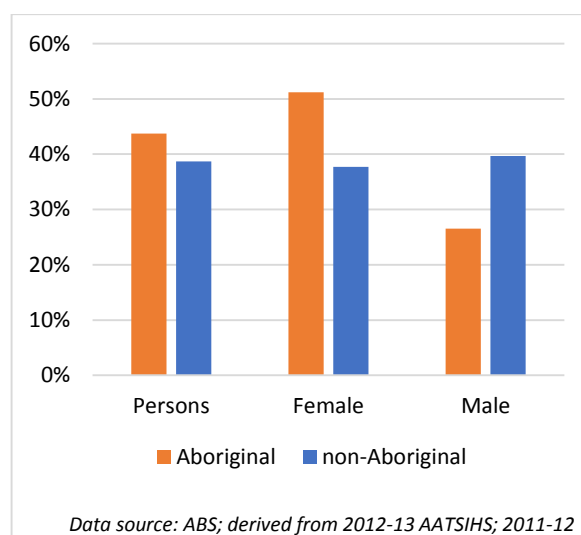


Figure 71: Achieving sufficient physical activity to be beneficial to health, by sex and Aboriginal status

Obesity

Body Mass Index

Body mass index (BMI) is the most common measure of overweight and obesity. However, the cut off points defined by the World Health Organisation and used here are derived from primarily European populations and may not be suitable to assess the same risk in other populations, such as Aboriginal and Asian. It has been suggested⁵ that for Aboriginal populations, a BMI of less than 25 kg/m² may be seen as a risk factor.

Data on the BMI of Aboriginal South Australians differs dependent on data source (see Table 8 and Figure 72). The AATSIHS indicates that 56% of Aboriginal people have a BMI of overweight or obese, just under the non-Aboriginal level of 5%, however with a greater proportion of Aboriginal people having a BMI category of obese. However, the SAAHS data indicated that almost 80% of Aboriginal people are overweight or obese, with over 50% alone obese.

Table 8: SA Aboriginal/non-Aboriginal population, comparison of cardiovascular risk factors – body mass index (BMI)

	Aboriginal				non-Aboriginal	
	AATSIHS (SA)		SAAHS		AHS (SA)	
	n ('000)	%	n ('000)	%	n ('000)	%
Body Mass Index ¹						
Overweight (BMI 25.0-29.9 kg/m ²)	7.1	28.1	29	28.5	430.2	33.0
Obese (BMI >= 30 kg/m ²)	7.2	28.5	51	50.8	332.8	25.5
Overweight/obese	14.3	56.6	80	79.3	763.0	58.5

¹ Persons aged 15 years and over: Measured BMI (excludes people for whom height and/or weight were not measured).

Data source: ABS; derived from 2012-13 AATSIHS; 2011-12 AHS and SA Health; South Australian Aboriginal Health Survey (unpublished), 2015

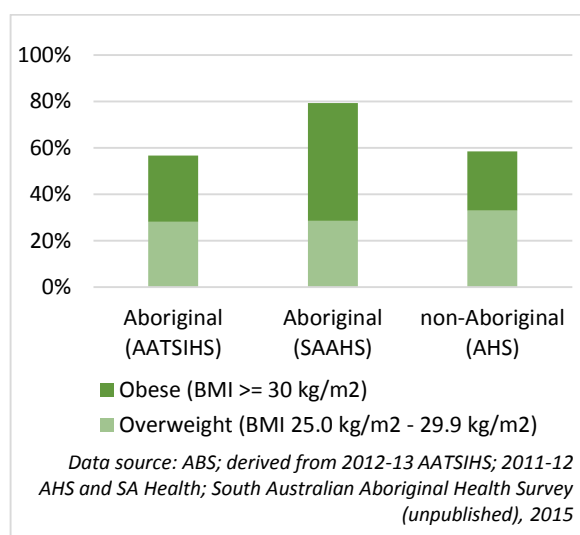


Figure 72: Comparison of Aboriginal and non-Aboriginal overweight and obese between three SA datasets

⁵ Razak F, et al. (2007). Defining Obesity Cut Pints in a Multiethnic Population. *Circulation* 115:2111-2118

Waist circumference

Waist circumference reflects mainly subcutaneous abdominal fat storage. According to a World Health Organisation (WHO) joint report, has been shown to positively correlate to disease risk. As with BMI, the cut-off points in this scale are best used for people of European origin (see Table 9).

Aboriginal females are more likely to be at a substantially increased risk (Aboriginal females: 70%, non-Aboriginal females: 51%), and overall, are more likely to be at increased risk. There is little difference between Aboriginal and non-Aboriginal males at substantially increased risk (Aboriginal males: 42.5%; non-Aboriginal males: 40.5%), and overall, were less likely to have an increased risk (see Figure 73).

Table 9: Waist circumference guidelines, adults

	Not at risk	Increased risk	Substantially increased risk
Males	Less than 94 cm	94 cm or more	102 cm or more
Females	Less than 80 cm	80 cm or more	88 cm or more

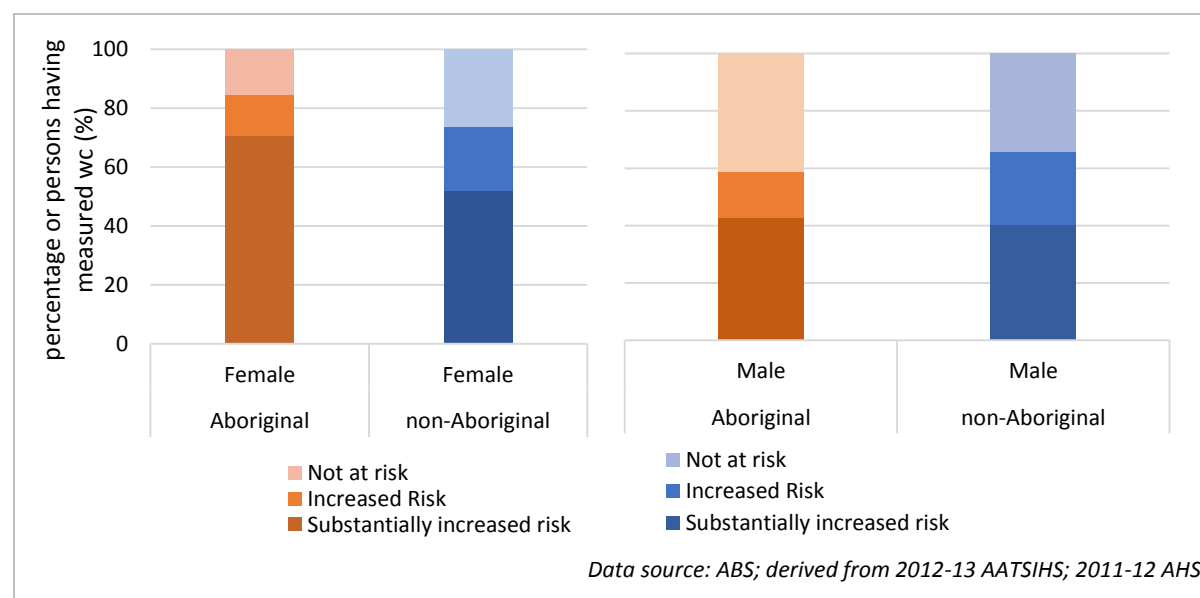


Figure 73: Waist circumference indicating risk to health, by sex and Aboriginal status

Co-morbidity of chronic conditions

Aboriginal people are significantly more likely to have been diagnosed with diabetes (sometimes reported at high sugar) (17.4%) and/or chronic kidney disease (21.6%) than non-Aboriginal people (6.8% and 10.7% respectively) (see Figure 74).

SAAHS data have been used here as they are considered a more representative reflection of the high levels of diabetes in SA. These data report rates as high as 40% in remote SA communities.

When managing risk for cardiovascular disease, these conditions must be considered in a holistic approach to health care.

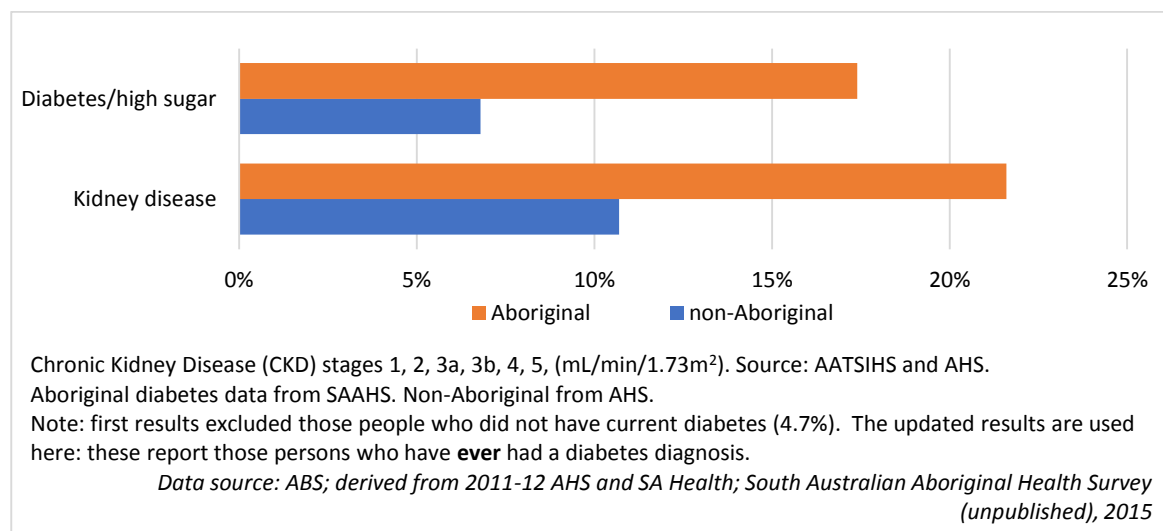


Figure 74: Presence of diabetes/high blood sugar and kidney disease in SA, by Aboriginal status

The majority of Aboriginal South Australians reported having three or more long term health conditions (35.7%; n=12,700) (see Figure 75). When considering CVD, CKD and diabetes, Aboriginal people were more likely to have diabetes (only) (4.1%) or CKD (only) (0.9%), when compared to non-Aboriginal South Australians (2.2% and 0.2% respectively). For those reporting all three chronic conditions, Aboriginal people were significantly more likely to report having diabetes, CKD and CVD (0.3%) compared to no non-Aboriginal people reporting all three commodities.

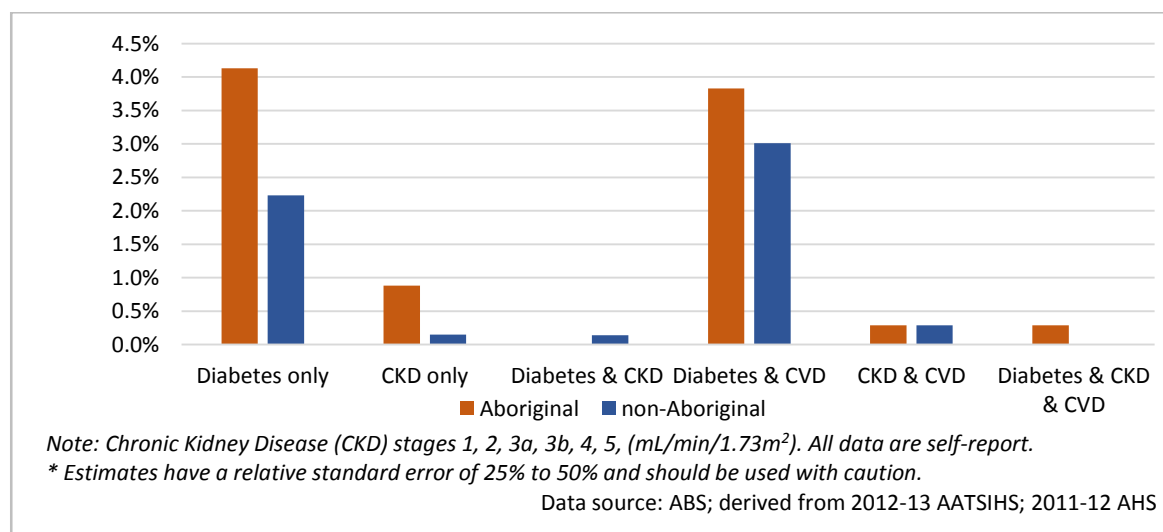


Figure 75: Percentage of those reporting one, two, or three chronic conditions, by Aboriginality and type of condition

Family stressors and psychological distress

Estimating the burden of mental ill-health in the Aboriginal population is very important. Recognising that a western construct of social and emotional wellbeing is inadequate to describe the same in Aboriginal and Torres Strait Islander populations, but lacking any alternatives, a measure of psychological stress is reported here using the K5 (a subset of the Kessler 10 and Kessler 6 Psychological Distress Scale). Measures have been compared between the AATSIHS and the AHS.

For both males and females, Aboriginal people report significantly higher levels of psychological distress than non-Aboriginal persons (see Figure 76).

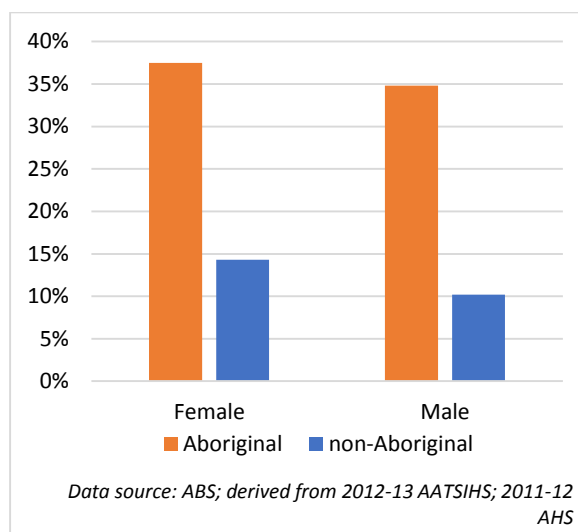


Figure 76: Prevalence of high to very high psychological distress as measured by the K5, by sex and Aboriginal status

Questions to assess self-reported family stressors are included in both the AATSIHS and the AHS. Family stressors were defined as life events or conditions that may have been a problem for the respondent or anyone close to them in the 12 months prior to interview.

Aboriginal persons were significantly more likely to have experienced a family stressor in the past 12 months when compared to non-Aboriginal persons (see Figure 77).

The main family stressor for non-Aboriginal SA is 'death' closely followed by 'serious illness'. When comparing between the Aboriginal and non-Aboriginal population, Aboriginal people often experience multiple stressors from a range of sources and events (see Figure 77).

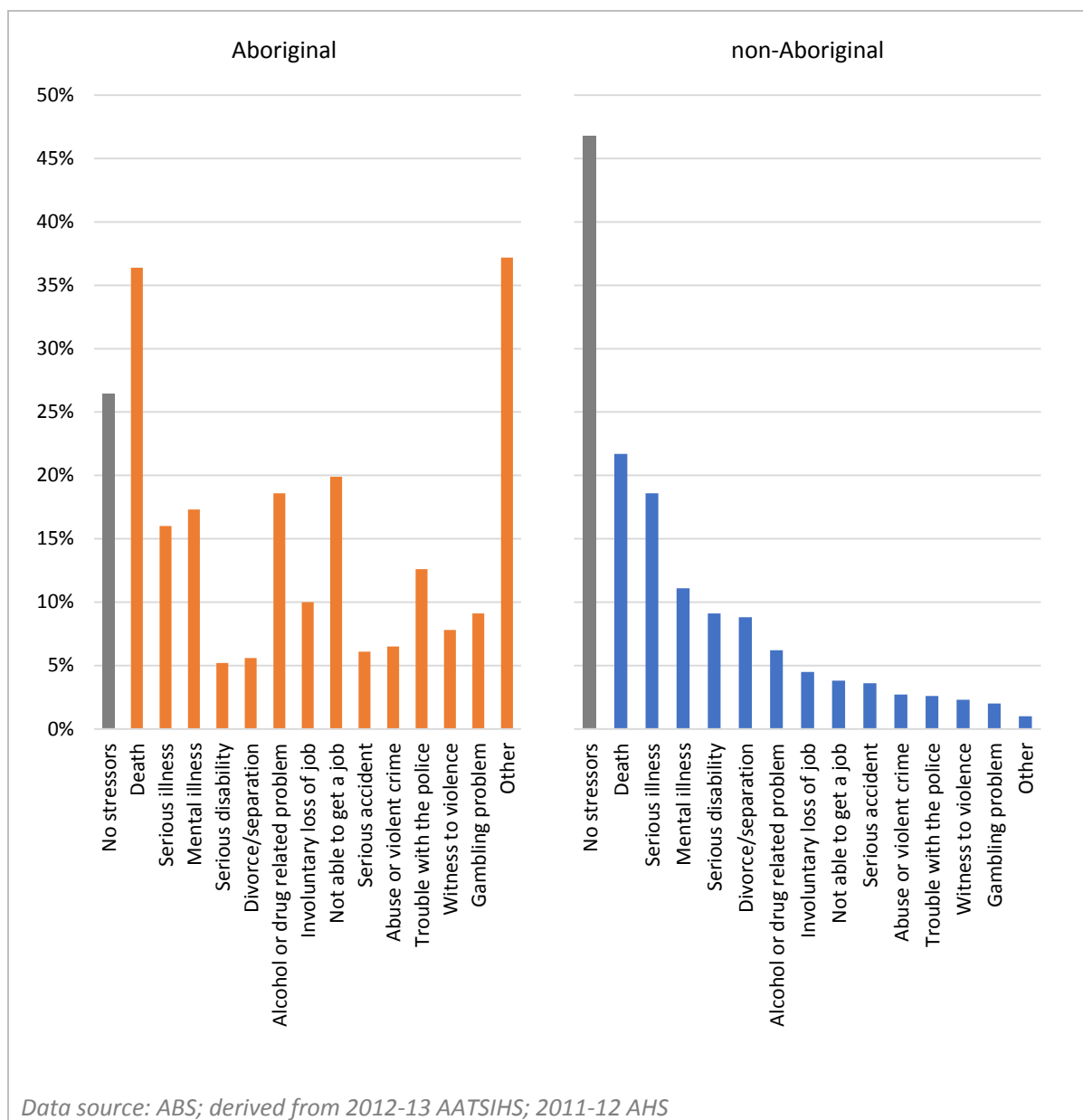


Figure 77: Family stressors reported by SA Aboriginal and non-Aboriginal respondents

Appendix 7 Prevalence and hospitalisations of heart disease and stroke for Aboriginal South Australians

Cardiovascular disease (CVD)

Prevalence of Cardiovascular Disease:

Prevalence is discussed on page 12 of the SA Aboriginal Cardiovascular Health Profile.

Hospitalisations for Cardiovascular Disease:

The age distribution and hospitalisation rate for Aboriginal people is discussed on page 14 of the SA Aboriginal Cardiovascular Health Profile.

84% of separations of CVD for Aboriginal people were for cardiac conditions, compared to 75% for non-Aboriginal separations. Cerebrovascular conditions (including stroke) accounted for 7 percent of separations for Aboriginal people, which was proportionally less than for non-Aboriginal separations. Vascular disease accounted for 9% of Aboriginal separations, almost half of the 16% for non-Aboriginal separations (see Figure 78).

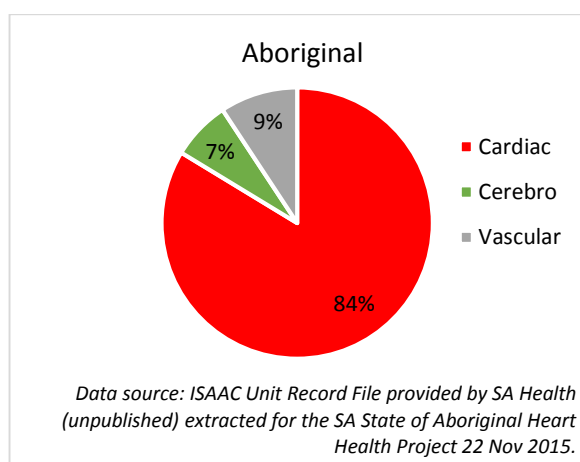


Figure 78: All Aboriginal hospital admissions for a principal diagnosis of CVD, July 2010-June 2015, by sub-set of CVD

Hypertension

Prevalence of high blood pressure (hypertension):

Prevalence of hypertension is discussed on page 51 of the SA Aboriginal Cardiovascular Health Profile.

Hospitalisations for hypertension:

Hypertension accounted for less than 2 percent of all Aboriginal separations for a principal diagnosis of CVD (see Table 10).

This is similar to the non-Aboriginal population. Low rates of hospitalisations for principal diagnosis of hypertension indicates on-going management of hypertension outside of the hospital system.

Table 10: All hospital admissions to SA hospitals for a principal diagnosis of hypertension, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of CVD, by Aboriginal status
Aboriginal	73	2%	2%
non-Aboriginal	3392	94%	2%

Not Stated	133	4%	1%
Total	3598	100%	2%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Of the Aboriginal separations for hypertension, 56% were female. The proportion of separations for Aboriginal females was less than the proportion of non-Aboriginal women (65%).

The early onset of hypertension is observed in the hospitalisations for Aboriginal people with a principal diagnosis of hypertension. More than 60% of Aboriginal hospitalisations for hypertension occur before the age of 55, with the age group 0-44 accounting for over 30% of admissions (see Figure 79).

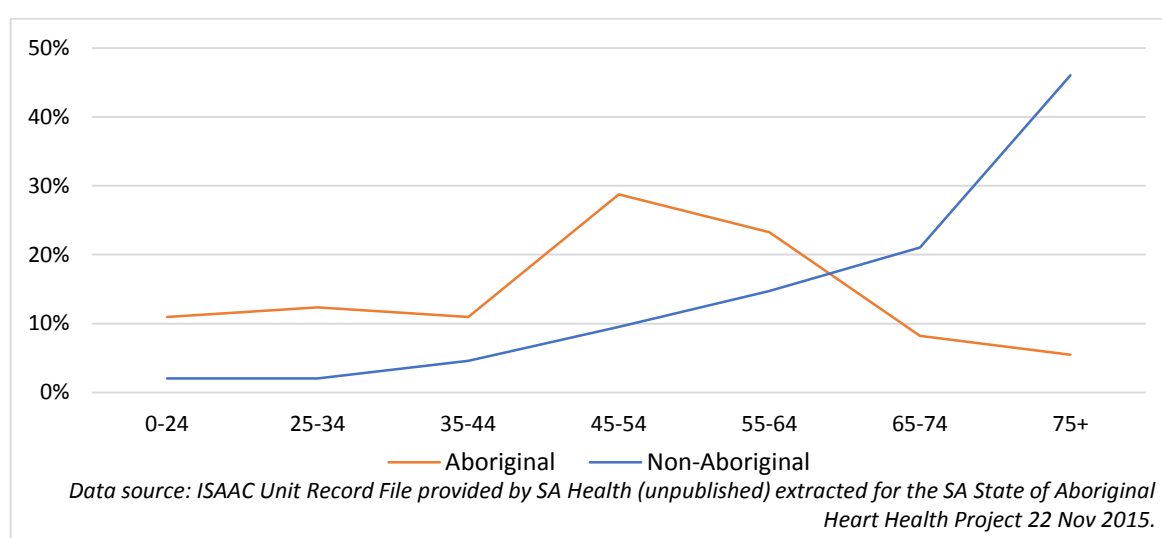


Figure 79: Hospital admissions to SA hospitals for a principal diagnosis of hypertension, July 2010 - June 2015, by Aboriginal status and age

Over a 10 year period (July 2005 - June 2015), the hospitalisation rate for Aboriginal people was 0.44 per 1,000, compared to 0.39 per 1,000 for non-Aboriginal people.

After adjusting for age, Aboriginal hospitalisation rate was 0.7 per 1,000, compared to 0.3 per 1,000 non-Aboriginal people (see Figure 80).

The hospitalisation rate for Aboriginal people was higher than the non-Aboriginal comparison in all age groups other than 75 and over. The greatest relative disparity is in the 45-54 age group (Aboriginal: 1.8 per 1,000 vs non-Aboriginal: 0.29 per 1,000) (see Figure 81).

Between July 2005 - June 2010 and July 2010 - June 2015, the hospitalisation rate for Aboriginal people has dropped for all ages between 35 and 74. The greatest relative decreases in Aboriginal hospitalisation rate occurred in the younger age groups 45-54 and 55-64 age groups. The non-Aboriginal hospitalisation rate also for age groups 35-74. However, hospitalisation rates remain substantially higher in the Aboriginal population (see Figure 82).

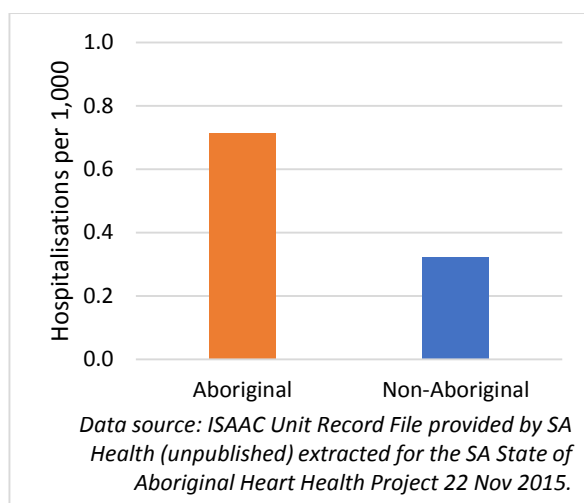


Figure 80: Age-standardised hospitalisation rate for hypertension, by Aboriginal status, July 2005 - June 2015

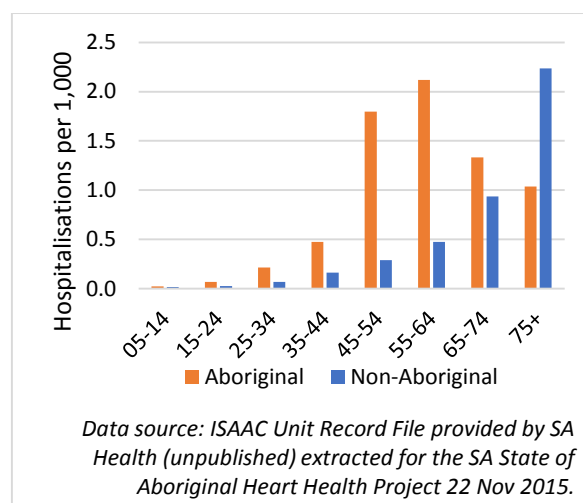
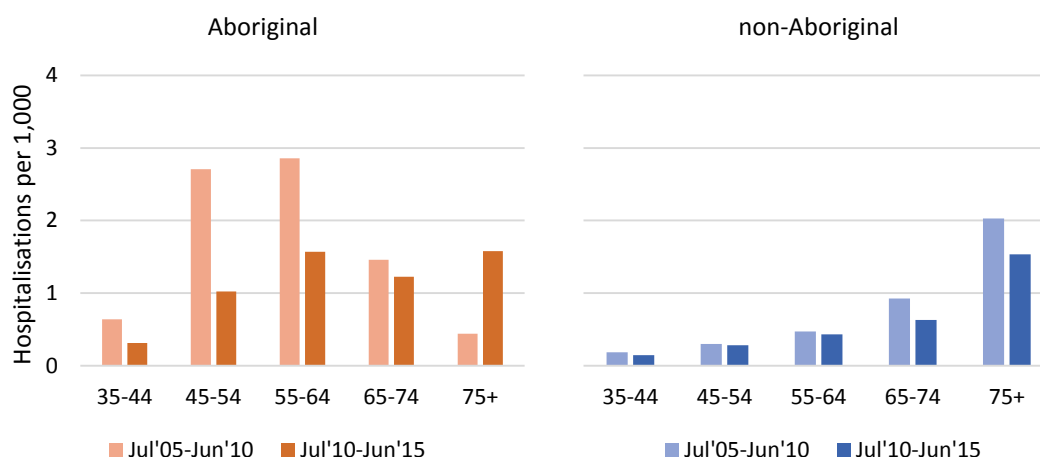


Figure 81: Age-specific hospitalisation rate for hypertension, by Aboriginal status, July 2005 - June 2015



Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015.

Figure 82: Age-specific hospitalisation rates for people with a principal diagnosis of hypertension, by Aboriginal status and years, July 2005 - June 2015

Coronary Heart Disease

Hospitalisations for coronary heart disease:

Coronary Heart Disease (CHD) (I20-I25) accounted for 47% of all Aboriginal separations for a principal diagnosis of CVD. This is compared to 29% of all principal diagnoses of CVD for the non-Aboriginal population (see Table 11).

Table 11: All hospital admissions to SA hospitals for a principal diagnosis of CHD, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of

			CVD, by Aboriginal status
Aboriginal	1917	3%	47%
non-Aboriginal	50779	91%	29%
Not Stated	3017	5%	29%
Total	55713	100%	29%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Females are disproportionately over-represented in the Aboriginal cohort presenting to SA hospitals, accounting for 43% of Aboriginal separations, compared to 32% of non-Aboriginal separations.

The distribution of coronary heart disease by age is significantly different between the Aboriginal and non-Aboriginal populations (see Figure 83). The peak of number of separations in the Aboriginal population is at age 45-54. The peak of the number of separations in the non-Aboriginal population is 75 and over. Approximately 60% of Aboriginal separations occur before the age of 55, compared to 16% in the non-Aboriginal population.

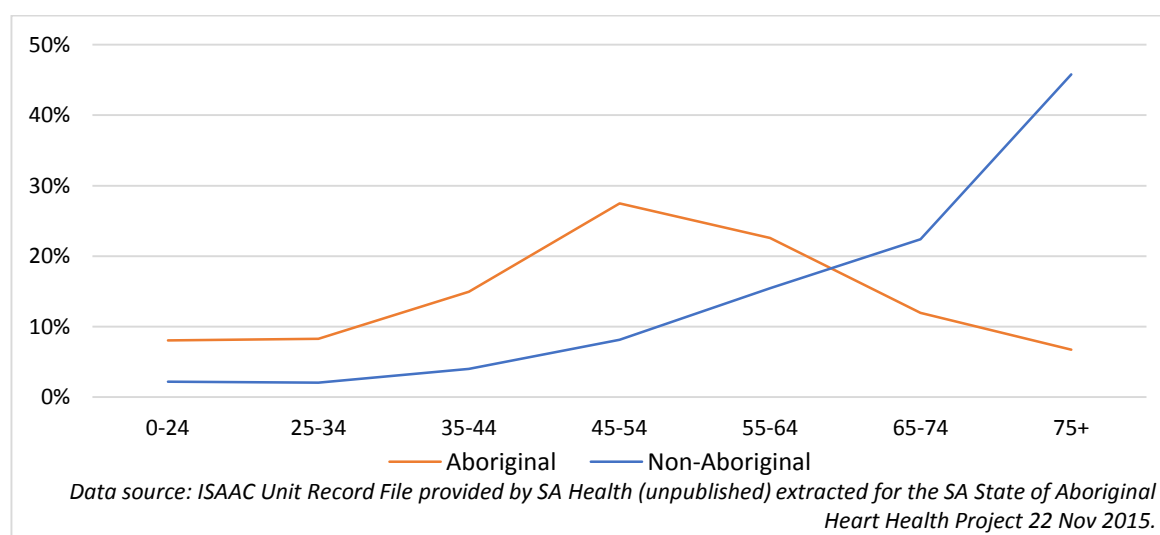


Figure 83: All hospital admissions to SA hospitals for a principal diagnosis of CHD (I20-I25), July 2010 - June 2015, by Aboriginal status and age

Separations for Aboriginal people were more likely to be for acute myocardial infarction (AMI) compared to non-Aboriginal separations, which accounted for 45% of all separations for Aboriginal people. Separations for Aboriginal people were less likely to be for angina and other CHD compared to non-Aboriginal counterparts (see Figure 84).

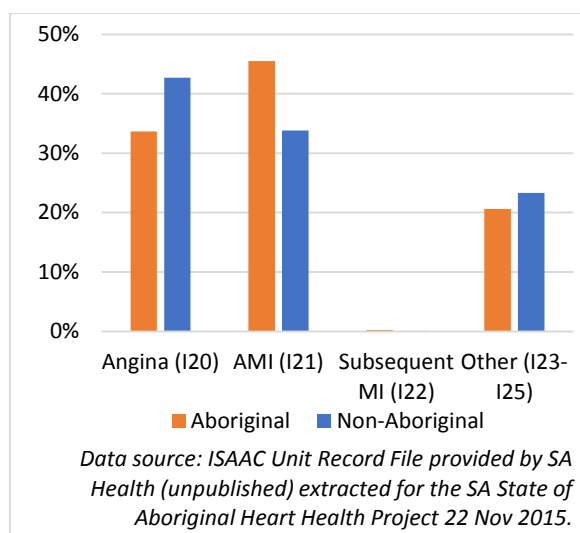


Figure 84: All hospital admissions for a principal diagnosis of CHD, July 2010-June 2015, by Aboriginal status, and type of CHD

Hospitalisation rates for coronary heart disease are discussed on page 45 of the SA Aboriginal Cardiovascular Health Profile.

Chronic Heart Failure

Hospitalisations for chronic heart failure:

Chronic Heart Failure (I50) accounted for 10 percent of all Aboriginal separations for a principal diagnosis of CVD. This is similar to the non-Aboriginal population (see Table 12).

Table 12: All hospital admissions to SA hospitals for a principal diagnosis of CHF, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of CVD, by Aboriginal status
Aboriginal	420	2%	10%
non-Aboriginal	20283	95%	12%
Not Stated	645	3%	6%
Total	21348	100%	11%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Of the Aboriginal separations for chronic heart failure, females accounted for approximately half (49%). This was similar to the non-Aboriginal sex split.

The distribution of chronic heart failure by age is significantly different between the Aboriginal and non-Aboriginal populations (see Figure 85). The peak of number of separations in the Aboriginal population is at age 55-64. The peak of the number of separations in the non-Aboriginal population is 75 and over. 38% of Aboriginal separations occur before the age of 55, compared to 3% in the non-Aboriginal population.

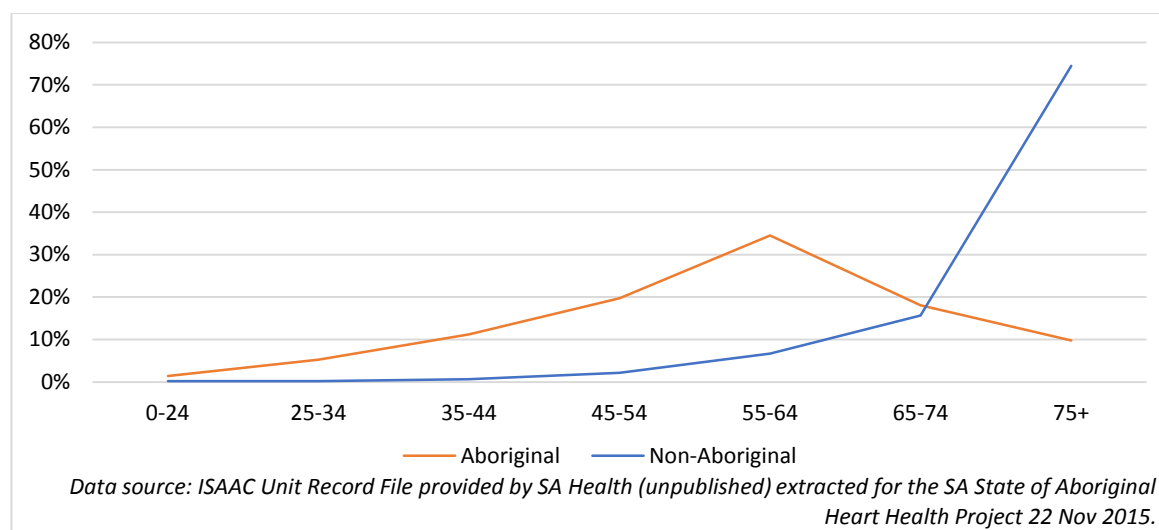


Figure 85: Hospital admissions to SA hospitals for a principal diagnosis of Chronic Heart Failure (I50), July 2010 - June 2015, by Aboriginal status and age

The hospitalisation rates for stroke are discussed on page 47 of the SA Aboriginal Cardiovascular Health Profile.

Stroke

Hospitalisations for stroke:

Stroke (I61, I62.9, I63, I64) accounted for 5% of all Aboriginal separations for a principal diagnosis of CVD. This is similar to the non-Aboriginal population (see Table 13).

Table 13: All hospital admissions to SA hospitals for a principal diagnosis of Stroke, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of CVD, by Aboriginal status
Aboriginal	186	2%	5%
non-Aboriginal	11,125	92%	6%
Not Stated	843	7%	8%
Total	12,154	100%	6%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Of the 186 Aboriginal separations for stroke, females accounted for 56%. This is compared to females accounting for 48% of the non-Aboriginal separations.

The distribution of stroke by age is significantly different between the Aboriginal and non-Aboriginal populations (see Figure 86). Females accounted for 56% of all Aboriginal separations for stroke, compared to 48% in the non-Aboriginal population. The peak of number of separations in the Aboriginal population is at age 45-54, accounting for 27% of all Aboriginal separations for stroke. The peak of the number of separations in the non-Aboriginal population is 75 and over. 49% of Aboriginal separations occur before the age of 55, compared to 10% in the non-Aboriginal separations.

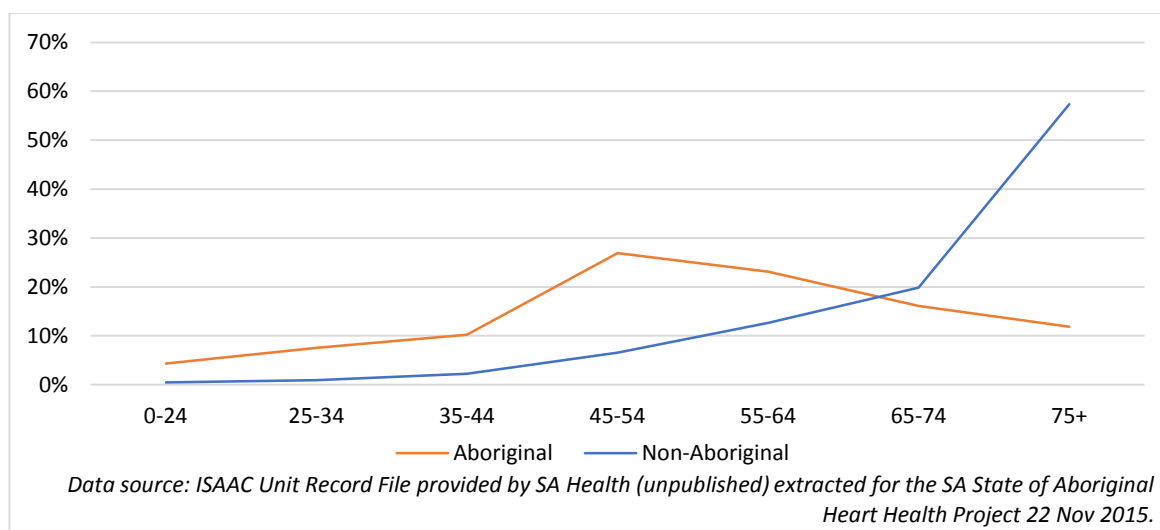


Figure 86: Hospital admissions to SA hospitals for a principal diagnosis of Stroke, July 2010 - June 2015, by Aboriginal status and age

The hospitalisation rates for stroke are discussed on page 48 of the SA Aboriginal Cardiovascular Health Profile.

Acute Rheumatic Fever and Rheumatic Heart Disease

The profile of acute rheumatic fever and rheumatic heart disease has changed over the last 50 years. Prior to the availability of penicillin, these conditions were common among the non-Aboriginal population, however more recently they have become a conditions disproportionately affecting disadvantaged groups, specifically Aboriginal populations in Australia.

Whilst in relative terms these conditions account for a small proportion of all cardiovascular hospitalisations in SA, they are important to report due to the disparity in prevalence in the Aboriginal population.

Incidence of Acute Rheumatic Fever:

The incidence of acute rheumatic fever, and the proportion of cases which are recurrent is discussed on page 49 of the SA Aboriginal Cardiovascular Health Profile.

Prevalence of Rheumatic Heart Disease:

The prevalence of rheumatic heart disease is between 6 and 24 people per 10,000 population, with an average of 15.5 per 10,000 between January 2013 and June 2015 (see Table 14).

Table 14: Prevalence of RHD for Aboriginal people, by year

Year	Prevalence of RHD (n)	Prevalence rate per 10,000 population
Jan-Dec 2013	95	24.4
Jan-Dec 2014	64	16.1
Jan-June 2015	27	6.6
Total (30 months)	186	15.6

Data source: SA Rheumatic Heart Disease Register provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 18 September 2015

The majority of cases of rheumatic heart disease are in Country Health SA LHN, particularly in the Eyre, Flinders & Far North West sub-region. In the metropolitan Adelaide area, there were 55 cases, with the majority in Northern Adelaide LHN (see Table 15).

Table 15: Prevalence of RHD for Aboriginal people, by Local Health Network and sub-region

Local Health Network Region	n
NALHN	40
CALHN	0
SALHN	15
CHSALHN	147
Barossa Hills Fleurieu	0
Eyre Flinders & Far North East	19
Eyre Flinders & Far North West	119
Riverland Mallee Coorong	...
South East	0
Yorke & Northern	...
Total	202

Data source: SA Rheumatic Heart Disease Register provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 18 September 2015

Hospitalisations for Acute Rheumatic Fever:

Acute Rheumatic Fever accounted for 0.6 percent of all Aboriginal separations for a principal diagnosis of CVD. Aboriginal separations for ARF accounted for 61% of all ARF separations in SA (see Table 16).

Table 16: All hospital admissions to SA hospitals for a principal diagnosis of ARF, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of CVD, by Aboriginal status
Aboriginal	23	61%	0.6%
non-Aboriginal	14	37%	0.0%
Not Stated	...	3%	0.0%
Total	-	100%	0.0%

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

The number of acute rheumatic fever hospitalisations is greater in the earlier years (0-9 and 10-29) in the Aboriginal age groups but, significantly higher in the 30 years and over non-Aboriginal group (see Table 17).

Table 17: Hospital admissions to SA hospitals for a principal diagnosis of Acute Rheumatic Fever (I00-I02), July 2005 - June 2015, by Aboriginal status and age

	Aboriginal	non-Aboriginal
0-9	14	...
10-29	18	...
30+	9	27
Total	41	40

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Hospitalisation rates for acute rheumatic fever are discussed on page 50 of the SA Aboriginal Cardiovascular Health Profile.

Hospitalisations for Rheumatic Heart Disease:

Rheumatic Heart Disease accounted for 5.1% of all Aboriginal separations for a principal diagnosis of CVD. This was compared to 0.7% for non-Aboriginal separations (see Table 18).

Table 18: All hospital admissions to SA hospitals for a principal diagnosis of ARF, July 2010 - June 2015, by Aboriginal status

	Persons		
	n	% by Aboriginal status	Proportion of all principal diagnoses of CVD, by Aboriginal status
Aboriginal	207	13%	5.1%
non-Aboriginal	1250	81%	0.7%
Not Stated	85	6%	0.8%
Total	1542	100%	0.8%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Hospitalisations for rheumatic heart disease in the Aboriginal population is high and evenly spread up to age 60 years, whereas for the non-Aboriginal group hospitalisations are high from the age of 50 years (see Figure 87). This represents the pre-penicillin population that continues to live with rheumatic heart disease. 79% of Aboriginal separations occur before the age of 50, compared to 11% in the non-Aboriginal population.

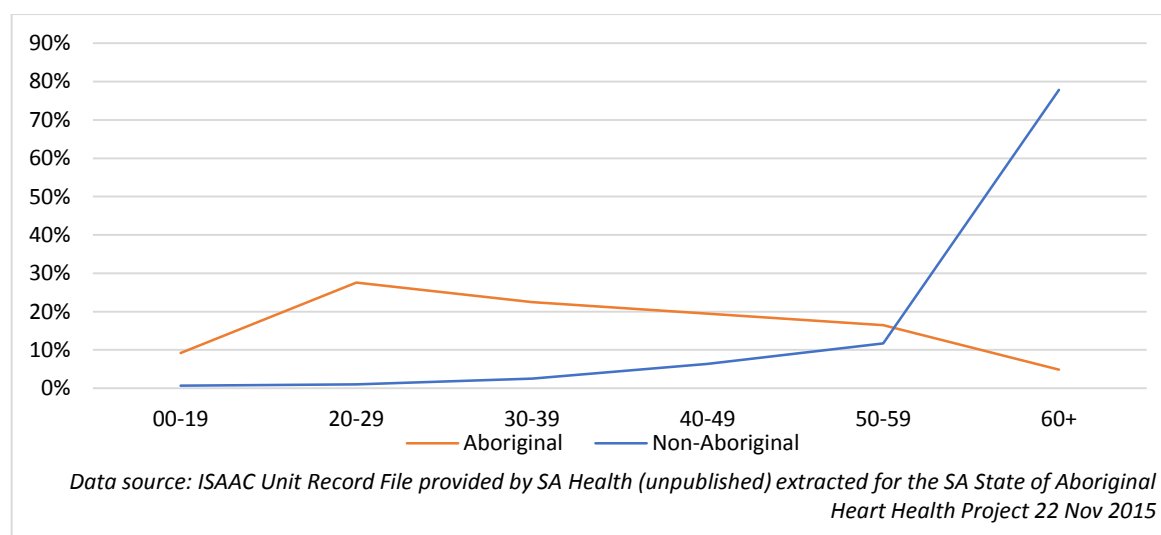


Figure 87: Hospital admissions to SA hospitals for a principal diagnosis of Rheumatic Heart Disease (I05-I09), July 2005 - June 2015, by Aboriginal status and age

The hospitalisation rate for rheumatic heart disease is discussed on page 50 of the SA Aboriginal Cardiovascular Health Profile.

Appendix 8 Service activity – primary preventive care

Health promotion and disease prevention:

The community voiced support and use of smoking cessation and healthy lifestyle campaigns which are driven by Aboriginal leadership and have strong connection to the community.

There is limited data on the service utilisation of primary health care providers, however, anecdotally, approximately half of all Aboriginal people use Aboriginal health service, and half use mainstream services. This is supported by feedback from the community.

Risk assessment and management:

There is limited data on the heart and stroke risk identification and management activities in the primary health care sector.

Receipt of an Aboriginal and Torres Strait Islander adult health check (MBS Item 715) is a measure of activity and quality of care as defined by the ESSENCE measurement indicators. This is discussed on page 28 of the SA Aboriginal Cardiovascular Health Profile.

In terms of management of heart and stroke risk in primary health care, there is also limited data. Again, activity is also defined as quality of care, and is therefore included in the ESSENCE measurement indicators. This is discussed on page 28 of the SA Aboriginal Cardiovascular Health Profile.

As outlined below, the Heart Foundation has a number of resources available to support risk and disease management a range of settings, including primary health care (see page 118).

Appendix 9 Service activity - Clinical suspicion of disease

Investigation services:

There is limited understanding of the scope or extent of activity to investigate CHD and CHF without access to MBS data.

ARF/RHD patients receive regular echocardiography. Receipt of echocardiography is a measure of activity and of quality of care as defined by the ESSENCE measurement indicators. Receipt of echocardiography is discussed on page 30 of the SA Aboriginal Cardiovascular Health Profile.

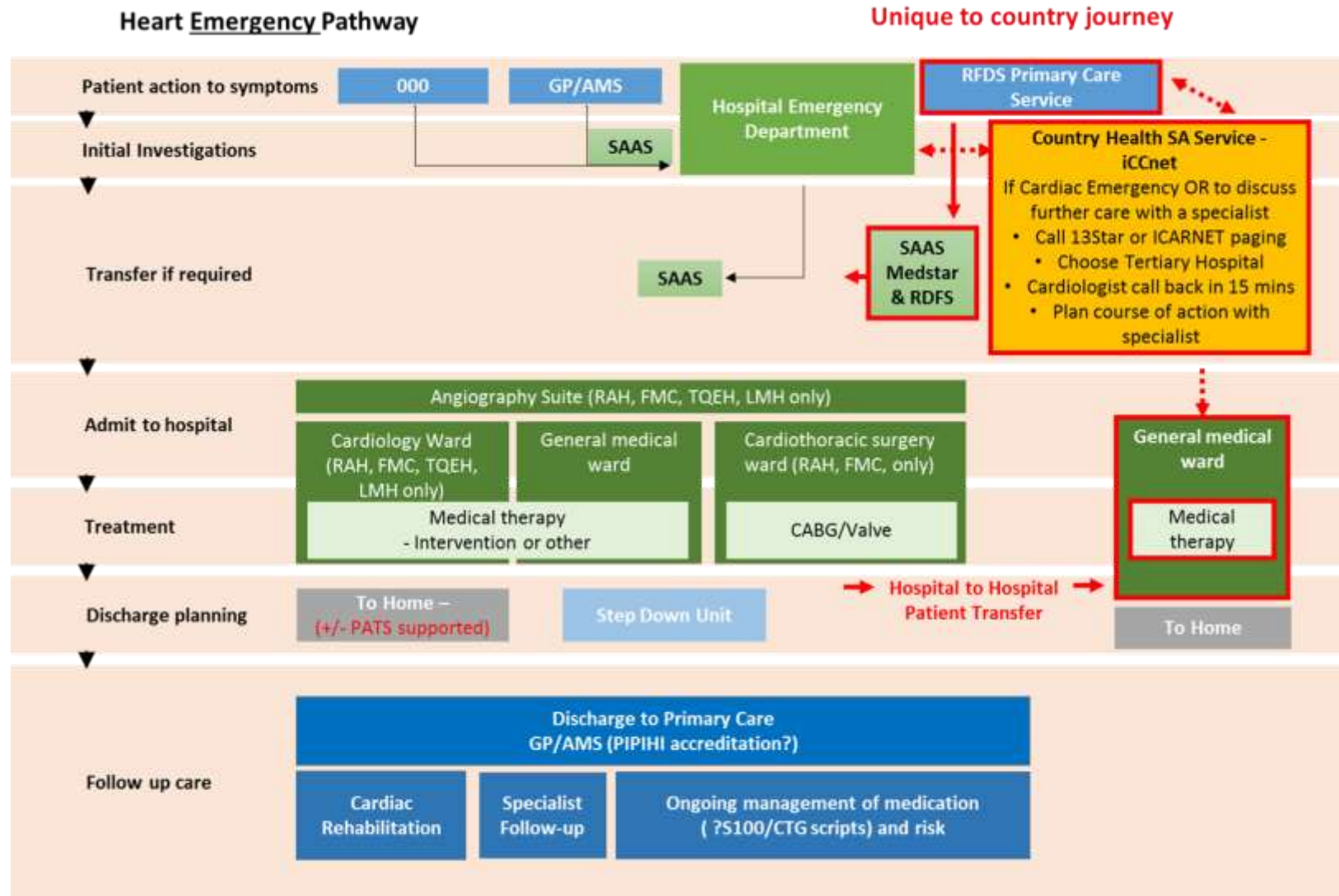
Specialist services:

Other than MBS item data, there is little understanding of the scope or extent of activity of specialist services.

Community voiced concerns about the availability of specialists, support in accessing the service, and the lack of culturally appropriate services.

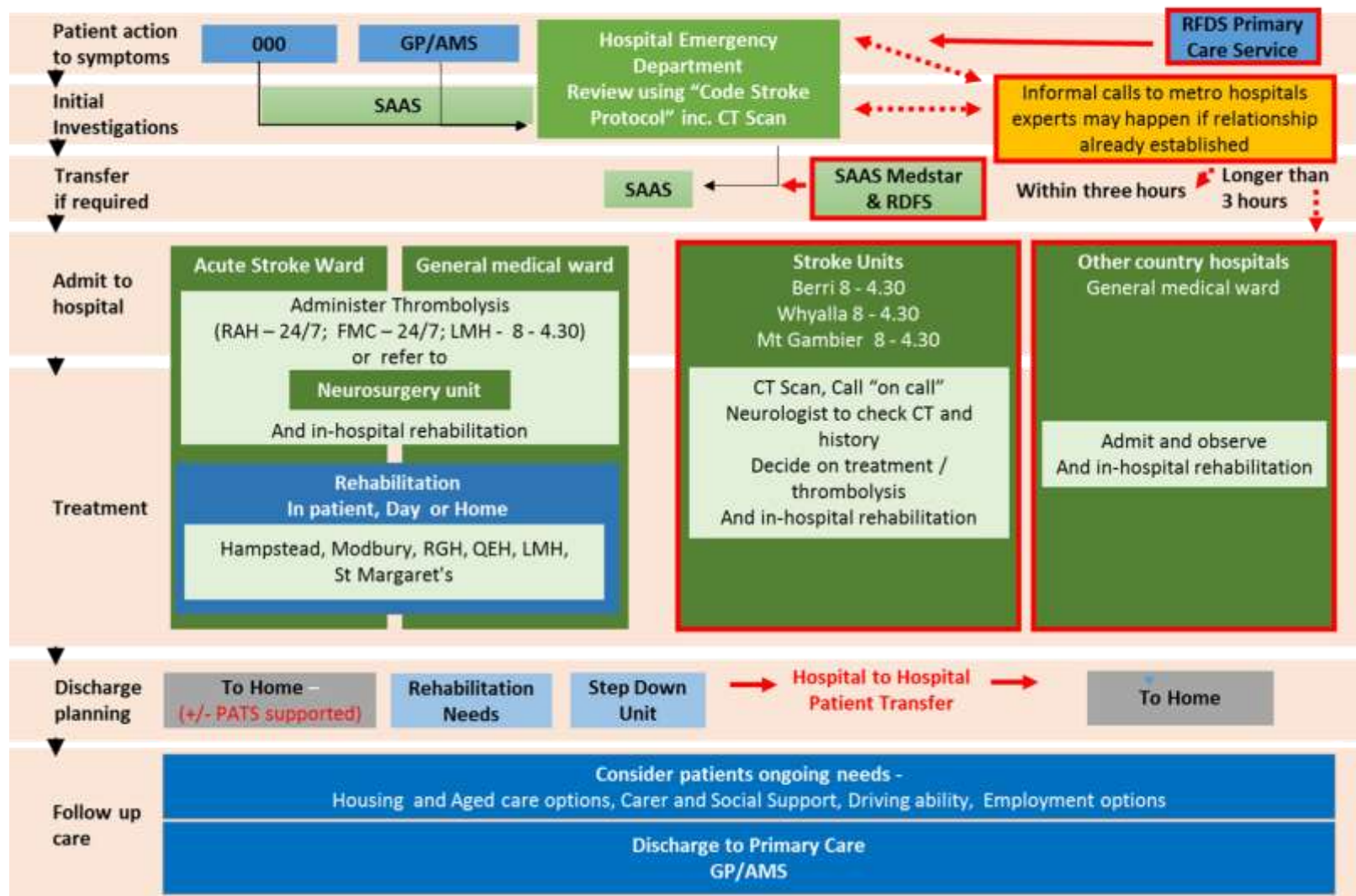
Appendix 10 Service activity - Acute episode

Patient journeys



Stroke Emergency Pathway

Unique to country journey



Planned and urgent transfers, and emergency retrieval services

There are varying levels of symptom recognition of the warning signs of heart attack and stroke in the community. Often, family play an important role in initiating care. ED data shows that 66% of all Aboriginal presentations were referrals from self or family and friends, 4% higher than non-Aboriginal presentations.

At community forums, there was discussion about how the cost of ambulances was a barrier to seeking care. Some community members reported prioritising the purchase of ambulance insurance, as they recognised their potential need.

Data has not been sought from the SA Ambulance Service.

Between January 2006 and December 2012, the RFDS undertook 137 primary evacuations from SA for people identified as Aboriginal. The majority were evacuated to Alice Springs (n=113). Many of the primary evacuations to Alice Springs were from APY lands communities (see Table 19).

There were also evacuations to South Australian centres, with Port Augusta receiving the greatest number. Many of the primary evacuations to Port Augusta were from the far west of SA.

There were 424 inter-hospital transfers from country SA. Of these 424 transfers, 287 (approximately 70%) were to Adelaide and 91 to Alice Springs.

Table 19: RFDS primary evacuations by evacuation and receiving locations

		Primary evacuation* from:						
		SA						
Evacuation to:		APY lands	Marla	Mt Davies	Oak Valley	Yalata Mission	Other	Total
	NT	82	13	7	0	0	11	113
	SA	0	0	0	10	6	8	24
	Adelaide	0	0	...	...	...	...	...
	Ceduna	0	0	0	...	...	...	...
	Port Augusta	0	0	...	9	6	...	20
	Total	82	13	...	10	...	26	137

Primary evacuation refers to retrieval from point with no medical facility.*

Data source: RFDS Unit Record data provided by RFDS (unpublished) extracted for the SA Aboriginal Heart and Stroke Plan, 16 Sept 2015

Of the inter hospital transfers to Adelaide, 40% (n=121) were from Port Augusta hospital. Ceduna and Coober Pedy were the other two sites with a high number of transfers to Adelaide (see Table 20).

There were also 471 inter-hospital transfers from the NT to Adelaide.

Table 20: RFDS inter-hospital transfers and retrievals by referring location and receiving location

		Inter-hospital transfers* from:													
		NT	Adelaide	Ceduna	Coober Pedy	Leigh Creek	Maitland	Oodnadatta	Port Augusta	Port Lincoln	Port Pirie	Renmark	Whyalla	Other	SA
Inter-hospital	NSW	...	...	0	0	0	0	0	0	0	0	0	0	...	...
	NT	172	91	0	0	0	0	0	0	0	0	0	0	8	99
	QLD	...	...	0	0	0	0	0	0	0	0	0	0	...	...
	SA	471	...	46	41	8	7	12	121	16	15	9	8	35	318
	Adelaide	471	...	46	41	...	7	...	121	16	15	9	8	17	287
	Coober Pedy		0	0	0	0	0	0	0	0	0	0	0	16	16
	Port Augusta		...	0	0	...	0	10	0	0	0	0	0	...	14

Other		...	0	0	...	0	...	0	0	0	0	0	...	...
VIC		...	0	0	0	0	0	0	0	0	0	0	...	...
Total	644	98	46	41	8	7	12	121	16	15	9	8	43	424

*Inter-hospital transfer*refers to inter-hospital transfers and retrievals with clinical staff external to RFDS (such as MedStar staff).*

Data source: RFDS Unit Record data provided by RFDS (unpublished) extracted for the SA Aboriginal Heart and Stroke Plan, 16 Sept 2015

For the emergency presentations to ED departments, 58% of these were by ambulance (including air ambulance; helicopter; and ambulance service), similar to the non-Aboriginal population (see Table 21).

Table 21: Number of presentations to SA Emergency Departments for an 'emergency' admission for principal diagnosis of CVD (I00-I99), July 2010-June 2015, by Aboriginal status and arrival mode

	Ambulance ^a		Self-propelled ^b		Other / Not stated ^c		Total
	n	%	n	%	n	%	n
Aboriginal	930	58%	559	35%	104	7%	1593
Non-Aboriginal	44635	57%	24610	32%	8748	11%	77993

a. Includes arrival modes: air ambulance; helicopter; and ambulance service.

b. Includes arrival modes: taxi; community/public transport; private care; volunteer transport; and walk in.

c. Includes arrival modes: Police vehicle; other; and not stated.

Data source: EDDC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

However, variation in arrival mode is seen between hospitals. For Aboriginal presentations, the RAH has the highest percentage of presentations with an arrival by ambulance (78%), followed by FMC (64%). These higher percentages are also seen at these sites in the non-Aboriginal presentations. Galwer (8%), Noarlunga (19%) and Riverland (Berri) (25%) had the lowest percentage of presentations with an arrival by ambulance for Aboriginal presentations (see Figure 88).

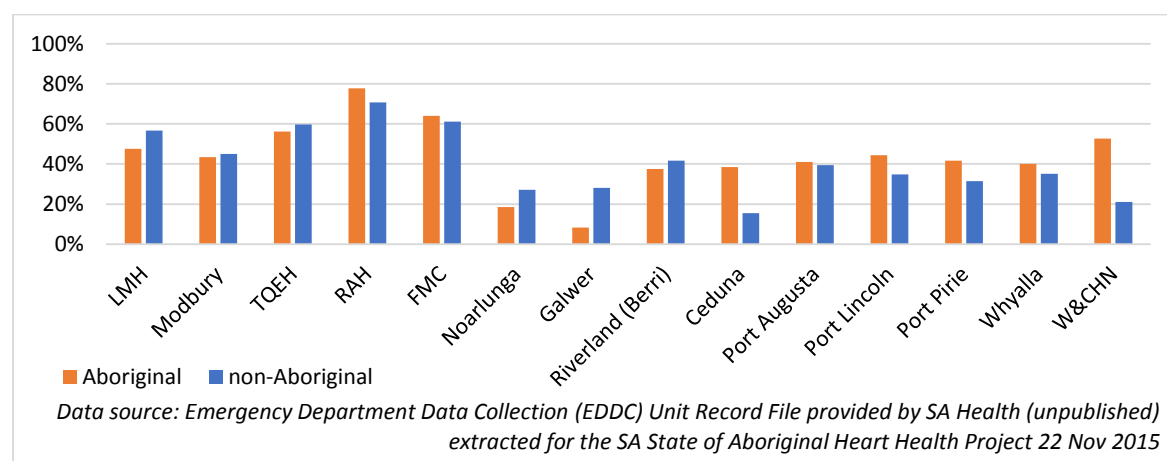


Figure 88: Proportion of presentations which arrive via ambulance, by Aboriginal status and hospital, July 2010-June 2015

Acute hospital care – Emergency Department:

Aboriginal people accounted for 2% of emergency presentations to ED departments in SA with a diagnosis of cardiovascular disease, with 1618 presentations over the 5 year period from July 2010-June 2015.

Of the 1618 presentations for Aboriginal people, 98% of these are for an 'emergency' visit. The other 2 percent of presentations are visits attributed to trauma, planned and unplanned review, planned admission, other cause of visit, or not stated (see Table 22).

Table 22: Number of presentations SA Emergency Departments for a principal diagnosis of CVD (I00-I99), July 2010-June 2015, by Aboriginal status by type of admission

	Emergency	Other*	Total	% of presentations which were emergency	% of emergency presentations which by Aboriginal status
Aboriginal	1593	25	1618	98%	2%
Non-Aboriginal	77993	2163	80156	97%	92%
Not Stated	5069	143	5212	97%	6%
Total	84655	2331	86986	97%	100%

Other* includes trauma, unplanned review, planned review, planned admission, other and not stated.

Data source: Emergency Department Data Collection (EDDC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Central Adelaide LHN accounted for 48% of all ED presentations with a diagnosis of CVD for Aboriginal people. The RAH had the greatest number of Aboriginal presentations, followed by the Lyell McEwin Hospital and The Queen Elizabeth Hospital. Country Health SA LHN accounted for 13% of all ED presentations for Aboriginal people. Of the country hospitals, Port Augusta 41% of all presentations (n=83) (see Table 23).

Table 23: Number of presentations to SA Emergency Departments for an 'emergency' admission for principal diagnosis of CVD (I00-I99), July 2010-June 2015, by Aboriginal status, Local Health Network and hospital

	Aboriginal		Non-Aboriginal	
	n	%	n	%
NALHN	359	23%	18971	24%
LMH	336		14872	
Modbury	23		4099	
CALHN	767	48%	31180	40%
TQEH	228		12823	
RAH	539		18357	
SALHN	229	14%	21853	28%
FMC	175		16528	
RGH			780	
Noarlunga	54		4545	
CHSALHN	200	13%	5140	7%
Galwer	12		621	

Riverland (Berri)	24		429	
Leigh Creek	12		7	
Ceduna	13		52	
Port Augusta	83		236	
Port Lincoln	9		187	
Port Pirie	24		565	
Whyalla	10		387	
Other*	13		2656	
W&CHN	38	2%	849	1%
Total	1593		77993	

Other* is made up of the remaining CHSA hospitals.

Data source: EDDC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015.

Source of referral:

Aboriginal people are referred to Emergency Departments in SA from a range of referral sources (see Table 24). 66% of all Aboriginal presentations were referrals from self or family and friends, 4% higher than non-Aboriginal presentations. 11% of Aboriginal presentations were from another hospital, compared to only 3% of non-Aboriginal presentations.

Table 24: Number of presentations to SA Emergency Departments for an 'emergency' admission for principal diagnosis of CVD (I00-I99), July 2010-June 2015, by Aboriginal status and source of referral

	Aboriginal		Non-Aboriginal	
	n	%	n	%
Self/Family/Friends	1044	66%	48088	62%
GP	91	6%	5063	6%
Police	8	1%	49	0%
Hospital	182	11%	2359	3%
Nursing Home	12	1%	2132	3%
First Aid Provider	28	2%	1403	2%
Other Department in this Hospital	8	1%	371	0%
Other*	220	14%	18528	24%
Total	1593	100%	77993	100%

Other* includes: Private Medical Specialist/Other MO; Locum Service; Community Health; Other Private Health Provider; Hostel; ED Staff (for review); SA Government Health Call Centre; Other; and Not Stated/Unknown

Data source: Emergency Department Data Collection (EDDC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Cause of presentation, by cardiovascular condition:

Of all Aboriginal separations for a principal diagnosis of CVD (I00-I99), cardiac disease accounted for 74%, compared to 71% for non-Aboriginal presentations. Cerebrovascular disease (stroke and other cerebrovascular disease) accounted for 11% of all Aboriginal separations, compared to 13% for non-Aboriginal separations. Vascular disease accounted for 15% of Aboriginal presentations, compared to 16% for the non-Aboriginal separations (see Figure 89).

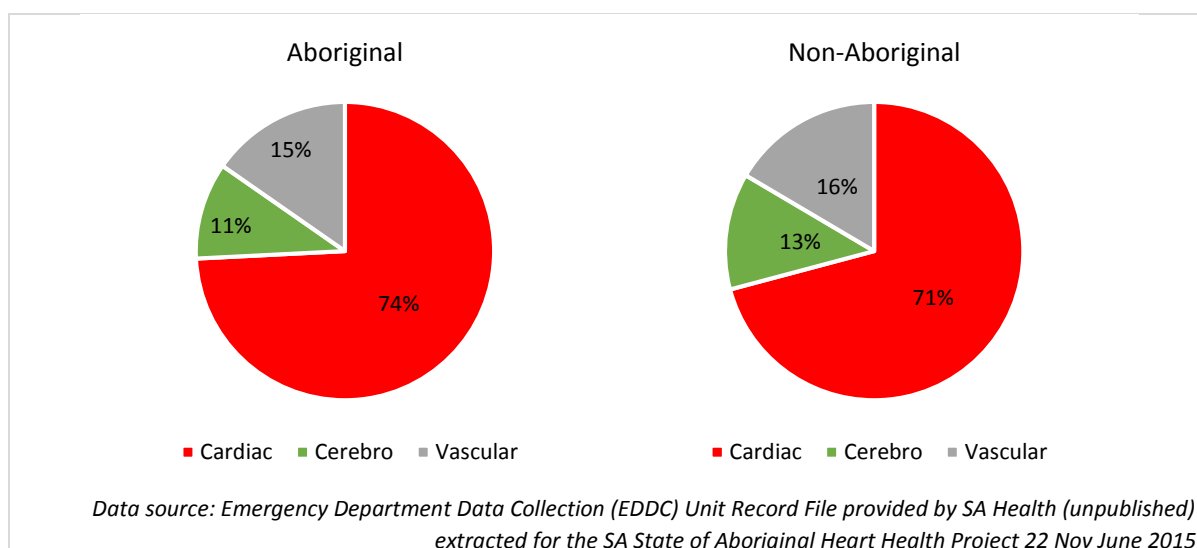


Figure 89: All ED presentations for a principal diagnosis of CVD, July 2010-June 2015, by Aboriginal status, and sub-set of CVD

Acute hospital care – Inpatient:

Aboriginal people account for 2.2% of all hospitalisations in SA for a principal diagnosis of cardiovascular disease, with 4,053 separations over the 5 year period from July 2010-June 2015. There were 10,231 separations for which Aboriginal status was not recorded, accounting for 5% of all separations.

The number of separations has increased by 15% for the Aboriginal population from July 2005 - June 2010 to July 2010 - June 2015, compared to an increase of 5% in the non-Aboriginal population, which equates to an additional 541 separations for Aboriginal people over the 5 year period (see Table 25 and Figure 90).

There was a 15% increase in the number of separations for Aboriginal people for CVD from the period July 2005 - June 2010 to July 2010 - June 2015, which equated to an additional 541 separations.

Table 25: Number of separations for hospitalisations with a principal diagnosis of CVD (I00-I99), July 2005 - June 2015, by Aboriginal status and financial year

	July 2005 - June 2010					
	Jul'05-Jun'06	Jul'06-Jun'07	Jul'07-Jun'08	Jul'08-Jun'09	Jul'09-Jun'10	Jul'05-Jun'10
Aboriginal	754	679	707	664	708	3512
non-Aboriginal	33148	33870	33835	33697	33372	167922
Not Stated	713	841	1264	1633	2125	6576
Total	34615	35390	35806	35994	36205	178010
	July 2010 - June 2015					
	Jul'10-Jun'11	Jul'11-Jun'12	Jul'12-Jun'13	Jul'13-Jun'14	Jul'14-Jun'15	Jul'10-Jun'15
Aboriginal	824	809	782	834	804	4053
non-Aboriginal	35251	35264	34529	35004	36070	176118
Not Stated	2152	2105	1896	2268	1810	10231
Total	38227	38178	37207	38106	38684	190402

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015.

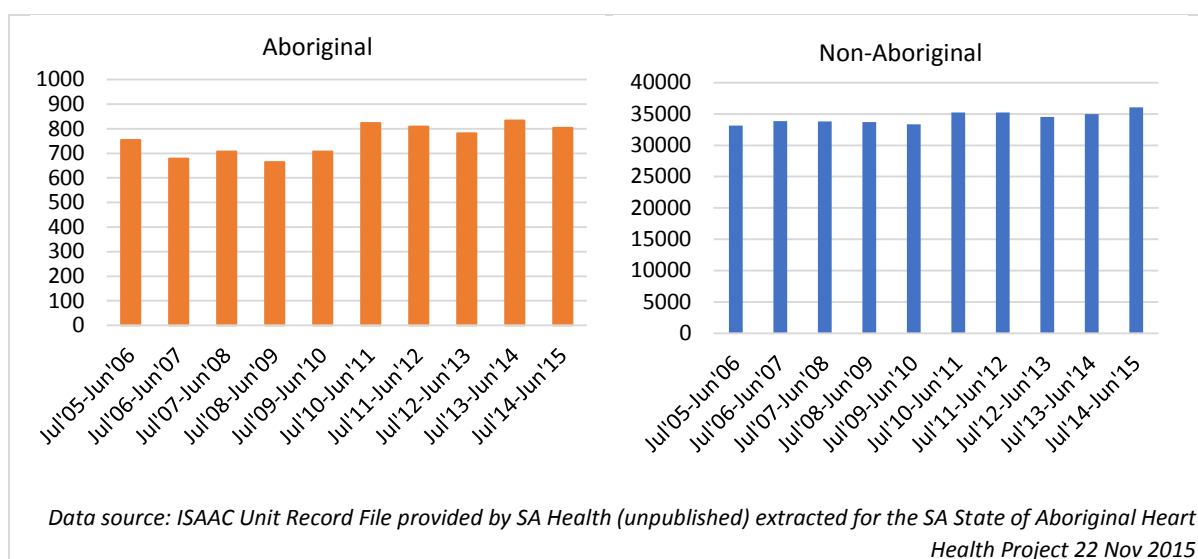


Figure 90: Number of separations with a principal diagnosis of CVD (I00-I99), July 2005 - June 2015, by Aboriginal status and financial year

Hospitalisation by type of admission:

Approximately 7 in 10 hospital admissions for Aboriginal people were emergency admissions (see Table 26). The Aboriginal population are 8% more likely to have an emergency admission for a hospital separation with a principal diagnosis of CVD than the non-Aboriginal population.

Table 26: Hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status and type of admission

	Emergency		Elective		Other*	
	n	%	n	%	n	%
Aboriginal	2776	68	1224	30	53	1
non-Aboriginal	110780	63	62734	36	2604	1
Not Stated	5969	58	2442	24	1820	18

* Other includes where admission category is 'not applicable' or 'error/null value from source system'

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

The admission type varies significantly between Aboriginal people dependent on their state/territory of residence (see Table 27). Four in 5 SA Aboriginal separations were emergency admissions. Aboriginal people who reside in the Northern Territory were least likely to be admitted for an emergency admission (43%). This compares to 67% of Aboriginal separations from New South Wales.

Table 27: Hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, for Aboriginal people, by type of admission and state/territory of residence

	Aboriginal					Non-Aboriginal				
	Emergency		Elective		Total	Emergency		Elective		Total
	n	%	n	%	n	n	%	n	%	n
SA	2,205	80	556	20	2,761	108,391	64	60,025	36	168,416
ACT	0		0		0	26	28	66	72	92
NSW	39	67	19	33	58	534	46	621	54	1,155

NT	480	43	629	57	1,109	399	29	955	71	1,354
Qld	...		...		...	195	74	68	26	263
Tas	...		0		...	34	57	26	43	60
Vic	...		...		22	750	53	670	47	1,420
WA	...		...		9	121	78	34	22	155
Other*	24	67	12	33	36	330	55	269	45	599
Total	2,776	68	1,224	30	4,000	110,780	63	62,734	36	173,514

Other includes Unknown state of residence and overseas.*

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Hospitalisation by place of residence:

Of all hospital separations for Aboriginal people in SA hospitals, 69 percent are SA residents. This is in contrast to the non-Aboriginal population, for whom SA residents make up 97 percent of all hospitalisations (see Table 28 and Figure 91). NT residents make up 27 percent of all Aboriginal separations to SA hospitals (n= 1,109 separations over 4 years). New South Wales, Victoria, Western Australia, Queensland and Tasmania also have some Aboriginal residents using SA hospitals.

Table 28: Hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status and state/territory of usual residence

	Aboriginal		Non-Aboriginal		Not Stated		Total	
	n	%	n	%	n	%	n	%
SA	2814	69%	170994	97%	9457	92%	183265	96%
ACT	0	0%	92	0%	6	0%	98	0%
NSW	58	1%	1159	1%	157	2%	1374	1%
NT	1109	27%	1360	1%	302	3%	2771	1%
Qld	...	0%	264	0%	36	0%	303	0%
Tas	...	0%	60	0%	6	0%	68	0%
Vic	22	1%	1427	1%	156	2%	1605	1%
WA	9	0%	157	0%	23	0%	189	0%
Other	36	1%	605	0%	88	1%	729	0%
Total	4053	100%	176118	100%	10231	100%	190402	100%

* Other includes where state of residence is unknown, or the separation's place of residence is overseas

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

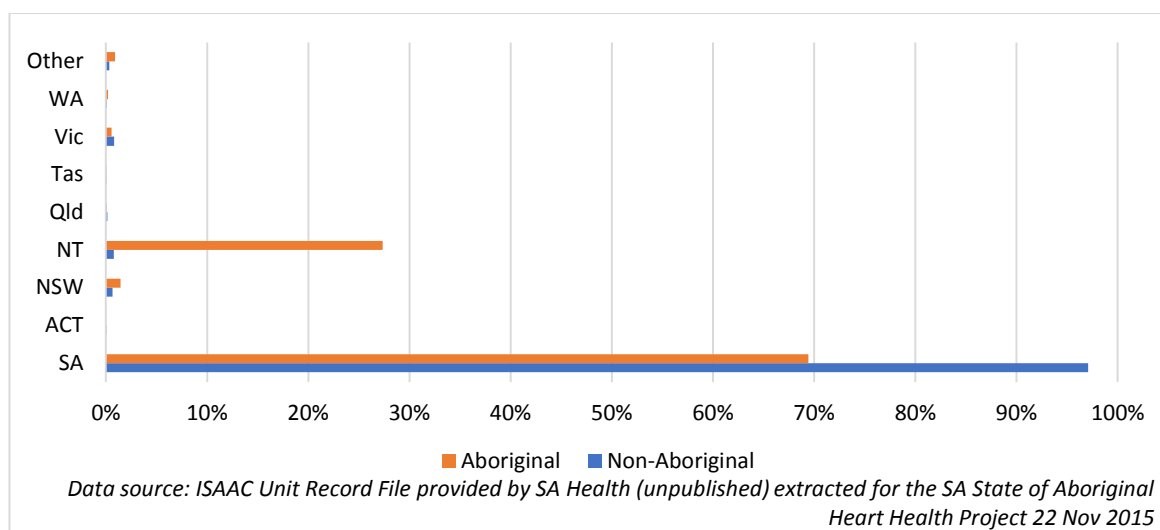
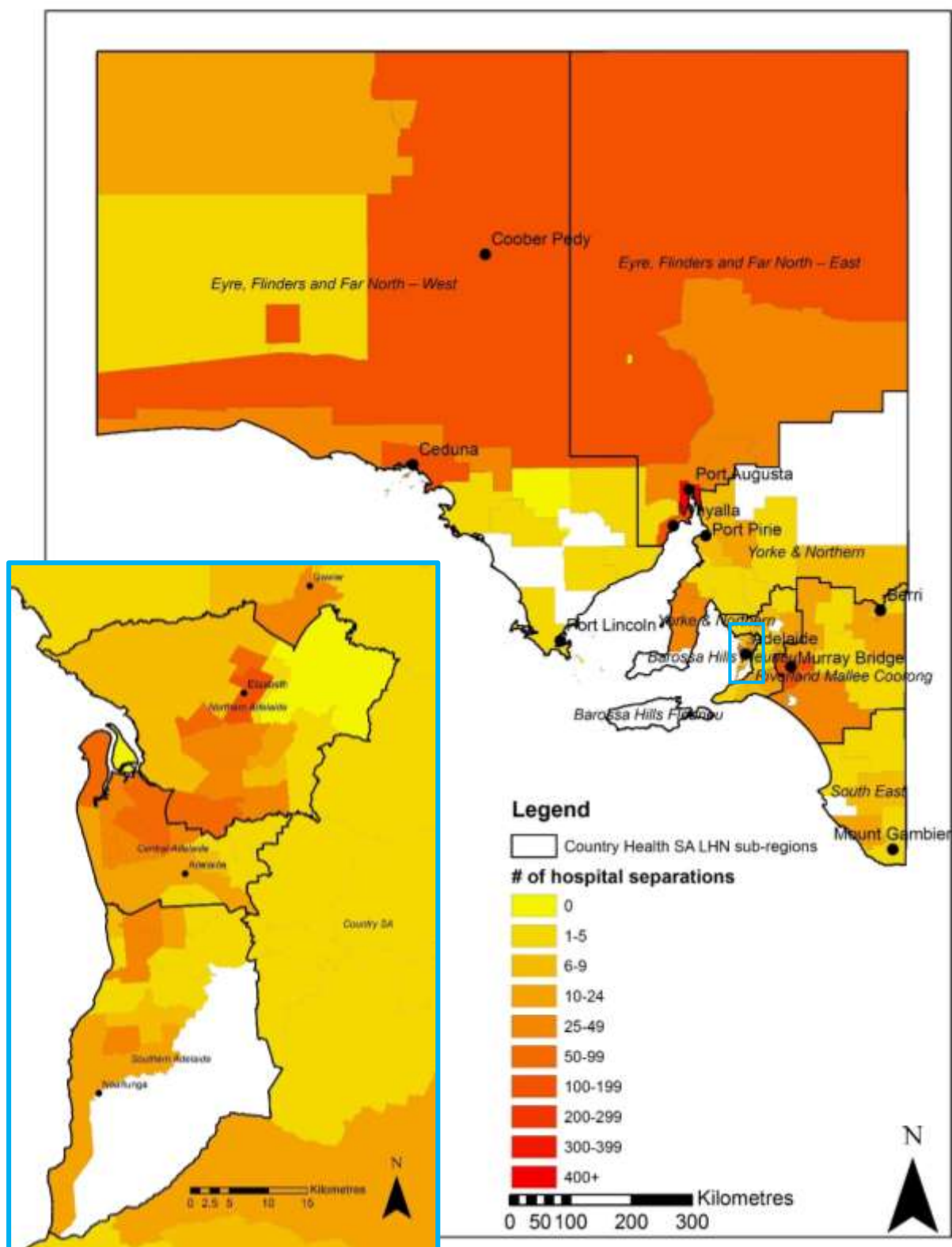


Figure 91: Hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status and state/territory of usual residence

Figure 92 shows Aboriginal hospitalisation rates by statistical local area (SLA). There are significant variations in the hospitalisation rate across the state, including significant variation in metropolitan Adelaide and country regions.



Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Figure 92: Number of Aboriginal separations for CVD, by SLA, for South Australia July 2010-June 2015

Hospitalisations by Local Health Network and Hospital:

The number of hospitalisations is discussed in some detail on page 14 of the SA Aboriginal Cardiovascular Health Profile. This discussion is an extension of that.

Central Adelaide LHN (CALHN) had the greatest number of separations for Aboriginal people over the 5 year period (July 2010 - June 2015), with a total of 1,544 separations for a principal diagnosis of CVD (see Table 29 and Figure 93). Country Health SA LHN and Southern Adelaide LHN had the next highest number of separations for CVD with 1007 and 978 separations respectively. The Women's and Children's Health Network had 59 separations for Aboriginal people over the 5 year period, all under the age of 25 years. The private hospitals had 120 separations for Aboriginal people over 5 years.

Those aged 35-64 accounted for a large proportion of the Aboriginal separations in Northern Adelaide, Central Adelaide, Southern Adelaide and Country Health Local Health Networks.

Table 29: Number and proportion of hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status, Local Health Network and hospital

	Aboriginal		Non-Aboriginal	
	n	%	n	%
NALHN	344	8%	21,498	12%
LMH	311		15,560	
Modbury	33		5,938	
CALHN	1544	38%	48,324	27%
Hampstead	0		...	
RAH	1167		30,475	
TQEH	377		17,848	
SALHN	978	24%	29088	17%
FMC	967		25,030	
Noarlunga	...		1,170	
RGH	...		2,888	
CHSALHN	1007	25%	26,895	15%
Angaston	0		525	
Balaklava	...		235	
Barmera	9		234	
Booleroo	...		118	
Bordertown	0		260	
Burra	0		93	
Ceduna	116		208	
Clare	0		589	
Cleve	...		135	
Cooper Pedy	53		148	
Cowell	...		74	
Crystal Brook	...		219	
Cummins	0		116	
CYP (Maitland)	23		334	
Elliston	...		51	
Eudunda	...		60	
Gawler	24		1,655	
Gumeracha	0		102	
Hawker	6		39	
Jamestown	...		211	
Kangaroo Island	0		349	
Kapunda	...		428	
Karoonda	0		17	
Kimba	0		56	
Kingston	...		207	
Lameroo	0		102	
Laura	...		102	
Leigh Creek	16		38	
Lower Murray (Tailem Bend)	...		162	

Loxton	...		472	
Mannum	...		360	
Meningie	19		287	
Millicent	7		838	
Mt Barker	...		527	
Mt Gambier	17		2,491	
Mt Pleasant	0		226	
Murray Bridge	72		1,199	
Naracoorte	6		970	
Northern Yorke	15		1,047	
Oodnadatta	...		...
Orroroo	0		81	
Penola	0		99	
Peterborough	...		185	
Pinnaroo	0		48	
Port Augusta	350		1,188	
Port Broughton	0		175	
Port Lincoln	55		1,279	
Port Pirie	43		1,326	
Quorn	17		125	
Renmark	0		260	
Riverland (Berri)	42		1,066	
Riverton	0		138	
Roxby Downs	...		122	
Snowtown	0		33	
South Coast	8		1,580	
Southern Yorke	...		381	
Strathalbyn	...		585	
Streaky Bay	...		128	
Tanunda	0		608	
Tumby Bay	0		258	
Waikerie	...		362	
Whyalla	66		1,472	
Woomera	0		...	
Wudinna	0		106	
Private	120	3%	49,611	28%
W&CHN	59	1%	667	0%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

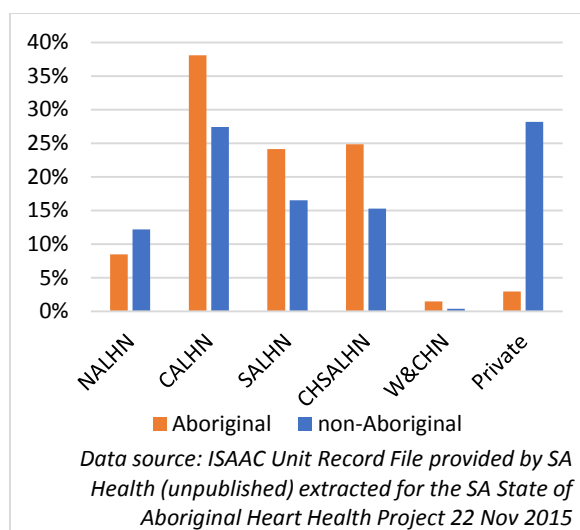
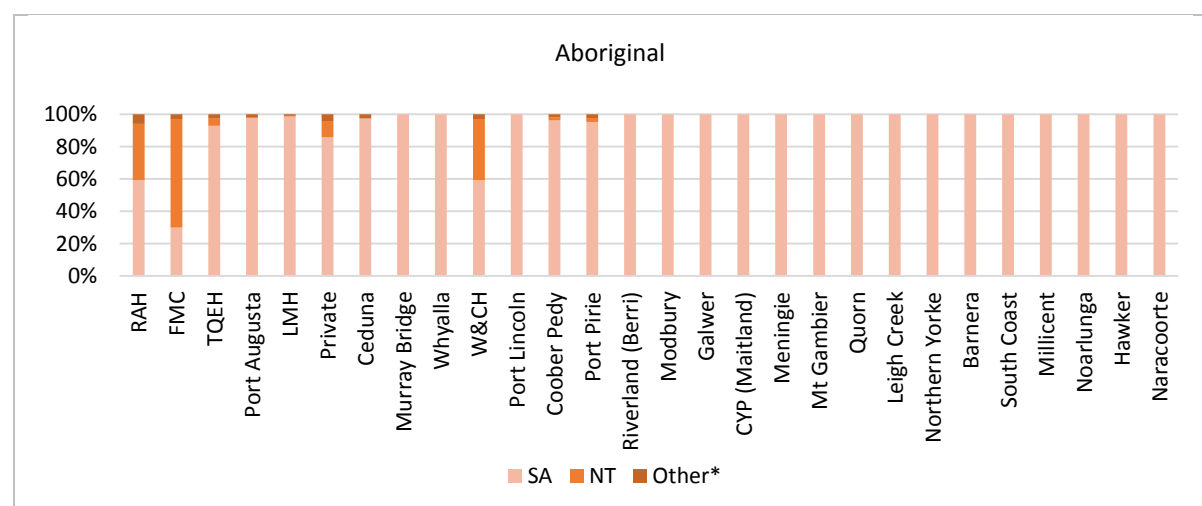


Figure 93: Proportion of hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status and Local Health Network

When considering the separations by state of residence by hospital, the FMC have the greatest proportion of Aboriginal separations from other states/territories, with a majority (67%) of Aboriginal separations from the NT. Only 30% of Aboriginal separations at the FMC are SA residents. The RAH and the W&CH also have high proportions of Aboriginal separations from other states/territories, with only 59% of separations from SA. This is in contrast to non-Aboriginal separations, where a small proportion are from interstate. However, given the larger number of non-Aboriginal separations, RAH has 3 times the number of non-Aboriginal NT separations to Aboriginal NT separations.

In both cases, a majority of the interstate residents are from the NT. For the country hospitals, the majority of Aboriginal separations, if not all, are SA residents. This is similar to the non-Aboriginal separations, however Coober Pedy, Leigh Creek and Hawker have a number of separations of residents not from SA (see Table 30 and Figure 94).



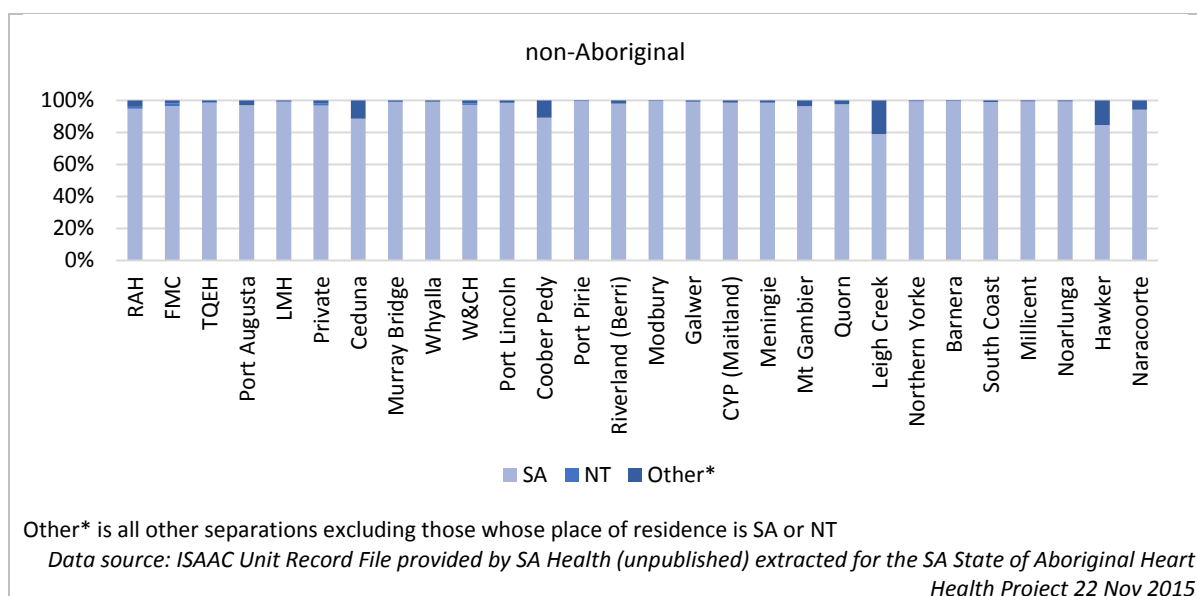


Figure 94: Proportion of hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status, hospital and state/territory of residence

Table 30: Number and proportion of hospitalisations for principal diagnosis of CVD (I00-I99), July 2010 - June 2015, by Aboriginal status, hospital and state/territory of residence

	Aboriginal							Non-Aboriginal						
	SA		NT		Other*		Total	SA		NT		Other*		Total
	n	%	n	%	n	%	n	n	%	n	%	n	%	n
RAH	693	59%	405	35%	69	6%	1167	28891	95%	328	1%	1256	4%	30475
FMC	290	30%	646	67%	31	3%	967	24096	96%	465	2%	469	2%	25030
TQEH	350	93%	18	5%	9	2%	377	17604	99%	30	0%	214	1%	17848
Port Augusta	342	98%	...	...	...	...	350	1151	97%	0	0%	37	3%	1188
LMH	307	99%	...	...	...	...	311	15443	99%	...	...	...	...	15560
Private	103	86%	...	...	...	...	120	48024	97%	520	1%	1067	2%	49611
Ceduna	113	97%	...	...	...	...	116	184	88%	0	0%	24	12%	208
Murray Bridge	72	100%	...	...	...	...	72	1188	99%	...	...	...	...	1199
Whyalla	66	100%	...	...	...	...	66	1460	99%	0	0%	12	1%	1472
W&CH	35	59%	...	...	...	...	59	648	97%	7	1%	12	2%	667
Port Lincoln	55	100%	...	...	...	...	55	1259	98%	...	...	...	...	1279
Cooper Pedy	51	96%	...	...	...	...	53	132	89%	0	0%	16	11%	148
Port Pirie	41	95%	...	...	...	...	43	1320	100%	0	0%	6	0%	1326
Riverland (Berri)	42	100%	0	0%	0	0%	42	1043	98%	0	0%	23	2%	1066
Modbury	33	100%	0	0%	0	0%	33	5920	100%	...	...	...	...	5938
Galwer	24	100%	0	0%	0	0%	24	1640	99%	0	0%	15	1%	1655
CYP (Maitland)	23	100%	0	0%	0	0%	23	329	99%	...	...	...	...	334
Meningie	19	100%	0	0%	0	0%	19	283	99%	...	...	...	...	287

Mt Gambier	17	100%	0	0%	0	0%	17	2399	96%	0	0%	92	4%	2491
Quorn	17	100%	0	0%	0	0%	17	122	98%	...	...	...	...	125
Leigh Creek	16	100%	0	0%	0	0%	16	30	79%	0	0%	8	21%	38
Northern Yorke	15	100%	0	0%	0	0%	15	1039	99%	2	0%	6	1%	1047
Barnera	9	100%	0	0%	0	0%	9	233	100%	...	...	...	...	234
South Coast	8	100%	0	0%	0	0%	8	1564	99%	0	0%	16	1%	1580
Millicent	7	100%	0	0%	0	0%	7	833	99%	...	...	...	...	838
Noarlunga	6	100%	0	0%	0	0%	6	1163	99%	...	0%	7	1%	1170
Hawker	6	100%	0	0%	0	0%	6	33	85%	...	0%	6	15%	39
Naracoorte	6	100%	0	0%	0	0%	6	913	94%	...	0%	57	6%	970

Other is all other separations excluding those whose place of residence is SA or NT*

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Cause of hospitalisation, by cardiovascular condition:

84% of separations of CVD for Aboriginal people were for cardiac conditions, compared to 75% for non-Aboriginal separations. Cerebrovascular conditions (including stroke) accounted for 7 percent of separations for Aboriginal people, which was proportionally less than for non-Aboriginal separations. Vascular disease accounted for 9% of Aboriginal separations, almost half of the 16% for non-Aboriginal separations (see Table 31 and Figure 95).

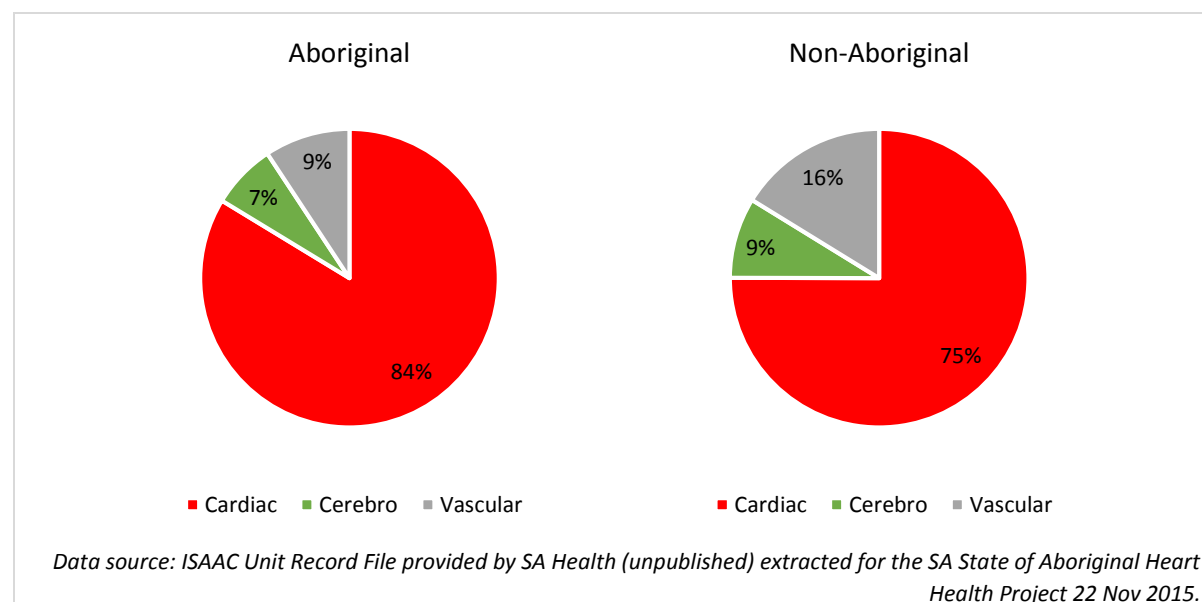


Figure 95: All hospital admissions for a principal diagnosis of CVD, July 2010-June 2015, by Aboriginal status, and sub-set of CVD

Table 31: Hospital admissions to SA hospitals for a principal diagnosis of cardiac disease (I00-I59), cerebrovascular disease (I60-I69) and other vascular disease (I70-I99), July 2010 - June 2015, by Aboriginal status and age

	Aboriginal			Non-Aboriginal		
	Cardiac	Cerebro	Vascular	Cardiac	Cerebro	Vascular
0-24	141	15	43	1398	137	1200
25-34	286	20	31	1828	198	1057
35-44	570	43	60	4702	533	2070
45-54	1013	77	92	11708	1334	3123
55-64	819	60	95	23213	2227	4605
65-74	400	42	33	32403	3213	5872
75+	163	28	22	56907	7745	10645
Total	3392	285	376	132159	15387	28572
% of CVD	84%	7%	9%	75%	9%	16%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 32: All hospital separations for Aboriginal people with a principal diagnosis of Coronary Heart Disease, Chronic Heart Failure, Stroke, and Hypertension, by Local Health Network and (selected) hospital, July 2010 - June 2015

	Hypertension		CHD		CHF		Stroke		Atrial Fibrillation	
LHN	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
Hospital										
NALHN	...	377	155	7467	56	2946	15	1445	16	2770
LMH	...	255	141	5871	...	1890	12	1029	14	1878
Modbury	0	122	14	1596	...	1056	3	416	2	892
CALHN	16	576	776	13401	114	4857	79	4184	64	6542
TQEH	...	212	180	5078	26	1965	11	1315	27	2545
RAH	...	364	596	8323	88	2892	68	2869	37	3997
SALHN	...	490	595	7616	29	3562	18	2435	18	2849
FMC	...	363	594	7134	27	2362	18	2334	17	2327
RGH	0	64	...	386	...	851		48	1	443
Noarlunga	...	63	...	96	...	349		53		79
CHSALHN	48	1265	338	7310	209	4411	67	2254	85	4725
Ceduna	...	22	41	67	25	27	11	19	10	34
Cooper Pedy	...	10	23	38	16	29	...	13	...	28
CYP (Maitland)	...	23	9	128	...	43	...	28	0	33
Galwer	0	77	6	494	...	257	...	125	...	218
Leigh Creek	0	...	10	10	...	3	...	...	0	9
Mt Gambier	0	55	10	745	...	397	...	262	...	342
Murray Bridge	0	20	31	313	11	196	7	105	8	237
Port Augusta	20	87	103	295	82	153	19	80	25	184
Port Lincoln	6	33	26	333	...	210	...	80	...	255
Port Pirie	...	90	11	401	6	241	...	94	10	186
Quorn	...	...	8	25	...	20	0	14	...	32
Riverland (Berri)	0	38	14	212	12	200	...	96	7	182
Whyalla	...	90	17	322	13	198	6	115	...	310
Other	0	0	0	...	...	11	0	...	0	...
Private	...	641	53	14973	9	4474	...	785	15	9521
W&CHN	...	43	0	...	...	22	...	...	0	...
Total	73	3,392	1917	50,779	420	20,283	186	11,125	198	26,416

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Hypertension:

Hypertension (I10-I15) accounted for less than 2 percent of all Aboriginal separations for a principal diagnosis of CVD (N=73).

The number of separations has decreased by 28% for the Aboriginal population from July 2005 - June 2010 to July 2010 - June 2015, compared to an increase of 17% in the non-Aboriginal population.

93% of Aboriginal separations were South Australian residents, compared to 99% of non-Aboriginal separations.

Country Health SA LHN had the greatest number of separations for Aboriginal people over the 5 year period, with a total of 48 separations for a principal diagnosis of hypertension. Of the 48 separations of a principal diagnosis of hypertension at Country Health SA LHN hospitals, Port Augusta had 20 separations (42% of all CHSALHN hospitalisations), followed by Port Lincoln with 6 separations. Central Adelaide had the next highest number of separations for Aboriginal people. Southern Adelaide and Northern Adelaide LHN and the W&CHN had few separations (see Table 32).

Coronary Heart Disease:

Coronary Heart Disease (CHD) (I20-I25) accounted for 47% of all Aboriginal separations for a principal diagnosis of CVD. This is compared to 29% of all principal diagnoses of CVD for the non-Aboriginal population.

The number of separations has increased by 6% for the Aboriginal population from July 2005- June 2010 to July 2010 - June 2015, compared to a decrease of 12% in the non-Aboriginal population. This was an additional 117 separations for Aboriginal people over the 5 year period.

Sixty percent of Aboriginal separations for coronary heart disease (I20-I25) were from South Australia. Northern Territory accounted for 36% of separations (see Table 33).

The Northern Territory Government recently established a Cardiac Cath Laboratory in Darwin, which now takes some Northern Territory patients for coronary angiographies and PCI, treatments for coronary heart disease, particularly Acute Myocardial Infarction. Historically, these patients were treated in SA hospitals. Therefore, this data reflects the period when there has been a shift in patterns.

Table 33: Hospitalisations for principal diagnosis of CHD, July 2010 - June 2015, by Aboriginal status and state/territory of residence

	Aboriginal		Non-Aboriginal	
	n	%	n	%
SA	1,146	60%	48,672	96%
ACT	0	0%	9	0%
NSW	35	2%	437	1%
NT	693	36%	705	1%
Qld	...	0%	87	0%
Tas	...	0%	18	0%
Vic	17	1%	604	1%
WA	...	0%	55	0%
Other*	19	1%	192	0%
Total	1,917	100%	50,779	100%

* Other includes where state of residence is unknown, or the separation's place of residence is overseas

*Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished)
extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015*

Separations for Aboriginal people were more likely to be for acute myocardial infarction (AMI) compared to non-Aboriginal separations, which accounted for 45% of all separations for Aboriginal people. Separations for Aboriginal people were less likely to be for angina and other CHD compared to non-Aboriginal counterparts. (see Figure 96).

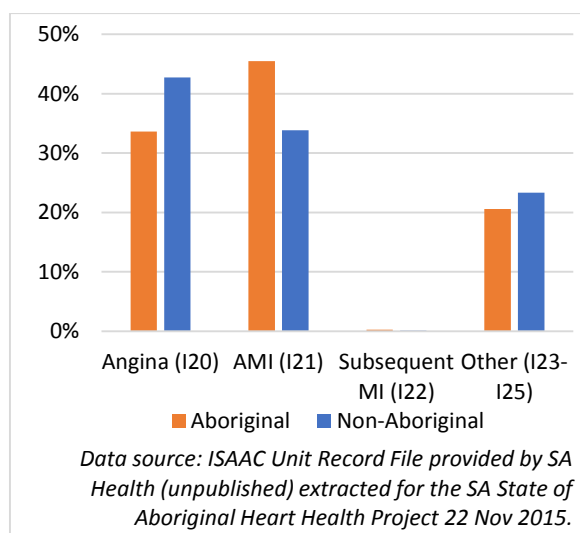


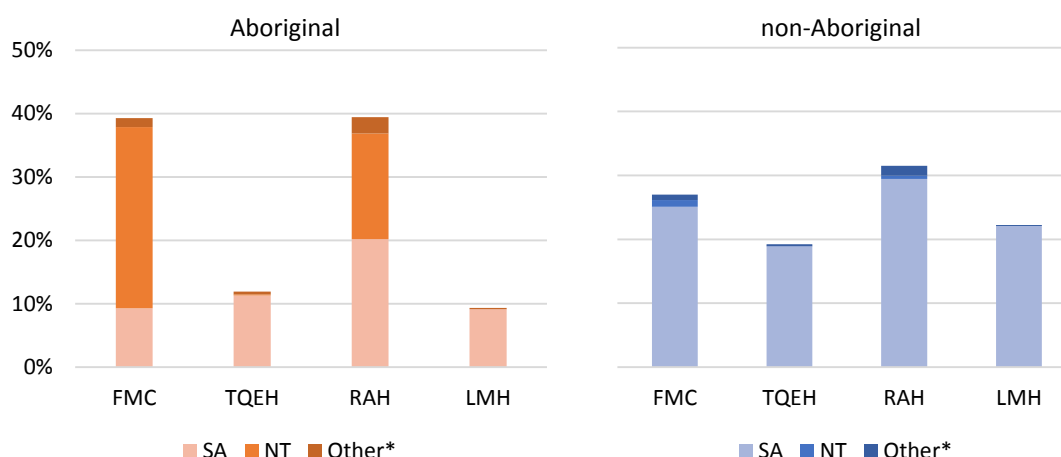
Figure 96: All hospital admissions for a principal diagnosis of CHD, July 2010-June 2015, by Aboriginal status, and type of CHD

Central Adelaide LHN had the greatest number of separations for Aboriginal people over the 5 year period, with a total of 776 separations for a principal diagnosis of coronary heart disease. The majority of these separations (n=596) were at the Royal Adelaide Hospital (see Table 32 and Figure 97).

Southern Adelaide LHN and Country Health SA LHN have the next highest number of separations for coronary heart disease. Almost all separations of a principal diagnosis of coronary heart disease at Southern Adelaide LHN were at Flinders Medical Centre (n=594). FMC and RAH see similar number of patients (see Table 32 and Figure 97).

Of the 338 separations of a principal diagnosis of coronary heart disease at Country Health SA LHN hospitals, Port Augusta had almost one third of all separations (n=103). This was followed by Ceduna (n=41), Murray Bridge (n=31), and Port Lincoln (n=26) and Coober Pedy (n=23) (see Table 32).

Of the 155 separations of a principal diagnosis of coronary heart disease at Northern Adelaide LHN, Lyell McEwin Hospital had 90 percent of the separations. The Women's and Children's Health Network did not have any separations for coronary heart disease for Aboriginal people over the 5 year period. The private hospitals had 53 separations of a principal diagnosis of coronary heart disease for Aboriginal people over 5 years (see Table 32).



Other* is all other separations excluding those whose place of residence is SA or NT

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Figure 97: Proportion of hospitalisations for principal diagnosis of CHD (I20-I25) and hospital, July 2010 - June 2015, by Aboriginal status and state of residence

Chronic Heart Failure:

Chronic Heart Failure (I50) accounted for 10 percent of all Aboriginal separations for a principal diagnosis of CVD. This is similar to the non-Aboriginal population.

The number of separations has increased by 12% for the Aboriginal population from July 2005 - June 2010 to July 2010 - June 2015, equal to the increase in the non-Aboriginal population.

A majority (96%) of Aboriginal separations for Chronic Heart Failure (I50) were from South Australia, with small numbers from other state and territories.

Country Health SA LHN had the greatest number of separations for Aboriginal people over the 5 year period, with a total of 209 separations for a principal diagnosis of chronic heart failure (see Table 32). Of the 209 separations of a principal diagnosis of chronic heart disease at Country Health SA LHN hospitals, Port Augusta had 39% of all separations (n=82). This was followed by Ceduna (n=25) (see Table 32).

Central Adelaide had the next highest number of separations for Aboriginal people (n=114). Southern Adelaide and Northern Adelaide LHNs had fewer separations (see Table 32).

The private hospitals had 9 separations of a principal diagnosis of chronic heart failure for Aboriginal people over 5 years (see Table 32).

Stroke:

Stroke (I61, I62.9, I63, I64) accounted for 5% of all Aboriginal separations for a principal diagnosis of CVD. This is similar to the non-Aboriginal population.

The number of separations has increased by 15% for the Aboriginal population from July 2005 - June 2010 to July 2010 - June 2015, compared to only a 2% increase in the non-Aboriginal population. This equated to an additional 24 separations for Aboriginal people.

Separations for Aboriginal people were less likely to be for ischaemic stroke, however ischaemic stroke still accounted for the majority of strokes for Aboriginal and non-Aboriginal separations (Aboriginal: 52%; non-Aboriginal: 62%) (see Figure 98 and Figure 99).

Separations for Aboriginal people were more likely to be for haemorrhagic stroke compared to non-Aboriginal separations. Haemorrhagic stroke accounted for 18% of all separations for Aboriginal people with stroke, compared to 14%. Aboriginal people were also more likely to be diagnosed with stroke – not specified than non-Aboriginal counterparts.

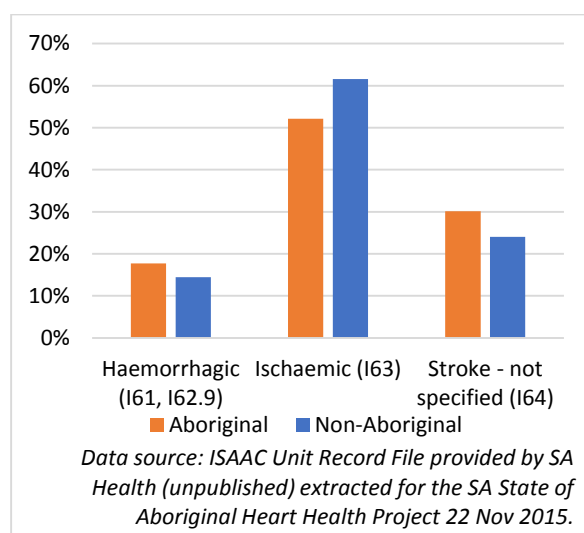
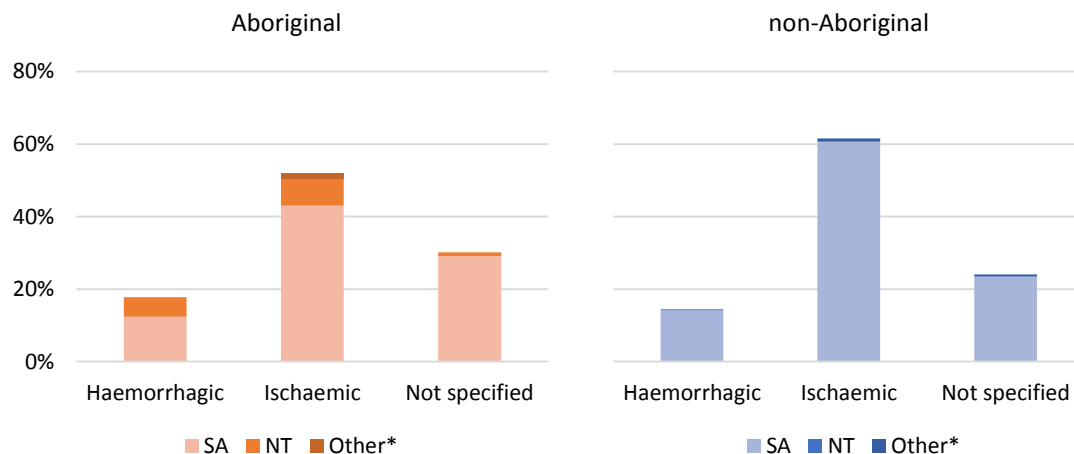


Figure 98: All hospital admissions for a principal diagnosis of stroke, July 2010-June 2015, by Aboriginal status, and type of stroke



Other* is all other separations excluding those whose place of residence is SA or NT

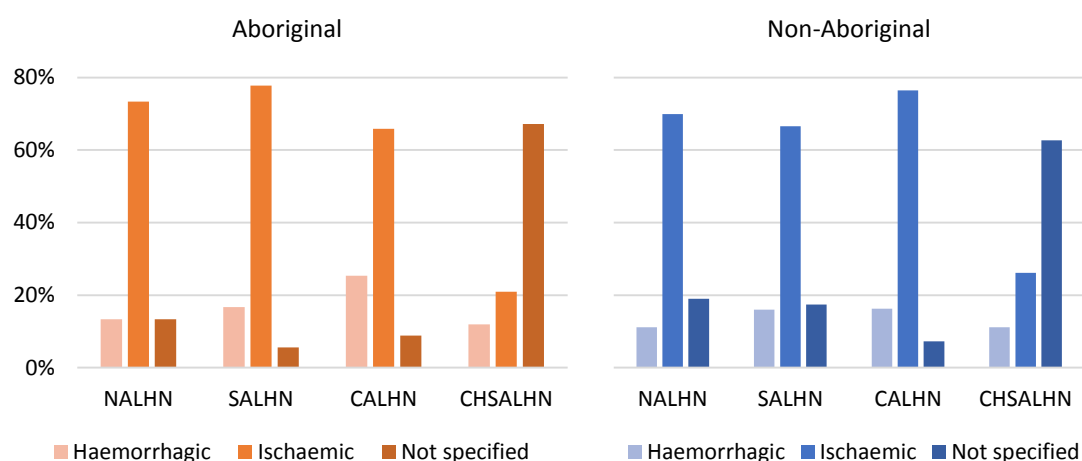
Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Figure 99: Proportion of hospitalisations for principal diagnosis of stroke by sub-condition (I20-I25), July 2010 - June 2015, by Aboriginal status and state of residence

84% of Aboriginal separations for Stroke were from South Australia, with NT residents accounting for another 14% of Aboriginal separations.

Central Adelaide LHN had the greatest number of separations for Aboriginal people over the 5 year period, with a total of 79 separations for a principal diagnosis of stroke (see Table 32). Of the 79

separations of a principal diagnosis of stroke, a majority of these were at the RAH. Country Health SA LHN had the second highest number of separations, with 67 separations over 5 years. Of the County Health SA LHN hospitals, Port Augusta had 28% of all separations (n=19). This was followed by Ceduna (n=11). Southern Adelaide and Northern Adelaide LHNs had fewer separations (see Table 32 and Figure 100).



Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Figure 100: Proportion of hospitalisations for principal diagnosis of stroke by sub-condition (I20-I25), July 2010 - June 2015, by Aboriginal status and LHN

Acute Rheumatic Fever and Rheumatic Heart Disease:

Acute Rheumatic Fever (I00-I02) accounted for 0.4 percent, and Rheumatic Heart Disease (I05-I09) accounted for 5 percent of all Aboriginal separations for a principal diagnosis of CVD. Whilst in relative terms these conditions account for a small proportion of all cardiovascular hospitalisations in SA, they are important to report due to the disparity in prevalence in the Aboriginal population. The number of acute rheumatic fever hospitalisations is even across the Aboriginal age groups but, significantly higher in the 30 years and over non-Aboriginal group.

Numbers for Acute Rheumatic Fever (I00-I02) by distribution by state/territory of residence were too small to report.

Three quarters of Aboriginal separations for Rheumatic Heart Disease (I05-I09) were from the Northern Territory, with 21 percent from South Australia. This can be accounted for as a majority of Northern Territory patients receive valvular surgery, a procedure for rheumatic heart disease, in South Australia treated at the Flinders Medical Centre.

For acute rheumatic fever, Central Adelaide and Country Health SA LHN had the largest number of separations. For rheumatic heart disease, Southern Adelaide LHN had the majority of the cases, followed by the Central Adelaide LHN. This can be accounted for by the large number of Northern Territory patients treated at the Flinders Medical Centre.

Hospital activity by procedures:

Coronary angiography:

Over 5 years, Aboriginal people had 1138 hospitalisations with a coronary angiography procedure recorded. Almost 80% of coronary angiographies were undertaken in Aboriginal people aged 35-64, compared to 39% in the non-Aboriginal cohort (see Figure 101).

87% of coronary angiographies are done for a principal diagnosis of coronary heart disease for Aboriginal separations, compared to 78% for non-Aboriginal separations. For Aboriginal people, over half (51%) of all coronary angiographies were for a principal diagnosis of acute myocardial infarction, compared to only 27% for non-Aboriginal separations. Coronary angiography is also undertaken for principal diagnosis of rheumatic heart disease and chronic heart failure.

62% of coronary angiographies undertaken on Aboriginal people were during an emergency admission, compared to 47% for the non-Aboriginal separations receiving a coronary angiography (see Figure 102). Lyell McEwin Hospital (88%) and Royal Adelaide Hospital (77%) had the highest rates of emergency coronary angiographies for Aboriginal separations. Private hospitals had the lowest rate of emergency coronary angiographies for Aboriginal separations (26%).

Of the 1138 Aboriginal separations who received a coronary angiography, 51% were South Australian residents, an additional 43% were Northern Territory residents.

Flinders Medical Centre and the Royal Adelaide Hospital undertake more angiographies for Aboriginal people from the Northern Territory than for Aboriginal South Australians. (Figure 103)

Central Adelaide LHN undertakes 59% of all coronary angiographies for Aboriginal people, with Royal Adelaide Hospital alone accounting for almost half (48%) of all activity (see Figure 103 and Figure 104). At the Royal Adelaide, 44% percent are SA patients.

Southern Adelaide LHN accounts for 31% of all coronary angiographies undertaken on Aboriginal people, with the 62% of patients from the Northern Territory (see Figure 103).

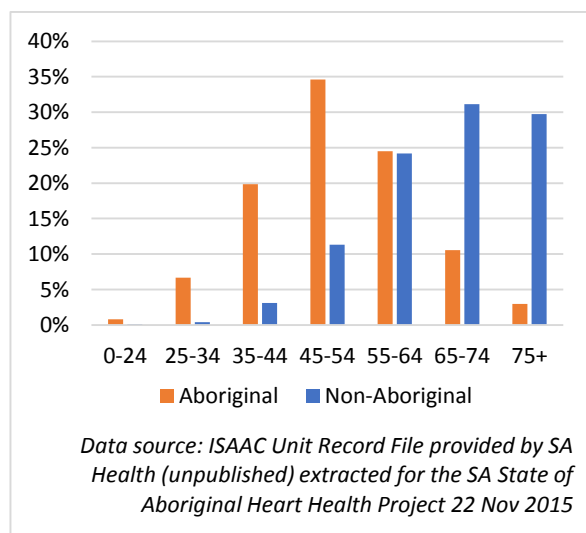


Figure 101: Proportion of Coronary Angiography performed for principal diagnosis of CVD by age, July 2010 - June 2015, by Aboriginal status

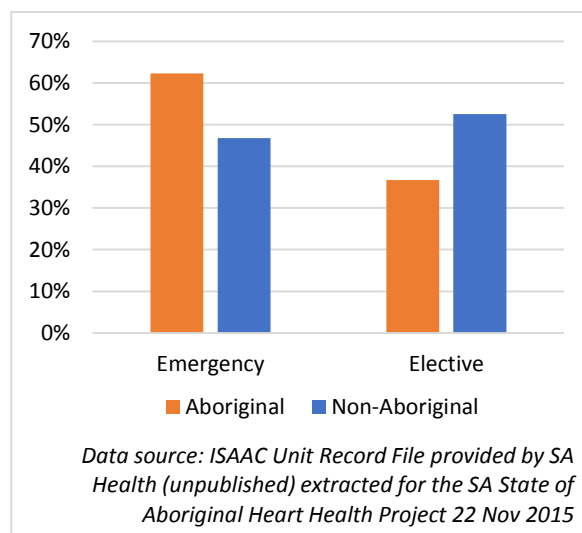


Figure 102: Proportion of Coronary Angiography performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and type of admission

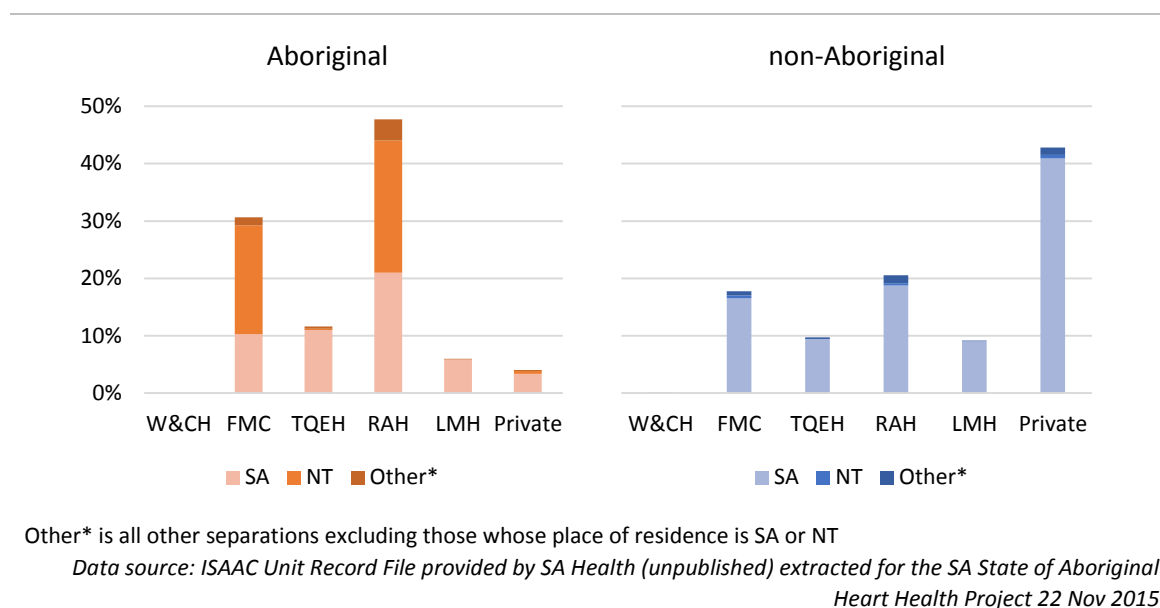


Figure 103: Proportion of hospitalisations receiving a Coronary Angiography by hospital, July 2010 - June 2015, by Aboriginal status and state of residence

Percutaneous Coronary Intervention (PCI):

Over 5 years, Aboriginal people had 511 hospitalisations with a PCI recorded. 83% of PCIs were undertaken in Aboriginal people aged 35-64, compared to 45% of non-Aboriginal people (see Figure 104).

For Aboriginal separations, all but 10 PCIs were done for a principal diagnosis of coronary heart disease, with 66% of all procedures specifically for a principal diagnosis of acute myocardial infarction. Similarly, most PCIs for non-Aboriginal separations were for CHD, however only 47% were undertaken for a principal diagnosis of AMI.

Of those 511 separations, on 61% were for emergency admissions, the same as non-Aboriginal separations.

However, this varied significantly by hospital, with Flinders Medical Centre having only 37% emergency admissions for Aboriginal separations, compared to 75% for non-Aboriginal separations. In contrast, 92% of the PCIs undertaken by the Lyell McEwin Hospital, and 87% by the Royal Adelaide Hospital were for emergency admissions for Aboriginal separations.

51% of PCIs for Aboriginal people were undertaken for Northern Territory residents, compared to 3% for non-Aboriginal counterparts (Figure 105).

Flinders Medical Centre (45%) and the Royal Adelaide Hospital (36%) undertake the majority of PCIs for Aboriginal people. This is in contrast to non-Aboriginal separations receiving PCI, 39% of which is undertaken in Private hospitals, 22% at the RAH (see Figure 105).

At FMC, 78% of the Aboriginal patients are NT residents. At the RAH 45% of Aboriginal patients are NT residents. This is in contrast to the LMH and TQEH, where virtually all Aboriginal patients receiving PCI were South Australian residents (see Figure 105).

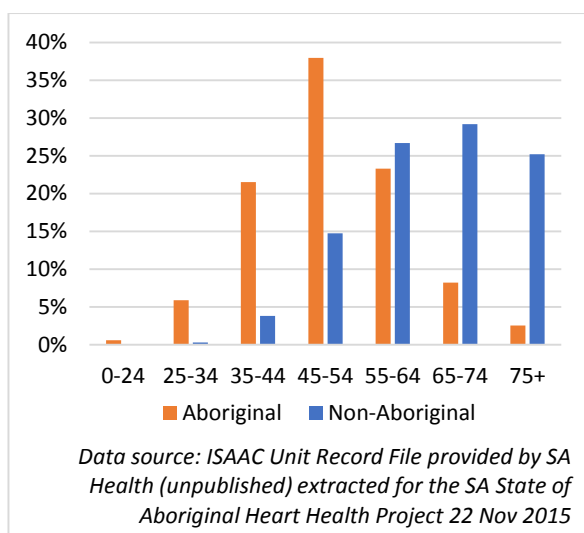


Figure 104: Proportion of PCI performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and age

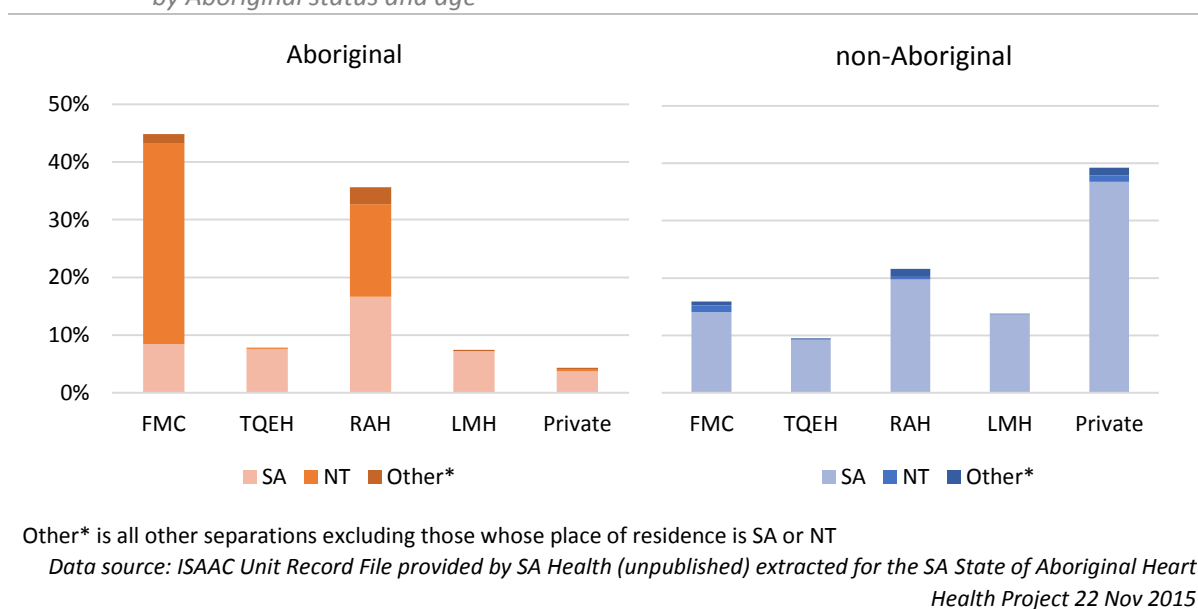


Figure 105: Proportion of hospitalisations receiving a PCI by hospital, July 2010 - June 2015, by Aboriginal status and state of residence

Coronary artery bypass grafting (CABG):

Over 5 years, 352 Aboriginal hospitalisations with a principal diagnosis of CVD had a coronary artery bypass graft. 86% of coronary artery bypass grafts were undertaken in Aboriginal people aged 35-64, compared to 37% of non-Aboriginal separations (see Figure 106).

Admission type was similar for Aboriginal and non-Aboriginal separations receiving a CABG, with 33% of Aboriginal and 29% of non-Aboriginal separations being an emergency admission (see Figure 107).

There was significant variation in type of admission by hospital. 16% of coronary artery bypass grafts undertaken by Flinders Medical Centre for Aboriginal patients were emergency admissions, compared to 39% of non-Aboriginal patients. In contrast, 67% of the coronary artery bypass grafts undertaken by the Royal Adelaide Hospital for Aboriginal separations were for emergency admissions, compared to 37% for non-Aboriginal patients.

65% of all coronary artery bypass grafts for Aboriginal separations were undertaken at Flinders Medical Centre, 34% at RAH, and 2% in private hospitals. This compares to non-Aboriginal separations, of which 22% were undertaken at FMC, 30% at RAH, and 48% in private hospitals (see Figure 108).

28% of all coronary artery bypass grafts were undertaken for Aboriginal people from South Australia, compared to 70% for Aboriginal residents of the Northern Territory (see Figure 108). Flinders Medical Centre undertook 81% of all procedures for Aboriginal Northern Territory separations.

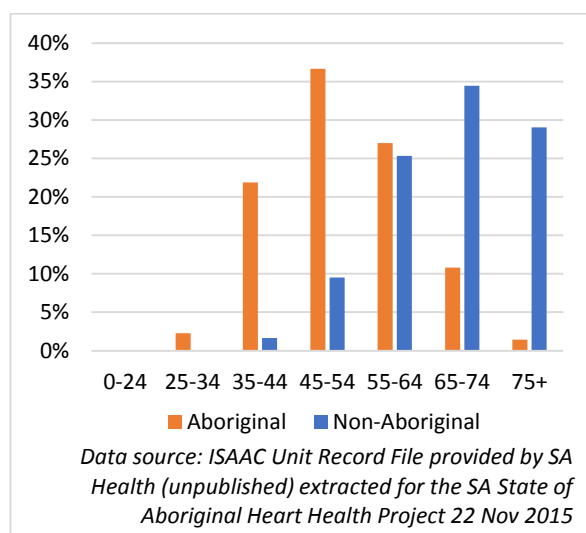


Figure 106: Proportion of CABG performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and age

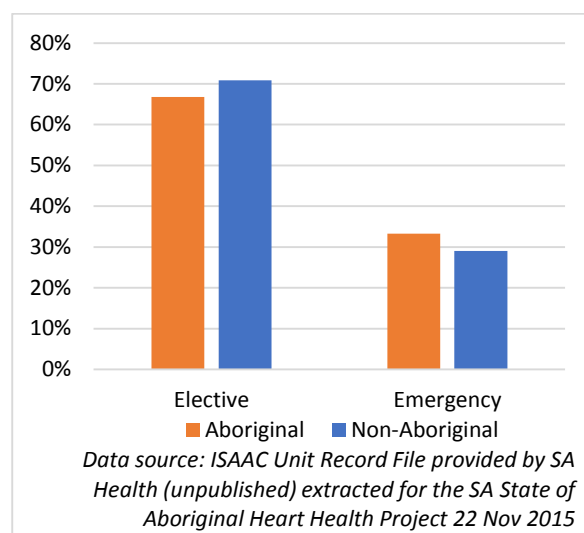


Figure 107: Proportion of CABG performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and type of admission

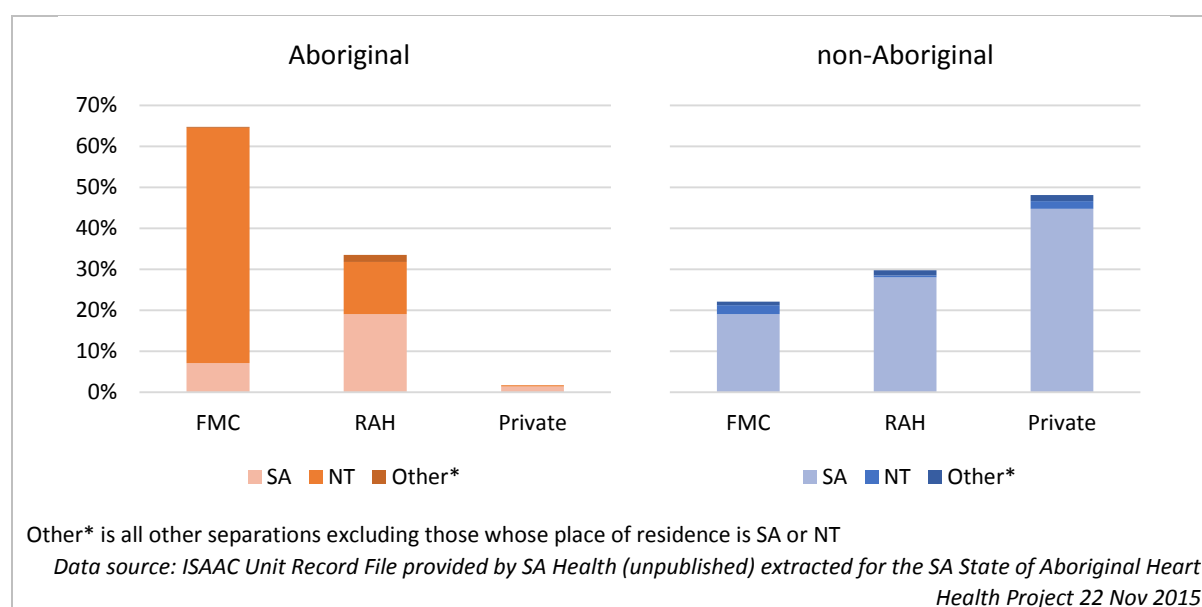


Figure 108: Proportion of hospitalisations receiving a CABG by hospital, July 2010 - June 2015, by Aboriginal status and state of residence

Valve Surgery:

Over 5 years, Aboriginal people with a principal diagnosis of CVD had 145 separations involving mitral valve surgery, and 71 involving aortic valve surgery recorded. Of the Aboriginal separations, 96% of

mitral valve surgery and 87% of aortic valve surgery was performed on people younger than 65. This was compared to 41% of mitral valve and 19% of aortic valve surgery on non-Aboriginal separations (see Figure 109 and Figure 110).

For Aboriginal separations, 79% of mitral surgery and 69% of aortic valve surgery were undertaken from the Northern Territory (see Figure 111 and Figure 112).

80% all mitral valve surgery, and 63% percent of all aortic valve surgery for Aboriginal separations was undertaken at Flinders Medical Centre (see Figure 111 and Figure 112).

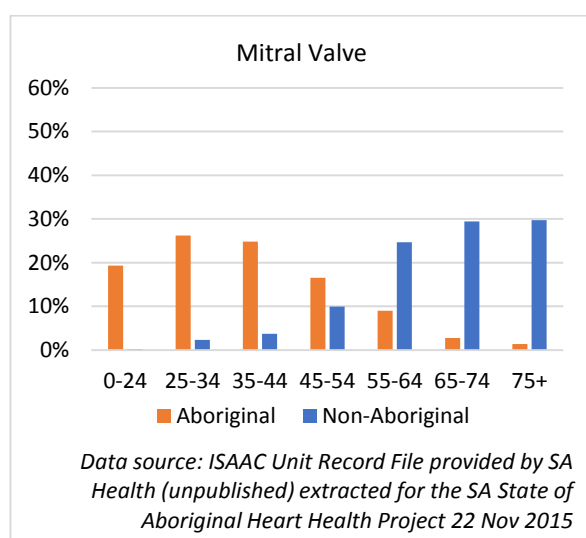


Figure 109: Proportion of mitral valve surgery performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and age

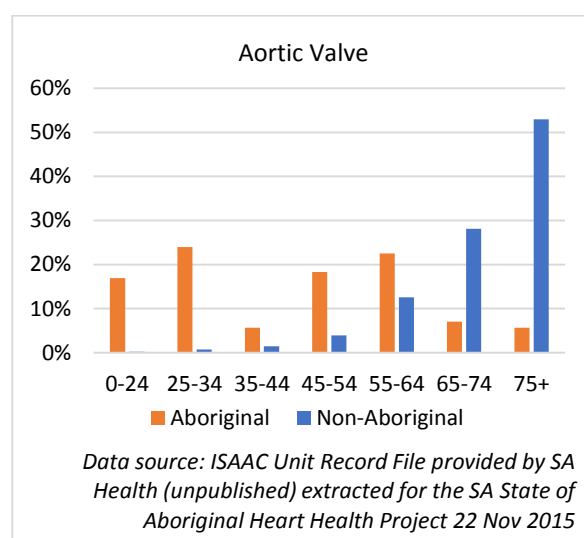


Figure 110: Proportion of aortic valve surgery performed for principal diagnosis of CVD, July 2010 - June 2015, by Aboriginal status and age

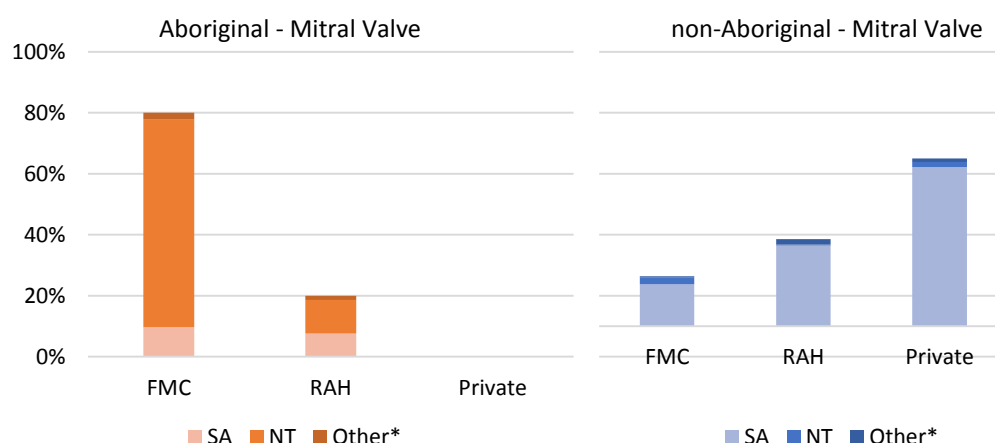
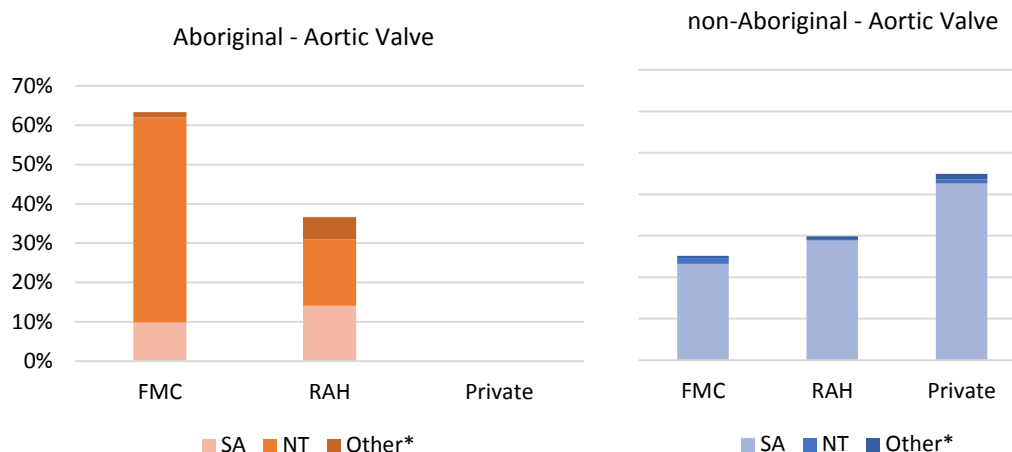


Figure 111: Proportion of hospitalisations receiving mitral valve surgery by hospital, July 2010 - June 2015, by Aboriginal status and state of residence



Other* is all other separations excluding those whose place of residence is SA or NT

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Figure 112: Proportion of hospitalisations receiving aortic valve surgery by hospital, July 2010 - June 2015, by Aboriginal status and state of residence

Thrombolysis for stroke:

Over 5 years, 7 Aboriginal separations with a principal diagnosis of ischaemic stroke or stroke not specified had received thrombolysis. Due to the small number of separations, it is not feasible to undertake analysis.

Appendix 11 Service activity - Ongoing care

Hospital discharge planning and follow-up services:

There is little understanding of the scope or extent of discharge planning and follow up services. Based on anecdotal reports, discharge planning is not systematically taken or communicated to primary health care providers. Discharge planning is also a measure of quality of care in the ESSENCE measurement indicators. There is discussion around this on page 36 of the SA Aboriginal Cardiovascular Health Profile.

The Heart Foundation (HF) over many years has developed three key evidence-based resources to support patients following hospitalisation. These are reviewed, printed and disseminated by the Heart Foundation SA through a current contract with SA Health. They are:

- Heart Foundation *My heart, my life* (MHML)
- Heart Foundation *My Heart My Family Our Culture* (MHMFOC)
- Heart Foundation *Living Everyday with My Heart Failure* (LEDWMHF)

Heart Foundation *My heart, my life* is made available to all patients (Aboriginal and non-Aboriginal) in South Australia with acute coronary syndrome, ischaemic heart disease or following either coronary stenting or coronary artery bypass grafting. It is aimed at providing practical advice to help people with coronary heart disease to have an active role in managing their health and lifestyle. It also assists health professionals to provide consistent contemporary evidence-based information for acute coronary syndrome patients and to conduct cardiac education.

A total of 48,306 copies of Heart Foundation *My heart, my life* have been distributed through South Australian hospitals (metropolitan, country and private) between July 2010 and June 2015, and over 7,000 copies were distributed through universities, the Country Access to Cardiac Health (CATCH), a telephone cardiac rehabilitation program developed by iCCNet CHSA in collaboration with the Heart Foundation, primary care (including Aboriginal Medical Services), and as part of the Heart Foundation SA Nurse Ambassador Program (over 200 nurse ambassadors since 2004).

Almost 2000 health professionals attended face to face in-service training for the resource, and over 96 metropolitan and 46 country general practices ordered the MHML resource since September 2014.

The Heart Foundation *My Heart My Family Our Culture* resources are for health professionals and Aboriginal patients to learn about preventing and managing heart disease and the associated risk factors. It consists of two components:

- a kit for Health professionals comprising an A4 flipchart to use with clients, health professional information book and 2 posters.
- a kit for consumers which includes a cookbook, risk factor information sheets, and a warning signs fridge magnet.

Heart Foundation *My Heart My Family Our Culture* is an Aboriginal-specific resource used in a wide range of settings including metropolitan and country hospitals, Aboriginal Community Controlled Health Organisations, medical clinics and community health services. Between July 2012 and June 2015, 467 professional kits and 2214 consumer resources have been ordered. There has been wide-spread training about the resources and their use. This has included Aboriginal Community Controlled Health Services, SA Health Aboriginal Medical Services, Correctional Services and Medicare Locals.

Heart Foundation *Living Everyday with My Heart Failure* is an Aboriginal-specific resource for health professionals to give to Aboriginal patients with heart failure. An evaluation of the resource in 2013

identified that health professionals who used the resource were in roles that worked to support Aboriginal patients directly or in collaboration with Aboriginal Health Workers to provide education, support and case management to encourage self-management strategies for patients with heart failure. Over 1200 resources have been distributed between July 2012 and June 2015.

The Heart Foundation *My Heart My Family Our Culture* and Heart Foundation *Living Everyday with My Heart Failure* resources have been integrated into the Aboriginal Health Council SA Primary Health Care Certificate 3 & 4 courses since 2012.

The Heart Foundation also distributes two Aboriginal-specific “Warning Signs” fridge magnets, targeted at metropolitan and regional/remote populations, and also has specific Risk Factor brochures for Aboriginal people available through a range of service providers including hospitals.

Rehabilitation, secondary prevention and ongoing care services:

Ongoing support post-discharge after a heart or stroke event improves patient outcomes. On-going support should include rehabilitation (both for stroke and heart), follow up care in the primary health sector, patient education, and medications.

A measure of activity and quality of care is the completion of a cardiac rehabilitation program. This is discussed on page 36 of the SA Aboriginal Cardiovascular Health Profile.

A number of other consumer and patient focused resources including Warning Signs of Heart Attack information are available via the Heart Foundation, to support on-going care across a range of settings, including primary health care.

Community voiced concerns about the lack of culturally appropriate cardiac rehabilitation, and the lack of cardiac rehabilitation which was accessible and appropriate for young people following a cardiac event.

Appendix 12 Service availability

(current as of December 2015)

The organisation of cardiovascular services in South Australia is critical to support the orientation of current resources to better service the needs of Aboriginal people who require cardiovascular care.

Organisation of cardiovascular services is considered by the Local Health Network region/sub-region and stage of care.

Below are the number of Aboriginal people (and proportion) who are recorded as living in each of the Local Health Network regions, and the Country Health SA Local Health Network sub-regions, as at 2011.

Table 34: Aboriginal population distribution, by Local Health Network*

	Persons	
	n	%
Northern Adelaide LHN	8,512	22.8
Central Adelaide LHN	5,521	14.8
Southern Adelaide LHN	4,264	11.4
Country Health SA LHN	19,111	51.1
Total	37,408	100.0

* Estimated Resident Population, July 2011.

Data Source: ABS 2015

Table 35: Aboriginal population distribution, by Country Health SA Local Health Network sub-region*

	Persons (n)	% of CHSA LHN Aboriginal population
Barossa Hills Fleurieu	2,271	6.1
Eyre, Flinders and Far North East	4,768	12.7
Eyre, Flinders and Far North West	5,808	15.5
Riverland Mallee Coorong	2,928	7.8
South East	1,331	3.6
Yorke & Northern	2,005	5.4
Total	19,111	51.1

* Estimated Resident Population, July 2011.

Data Source: ABS 2015

Statewide services:

Primary preventive care	
Health promotion and disease prevention services	<ul style="list-style-type: none"> • Drug and Alcohol Services SA
Risk assessment and management services	<ul style="list-style-type: none"> • Aboriginal Health Council of SA • Primary Health Networks • Adelaide • Country
Clinical suspicion of disease	
Diagnostic investigation services	
Specialist services	
Acute episode	
Planned and urgent transfers, and emergency retrieval services	<ul style="list-style-type: none"> • SA Ambulance Service
Acute hospital services	<ul style="list-style-type: none"> • Women's and Children's Health Network
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Heart Foundation secondary prevention resources, including Aboriginal-specific resources • CATCH referral system

Northern Adelaide Local Health Network:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	<p>SA Health Services (Mainstream and Aboriginal Medical Service)</p> <ul style="list-style-type: none"> • GP Plus Health Care Centre Elizabeth • Muna Paiendi Primary Health Care Services (Elizabeth) • Modbury GP Plus Super Clinic • Gilles Plains GP Plus Super Clinic • Maringga Turtpandi (Gillies Plains) • Wonggangga Turtpandi Aboriginal Primary Health Care Service <p>Aboriginal Community Controlled Health Organisations</p> <ul style="list-style-type: none"> • Nunkuwarrin Yunti – Brady Street Clinic <p>Private providers</p> <ul style="list-style-type: none"> • Oakden Medical Centre • Elizabeth North Clinic
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • Adelaide Cardiology – Modbury Clinic • SA Heart – Modbury Clinic • SA Heart – St Agnes Clinic • SA Heart – Craigmore Clinic • Lyell McEwin Hospital • Modbury Hospital
Specialist services	<ul style="list-style-type: none"> • Adelaide Cardiology – Modbury Clinic • SA Heart – Modbury Clinic • SA Heart – St Agnes Clinic • SA Heart – Craigmore Clinic • Adelaide Vascular – Calvary Central Districts Hospital • Lyell McEwin Hospital
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Lyell McEwin Hospital • Modbury Hospital

Ongoing care

Rehabilitation, secondary prevention and ongoing care services

- *Primary health care services as listed under risk assessment and management services*
- Primary Health Network Care Coordination Team - Elizabeth
- Kangawodli Step Down Centre
- Hamstead Rehabilitation Centre
- Lyell McEwin Hospital – Cardiac Rehabilitation Program
- Modbury Hospital – Cardiac Rehabilitation Program

Central Adelaide Local Health Network:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	<p>Aboriginal Community Controlled Health Organisations</p> <ul style="list-style-type: none"> • Nunkuwarrin Yunti <p>Private providers</p> <ul style="list-style-type: none"> • Trinity Medical Centre • Primary Old Port Road Medical & Dental Centre • Adelaide Medical Solutions • Grand Health Medical Centre • Churchill Road Medical Centre • Campbelltown Health Centre
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • Heart and vascular institute – Fullarton Clinic • Adelaide Cardiology – Kurralta Park Clinic • Adelaide Cardiology – Unley Road Clinic • Adelaide Cardiology – Leabrook Clinic • Adelaide Cardiology – St Andrews Medical Centre Clinic • SA Heart – North Adelaide Clinic • SA Heart – Norwood Clinic • SA Heart – Findon Clinic • SA Heart – Ashford Clinic • Royal Adelaide Hospital • The Queen Elizabeth Hospital
Specialist services	<ul style="list-style-type: none"> • Heart and vascular institute – Fullarton Clinic • Adelaide Cardiology – Kurralta Park Clinic • Adelaide Cardiology – Unley Road Clinic • Adelaide Cardiology – Leabrook Clinic • Adelaide Cardiology – St Andrews Medical Centre Clinic • SA Heart – North Adelaide Clinic • SA Heart – Norwood Clinic • SA Heart – Findon Clinic • SA Heart – Ashford Clinic • Adelaide Vascular – Adelaide East Healthcare Centre • Royal Adelaide Hospital • The Queen Elizabeth Hospital
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Royal Adelaide Hospital

	<ul style="list-style-type: none"> • The Queen Elizabeth Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • PHN Care Coordination Team - Port Adelaide (West) • Ashford Hospital Cardiac Rehabilitation • Calvary Community Rehabilitation (Walkerville) • Cardiac Rehabilitation Service at Walkerville - Private

Southern Adelaide Local Health Network:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	SA Health Services (Mainstream and Aboriginal Medical Service) <ul style="list-style-type: none"> • Aldinga GP Plus Health Care Centre • Marion GP Plus Health Care Centre • Southern Primary Health Seaford • Noarlunga GP Plus Super Clinic • Minunthi Tapa Inparrititya
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • Heart and Vascular Institute – Flinders Cardiac Clinic (as part of Flinders Private) • Heart and Vascular Institute – Flinders • SA Heart – Flinders Private Hospital • SA Heart – Morphett Vale • SA Heart – Glenelg • Flinders Medical Centre • Noarlunga Public Hospital • General Repatriation Hospital • Flinders Private Hospital
Specialist services	<ul style="list-style-type: none"> • Heart and Vascular Institute – Flinders Cardiac Clinic (as part of Flinders Private) • Heart and Vascular Institute – Flinders • SA Heart – Flinders Private Hospital • SA Heart – Morphett Vale • SA Heart – Glenelg • Flinders Private Hospital
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Flinders Medical Centre • Noarlunga Public Hospital • General Repatriation Hospital • Flinders Private Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • PHN Care Coordination Team - Morphett Vale • Flinders Medical Centre Cardiac Rehabilitation Program

	<ul style="list-style-type: none"> • Flinders Private Cardiac Rehabilitation Program • Griffiths Rehabilitation Hospital Cardiac Rehabilitation (Private)
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Country Health SA LHN (region wide):

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	<ul style="list-style-type: none"> • Private providers • RFDS
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • iCCnet
Specialist services	<ul style="list-style-type: none"> • RDWA
Acute episode	
Planned and urgent transfers, and emergency retrieval services	<ul style="list-style-type: none"> • SAAS Medstar • iCCnet • RFDS
Acute hospital services	
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i>

Barossa Hills Fleurieu sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	SA Health Services (Mainstream and Aboriginal Medical Service) <ul style="list-style-type: none"> Gawler Health Service (includes Aboriginal Medical Service)
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> SA heart – Mount Barker Clinic Adelaide Cardiology – Gawler Health Service (as part of hospital) Heart and Vascular Institute – Southcoast District Hospital (as part of hospital) Heart and Vascular Institute – Goolwa Clinic SA Heart – Strathalbyn Clinic SA Heart – Stirling Clinic
Specialist services	<ul style="list-style-type: none"> Adelaide Cardiology - Mount Barker Clinic SA heart – Mount Barker Clinic Adelaide Vascular – Mount Barker Clinic Heart and Vascular Institute – Mount Barker Hospital (as part of hospital) Adelaide Vascular – Galmec Specialist Suite at Gawler Health Service Adelaide Cardiology – Gawler Health Service (as part of hospital) Adelaide Cardiology – Angaston Hospital (as part of hospital) Heart and Vascular Institute – Victor Harbor Clinic Heart and Vascular Institute – Southcoast District Hospital (as part of hospital) SA Heart – Victor Harbor Clinic Heart and Vascular Institute – Goolwa Clinic SA Heart – Strathalbyn Clinic SA Heart – Stirling Clinic Adelaide Vascular - Stirling District Hospital SA Heart – Yankalilla Clinic Visiting vascular surgeon – Yankalilla Clinic RDWA Kingscote - Cardiologist: Chris Zeitz
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> Gawler Health Service Angaston Hospital Gumeracha District Soldiers Memorial Hospital Kangaroo Island Health Service Eudunda Hospital

	<ul style="list-style-type: none"> • Kapunda Hospital • Mount Barker District Soldiers' Memorial Hospital • Mount Pleasant District Hospital • South Coast District Hospital • Strathalbyn and District Health Service • Tanunda War Memorial Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • PHN Care Coordination Team - Victor Harbor • Barossa Health Service Cardiac Rehabilitation Program • Gawler Health Service Cardiac Rehabilitation Program • Mount Barker District Soldiers' Memorial Hospital Cardiac Rehabilitation Program • CATCH telephone cardiac rehabilitation program • Better Care in the Community – Gawler/Barossa • Better Care in the Community – Victor Harbor • Better Care in the Community – Mount Barker

Eyre, Flinders and Far North East sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	<ul style="list-style-type: none"> • RFDS Healthy Living Program – Hawker • RFDS Healthy Living Program – Leigh Creek • RFDS Healthy Living Program – Copley • RFDS Healthy Living Program – Nepabunna
Risk assessment and management services	<p>SA Health Services (Mainstream and Aboriginal Medical Service)</p> <ul style="list-style-type: none"> • CHSA AMS – Child and Maternal Health Clinic Port Augusta <p>Aboriginal Community Controlled Health Organisations</p> <ul style="list-style-type: none"> • Pika Wiya Health Service Aboriginal Corporation – Port Augusta • Nunyara Aboriginal Health Service – Whyalla <p>Private providers</p> <ul style="list-style-type: none"> • Port Augusta Medical Centre • Carlton Medical Service (Port Augusta) • Ghan Medical Service (Port Augusta) • Augusta Westside Medical Centre (Port Augusta) • The Old Base Medical Centre (Port Augusta) • Wilson Surgery (Port Augusta) • RFDS GP service - Blinman • RFDS GP service – Marree • RFDS GP service – Mungerannie • RFDS GP service – Nepabunna • RFDS GP service – William Creek
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • Vascular Ultrasound Partners Pty Ltd (Port Augusta) • Port Augusta Hospital • Leigh Creek health Service
Specialist services	<ul style="list-style-type: none"> • RDWA Port Augusta - Cardiologist: Chris Zeitz • RDWA Port Augusta (Pika Wiya) - Cardiologist: Chris Zeitz • RDWA Port Augusta - Vascular Surgeon: Ewan Macaulay • W&CHN Port Augusta – Paediatric Cardiologist: Andrew Kelly
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Port Augusta Hospital • Whyalla Hospital and Health Services <ul style="list-style-type: none"> ▪ Stroke Unit • Andamooka Outpost Hospital • Hawker Memorial Hospital • Leigh Creek health Service

	<ul style="list-style-type: none"> • Maree health Services • Quorn Health Service • Roxby Downs Health Service • Woomera Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Port Augusta Step Down Unit • Better Care in the Community – Port Augusta • Better Care in the Community – Whyalla

Eyre, Flinders and Far North West sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	<ul style="list-style-type: none"> • RFDS Healthy Living Program – Penong • RFDS Healthy Living Program – Ceduna • RFDS Healthy Living Program – Smoky Bay • RFDS Healthy Living Program – Penong • RFDS Healthy Living Program – Coober Pedy • RFDS Healthy Living Program – Oodnadatta • RFDS Healthy Living Program – Woomera • RFDS Healthy Living Program – Roxby Downs • RFDS Healthy Living Program – Andamooka
Risk assessment and management services	<p>SA Health Services (Mainstream and Aboriginal Medical Service)</p> <ul style="list-style-type: none"> • Ceduna GP Plus Health Care Centre • Whyalla GP Plus Health Care Centre <p>Aboriginal Community Controlled Health Organisations</p> <ul style="list-style-type: none"> • Umoona Tjutagka Health Service Aboriginal Corporation – Coober Pedy • Oak Valley health Services • Nganampa Health Council – APY lands • Tullawon Health Service - Yalata • Ceduna Koonibba Aboriginal Health Service Aboriginal Corporation • Port Lincoln Aboriginal Health Service <p>Private providers</p> <ul style="list-style-type: none"> • RFDS GP service - Cook • RFDS GP service - Glendambo • RFDS GP service – Kingoonya • RFDS GP service – Marla • RFDS GP service – Mintabee • RFDS GP service – Oak Valley • RFDS GP service – Oodnadatta • RFDS GP service – Tarcoola • RFDS GP service – Yalata
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • RDWA Nganampa Health Service – Radiographer • Ceduna District Health Service • Cleve District Hospital and Aged Care • Coober Pedy Hospital and Health Service • Cowell District Hospital and Aged Care • Elliston Hospital • Kimba District Hospital and Aged Care • Streaky Bay Hospital • Wudinna Hospital
Specialist services	<ul style="list-style-type: none"> • RDWA Nganampa Health - Cardiologist: Chris Zeitz

	<ul style="list-style-type: none"> • RDWA Ceduna – Cardiologist: Chris Zeitz • RDWA Coober Pedy – Cardiologist: Chris Zeitz • RDWA Port Lincoln - Cardiologist: Hamish Eaton • RDWA Wudinna- Cardiologist: Phil Tideman • RDWA Port Lincoln/Tumby Bay – Neurologist: Karen Boundy
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Ceduna District Health Service • Cleve District Hospital and Aged Care • Coober Pedy Hospital and Health Service • Cowell District Hospital and Aged Care • Cummins and District Memorial Hospital • Elliston Hospital • Kimba District Hospital and Aged Care • Oodnadatta Clinic • Port Lincoln Health Service • Streaky Bay Hospital • Tumby Bay Hospital and Health Services • Wudinna Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Ceduna District Health Service Cardiac Rehabilitation Program • Better Care in the Community – Ceduna • Better Care in the Community – Port Lincoln

Riverland Mallee Coorong sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	<p>SA Health Services (Mainstream and Aboriginal Medical Service)</p> <ul style="list-style-type: none"> • Aboriginal Medical Service - Riverland • Aboriginal Medical Service – Murray Bridge and Mallee • Aboriginal Community Controlled Health Organisations • Kalparrin Community – Murray Bridge <p>Private providers</p> <ul style="list-style-type: none"> • Coorong Medical Centre (Meningie)
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> • Adelaide Cardiology – Murray Bridge Clinic • Heart and Vascular Institute – Riverland Regional Hospital (as part of hospital) • SA Heart - Riverland Regional Hospital • Heart and Vascular Institute – Coorong Medical Centre • Barmera Health service • Lamerloo District health Service • Meningie & Districts Memorial Hospital & Health Services • Riverland General Hospital (Berri) • Waikerie Health Service
Specialist services	<ul style="list-style-type: none"> • Adelaide Cardiology – Murray Bridge Clinic • Adelaide Vascular – Murray Bridge • Heart and Vascular Institute – Riverland Regional Hospital (as part of hospital) • SA Heart - Riverland Regional Hospital • Heart and Vascular Institute – Coorong Medical Centre • Adelaide Vascular – Riverland Regional Hospital • Adelaide Vascular – Loxton Health Care • Adelaide Vascular – Renmark Paringa District Hospital • Adelaide Vascular – Waikerie Medical Centre • RDWA Lamerloo - Cardiologist: Phil Tideman
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> • Murray Bridge Soldiers' Memorial Hospital • Barmera Health service • Karoonda and Districts Soldiers' Memorial Hospital • Lamerloo District health Service • Loxton Hospital Complex

	<ul style="list-style-type: none"> • Mannum District Hospital • Meningie & Districts Memorial Hospital & Health Services • Pinnaroo Soldiers' Memorial Hospital • Renmark Paringa District Hospital • Riverland General Hospital (Berri) <ul style="list-style-type: none"> ▪ Stroke Unit • Tailem Bend District Hospital • Waikerie Health Service
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Murray Bridge Soldiers' Memorial Hospital Cardiac Rehabilitation Program • CATCH telephone cardiac rehabilitation program • Better Care in the Community – Murray Bridge • Better Care in the Community – Berri

South East sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	<p>SA Health Services (Mainstream and Aboriginal Medical Service)</p> <ul style="list-style-type: none"> Aboriginal Medical Service – Mount Gambier <p>Aboriginal Community Controlled Health Organisations</p> <ul style="list-style-type: none"> Pangula Mannamurna (Mount Gambier)
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> Heart and Vascular Institute – Mount Gambier (as part of hospital) SA Heart – Mount Gambier (as part of hospital) Heart and Vascular Institute – Beachport Clinic Heart and Vascular Institute – Kingston (SE) Heart and Vascular Institute – Naracoorte District Hospital (as part of hospital) Mount Gambier and Districts Health Service Naracoorte Health Service Bordertown Memorial Hospital Kingston Soldiers' memorial hospital Millicent & Districts Hospital & Health Service Penola War Memorial Hospital
Specialist services	<ul style="list-style-type: none"> Heart and Vascular Institute – Mount Gambier (as part of hospital) SA Heart – Mount Gambier (as part of hospital) Heart and Vascular Institute – Beachport Clinic Heart and Vascular Institute – Kingston (SE) Heart and Vascular Institute – Robe Heart and Vascular Institute – Millicent Heart and Vascular Institute – Naracoorte District Hospital (as part of hospital) Heart and Vascular Institute – Bordertown Memorial Hospital (as part of hospital) Heart and Vascular Institute – Keith RDWA Mount Gambier - Cardiologist: Christine Burdeniuk
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> Mount Gambier and Districts Health Service <ul style="list-style-type: none"> Stroke Unit Naracoorte Health Service Bordertown Memorial Hospital Kingston Soldiers' memorial hospital

	<ul style="list-style-type: none"> • Millicent & Districts Hospital & Health Service • Penola War Memorial Hospital
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Lucindale Community Health (SA Health) Cardiac Rehabilitation Program • Millicent & Districts Hospital & Health Service Cardiac Rehabilitation Program • Mount Gambier and Districts Health Service Cardiac Rehabilitation Program • Naracoorte Physiotherapy Clinic Cardiac Rehabilitation Program • CATCH telephone cardiac rehabilitation program • Better Care in the Community – Mount Gambier • Better Care in the Community – Millicent

Yorke & Northern sub-region - Country Health SA:

Primary preventive care	
Health promotion and disease prevention services	
Risk assessment and management services	SA Health Services (Mainstream and Aboriginal Medical Service) <ul style="list-style-type: none"> Aboriginal Medical Service – Yorke Peninsula (Maitland, Moonta and Point Peirce)
Clinical suspicion of disease	
Diagnostic investigation services	<ul style="list-style-type: none"> Adelaide Cardiology – Wallaroo Hospital (in hospital) Adelaide Vascular – Wallaroo (as part of hospital) Port Pirie Regional Health Service Northern Yorke Peninsula Health Service (Wallaroo) Jamestown Hospital and Health Service Orroroo & District Health Service Southern Yorke Peninsula Health Service [Yorketown]
Specialist services	<ul style="list-style-type: none"> Adelaide Cardiology - Clare Medical Centre Adelaide Cardiology - Minlaton Medical Centre Adelaide Cardiology – Wallaroo Hospital (in hospital) Adelaide Vascular – Wallaroo (as part of hospital) Port Pirie - visiting cardiologist: Dr K Mishra & Dr Margaret Arstall Port Pirie - visiting vascular surgeon: Dr Micheal Berce RDWA Balaklava - Cardiologist: Dale Ashby RDWA Crystal Brook - Cardiologist: Dale Ashby RDWA Peterborough - Cardiologist: Chris Zeitz RDWA Wallaroo – Vascular Surgeon: Rob Fitridge RDWA Maitland – Neurologist: Thomas Kimber
Acute episode	
Planned and urgent transfers, and emergency retrieval services	
Acute hospital services	<ul style="list-style-type: none"> Port Pirie Regional Health Service Balaklava Soldiers Memorial Hospital Booleroo Centre District Hospital and Health Services Burra Hospital Central Yorke Peninsula Hospital (Maitland) Clare Hospital Crystal Brook and District Hospital Laura and District Hospital Northern Yorke Peninsula Health Service (Wallaroo) Jamestown Hospital and Health Service Orroroo & District Health Service Peterborough Soldiers' Memorial Hospital Port Broughton & District Hospital & Health Service Riverton District Soldiers Memorial Hospital

	<ul style="list-style-type: none"> • Snowtown Hospital and Health Service • Southern Yorke Peninsula Health Service [Yorke town]
Ongoing care	
Rehabilitation, secondary prevention and ongoing care services	<ul style="list-style-type: none"> • <i>Primary health care services as listed under risk assessment and management services</i> • Clare Medical Centre Cardiac Rehabilitation Program • Central Yorke Peninsula Hospital (Maitland) Cardiac Rehabilitation Program • Orroroo & District Health Service Cardiac Rehabilitation Program • Better Care in the Community – Port Pirie • Better Care in the Community – Wallaroo/Maitland

Appendix 13 Methodology

Ethics

All required ethics applications were applied for and approvals were granted from the Aboriginal Health Research Ethics Committee (HREC) (SA) and SA Health HREC. Additionally site specific assessments were completed as required.

Analysis

Data management and analysis was undertaken in SAS v9.4, Stata v.13, and Microsoft Excel 2013.

Numbers were reported, and where appropriate, proportions and rates. Where appropriate, totals have been included. Unless otherwise stated, all analysis reported principal diagnosis/cause only.

The term 'Aboriginal' in this report is used to refer to Aboriginal and Torres Strait Islander people.

Where reported by Aboriginal Status, unless reported individually, where Indigenous status not reported, these records were excluded.

Where count was less than 6, data was not reported. Where a count of less than 6 individuals, cells were randomly removed to prevent calculation of other small cell counts at risk of disclosure.

Where reported by age, the age groups used were under 25, 10 year age groups 25 to 75, and 75 years and over were reported a majority of the time. Where appropriate, these age groups were altered.

Where reported by sex, where sex indeterminate/not stated, records were excluded.

Mortality data

The number and proportion of deaths by principal cause was calculated. Number and proportion of deaths by cardiovascular condition were reported as a percentage of all cardiovascular deaths. The number and proportion of deaths by Aboriginal status and sex, and Aboriginal status and age were reported.

Deaths for South Australian residents only were included.

Mortality rate

For CVD and cardiovascular conditions, the mortality rate per 10,000 population by Aboriginal status and age were reported.

The numerator included deaths for South Australian residents only, as identified by the Statistical Local Area code.

The denominator used was calculated using the estimated resident population, South Australia, for the period 2005-June 2015, the Estimated and projected Aboriginal and Torres Strait Islander population, Series B for 2012 and the estimated resident population for all residents (not by Indigenous status) extracted from ABSStat. The average of the population at either end of the financial year was calculated. The non-Aboriginal population was calculated by deducting the Aboriginal and Torres Strait Islander population from the total population.

The age-standardised rate was calculated using the direct method. For CVD, five year age groups from 0 to 74 years, and 75 and over were used. For all sub-set of cardiovascular conditions, the age groups

used were 0-14, 20 year age groups for ages 15-74, and 65 years and over. The standard population used was the Australian Estimated Resident Population as at 30 June 2001.

The age-specific rate was calculated using 10 year age groups from 5 to 75 years and over.

The rate ratio of the Aboriginal rate divided by the non-Aboriginal rate was calculated for the crude rate, the age standardised rate, and the age-specific rates.

Where possible, trends in age-specific hospitalisation rates were reported.

Prevalence data

Prevalence of cardiovascular disease was calculated using data from the 2012-13 Australian Aboriginal and Torres Strait Islander Health Survey.

Results from this survey are presented as a benchmarked weight.

The numerator was where “cardiovascular disease” was reported as a health condition. The denominator was the total of people with cardiovascular disease and people without cardiovascular disease.

Analysis was done by age and sex.

Hospitalisations data

For CVD and cardiovascular conditions, the number and proportion of hospitalisations by Aboriginal status and sex, and Aboriginal status and age were reported.

The proportion of separations by cardiovascular condition by age, and by sex was reported for Aboriginal people for all ages.

All hospitalisations, regardless of state/territory of residence were reported.

Hospitalisation rate

For CVD and cardiovascular conditions, the hospitalisation rate per 1,000 population by Aboriginal status, sex (for all cardiovascular disease (I00-I99) only) and age were reported.

The numerator included separations for South Australian residents only, as identified by the Statistical Local Area code.

The denominator used was calculated using the estimated resident population, South Australia, for the period 2005-June 2015, the Estimated and projected Aboriginal and Torres Strait Islander population, Series B for 2012 and the estimated resident population for all residents (not by Indigenous status) extracted from ABSStat. The average of the population at either end of the financial year was calculated. The non-Aboriginal population was calculated by deducting the Aboriginal and Torres Strait Islander population from the total population.

The age-standardised rate was calculated using the direct method. For CVD, five year age groups from 0 to 74 years, and 75 and over were used. For all sub-set of cardiovascular conditions, the age groups used were 0-14, 10 year age groups for ages 15-74, and 75 years and over. The standard population used was the Australian Estimated Resident Population as at 30 June 2001.

The age-specific rate was calculated using 10 year age groups from 5 to 75 years and over.

The rate ratio of the Aboriginal rate divided by the non-Aboriginal rate was calculated for the crude rate, the age standardised rate, and the age-specific rates.

Where possible, trends in age-specific hospitalisation rates were reported.

Self-discharge rates

This measure is adapted from the Aboriginal and Torres Strait Islander Health Performance Framework (REF).

The crude and age-specific rates are the number of separations aged 18 and over divided by the number of separations with a nature of separation of “Self discharge”. The age-adjusted rate was a direct age-standardisation was calculated using the distribution of hospital separations using 10-year age groups.

ESSENCE service standard indicators

The specifications for each of the reported indicators is outlined below.

#	Title	Description	Calculation	Numerator	Denominator	Age group	Definitions	Disaggregation	Data sources
1a	Household crowding	Proportion of people, of all ages, who live in overcrowded houses	100 x (Numerator ÷ Denominator)	Number of people who live in 'overcrowded' housing	Total population who reside in private dwellings	All aged	Housing overcrowding is based on the Canadian National Occupancy Standard for housing appropriateness. The measure assesses the bedroom requirements of a household.	Remoteness	2011 Census
1b	Attainment of Year 12 education or equivalent	Proportion of the 20-24 year old population having attained at least a Year 12 or equivalent or Australian Qualifications Framework Certificate level II or above	100 x (Numerator ÷ Denominator)	People aged 20–24 years who have completed Year 12 or equivalent or whose level of highest non-school qualification is at Australian Qualifications Framework Certificate level II or above	Total population of people aged 20–24 years	20-24 years		Sex Local Health Network	2011 Census
1c	workforce participation i. Employment to population ratio ii. Unemployment rate iii. labour force participation rate	The level of workforce participation as measured by employment, unemployment and labour force participation rates.	100 x (Numerator ÷ Denominator)	i. Number of employed people aged 15–64 years excluding those whose Indigenous status and labour force status were not stated and overseas and temporary visitors ii. Number of unemployed people aged 15–64 years excluding those whose	i. Total population aged 15–64 years excluding those whose Indigenous status and labour force status were not stated and overseas and temporary visitors. ii. Total number of people in the labour force aged 15–64 years whose	15-64 years		Local Health Network	2011 Census

				Indigenous status and labour force status were not stated and overseas and temporary visitors. iii. Number of people aged 15–64 years in the labour force excluding those whose Indigenous status and labour force status were not stated and overseas and temporary visitors.	Indigenous status and labour force status were not stated and overseas and temporary visitors. iii. Total number of people aged 15–64 years excluding those whose Indigenous status and labour force status were not stated and overseas and temporary visitors.				
3a	Rate of current smokers	Proportion of people aged 15 years and over who are current smokers, by Indigenous status	100 x (Numerator ÷ Denominator)	People aged 15 years and over who currently smoke tobacco	Total populations (Indigenous and non-Indigenous) aged 15 years and over	15 years and over		Sex Age group (age-specific)	2012/13 AATSIHS; 2012/13 AHS
3b	Tobacco smoking during pregnancy	Proportion of mothers who smoked during pregnancy, by Indigenous status	100 x (Numerator ÷ Denominator)	Number of women who smoked at first antenatal visit	Total number of women who gave birth with known smoking status at first antenatal visit	All ages		Age Local Health Network/sub-region	SA Health Pregnancy Outcomes
3c	People meeting guidelines for adequate intake of fruit and vegetables	Proportion of Australians meeting NHMRC Australian Dietary Guidelines 2013 for adequate intake of fruit & vegetables	100 x (Numerator ÷ Denominator)	Number of adults aged 18 and over consuming the recommended amount of fruit and vegetables	Total number of adults	18 and over			2012/13 AATSIHS; 2011/12 AHS
3d	Proportion of adults meeting sufficient levels of physical activity	Adults undertaking sufficient (at least 150 minutes over 5 or more sessions) in a week	100 x (Numerator ÷ Denominator)	Number of adults aged 18 and over who undertake at least 150 minutes of physical activity over 5 or more sessions in one week	Total number of adults	18-64 years		Sex	2012/13 AATSIHS; 2011/12 AHS
5b	MBS Health Assessment within the previous 12 months	Number and usage of Medicare Benefits Schedule Health Assessment within the previous 12 months	Number: numerator Usage rate: 100 x (numerator ÷ denominator).	Number: Number of checks Usage rate: Number of checks	Number: - Usage rate: Population	15 and over		Primary Health Network	AIHW

6b	Documented evidence of primary care practitioner follow-up for people with elevated risk of cardiac disease	Proportion of those Aboriginal and Torres Strait Islander people identified as having elevated risk of cardiac disease in the previous 2 years, with documented evidence of primary care practitioner follow-up, including the proportion commenced on anti-hypertensive and lipid-lowering therapy and proportion of smokers offered an evidence based smoking cessation intervention	Blood pressure checked: 100 x (Numerator ÷ Denominator) . Discussed quitting smoking: 100 x (Numerator ÷ Denominator)	Blood pressure checked: Number of Indigenous people at high risk of cardiac disease who had their blood pressure checked in the last 2 years. Discussed quitting smoking: Number of Indigenous people at high risk of cardiac disease who discussed quitting smoking	Blood pressure checked: Number of Indigenous people at high risk of cardiac. Discussed quitting smoking: Number of Indigenous people at high risk of cardiac disease.			State/territory	AIWH
7a	Proportion of all people indicated for and who receive Benzathine Penicillin G secondary prophylaxis	Proportion of all people indicated for benzathine penicillin G secondary prophylaxis administration who received <50%, 50-79% and greater than or equal to 80% of scheduled doses in the previous calendar year	100 x (Numerator ÷ Denominator)	Number of people indicated for benzathine penicillin G secondary prophylaxis administration who received : <ul style="list-style-type: none"> • <50%, • 50-79% and • ≥80% of scheduled doses in the previous calendar year	Number of people indicated for benzathine penicillin G secondary prophylaxis administration	All ages		Year	SA Rheumatic Heart Disease Register
7b	Priority 1 and 2 rheumatic heart disease cases receiving Serial echocardiography	Echocardiograms performed within designated timeframes for priority level 1 and 2 rheumatic heart disease cases	100 x (Numerator ÷ Denominator)	Number of people classed as priority 1 and priority 2 who received echocardiography within guideline period. Priority 1: 3-6 months Priority 2: 12 months	Number of people classed as priority 1 and priority 2	All ages	Priority 1: 3-6 months Priority 2: 12 months	Year	SA Rheumatic Heart Disease Register
8a	Electrocardiogram performed and interpreted within 10 minutes of arrival for ACS	Proportion of emergency department patients presenting with acute chest pain or other symptoms suggestive of acute coronary	100 x (Numerator ÷ Denominator)	Total number of patients with STEMI, with electrocardiogram performed before or within 10 minutes of first medical contact	Total number of patients with STEMI	18 and over			CADOSA

		syndrome, with electrocardiogram performed and analysed before or within 10 minutes of first medical contact							
9a	STEMI patients receiving fibrinolysis or percutaneous coronary intervention	STEMI patients receiving thrombolysis or PCI	100 x (Numerator ÷ Denominator)	Total number of patients with STEMI who receive fibrinolysis or percutaneous coronary intervention	Total number of patients with STEMI	18 and over		Age	CADOSA
		Proportion of people aged 18 and over with a STEMI who are treated by PCI	100 x (Numerator ÷ Denominator)	Number of hospitalisations with a principal diagnosis of STEMI, and an episode of care of “acute”, and admission category of “emergency”, and nature of separation not “Other hospital – Up transfer”, with a procedure code related to PCI.	Number of hospitalisations with a principal diagnosis of STEMI, and an episode of care of “acute”, and admission category of “emergency”, and nature of separation not “Other hospital – Up transfer”.	18 and over			ISAAC
9b	STEMI patients receiving fibrinolysis within 30 minutes of hospital arrival	Proportion of patients with STEMI treated with fibrinolysis before or within 30 minutes of hospital arrival	100 x (Numerator ÷ Denominator)	Total number of patients with STEMI who receive fibrinolysis before or within 30 minutes of hospital arrival	Total number of patients with STEMI	18 and over			CADOSA
9c	Stroke patients treated by intravenous thrombolysis	Proportion of patients with ischaemic stroke with documentation that intravenous thrombolysis was administered, by Aboriginal status.	100 x (Numerator ÷ Denominator)	Number of hospitalisations with a principal diagnosis of ischaemic stroke (ICD-10-AM codes I63- I64), and an episode of care of “acute”, and admission category of “emergency”, and nature of separation not “Other hospital – Up transfer”, with a procedure code related to thrombolysis.	Number of hospitalisations with a principal diagnosis of ischaemic stroke (ICD-10-AM codes I63- I64), and an episode of care of “acute”, and admission category of “emergency”, and nature of separation not “Other hospital – Up transfer”.	18 and over			ISAAC

11a (i)	CHD, CHF & Stroke: Patients discharged with appropriate, condition-specific medications	Proportion of people with a diagnosis of ACS discharged with medications, as appropriate to the condition	100 x (Numerator ÷ Denominator)	Number of ACS patients discharged on: <ul style="list-style-type: none"> • Aspirin • Other anti-platelet • Dual anti-platelet • Statin • Non-statin lipid lowering • ACE inhibitor • ARB • Beta blocker • CCB • Long acting nitrate 	Number of ACS patients discharged	18 and over		Type of medication	CADOSA
13b	CHD, CHF & Stroke: Patients referred to an appropriate condition-specific rehabilitation or other secondary prevention program	Proportion of cardiac patients with documented referral prior to discharge to an appropriate, condition-specific rehabilitation or secondary prevention program	100 x (Numerator ÷ Denominator)	Number of cardiac patients with a referral to cardiac rehabilitation as an in-patient.	Number of cardiac patients eligible for referral to cardiac rehabilitation.	18 and over		Region of hospital	SA Cardiac Rehabilitation Minimum Data Set
13c	CHD, CHF & Stroke: Patients completing an appropriate, condition specific rehabilitation or other secondary program	Proportion of cardiac patients with documented completion of an appropriate, condition-specific rehabilitation or an alternative secondary prevention program	100 x (Numerator ÷ Denominator)	Number of cardiac patients with a referral to cardiac rehabilitation, recorded as completed.	Number of cardiac patients with a referral to cardiac rehabilitation, not currently enrolled.	18 and over			SA Cardiac Rehabilitation Minimum Data Set
14	Integrated regional clinical network scorecard	Degree that a regional network meets elements of an integrated regional clinical network	Numerator	Grading 1-5, 1 being very poor, 5 being very good.	-	n/a			Service mapping

15	Rheumatic Heart Disease control programme scorecard	Degree that a jurisdiction meets elements of a rheumatic heart disease control programme	Numerator	Grading 1-5, 1 being very poor, 5 being very good.	-	n/a			Service mapping
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ESSENCE Cardiovascular Outcome Indicators

The specifications for each of the reported indicators is outlined below.

#	Title	Description	Calculation	Numerator	Denominator	Age group	Definitions	Disaggregation	Data sources
1a	Cardiovascular mortality rate	Mortality rates by causes of death: i. All cardiovascular (I00-I99) ii. Coronary Heart Disease (I20-I25) iii. Chronic Heart Failure (I50) iv. Stroke (I60-I69) v. Acute Rheumatic Fever (I00-I02) & Rheumatic Heart Disease (I05-I09)	10,000 x (Numerator ÷ Denominator) Age standardised rate (ASR): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$	Number of deaths with principal cause of death	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages	p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population	Age-specific Age-standardised	COD & ABS population data
2a	CHD hospitalisation rate	Coronary heart disease hospitalisation rate	10,000 x (Numerator ÷ Denominator) Age standardised rate (ASR): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$	Number of hospitalisations with a principal diagnosis of coronary heart disease (ICD-10-AM codes I20-I25).	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages	p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population		ISAAC & ABS population data
3a	CHF hospitalisation rate	Chronic heart failure hospitalisation rate	10,000 x (Numerator ÷ Denominator)	Number of hospitalisations with a principal diagnosis of chronic heart failure (ICD-10-AM codes I50).	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.	All ages			ISAAC & ABS population data

4a	Stroke hospitalisation rate	Stroke hospitalisation rate	10,000 x (Numerator ÷ Denominator) Age standardised rate (ASR): $ASR = \frac{\sum_i N_i p_i}{\sum_i N_i}$	Number of hospitalisations with a principal diagnosis of coronary heart disease (ICD-10-AM codes I61, I62.9, I63, I64).	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.		p_i is the age-specific rate for age group i in the population being studied N_i is the population of age group i in the standard population		ISAAC & ABS population data
5a	ARF incidence	Yearly acute rheumatic fever incidence	10,000 x (Numerator ÷ Denominator)	Number of incidences of ARF	Total population	All ages			SA Rheumatic Heart Disease Register
5b	ARF recurrence	Yearly acute rheumatic fever recurrences a) Proportion of all acute rheumatic fever episodes	100 x (Numerator ÷ Denominator)	Number of recurrent cases of ARF	Total number of incidences of ARF	All ages			SA Rheumatic Heart Disease Register
5c	ARF hospitalisation rate & RHD hospitalisation rate	ARF & RHD hospitalisation rate i) ARF hospitalisation rate ii) RHD hospitalisation rate	10,000 x (Numerator ÷ Denominator)	i. Number of hospitalisations with a principal diagnosis of acute rheumatic fever (ICD-10-AM codes I00-I02). ii. Number of hospitalisations with a principal diagnosis of rheumatic heart disease (ICD-10-AM codes I05-I09).	Population at the middle of the financial year, calculated from the average of the populations at 30 June at the beginning and end of the financial year.				ISAAC & ABS population data
6a	Proportion of population with self-reported or measured hypertension	Proportion of adults with a self-reported/measured (as part of survey) high blood pressure	100 x (Numerator ÷ Denominator)	People aged 18 years and over who have a measured (as part of survey) and/or self-report high blood pressure	Total population	18 and over	Normal to high: ≥120/80 < 140/90 High-severe: > 140/90	Age	2012/13 AATSIHS; 2011/12 AHS

Condition codes

Condition	ICD-10 code	Abbreviation
Cardiovascular disease	I00-I99	CVD
Cardiac disease	I00-I59	Cardiac
Cerebrovascular disease	I60-I69	Cerebro
Vascular disease	I70-I99	Vascular
Acute Rheumatic Fever	I00-I02	ARF
Rheumatic Heart Disease	I05-I09	RHD
Hypertension	I10-I15	
Coronary Heart Disease	I20-I25	CHD
Angina	I20	
Acute Myocardial Infarction	I21	AMI
ST elevation Myocardial Infarction	I21.0, I21.1, I21.2, I21.3	STEMI
Acute Coronary Syndrome	I20.0, I21.0, I21.1, I21.2, I21.3, I21.4, I21.9	ACS
Subsequent Myocardial Infarction	I22	Subsequent MI
Other CHD	I23-I25	
Atrial Fibrillation	I48	AF
Chronic Heart Failure	I50	CHF
Stroke	I61, I62.9, I63-I64	
Haemorrhagic Stroke	I61, I62.9	
Ischaemic Stroke	I63	
Stroke not specified	I64	

Procedure codes

Procedure	ACHI Code	Description
Diagnostic angiography	3821500	Coronary angiography
	3821800	Coronary angiography with left heart catheterisation
	3821801	Coronary angiography with right heart catheterisation
	3821802	Coronary angiography with left and right heart catheterisation
PCI	3830000	Percutaneous transluminal balloon angioplasty of 1 coronary artery
	3830300	Percutaneous transluminal balloon angioplasty of ≥ 2 coronary arteries
	3830600	Percutaneous insertion of 1 transluminal stent into single coronary artery
	3830601	Percutaneous insertion of ≥ 2 transluminal stents into single coronary artery
	3830602	Percutaneous insertion of ≥ 2 transluminal stents into multiple coronary arteries
	3830900	Percutaneous transluminal coronary rotational atherectomy, 1 artery
	3831200	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of 1 stent
	3831201	Percutaneous transluminal coronary rotational atherectomy, 1 artery with insertion of ≥ 2 stents
	3831500	Percutaneous transluminal coronary rotational atherectomy, multiple arteries
	3831800	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of 1 stent

	3831801	Percutaneous transluminal coronary rotational atherectomy, multiple arteries with insertion of \geq 2 stents
CABG	3830001	Open transluminal balloon angioplasty of 1 coronary artery
	3830301	Open transluminal balloon angioplasty of \geq 2 coronary arteries
	3830603	Open insertion of 1 transluminal stent into single coronary artery
	3830604	Open insertion of \geq 2 transluminal stents into single coronary artery
	3830605	Open insertion of \geq 2 transluminal stents into multiple coronary arteries
	3849700	Coronary artery bypass, using 1 saphenous vein graft
	3849701	Coronary artery bypass, using 2 saphenous vein grafts
	3849702	Coronary artery bypass, using 3 saphenous vein grafts
	3849703	Coronary artery bypass, using \geq 4 saphenous vein grafts
	3849704	Coronary artery bypass, using 1 other venous graft
	3849705	Coronary artery bypass, using 2 other venous grafts
	3849706	Coronary artery bypass, using 3 other venous grafts
	3849707	Coronary artery bypass, using \geq 4 other venous grafts
	3850000	Coronary artery bypass, using 1 left internal mammary artery graft
	3850001	Coronary artery bypass, using 1 right internal mammary artery graft
	3850002	Coronary artery bypass, using 1 radial artery graft
	3850003	Coronary artery bypass, using 1 epigastric artery graft
	3850004	Coronary artery bypass, using 1 other arterial graft
	3850005	Coronary artery bypass, using 1 composite graft
	3850300	Coronary artery bypass, using \geq 2 left internal mammary artery grafts
	3850301	Coronary artery bypass, using \geq 2 right internal mammary artery grafts
	3850302	Coronary artery bypass, using \geq 2 radial artery grafts
	3850303	Coronary artery bypass, using \geq 2 epigastric artery grafts
	3850304	Coronary artery bypass, using \geq 2 other arterial grafts
	3850305	Coronary artery bypass, using 1 composite graft
	3850500	Open coronary endarterectomy
	9020100	Coronary artery bypass, using 1 other graft, not elsewhere classified
	9020101	Coronary artery bypass, using 2 other grafts, not elsewhere classified
	9020102	Coronary artery bypass, using 3 other grafts, not elsewhere classified
	9020103	Coronary artery bypass, using \geq 4 other grafts, not elsewhere classified
Thrombolysis	9619901	Intrathecal administration of pharmacologist agent, thrombolytic agent

Appendix 14 Detailed data for Profile

Table 36: Number (and proportion) of Aboriginal deaths by primary cause of death, cardiovascular cause disaggregated by cardiovascular condition, SA, January 2006-December 2012

(data used in Figure 1)

Cause of death [ICD-10 code]	Number of deaths	Proportion of all deaths	Proportion of all cardiovascular deaths
External causes (Injury) [S00-T98, V01-Y98]	160	16%	
Perinatal [P00-P96]	21	2%	
Genitourinary diseases [N00-N99]	28	3%	
Liver diseases [K70-K76]	54	5%	
Respiratory diseases [J00-J99]	83	8%	
Musculoskeletal diseases [M00-M99]	8	1%	
Diabetes [E10-E14]	57	6%	
Mental & Behavioural [F00-F99]	26	3%	
Cancer [C00-D48]	165	17%	
Other causes [All other codes]	126	13%	
Cardiovascular disease [I00-I99]	255	26%	
RHD [I05-I09]	6		2%
Hypertensive [I10-I15]	10		4%
AF [I48]	...		2%
CHF [I50]	6		2%
CHD-Angina [I20]	0		0%
CHD-AMI [I21]	48		19%
CHD-SMI [I22]	0		0%
CHD-Other [I23-I25]	95		38%
Other cardiac [I00-I04, I15-I19, I26-I47, I49, I51-I59]	35		14%
Haemorrhagic Stroke [I61, I62.9]	8		3%
Ischaemic Stroke [I63]	...		1%
Stroke not specified [I64]	12		5%
Other – cerebral [I60, I62.1-I62.8, I65-I69]	20		8%
Other – vascular [I70-I99]	7		3%
TOTAL	983	100%	100%

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015.

Table 37: Number (and proportion) of deaths from cardiovascular disease, by Aboriginal status and age, SA, January 2006-December 2012

(Data used in Figure 2)

Age	Aboriginal		non-Aboriginal	
	n	%	n	%
00-04	...	0%	11	0%
05-09	0	0%	...	0%
10-14	0	0%	...	0%
15-19	0	0%	8	0%
20-24	...	0%	10	0%
25-29	...	2%	33	0%
30-34	6	2%	57	0%
35-39	16	6%	89	0%
40-44	25	10%	164	1%
45-49	32	13%	279	1%
50-54	27	11%	416	1%
55-59	31	12%	629	2%
60-64	23	9%	882	3%
65-69	23	9%	1,120	4%
70-74	19	7%	1,674	6%
75+	46	18%	23,331	81%
TOTAL	255	100%	28,708	100%

Records with age at death=unknown have been omitted from the detailed table but included in the column totals for completeness

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015.

Table 38: Number of deaths by major cause category, by Aboriginal status and age, SA, January 2006 – December 2012

(Data used in Figure 3)

		Perinatal	Injury	CVD	Respiratory	Diabetes	Kidney	Cancer	Mental & Behavioural	All other causes	All Causes
0-14yrs	Aboriginal	19	9	...	...	0	...	...	0	17	51
	Non-Aboriginal	183	94	14	19	0	...	38	...	258	608
15-19yrs	Aboriginal	0	20	0	...	0	0	0	0	...	25
	Non-Aboriginal	...	170	8	...	...	0	20	0	36	242
20-24yrs	Aboriginal	0	19	...	...	0	0	...	0	...	29
	Non-Aboriginal	0	225	10	8	...	...	34	0	43	322
25-29yrs	Aboriginal	0	25	...	...	0	0	...	0	8	42
	Non-Aboriginal	0	237	33	15	...	...	36	...	48	378
30-34yrs	Aboriginal	0	18	6	...	0	...	...	0	6	35
	Non-Aboriginal	0	276	57	16	...	...	69	...	74	501

35-39yrs	Aboriginal	0	20	16	...	...	0	...	...	17	63
	Non-Aboriginal	0	333	90	21	14	...	148	...	98	716
40-44yrs	Aboriginal	0	19	25	...	...	...	13	...	18	84
	Non-Aboriginal	0	343	168	33	17	9	293	11	180	1054
45-49yrs	Aboriginal	0	15	33	11	...	...	15	...	28	109
	Non-Aboriginal	0	294	282	51	25	11	550	22	300	1535
50-54yrs	Aboriginal	0	13	28	...	7	...	15	0	22	92
	Non-Aboriginal	0	306	420	91	39	24	1009	19	350	2258
55-59yrs	Aboriginal	0	...	32	...	10	...	26	...	20	100
	Non-Aboriginal	0	246	633	135	53	23	1505	23	422	3040
60-64yrs	Aboriginal	0	...	23	...	10	...	22	...	10	81
	Non-Aboriginal	...	189	893	235	99	...	2255	45	496	4251
65-69yrs	Aboriginal	0	0	23	9	9	...	26	...	11	82
	Non-Aboriginal	0	150	1124	388	137	76	2614	65	545	5099
70-74yrs	Aboriginal	0	0	19	9	...	...	14	...	11	62
	Non-Aboriginal	0	160	1684	579	210	112	3103	143	806	6797
75-79yrs	Aboriginal	0	...	13	...	...	...	18	...	...	53
	Non-Aboriginal	...	209	3082	917	...	...	3829	400	1267	10333
80-84yrs	Aboriginal	0	...	10	...	...	...	...	...	6	36
	Non-Aboriginal	0	329	5495	1454	549	494	4387	835	1966	15509
85-89yrs	Aboriginal	0	0	14	...	...	...	...	...	...	29
	Non-Aboriginal	0	424	7018	1589	583	584	3303	1248	2338	17087
90-94yrs	Aboriginal	0	0	...	...	0	...	...	...	...	16
	Non-Aboriginal	0	263	5151	1088	346	425	1484	1167	1585	11509
95yrs & older	Aboriginal	0	0	6	...	0	0	...	...	...	10
	Non-Aboriginal	0	137	2713	532	127	187	392	624	744	5456
TOTAL	Aboriginal	22	167	259	83	58	28	167	26	192	1002
	Non-Aboriginal	198	4385	28877	7177	2604	2227	25069	4617	11560	86714

*NB: records where the Indigenous status of the record could not be established have been omitted from these tables.

Records with age at death=unknown have been omitted from the detailed table but included in the column totals for completeness

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 39: Proportion of deaths by major cause category, by Aboriginal status and age, SA, January 2006 – December 2012

(Data used in Figure 3)

		Perinatal	Injury	CVD	Respiratory	Diabetes	Kidney	Cancer	Mental & Behavioural	All other causes	All Causes
0-14yrs	Aboriginal	1.9%	0.9%	0.1%	0.3%	0.0%	0.1%	0.1%	0.0%	1.7%	5.1%
	Non-Aboriginal	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.7%
15-19yrs	Aboriginal	0.0%	2.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.3%	2.5%

	Non-Aboriginal	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
20-24yrs	Aboriginal	0.0%	1.9%	0.1%	0.3%	0.0%	0.0%	0.1%	0.0%	0.5%	2.9%
	Non-Aboriginal	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
25-29yrs	Aboriginal	0.0%	2.5%	0.5%	0.3%	0.0%	0.0%	0.1%	0.0%	0.8%	4.2%
	Non-Aboriginal	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.4%
30-34yrs	Aboriginal	0.0%	1.8%	0.6%	0.3%	0.0%	0.1%	0.1%	0.0%	0.6%	3.5%
	Non-Aboriginal	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.6%
35-39yrs	Aboriginal	0.0%	2.0%	1.6%	0.3%	0.2%	0.0%	0.3%	0.2%	1.7%	6.3%
	Non-Aboriginal	0.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.1%	0.8%
40-44yrs	Aboriginal	0.0%	1.9%	2.5%	0.4%	0.1%	0.2%	1.3%	0.2%	1.8%	8.4%
	Non-Aboriginal	0.0%	0.4%	0.2%	0.0%	0.0%	0.0%	0.3%	0.0%	0.2%	1.2%
45-49yrs	Aboriginal	0.0%	1.5%	3.3%	1.1%	0.5%	0.1%	1.5%	0.1%	2.8%	10.9%
	Non-Aboriginal	0.0%	0.3%	0.3%	0.1%	0.0%	0.0%	0.6%	0.0%	0.3%	1.8%
50-54yrs	Aboriginal	0.0%	1.3%	2.8%	0.6%	0.7%	0.1%	1.5%	0.0%	2.2%	9.2%
	Non-Aboriginal	0.0%	0.4%	0.5%	0.1%	0.0%	0.0%	1.2%	0.0%	0.4%	2.6%
55-59yrs	Aboriginal	0.0%	0.2%	3.2%	0.5%	1.0%	0.4%	2.6%	0.1%	2.0%	10.0%
	Non-Aboriginal	0.0%	0.3%	0.7%	0.2%	0.1%	0.0%	1.7%	0.0%	0.5%	3.5%
60-64yrs	Aboriginal	0.0%	0.5%	2.3%	0.5%	1.0%	0.4%	2.2%	0.2%	1.0%	8.1%
	Non-Aboriginal	0.0%	0.2%	1.0%	0.3%	0.1%	0.0%	2.6%	0.1%	0.6%	4.9%
65-69yrs	Aboriginal	0.0%	0.0%	2.3%	0.9%	0.9%	0.1%	2.6%	0.3%	1.1%	8.2%
	Non-Aboriginal	0.0%	0.2%	1.3%	0.4%	0.2%	0.1%	3.0%	0.1%	0.6%	5.9%
70-74yrs	Aboriginal	0.0%	0.0%	1.9%	0.9%	0.4%	0.4%	1.4%	0.1%	1.1%	6.2%
	Non-Aboriginal	0.0%	0.2%	1.9%	0.7%	0.2%	0.1%	3.6%	0.2%	0.9%	7.8%
75-79yrs	Aboriginal	0.0%	0.1%	1.3%	0.5%	0.5%	0.3%	1.8%	0.4%	0.4%	5.3%
	Non-Aboriginal	0.0%	0.2%	3.6%	1.1%	0.5%	0.3%	4.4%	0.5%	1.5%	11.9%
80-84yrs	Aboriginal	0.0%	0.1%	1.0%	0.4%	0.4%	0.2%	0.5%	0.4%	0.6%	3.6%
	Non-Aboriginal	0.0%	0.4%	6.3%	1.7%	0.6%	0.6%	5.1%	1.0%	2.3%	17.9%
85-89yrs	Aboriginal	0.0%	0.0%	1.4%	0.4%	0.1%	0.2%	0.2%	0.3%	0.3%	2.9%
	Non-Aboriginal	0.0%	0.5%	8.1%	1.8%	0.7%	0.7%	3.8%	1.4%	2.7%	19.7%
90-94yrs	Aboriginal	0.0%	0.0%	0.4%	0.3%	0.0%	0.2%	0.3%	0.2%	0.2%	1.6%
	Non-Aboriginal	0.0%	0.3%	5.9%	1.3%	0.4%	0.5%	1.7%	1.3%	1.8%	13.3%
95yrs & older	Aboriginal	0.0%	0.0%	0.6%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	1.0%
	Non-Aboriginal	0.0%	0.2%	3.1%	0.6%	0.1%	0.2%	0.5%	0.7%	0.9%	6.3%
TOTAL	Aboriginal	2.2%	16.7%	25.8%	8.3%	5.8%	2.8%	16.7%	2.6%	19.2%	100.0%
	Non-Aboriginal	0.2%	5.1%	33.3%	8.3%	3.0%	2.6%	28.9%	5.3%	13.3%	100.0%

**NB: records where the Indigenous status of the record could not be established have been omitted from these tables.*

Records with age at death=unknown have been omitted from the detailed table but included in the column totals for completeness

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 40: South Australian age distribution* (number and proportion) (5 year age brackets), by Aboriginal status and sex

(Data used in Figure 4)

Sex		Male				Female			
Indigenous Status	Age	Aboriginal		Non-Aboriginal / Not stated		Aboriginal		Non-Aboriginal / Not stated	
		n	%	n	%	n	%	n	%
	0-4 years	2,282	12%	47,364	6%	2,176	12%	45,604	6%
	5-9 years	2,233	12%	46,446	6%	2,085	11%	44,212	5%
	10-14 years	2,158	12%	47,987	6%	2,155	11%	45,957	6%
	15-19 years	2,071	11%	52,194	7%	1,888	10%	49,655	6%
	20-24 years	1,825	10%	57,304	7%	1,794	10%	54,129	7%
	25-29 years	1,520	8%	55,867	7%	1,524	8%	53,828	7%
	30-34 years	1,071	6%	50,341	6%	1,161	6%	49,339	6%
	35-39 years	1,092	6%	52,155	7%	1,177	6%	51,944	6%
	40-44 years	1,076	6%	56,373	7%	1,168	6%	55,986	7%
	45-49 years	956	5%	56,125	7%	1,020	5%	56,653	7%
	50-54 years	723	4%	55,733	7%	871	5%	56,818	7%
	55-59 years	592	3%	50,527	6%	587	3%	52,170	6%
	60-64 years	378	2%	47,875	6%	442	2%	49,410	6%
	65-69 years	252	1%	37,082	5%	295	2%	39,014	5%
	70-74 years	144	1%	28,492	4%	206	1%	30,768	4%
	75-79 years	89	0%	21,655	3%	140	1%	25,456	3%
	80-84 years	49	0%	16,930	2%	98	1%	22,852	3%
	85 years +	43	0%	12,841	2%	67	0%	25,120	3%
	TOTAL	18,554	100%	793,291	100%	18,854	100%	808,915	100%

* Estimated Resident Population, July 2011.

Data Source: 2011 Census of Population and Housing, ABS (Commonwealth of Australia, 2015)

Table 41: Prevalence of cardiovascular disease in the South Australian Aboriginal population aged 15 years and over, by age and sex

(Data used in Figure 7)

Persons (Benchmarked weight)			Persons	
Sex			Male	Female
	Age			
Persons with cardiovascular disease (Benchmarked weight) ((000's))	15-17		0	0.1
	18-24		0.2	0.4
	25-34		0.1	0.7
	35-44		0.6	0.9
	45-54		0.6	1.1
	55-64		0.7	0.6
	65 years and over		0.4	0.6
Persons with no cardiovascular disease (Benchmarked weight) ((000's))	15-17		1.2	0.9
	18-24		2.4	1.7
	25-34		2	1.8
	35-44		1.1	1
	45-54		0.8	0.3
	55-64		0.1	0.2
	65 years and over		0.1	0.2
Percentage of persons who have cardiovascular disease (= persons with / total persons x 100)	15-17		0%	10%
	18-24		8%	19%
	25-34		5%	28%
	35-44		35%	47%
	45-54		43%	79%
	55-64		88%	75%
	65 years and over		80%	75%

Source: Australian Aboriginal and Torres Strait Islander Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2012-13 (Commonwealth of Australia, 2013)

Table 42: All hospital admissions (number and proportion) for a principal diagnosis of CVD, July 2010-June 2015, by Aboriginal status, age and sex

(Data used in Figure 8)

	Female				Male			
	Aboriginal		non-Aboriginal		Aboriginal		non-Aboriginal	
	n	%	n	%	n	%	n	%
00-04	14	1%	146	0%	16	1%	198	0%
05-09	13	1%	117	0%	9	0%	146	0%
10-14	10	1%	148	0%	17	1%	186	0%
15-19	24	1%	336	0%	18	1%	415	0%
20-24	48	3%	507	1%	30	1%	536	1%
25-29	104	5%	675	1%	62	3%	636	1%
30-34	93	5%	907	1%	78	4%	865	1%
35-39	109	6%	1310	2%	149	7%	1448	1%
40-44	224	12%	1917	3%	191	9%	2630	3%
45-49	263	14%	2539	3%	316	15%	4004	4%
50-54	255	13%	3324	4%	348	16%	6298	6%
55-59	230	12%	4199	6%	345	16%	8548	8%
60-64	161	8%	5613	7%	238	11%	11685	12%
65-69	143	7%	7175	10%	157	7%	13200	13%
70-74	91	5%	8238	11%	84	4%	12875	13%
75+	135	7%	37733	50%	78	4%	37564	37%
Total	1917	100%	74884	100%	2136	100%	101234	100%

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22
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Table 43: Hospitalisation rate for CVD, by Aboriginal status, July 2010 - June 2015
(Data used in Figure 9)

		Hospitalisation rate per 1,000 population for principal diagnosis of CVD (I00-I99) ^{a,b}	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		2,814	170,994
	00-04	20	330
	05-09	17	261
	10-14	19	326
	15-19	24	717
	20-24	30	1006
	25-29	114	1254
	30-34	100	1704
	35-39	133	2665
	40-44	263	4362
	45-49	385	6280
	50-54	411	9211
	55-59	404	12129
	60-64	321	16492
	65-69	242	19559
	70-74	140	20468
	75+	191	74230
Population (n)		192,981	8,121,385
	00-04	22,687	474,505
	05-09	21,984	463,997
	10-14	21,396	467,111
	15-19	20,660	504,845
	20-24	18,640	555,577
	25-29	16,085	554,541
	30-34	12,293	519,798
	35-39	10,897	511,785
	40-44	11,484	562,234
	45-49	10,113	558,685
	50-54	8,479	567,109
	55-59	6,416	525,817
	60-64	4,415	487,229
	65-69	2,922	416,134
	70-74	1,980	311,498
	75+	2,534	640,525
Crude rate		14.58	21.05
Age-standardised rate		26.0	16.7
	5-14	0.8	0.6
	15-24	1.4	1.6

Age-specific rate	25-34	7.5	2.8
	35-44	17.7	6.5
	45-54	42.8	13.8
	55-64	66.9	28.3
	65-74	77.9	55.0
	74+	75.4	115.9

a. Hospitalisation rate calculated for separations where the state/territory of residence was SA and where the hospitalisation occurred in SA

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015.

Table 44: Age-specific hospitalisation rates for people with a principal diagnosis of CVD, by Aboriginal status and years, July 2005 - June 2015

(Data used in Figure 10)

		Hospitalisation rate per 1,000 population for principal diagnosis of CVD (I00-I99) ^{a,b}					
			Jul'05-Jun'07	Jul'07-Jun'09	Jul'09-Jun'11	Jul'11-Jun'13	Jul'13-Jun'15
ABORIGINAL	Hospitalisations (n)	5-14	6	11	14	6	22
		15-24	24	12	22	27	16
		25-34	43	49	77	96	71
		35-44	155	167	168	151	157
		45-54	311	309	304	320	302
		55-64	253	225	253	293	301
		65-74	95	147	131	131	180
		75+	42	68	55	62	99
	Population (n)	5-14	16,070	16,528	16,969	17,295	17,536
		15-24	13,132	14,053	14,782	15,541	16,278
		25-34	8,865	9,180	10,078	11,083	12,133
		35-44	8,570	8,917	8,998	8,961	8,911
		45-54	5,931	6,516	6,959	7,354	7,717
		55-64	2,984	3,260	3,745	4,211	4,679
		65-74	1,583	1,668	1,743	1,901	2,118
		75+	869	936	957	1,001	1,054
	Rate per 1000	5-14	0.4	0.7	0.8	0.3	1.3
		15-24	1.8	0.9	1.5	1.7	1.0
		25-34	4.9	5.3	7.6	8.7	5.9
		35-44	18.1	18.7	18.7	16.9	17.6
		45-54	52.4	47.4	43.7	43.5	39.1
		55-64	84.8	69.0	67.6	69.6	64.3

		65-74	60.0	88.1	75.2	68.9	85.0
		75+	48.4	72.7	57.5	61.9	94.0
NON-ABORIGINAL	Hospitalisations (n)	5-14	305	220	234	276	217
		15-24	633	624	673	633	731
		25-34	1,033	1,062	1,073	1,175	1,236
		35-44	2,673	2,819	2,746	2,772	2,861
		45-54	6,104	6,160	6,280	6,125	6,169
		55-64	11,024	11,401	11,398	11,322	11,390
		65-74	14,827	14,754	15,185	15,569	16,717
		75+	28,373	28,383	29,047	29,563	29,737
	Population (n)	5-14	374,749	371,357	369,398	371,129	375,390
		15-24	407,742	419,115	426,760	424,810	421,996
		25-34	385,972	392,875	411,094	426,247	440,441
		35-44	440,511	439,357	435,492	431,647	425,197
		45-54	436,081	444,699	449,906	450,395	450,153
		55-64	358,035	378,756	393,584	402,399	412,240
		65-74	232,953	243,612	260,751	285,301	309,478
		75+	234,432	240,926	246,593	253,768	262,701
	Rate per 1000	5-14	0.8	,0.6	0.6	0.7	0.6
		15-24	1.6	,1.5	1.6	1.5	1.7
		25-34	2.7	,2.7	2.6	2.8	2.8
		35-44	6.1	6.4	6.3	6.4	6.7
		45-54	14.0	13.9	14.0	13.6	13.7
		55-64	30.8	30.1	29.0	28.1	27.6
		65-74	63.6	60.6	58.2	54.6	54.0
		75+	121.0	117.8	117.8	116.5	113.2

a. Hospitalisation rate calculated for separations where the state/territory of residence was SA and where the hospitalisation occurred in SA

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015.

Table 45: Hospitalisation rate for hypertension, by Aboriginal status, July 2005 - June 2015
(Data used in Figure 11 and Figure 12)

		Hospitalisation rate per 1,000 population for principal diagnosis of Hypertension (I10-I15) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		159	6,211
	0-14	...	66
	15-24	...	59
	25-34	11	144
	35-44	21	355
	45-54	62	648
	55-64	40	925
	65-74	12	1246
	75+	...	2768
Population (n)		365,007	15,853,137
	0-14	128,349	2,777,127
	15-24	73,785	2,100,422
	25-34	51,337	2,056,627
	35-44	44,356	2,172,204
	45-54	34,476	2,231,233
	55-64	18,878	1,945,014
	65-74	9,012	1,332,094
	75+	4,815	1,238,419
Crude rate		0.44	0.39
Age-standardised rate**		0.7	0.3
Age-specific rate	5-14**	0.02	0.02
	15-24**	0.07	0.03
	25-34	0.21	0.07
	35-44	0.47	0.16
	45-54	1.80	0.29
	55-64	2.12	0.48
	65-74	1.33	0.94
	75+	1.04	2.24

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished)
extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 46: Aboriginal separations – Metropolitan Hospitals, with a principal diagnosis CVD, July 2010-June 2015, by state/territory of residence: Royal Adelaide Hospital (RAH), Flinders Medical Centre (FMC), The Queen Elizabeth Hospital (TQEH), Lyell McEwin Hospital (LMH), Private and Women's and Children's Hospital (W&CH)

(Data used in Figure 13)

Data used in Figure 16y

	Aboriginal						
	SA		NT		Other*		Total
	n	%	n	%	n	%	n
RAH	693	59%	405	35%	69	6%	1167
FMC	290	30%	646	67%	31	3%	967
TQEH	350	93%	18	5%	9	2%	377
Port Augusta	342	98%	...	...	...	...	350
LMH	307	99%	...	...	...	...	311
Private	103	86%	...	...	...	...	120
W&CH	35	59%	...	...	...	...	59

Other* is all other separations excluding those whose place of residence is SA or NT

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 47: Aboriginal separations – Country Hospitals, with a principal diagnosis cardiovascular disease (CVD), July 2010-June 2015

(Data used in Figure 14)

	Aboriginal
	Total
	n
Port Augusta	350
Ceduna	116
Murray Bridge	72
Whyalla	66
Port Lincoln	55
Cooper Pedy	53
Port Pirie	43
Riverland (Berri)	42
Galwer	24
CYP (Maitland)	23
Meningie	19
Mt Gambier	17
Quorn	17
Leigh Creek	16
Northern Yorke	15
Other*	79

Other* is all other country SA Health hospitals

NB: the majority of hospital separations in CHSA are for South Australian residents.

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 48: Self discharge rate per 1,000 hospitalisations for separations with a principal diagnosis of CVD, by Aboriginal status, age and year, July 2005 – June 2015

(Data used in Figure 18)

		Discharge rate per 1,000 hospitalisations for principal diagnosis of Cardiovascular Disease (I00-I99)			
		Persons			
		Aboriginal		Non-Aboriginal	
		Jul'05-Jun'10	Jul'10-Jun'15	Jul'05-Jun'10	Jul'10-Jun'15
Self-discharged (n) total		117	133	505	738
	18-34	12	20	25	54
	35-44	26	30	69	93
	45-54	58	48	107	161
	55-64	17	28	116	170
	65+	4	7	188	260
Hospitalisations (n)		3433	3954	166600	174767
	18-34	295	437	3962	4467
	35-44	676	673	7063	7305
	45-54	1081	1182	16064	16165
	55-64	819	974	29268	30045
	65+	562	688	110243	116785
Crude rate		34.1	33.6	3.0	4.2
Age-specific rate	18-34	40.7	45.8	6.3	12.1
	35-44	38.5	44.6	9.8	12.7
	45-54	53.7	40.6	6.7	10.0
	55-64	20.8	28.7	4.0	5.7
	65+	7.1	10.2	1.7	2.2

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 49: Overcrowding in SA Aboriginal and non-Aboriginal households, by remoteness, 2011
(Data used in Figure 19)

	Aboriginal		Non-Aboriginal	
	n	% ^(a)	n	% ^(a)
Major cities	1 932	14.2%	53 314	5.1%
Inner regional	283	12.5%	5 032	3.3%
Outer regional	1 029	16.1%	5 586	3.3%
Remote	222	21.0%	1 151	3.1%
Very remote	1 852	51.4%	327	4.2%
TOTAL	5 318	19.8%	65 410	4.6%

^(a)Persons living in overcrowded households as a proportion of all Family, Lone Person and Group Households.

Housing overcrowding is based on the Canadian National Occupancy Standard for housing appropriateness.

The measure assesses the bedroom requirements of a household by specifying that:

- there should be no more than two persons per bedroom
- children less than 5 years of age of different sexes may reasonably share a bedroom
- children 5 years of age or older of opposite sex should have separate bedrooms
- children less than 18 years of age and of the same sex may reasonably share a bedroom
- single households members 18 years or over should have a separate bedroom, as should parents or couples.

Households living in dwellings where this standard cannot be met are considered to be overcrowded.

Data Source: ABS (unpublished) derived from the 2011 Census of Population and Housing (Commonwealth of Australia, 2015)

Table 50: Overcrowding in SA Aboriginal and non-Aboriginal households over time (2001, 2006, 2011), by remoteness

(Data used in Figure 20)

	2001		2006		2011	
	n	% ^(a)	n	% ^(a)	n	% ^(a)
Aboriginal						
Major cities	1 728	17.8%	1 750	15.4%	1 932	14.2%
Inner regional	288	15.8%	270	13.0%	283	12.5%
Outer regional	1 088	23.1%	1 125	21.2%	1 029	16.1%
Remote	259	27.4%	184	19.2%	222	21.0%
Very remote	2 403	62.7%	1 701	51.9%	1 852	51.4%
TOTAL	5 766	27.5%	5 030	21.9%	5 318	19.8%
Non-Aboriginal						
Major cities	43 446	4.5%	42 491	4.3%	53 314	5.1%
Inner regional	6 847	4.2%	5 745	3.6%	5 032	3.3%
Outer regional	5 940	3.9%	5 116	3.5%	5 586	3.3%
Remote	1 579	4.1%	1 155	3.2%	1 151	3.1%
Very remote	426	5.8%	312	4.1%	327	4.2%
TOTAL	58 238	4.4%	54 819	4.1%	65 410	4.6%

^(a)Persons living in overcrowded households as a proportion of all Family, Lone Person and Group Households.

Housing overcrowding is based on the Canadian National Occupancy Standard for housing appropriateness.

The measure assesses the bedroom requirements of a household by specifying that:

- there should be no more than two persons per bedroom
- children less than 5 years of age of different sexes may reasonably share a bedroom
- children 5 years of age or older of opposite sex should have separate bedrooms
- children less than 18 years of age and of the same sex may reasonably share a bedroom
- single households members 18 years or over should have a separate bedroom, as should parents or couples.

Households living in dwellings where this standard cannot be met are considered to be overcrowded.

Data Source: ABS (unpublished) derived from the 2001, 2006 and 2011 Census of Population and Housing (Commonwealth of Australia, 2015)

Table 51: Year 12 attainment or equivalent for 20-24 year olds, by Aboriginal status and sex

(Data used in Figure 21)

	Male		Female		Persons	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
Persons with year 12 or equivalent	407	32,936	514	36,987	921	69,923
Persons Total	1,350	52,629	1,367	50,241	2,717	102,870
% persons with year 12 or equivalent	30%	63%	38%	74%	33.9%	68.0%

Data Source: 2011 Census of Population and Housing, ABS (Commonwealth of Australia, 2015)

Table 52: Year 12 attainment or equivalent for 20-24 year olds, by Aboriginal status and sex
(Data used in Figure 22)

		Male		Female	
		Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
Northern Adelaide LHN	Persons with year 12 or equivalent	116	7243	148	8060
	Persons Total	305	12837	335	12269
	% persons with year 12 or equivalent	38.0%	56.4%	44.2%	65.7%
Central Adelaide LHN	Persons with year 12 or equivalent	82	12768	112	13892
	Persons Total	218	16815	201	16562
	% persons with year 12 or equivalent	37.6%	75.9%	55.7%	83.9%
Southern Adelaide LHN	Persons with year 12 or equivalent	71	7188	80	8346
	Persons Total	153	11055	166	10953
	% persons with year 12 or equivalent	46.4%	65.0%	48.2%	76.2%
Country Health SA LHN	Persons with year 12 or equivalent	139	5680	174	6607
	Persons Total	662	11780	653	10335
	% persons with year 12 or equivalent	21.0%	48.2%	26.6%	63.9%

Data Source: 2011 Census of Population and Housing, ABS (Commonwealth of Australia, 2015)

Table 53: Workforce participation by employment rate, unemployment rate and labour force participation rate, SA, 2011, by Aboriginal status
(Data used in Figure 23)

	Aboriginal	Non-Aboriginal
Employed (15-64 years)	7468	703155
Unemployed (15-64 years)	1658	42498
Not in the labour force (15-64 years)	8587	240357
Total population (15-64 years)	17713	986010
Employment to Population Ratio (=employed / total)	42%	71%
Unemployment Rate (=unemployed / total)	9%	4%
Labour Force Participation Rate (=1 – (not in labour force / total))	52%	76%

Data Source: 2011 Census of Population and Housing, ABS (Commonwealth of Australia, 2015)

Table 54: Workforce participation by employment rate, unemployment rate and labour force participation rate, SA, 2011, by Aboriginal status and Local Health Network

(Data used in Figure 24 and Figure 25)

	Northern Adelaide LHN		Central Adelaide LHN		Southern Adelaide LHN		Country Health SA LHN	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
Employed (15-64 years)	1599	154462	3601	197356	1225	192674	1010	157801
Unemployed (15-64 years)	410	11280	792	10559	266	11425	173	9006
Not in the labour force (15-64 years)	1883	60249	4601	65913	1245	65178	809	48198
Total population (15-64 years)	3892	225991	8994	273828	2736	269277	1992	215005
Employment to Population Ratio (=employed / total)	41%	68%	40%	72%	45%	72%	51%	73%
Unemployment Rate (=unemployed / total)	11%	5%	9%	4%	10%	4%	9%	4%
Labour Force Participation Rate (=1 – (not in labour force / total))	52%	73%	49%	76%	54%	76%	59%	78%

Data Source: 2011 Census of Population and Housing, ABS (Commonwealth of Australia, 2015)

Table 55: SA current smoking, by Aboriginal status and sex; and Aboriginal status and age, 15 years and over

(Data used in Figure 26)

	Aboriginal	non-Aboriginal
Persons	42%	18%
Male	47%	20%
Female	38%	16%
15-17 yrs	36%	6%
18-24 yrs	42%	17%
25-34 yrs	45%	25%
35-44 yrs	38%	26%
45-54 yrs	44%	22%
55-64 yrs	39%	12%
65+ yrs	43%	10%

Persons aged 15 years and over.

Data Source: Australian Aboriginal and Torres Strait Islander Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2012-13, Table Builder 2013; Australian Health Survey: Updated Results, 2011-12, Table Builder 2013 (Commonwealth of Australia, 2014)

Table 56: Smoker status at first antenatal visit, by Aboriginal status and smoking status, SA, 15 years and over, January 2006 - December 2012

(Data used in Figure 27)

	Aboriginal**		non-Aboriginal	
	n	%	n	%
Current smoker	2,279	51.7%	18,065	19.4%
Ex-smoker*	227	5.4%	5,048	5.4%
Non-smoker	1,619	41.4%	107,316	74.1%
Unknown	76	1.5%	1,771	1.1%
TOTAL	4,201	100%	132,200	100%

* Quit before first visit

Data Source: SA Health Perinatal statistics collection (unpublished), 2015

Table 57: Rate of current smokers at first antenatal visit, by Aboriginal status and maternal age, January 2006 - December 2012

(Data used in Figure 28)

Maternal age		Less than 20 years		20 to 29 years		30 years and over	
		Aboriginal	non-Aboriginal	Aboriginal	non-Aboriginal	Aboriginal	Non-Aboriginal
Current smoker	n	402	1649	1383	9611	494	6805
	%	51.3%	31.6%	54.6%	16.1%	49.1%	10.5%
Ex-smoker*	n	54	438	132	2763	41	1847
	%	7.5%	8.9%	5.1%	4.7%	3.5%	2.7%
Non-smoker	n	339	2878	900	44434	380	60004
	%	39.6%	58.7%	38.8%	78.2%	45.9%	85.3%

* Quit before first visit

Data Source: (unpublished), 2015

Table 58: Rate of current smokers at first antenatal visit, by Aboriginal status and region (LHN and CHSALHN sub-regions)

(Data used in Figure 29)

		Smoker		Ex-smoker*		Non-smoker		Unknown	
Central Adelaide	non-Aboriginal	2341	14.3%	917	5.8%	27746	78.2%	658	1.7%
	Aboriginal	301	51.2%	30	5.3%	250	40.8%	15	2.7%
Northern Adelaide	non-Aboriginal	6164	22.4%	1594	5.7%	27694	70.9%	409	1.0%
	Aboriginal	588	51.2%	87	7.9%	423	40.0%	12	1.0%
Southern Adelaide	non-Aboriginal	3086	17.4%	964	4.9%	23762	77.1%	212	0.6%
	Aboriginal	207	50.3%	...	3.2%	177	46.3%	...	0.1%
Country SA	non-Aboriginal	6474	23.5%	1573	5.3%	28114	70.0%	492	1.2%
	Aboriginal	1183	54.1%	99	5.2%	769	38.7%	48	2.0%
Barossa Hills Fleurieu	non-Aboriginal	1768	17.4%	579	5.6%	11173	75.3%	263	1.7%
	Aboriginal	53	49.6%	12	10.5%	51	39.4%	...	0.4%
Eyre, Flinders & Far North East	non-Aboriginal	871	25.6%	192	6.1%	2734	67.6%	25	0.7%
	Aboriginal	472	56.9%	31	3.5%	276	37.2%	18	2.4%
Eyre, Flinders & Far North West	non-Aboriginal	518	22.5%	106	4.4%	2302	71.8%	40	1.3%
	Aboriginal	278	54.8%	22	4.4%	191	37.5%	19	3.3%
Riverland Mallee Coorong	non-Aboriginal	1190	27.8%	243	5.7%	3576	65.0%	60	1.4%
	Aboriginal	203	56.2%	15	4.8%	116	35.9%	7	3.1%
South East	non-Aboriginal	1030	23.1%	207	4.3%	4458	72.2%	31	0.5%
	Aboriginal	66	59.5%	...	1.4%	55	37.6%	...	1.6%
Yorke & Northern	non-Aboriginal	1097	24.5%	246	6.0%	3871	68.1%	73	1.5%
	Aboriginal	111	47.7%	15	6.7%	80	44.3%	...	1.3%

* Quit before first visit

Data Source: SA Pregnancy Outcomes (2006-2012)

Table 59: Percentage of people who met recommended guidelines for fruit and vegetable consumption, by Aboriginal status, SA

(Data used in Figure 30)

	Met recommended guidelines (Benchmarked weight) ((000's))	Did not meet recommended guidelines (Benchmarked weight) ((000's))	% met recommended guidelines
Aboriginal	3.5	30.7	10.2%
non-Aboriginal	123.1	1405.9	8.1%

Data Source: Australian Aboriginal and Torres Strait Islander Health Survey, Nutrition and Physical Activity, 2012-13, Table Builder 2013; Australian Health Survey, Nutrition and Physical Activity, 2011-12, Table Builder 2013 (Commonwealth of Australia, 2013)

Table 60: Achieving sufficient physical activity to be beneficial to health, by sex and Aboriginal status

(Data used in Figure 31)

	non-Aboriginal			Aboriginal		
(Benchmarked weight) ((000's))	Male	Female	Persons	Male	Female	Persons
Inactive	137.8	137	278.2	1.2	0.5	1.1
Insufficiently active	232.1	261	491.8	6	3.5	7.9
Sufficiently active for health	243.2	241.1	486.4	2.6	4.2	7
Total	613.1	639.1	1256.4	9.8	8.2	16
% sufficiently active for health	40%	38%	39%	27%	51%	44%

Data Source: Australian Aboriginal and Torres Strait Islander Health Survey, Nutrition and Physical Activity, 2012-13, Table Builder 2013; Australian Health Survey, Nutrition and Physical Activity, 2011-12, Table Builder 2013 (Commonwealth of Australia, 2013)

Table 61: Number and usage rate of Aboriginal and Torres Strait Islander health checks for Aboriginal people July 2011-June 2014, by primary health network

(Data used in Figure 32)

		Aboriginal population	Number of MBS 715 checks claimed	Usage rate (%)
Adelaide PHN	Jul'11-Jun'12	18,553	983	5.3%
	Jul'12-Jun'13	19,066	1,232	6.5%
	Jul'13-Jun'14	19,586	1,819	9.3%
Country PHN	Jul'11-Jun'12	19,243	2,015	10.5%
	Jul'12-Jun'13	19,517	2,693	13.8%
	Jul'13-Jun'14	19,805	4,080	20.6%

Source: AIHW analysis of Medicare Australia Statistics.

Table 62: Average benzathine penicillin G adherence rate, SA, 2013-2015

(Data used in Figure 34)

Average 12-month BPG adherence	2013	2014	2015
<50% BPG adherence	33%	19%	10%
50-79% BPG adherence	40%	35%	33%
≥ 80% BPG adherence	27%	45%	57%

Data source: SA Rheumatic Heart Disease Register, 2016

Table 63: Proportion of priority 1 and priority 2 cases of Acute Rheumatic Fever/Rheumatic Heart Disease receiving serial echocardiography as per guidelines, per year

(Data used in Figure 35)

	2014 (as at December 2014)			2015 (as at December 2015)		
	Number of cases receiving guideline-based care	Total number of cases	% receiving guideline-based care	Number of cases receiving guideline-based care	Total number of cases	% receiving guideline-based care
Priority level 1*	16	35	46%	22	38	58%
Priority level 2**	11	26	42%	20	28	71%

* Echocardiography performed every 3-6 months

** Echocardiography performed every year

Data source: SA Rheumatic Heart Disease Register, 2016

Table 64: Proportion of STEMI patients who had a diagnostic ECG performed within 10 minutes of first medical contact, by Aboriginal status, January 2012 – December 2014

(Data used in Figure 36)

	Aboriginal	Non-Aboriginal	
Receive ECG within 10 minutes	12	528	
Total STEMI	40	1164	
% receiving ECG within 10 minutes	30%	45%	OR: 0.52 95% CI: 0.26-1.02 p-value: 0.059

Odds ratio, 95% CI and p value determined by logistic regression

Rates are unadjusted

Data source: CADOSA analysis provided by the CADOSA Registry, the University of Adelaide (unpublished) for the SA State of Aboriginal Heart Health Project. CADOSA was supported by a Cardiovascular Research Development Grant from the South Australian Division of the Heart Foundation of Australia and the Government of South Australia.

Table 65: Proportion of people with a STEMI treatment with thrombolysis or percutaneous coronary intervention (PCI), by Aboriginal status and age, January 2012 – December 2014

(Data used in Figure 37)

	Aboriginal	Non-Aboriginal	OR	95% CI	p-value
STEMI receiving thrombolysis and/or PCI (n)*	88	1,646			
% STEMI patients receiving thrombolysis and/or PCI (%)					
18-34 yo	55%	93%	0.09	0.01-0.97	0.047
35-44 yo	74%	92%	0.25	0.08-0.75	0.013
45-54 yo	93%	94%	0.84	0.19-3.78	0.825
55-64 yo	81%	95%	0.24	0.06-0.93	0.038
65+ yo	67%	95%	0.11	0.02-0.61	0.012

* indicates total n of patients receiving thrombolysis or PCI only. Excludes patients referred to CABG

Odds ratio, 95% CI and p value determined by logistic regression

Data source: CADOSA analysis provided by the CADOSA Registry, the University of Adelaide (unpublished) for the SA State of Aboriginal Heart Health Project. CADOSA was supported by a Cardiovascular Research Development Grant from the South Australian Division of the Heart Foundation of Australia and the Government of South Australia

Table 66: Proportion of people with a STEMI treated by percutaneous coronary intervention (PCI), by Aboriginal status, age and year, July 2005 – June 2015

(Data used in Figure 38)

		Aboriginal		non-Aboriginal	
		Jul'05-Jun'10	Jul'10-Jun'15	Jul'05-Jun'10	Jul'10-Jun'15
STEMI patients receiving PCI (n)		110	100	2732	2593
	18-34	15	8	22	17
	35-44	27	23	198	183
	45-54	43	43	586	564
	55-64	14	19	760	773
	65+	11	7	1166	1056
STEMIs (n)		180	155	4515	3858
	18-34	21	16	33	22
	35-44	45	40	251	225
	45-54	65	57	764	688
	55-64	28	29	1040	990
	65+	21	13	2427	1933
% STEMI patients receiving PCI		61%	65%	61%	67%
	18-34	71%	50%	67%	77%
	35-44	60%	58%	79%	81%
	45-54	66%	75%	77%	82%
	55-64	50%	66%	73%	78%
	65+	52%	54%	48%	55%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 67: Proportion of STEMI receiving thrombolysis within 30 minutes of hospital arrival, by Aboriginal status, January 2012 – December 2014

(Data used in Figure 39)

	Aboriginal	Non-Aboriginal	
Receive thrombolysis within 30 minutes of arrival (n)	6	45	
Total STEMI*	28	173	
% receiving thrombolysis within 30 minutes of arrival	21%	26%	OR: 0.78 95% CI: 0.30-2.03 p-value: 0.606

* total n of patients with data for parameter

Odds ratio, 95% CI and p value determined by logistic regression

Data source: CADOSA analysis provided by the CADOSA Registry, the University of Adelaide (unpublished) for the SA State of Aboriginal Heart Health Project. CADOSA was supported by a Cardiovascular Research Development Grant from the South Australian Division of the Heart Foundation of Australia and the Government of South Australia

Table 68: Crude proportion of people with a principal diagnosis of ischaemic stroke receiving thrombolysis (RAH, TQEH, FMC, LMH only), by Aboriginal status, July 2011 - June 2015

(Data used in Figure 40)

	Aboriginal	non-Aboriginal
Ischaemic stroke patients who received thrombolysis (n)	6	426
Ischaemic stroke patients (n)	60	4746
Proportion of ischaemic stroke patients who received thrombolysis (%)	10%	9%

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 69: Proportion of Acute Coronary Syndrome patients having discharge medication recorded, by type of medication and Aboriginal status, January 2012- December 2014

(Data used in Figure 41)

Medication type	Aboriginal	Non-Aboriginal	Unadjusted			Age Adjusted		
			OR	95% CI	p-value	OR	95% CI	p-value*
Aspirin	90%	83%	1.90	1.38-2.60	<0.001	1.79	1.30-2.47	<0.001
Other Anti-platelet	63%	57%	1.26	1.04-1.54	0.020	1.30	1.06-1.59	0.011
Dual Anti-platelet	60%	53%	1.29	1.06-1.57	0.010	1.23	1.01-1.50	0.043
Statin	88%	81%	1.77	1.32-2.37	<0.001	2.05	1.52-2.76	<0.001
Non-Statin Lipid Lowering	7.7%	6.9%	1.13	0.79-1.62	0.501	1.39	0.96-2.02	0.081
ACE Inhibitor	71%	56%	1.94	1.57-2.39	<0.001	1.78	1.43-2.20	<0.001
Angiotensin Receptor Blocker	12%	20%	0.52	0.39-0.70	<0.001	0.81	0.59-1.08	0.152
Beta Blocker	73%	56%	2.11	1.71-2.61	<0.001	2.62	2.10-3.26	<0.001
Calcium Channel Blocker	23%	27%	0.79	0.63-1.0	0.040	0.91	0.72-1.15	0.445
Long Acting Nitrates	26%	32%	0.74	0.60-0.92	0.007	1.03	0.82-1.28	0.818

Odds ratio, 95% CI and p value determined by logistic regression and adjusted for age where indicated

Data source: CADOSA analysis provided by the CADOSA Registry, the University of Adelaide (unpublished) for the SA State of Aboriginal Heart Health Project. CADOSA was supported by a Cardiovascular Research Development Grant from the South Australian Division of the Heart Foundation of Australia and the Government of South Australia

Table 70: Referral to cardiac rehabilitation program whilst an in-patient (SA patients only), January 2013- December 2014

(Data used in Figure 42)

	Metropolitan hospital		Country hospital	
	Aboriginal	non-Aboriginal	Aboriginal	non-Aboriginal
Referred to cardiac rehabilitation (n)	19	925	6	210
Total eligible for cardiac rehabilitation (n)	77	2911	13	401
% referred to cardiac rehabilitation	25%	32%	46%	52%

SA residents only

Data source: Cardiac Rehabilitation Minimum Data Set (CRMDS) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 7 Oct 2015

Table 71: Completion of a cardiac rehabilitation program (referral whilst an in-patient, SA patients only), January 2013 – December 2014

(Data used in Figure 43)

	Aboriginal	non-Aboriginal
Completed cardiac rehabilitation (n)	6	233
Total referred for cardiac rehabilitation (n)*	25	1135
% referred to cardiac rehabilitation	24%	21%

* Excludes individuals currently enrolled in cardiac rehabilitation

SA residents only

Data source: Cardiac Rehabilitation Minimum Data Set (CRMDS) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 7 Oct 2015

Table 72: Cardiovascular mortality rate per 10,000 population, SA, by Aboriginal Status, January 2006-December 2012

(Data used in Figure 44)

Mortality rate per 10,000 population for Cardiovascular Disease (I00-I99) ^{a,b,c,d,e}				
Persons				
	Aboriginal	non-Aboriginal	Rate ratio	
Deaths (n)	259	28,877		
Population (n)	249,773	10,993,913		
Crude rate	10.4	26.3	0.4	
Age-standardised rate*	-	-	-	
Age-specific rate	5-14	0.0**	0.0**	0.0
	15-24	0.2**	0.1**	1.6
	25-34	3.2**	0.6	5.1
	35-44	13.2	1.7	7.8
	45-54	26.0	4.5	5.8
	55-64	44.4	11.3	3.9
	65-74	69.9	31.5	2.2
	75+	142.4	274.8	0.5

a. Mortality rate calculated for deaths where the state/territory of residence was South Australia

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

c. Records with age at death=unknown have been omitted from the table.

d. Records where the Indigenous status of the record could not be established have been omitted from this table.

e. Total population at 30 June of that year.

* Age-standardised rate not calculated given that some numerator cell sizes less than n=20, therefore age-standardisation not attempted in accordance with (b)

** Calculated on cells where n<20

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 73: Coronary Heart Disease mortality rate per 10,000 population, SA, by Aboriginal Status, January 2006-December 2012

(Data used in Figure 45)

Mortality rate per 10,000 population for Coronary Heart Disease (I20-I25) ^{a,b,c,d,e}				
Persons				
		Aboriginal	non-Aboriginal	Rate ratio
Deaths (n)		144	13992	
Population (n)		30433	1,503,205	
Crude rate		4.7	9.3	0.5
Age-standardised rate*		-	-	-
Age-specific rate	25-44	4.8	0.5	8.7
	45-64	20.1	4.6	4.4
	65+	43.0	71.7	0.6

a. Mortality rate calculated for deaths where the state/territory of residence was South Australia

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

c. Records with age at death=unknown have been omitted from the table.

d. Records where the Indigenous status of the record could not be established have been omitted from this table.

e. Total population at 30 June of that year.

* Age-standardised rate not calculated given that some numerator cell sizes less than n=20, therefore age-standardisation not attempted in accordance with (b)

** Calculated on cells where n<20

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 74: Chronic Heart Disease mortality rate per 10,000 population, SA, by Aboriginal Status, January 2006-December 2012

Mortality rate per 10,000 population for Chronic Heart Disease (I50) ^{a,b,c,d,e}				
Persons				
		Aboriginal	non-Aboriginal	Rate ratio
Deaths (n)		6	1,805	
Population (n)		30,433	1,503,205	
Crude rate *		0.2	1.2	0.2

a. Mortality rate calculated for deaths where the state/territory of residence was South Australia

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

c. Records with age at death=unknown have been omitted from the table.

d. Records where the Indigenous status of the record could not be established have been omitted from this table.

e. Total population at 30 June of that year.

* Age-standardised rate not calculated given that some numerator cell sizes less than n=20, therefore age-standardisation not attempted in accordance with (b)

** Calculated on cells where n<20

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 75: Cerebrovascular Disease mortality rate per 10,000 population, SA, by Aboriginal Status, January 2006-December 2012

(Data used in Figure 46)

		Mortality rate per 10,000 population for Cerebrovascular Disease (I60-I69) a,b,c,d,e		
		Persons		
		Aboriginal	non-Aboriginal	Rate ratio
Deaths (n)		45	7,121	
Population (n)		30,433	1,503,205	
Crude rate		1.5	4.7	0.3
Age-standardised rate*		-	-	-
Age-specific rate	25-44	1.2	0.2	5.8
	45-64	3.3	1.2	2.8
	65+	26.9	38.5	0.7

a. Mortality rate calculated for deaths where the state/territory of residence was South Australia

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

c. Records with age at death=unknown have been omitted from the table.

d. Records where the Indigenous status of the record could not be established have been omitted from this table.

e. Total population at 30 June of that year.

* Age-standardised rate not calculated given that some numerator cell sizes less than n=20, therefore age-standardisation not attempted in accordance with (b)

** Calculated on cells where n<20

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 76: Acute Rheumatic Fever and Rheumatic Heart Disease mortality rate per 10,000 population, SA, by Aboriginal Status, January 2006-December 2012

		Mortality rate per 10,000 population for Acute Rheumatic Fever and Rheumatic Heart Disease (I00-I02, I05-I09) a,b,c,d,e		
		Persons		
		Aboriginal	non-Aboriginal	Rate ratio
Deaths (n)		6	179	
Population (n)		30,433	1,503,205	
Crude rate *		2.0	1.2	1.7

a. Mortality rate calculated for deaths where the state/territory of residence was South Australia

b. Age-standardised rate calculating using the National Indigenous Reform Agreement Performance Information Management Group (NIRAPIMG) agreed Principles for reporting directly age-standardised rates for administrative data

c. Records with age at death=unknown have been omitted from the table.

d. Records where the Indigenous status of the record could not be established have been omitted from this table.

e. Total population at 30 June of that year.

* Age-standardised rate not calculated given that some numerator cell sizes less than n=20, therefore age-standardisation not attempted in accordance with (b)

** Calculated on cells where n<20

Data source: Cause of Death Unit Record File for South Australia provided by the Australian Coordinating Registry (unpublished) extracted for the SA State of Aboriginal Heart Health Project 30 July 2015

Table 77: Hospitalisation rate for CHD, by Aboriginal status, July 2005 - June 2015
(Data used in Figure 48)

		Hospitalisation rate per 1,000 population for principal diagnosis of Coronary Heart Disease (I20-I25) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		2215	10,3704
	5-14	...	8
	15-24	...	48
	25-34	78	320
	35-44	344	3093
	45-54	834	11018
	55-64	575	22126
	65-74	285	27931
	75+	94	39154
Population (n)		365,007	15,853,137
	5-14	84,397	1,862,022
	15-24	73,785	2,100,422
	25-34	51,337	2,056,627
	35-44	44,356	2,172,204
	45-54	34,476	2,231,233
	55-64	18,878	1,945,014
	65-74	9,012	1,332,094
	75+	4,815	1,238,419
Crude rate		6.07	6.54
Age-standardised rate**		10.88	5.24
Age- specific rate	5-14**	0.00	0.00
	15-24**	0.07	0.02
	25-34	1.52	0.16
	35-44	7.76	1.42
	45-54	24.19	4.94
	55-64	30.46	11.38
	65-74	31.63	20.97
	75+	19.52	31.62

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished)
extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 78: Age-specific hospitalisation rates for people with a principal diagnosis of CHD, by Aboriginal status and years, July 2005 - June 2015

(Data used in Figure 49)

		Hospitalisation rate per 1,000 population for principal diagnosis of CHD ^a					
			Jul'05-Jun'07	Jul'07-Jun'09	Jul'09-Jun'11	Jul'11-Jun'13	Jul'13-Jun'15
ABORIGINAL	Hospitalisations (n)	25-34	14	11	16	26	11
		35-44	78	84	71	61	50
		45-54	152	187	167	170	158
		55-64	102	106	112	121	134
		65-74	42	59	52	52	80
		75+	11	16	17	23	27
	Population (n)	25-34	10,371	11,474	12,687	13,748	14,474
		35-44	9,124	9,086	9,051	9,056	9,620
		45-54	7,344	7,762	8,161	8,653	8,799
		55-64	4,353	4,851	5,327	5,830	6,346
		65-74	2,132	2,293	2,573	2,822	3,186
		75+	1,390	1,433	1,437	1,562	1,698
	Rate per 1000	25-34	1.3	1.0	1.3	1.9	0.8
		35-44	8.5	9.2	7.8	6.7	5.2
		45-54	20.7	24.1	20.5	19.6	18.0
		55-64	23.4	21.9	21.0	20.8	21.1
		65-74	19.7	25.7	20.2	18.4	25.1
		75+	7.9	11.2	11.8	14.7	15.9
NON-ABORIGINAL	Hospitalisations (n)	25-34	89	63	64	54	50
		35-44	718	676	572	608	519
		45-54	2423	2218	2222	2194	1961
		55-64	4977	4591	4422	4212	3924
		65-74	6184	5684	5474	5228	5361
		75+	8797	8382	7898	7425	6652
	Population (n)	25-34	394,465	413,573	436,704	444,590	445,286
		35-44	414,782	412,956	410,175	408,880	418,111
		45-54	450,464	450,047	450,248	450,364	445,419
		55-64	409,647	415,393	424,845	435,828	443,338
		65-74	285,091	311,787	334,936	357,118	375,823
		75+	280,198	284,160	289,696	297,034	309,794
	Rate per 1000	25-34	0.2	0.2	0.1	0.1	0.1
		35-44	1.7	1.6	1.4	1.5	1.2
		45-54	5.4	4.9	4.9	4.9	4.4
		55-64	12.1	11.1	10.4	9.7	8.9
		65-74	21.7	18.2	16.3	14.6	14.3
		75+	31.4	29.5	27.3	25.0	21.5

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 79: Hospitalisation rate for CHF, by Aboriginal status, July 2005 - June 2015

(Data used in Figure 49 and Figure 50)

		Hospitalisation rate per 1,000 population for principal diagnosis of Chronic Heart Failure (I50) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		754	38,148
	5-14	...	10
	15-24	...	20
	25-34	29	72
	35-44	89	234
	45-54	189	795
	55-64	239	2592
	65-74	127	6144
	75+	66	28250
Population (n)		365,007	15,853,137
	5-14	84,397	1,862,022
	15-24	73,785	2,100,422
	25-34	51,337	2,056,627
	35-44	44,356	2,172,204
	45-54	34,476	2,231,233
	55-64	18,878	1,945,014
	65-74	9,012	1,332,094
	75+	4,815	1,238,419
Crude rate		2.07	2.41
Age-standardised rate**		4.11	1.82
Age-specific rate	5-14 **	0.06	0.01
	15-24 **	0.04	0.01
	25-34	0.56	0.04
	35-44	2.01	0.11
	45-54	5.48	0.36
	55-64	12.66	1.33
	65-74	14.09	4.61
	75+	13.71	22.81

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 80: Age-specific hospitalisation rates for people with a principal diagnosis of CHF, by Aboriginal status and years, July 2005 - June 2015

(Data used in Figure 51)

		Hospitalisation rate per 1,000 population for principal diagnosis of Chronic Heart Failure (I50) ^a					
			Jul'05-Jun'07	Jul'07-Jun'09	Jul'09-Jun'11	Jul'11-Jun'13	Jul'13-Jun'15
ABORIGINAL	Hospitalisations (n)	35-44	23	13	11	17	25
		45-54	72	29	24	33	31
		55-64	49	31	38	62	59
		65-74	15	30	19	26	37
		75+	10	13	10	11	22
	Population (n)	35-44	8,865	9,180	10,078	11,083	12,133
		45-54	8,570	8,917	8,998	8,961	8,911
		55-64	5,931	6,516	6,959	7,354	7,717
		65-74	2,984	3,260	3,745	4,211	4,679
		75+	2,068	2,179	2,212	2,377	2,629
	Rate per 1000	35-44	2.6	1.4	1.1	1.5	2.1
		45-54	8.4	3.3	2.7	3.7	3.5
		55-64	8.3	4.8	5.5	8.4	7.6
		65-74	5.0	9.2	5.1	6.2	7.9
		75+	4.8	6.0	4.5	4.6	8.4
NON-ABORIGINAL	Hospitalisations (n)	35-44	41	44	41	53	55
		45-54	165	144	140	180	166
		55-64	514	515	507	501	555
		65-74	1215	1221	1158	1244	1306
		75+	5261	5381	5536	5851	6221
	Population (n)	35-44	385,972	392,875	411,094	426,247	440,441
		45-54	440,511	439,357	435,492	431,647	425,197
		55-64	436,081	444,699	449,906	450,395	450,153
		65-74	358,035	378,756	393,584	402,399	412,240
		75+	331,290	339,337	354,968	381,615	410,970
	Rate per 1000	35-44	0.1	0.1	0.1	0.1	0.1
		45-54	0.4	0.3	0.3	0.4	0.4
		55-64	1.2	1.2	1.1	1.1	1.2
		65-74	3.4	3.2	2.9	3.1	3.2
		75+	15.9	15.9	15.6	15.3	15.1

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 81: Hospitalisation rate for stroke, by Aboriginal status, July 2005 - June 2015
(Data used in Figure 52 and Figure 53)

		Hospitalisation rate per 1,000 population for principal diagnosis of Stroke (I61, I62.9, I63-I64) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		309	21,675
	5-14	...	29
	15-24	...	55
	25-34	14	164
	35-44	39	503
	45-54	71	1254
	55-64	84	2542
	65-74	54	4199
	75+	42	12907
Population (n)		365,007	15,853,137
	5-14	84,397	1,862,022
	15-24	73,785	2,100,422
	25-34	51,337	2,056,627
	35-44	44,356	2,172,204
	45-54	34,476	2,231,233
	55-64	18,878	1,945,014
	65-74	9,012	1,332,094
	75+	4,815	1,238,419
Crude rate		0.85	1.37
Age-standardised rate**		1.8	1.1
Age-specific rate	5-14**	0.01	0.02
	15-24**	0.00	0.03
	25-34**	0.27	0.08
	35-44	0.88	0.23
	45-54	2.06	0.56
	55-64	4.45	1.31
	65-74	5.99	3.15
	75+	8.72	10.42

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 82: Age-specific hospitalisation rates for people with a principal diagnosis of Stroke, by Aboriginal status and years, July 2005 - June 2015

(Data used in Figure 54)

		Hospitalisation rate per 1,000 population for principal diagnosis of Stroke (I61, I62.9, I63-I64) ^a			
		Aboriginal		Non-Aboriginal	
		Jul'05-Jun'10	Jul'10-Jun'15	Jul'05-Jun'10	Jul'10-Jun'15
Hospitalisations (n)	35-44	22	17	261	242
	45-54	29	42	549	705
	55-64	48	36	1180	1362
	65-74	26	28	2053	2146
	75+	20	22	6588	6319
Population (n)	35-44	21,975	22,381	1,098,186	1,074,018
	45-54	15,885	18,592	1,105,439	1,120,919
	55-64	8,048	10,830	931,968	1,125,794
	65-74	4,110	4,902	604,462	1,092,926
	75+	2,281	2,534	597,894	1,013,046
Rate per 1000	35-44**	1.0	0.8	0.2	0.2
	45-54	1.8	2.3	0.5	0.6
	55-64	6.0	3.3	1.3	1.2
	65-74	6.3	5.7	3.4	2.0
	75+	8.8	8.7	11.0	6.2

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 83: Hospitalisation rate for ARF, by Aboriginal status, July 2005 - June 2015

(Data used in Figure 56 and Figure 57)

		Hospitalisation rate per 1,000 population for principal diagnosis of Acute Rheumatic Fever (I00-I02) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		32	38
	0-19	18	12
	20+	14	26
Population (n)		365,007	15,853,137
	0-19	167,402	3,789,590
	20+	197,605	12,063,547
Crude rate		0.09	0.00
Age-specific rate	0-19**	0.11	0.00
	20+**	0.07	0.00

a. Hospitalisation rate calculated for separations where the state/territory of residence was SA and where the hospitalisation occurred in SA

** Calculated on cells where n<20

Data source: ISAAC Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 18 September 2015

Table 84: Hospitalisation rate for RHD, by Aboriginal status, July 2005 - June 2015

(Data used in Figure 58 and Figure 59)

		Hospitalisation rate per 1,000 population for principal diagnosis of Rheumatic Heart Disease (I05-I09) ^a	
		Persons	
		Aboriginal	non-Aboriginal
Hospitalisations (n)		72	2004
	0-29	19	33
	30-59	46	397
	60+	7	1574
Population (n)		365,007	15,853,137
	0-29	230,155	5924207
	30-59	113,360	6440495
	60+	21,493	3488435
Crude rate		0.20	0.13
Age-specific rate	0-29**	0.08	0.01
	30-59	0.41	0.06
	60+**	0.00	0.45

a. Hospitalisation rate calculated for separations where the state/territory of residence was South Australia and where the hospitalisation occurred in South Australia

** Calculated on cells where n<20

Data source: Integrated South Australian Activity Collection (ISAAC) Unit Record File provided by SA Health (unpublished) extracted for the SA State of Aboriginal Heart Health Project 22 Nov 2015

Table 85: Reported blood pressure, SA, by Aboriginal status, and for Aboriginal people by age

(Data used in Figure 60)

Blood pressure (18 yrs +)		Low (<120/80)		Normal - high (≥120/80 < 140/90)		High-Severe (> 140/90)	
		n*	%	n*	%	n*	%
Aboriginal		6.7	40%	5.6	34%	4.3	26%
non-Aboriginal		421.3	39%	402.7	38%	248.5	23%
Aboriginal	18-24	2.5	61%	1.4	34%	0.2	5%
	25-34	2.1	51%	1.3	32%	0.7	17%
	35-44	1.1	31%	1.3	36%	1.2	33%
	45-54	0.9	31%	0.8	28%	1.2	41%
	55-64	0.3	20%	0.7	47%	0.5	33%
	65 years +	0.1	13%	0.3	38%	0.4	50%

* Persons (Benchmarked weight) ((000's))

Source: Australian Aboriginal and Torres Strait Islander Health Survey, Nutrition and Physical Activity, 2012-13, Table Builder 2013; Australian Health Survey, Nutrition and Physical Activity, 2011-12, Table Builder 2013

