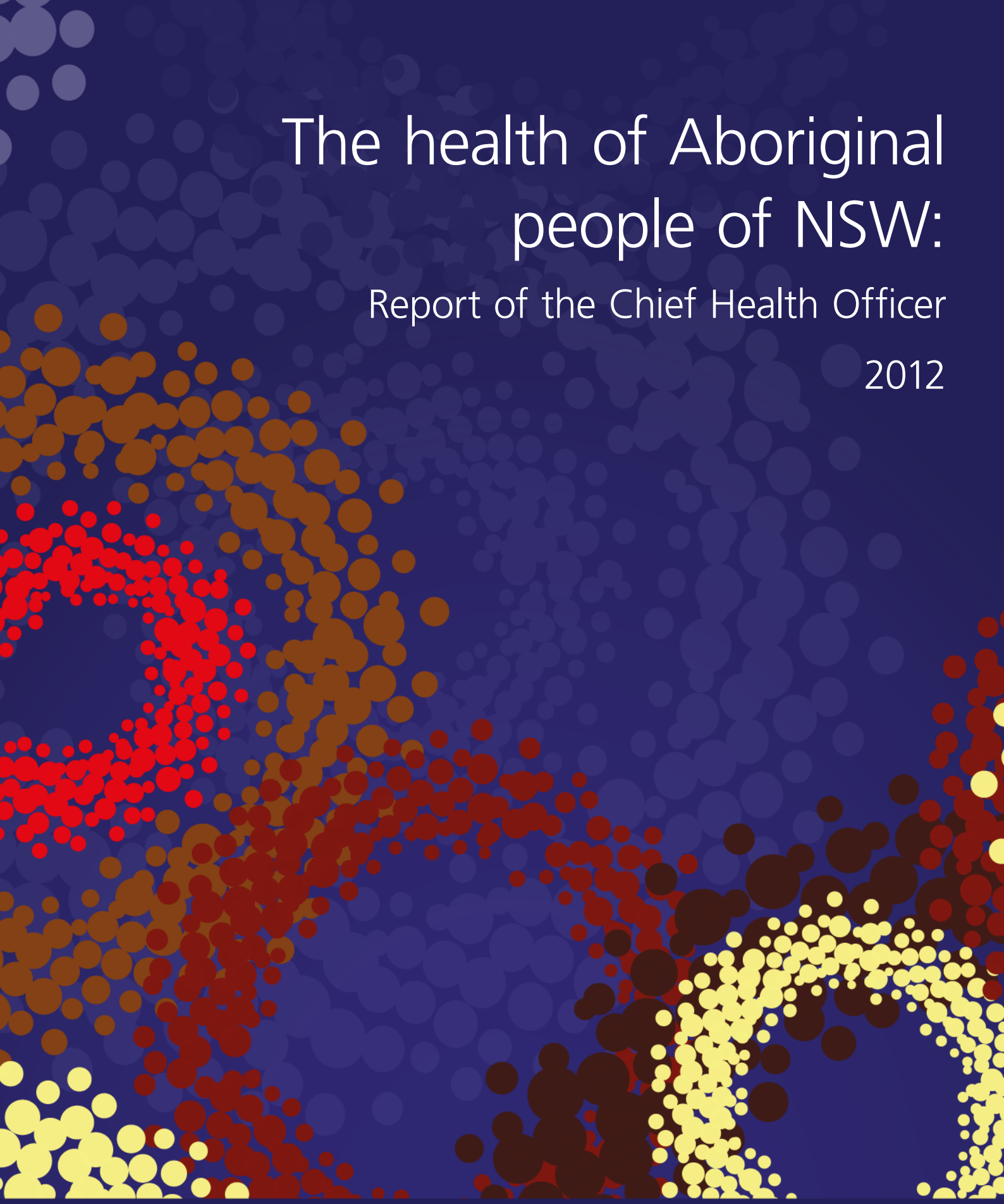
The health of Aboriginal people of NSW:

Report of the Chief Health Officer

2012



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Acknowledgment of Country

The authors acknowledge the traditional custodians of the land of NSW and respect elders past, present and future.

Definition of Aboriginal health

Health to Aboriginal peoples is being able to determine all aspects of life, including control over the physical environment, of dignity, of community self-esteem and of justice. It is not merely the provision of doctors, hospitals, medicines, or the absence of disease and incapacity. Aboriginal health is defined as "not just the physical wellbeing of the individual but the social, emotional and cultural wellbeing of the whole community. This is a whole–of–life view and includes the cyclical concept of life–death–life."

National Aboriginal Health Strategy 1989

Contributors to this Report

The health of Aboriginal people of NSW: Report of the Chief Health Officer represents the efforts of many people and organisations, working together to acknowledge the importance of improving the health of Aboriginal people in NSW. The following list indicates the broad roles played by the many contributors to the Report.

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For technical advice on indicators: Hanna Noworytko and Helen Moore, Centre for Epidemiology and Evidence, Ministry of Health; Kathryn Smith, Demand, Performance and Evaluation, Ministry of Health; Robyn Martin, Mid North Coast Local Health District; Tony Martin, Belinda Border and Aimee Smith, Hunter New England Local Health District.

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Design

NSW Ministry of Health would like to thank Jasmine Sarin for creating the cover artwork, and Dreamtime Public Relations for the graphic design of this Report.

Contents

From the Chief Health Officer

The health of Aboriginal people of NSW: Report of the Chief Health Officer is the first special Report of the Chief Health Officer to focus on the health of Aboriginal people in New South Wales (NSW). It presents population health and health service delivery data in the areas of: life expectancy and child mortality; mothers, babies and child health; risk and protective factors for health; and burden of ill-health. The Report focuses on providing accurate and reliable statistics, and aims to respectfully acknowledge that this information represents Aboriginal people, families and communities, the impact of history, dispossession and marginalisation on health, and the resilience of Aboriginal culture.

The Report provides trend data comparing the health of Aboriginal people to that of non-Aboriginal people, to show where improvements have been made, and where ongoing disparities still exist or have widened. For selected indicators presented, forward trajectories for closing the disparity highlight the effort needed from everyone working in health to enable us to achieve the improved health of Aboriginal people, and to close the gap in health inequality between Aboriginal and non-Aboriginal people. For indicators where the disparities are small, targeted effort may still be needed to address health issues that contribute to the higher burden of disease and injury experienced by Aboriginal people.

The indicators reported were selected to represent those health issues that contribute most to the burden of disease and injury experienced by Aboriginal people in NSW, or where there is a large disparity in terms of both health care and health outcomes for Aboriginal compared with non-Aboriginal people. Many of the indicators presented contribute to national targets and benchmarks set by Australian governments to close the gap in life expectancy and improve the health of Aboriginal and Torres Strait Islander people across Australia. The indicators presented are part of broader public health reporting on the health of the NSW community, many of which are available online at: **www.healthstats.nsw.gov.au**

This Report shows a significant disparity between Aboriginal and non-Aboriginal people across most population health indicators, highlighting the importance of addressing the determinants of health and health risk factors, and the need for NSW Health to work with Aboriginal Community Controlled Health Services and other key stakeholders to ensure effective partnerships in the delivery of comprehensive and holistic preventive care. NSW Health also plays a central role in reducing health disparity by ensuring equitable access to high quality services.

The health of Aboriginal people of NSW: Report of the Chief Health Officer presents an opportunity to reflect on how we can improve health policy and service provision for Aboriginal people in NSW. I encourage health staff to use this Report in their planning processes to ensure all services and programs contribute towards improving the health of Aboriginal people in NSW.

Dr Kerry Chant
Chief Health Officer and Deputy Director-General
Population and Public Health

Executive summary

In this Report, Aboriginal and Torres Strait Islander people are referred to as Aboriginal people in recognition that Aboriginal people are the original inhabitants of NSW.

The health of Aboriginal people of NSW: Report of the Chief Health Officer provides important information on the health of Aboriginal people in NSW and on health service delivery across NSW Local Health Districts. This summary presents progress towards key NSW and national targets, highlighting areas where there have been improvements, and areas that require more targeted effort.

Progress against National Indigenous Reform Agreement 'Closing the Gap' targets

Through the **National Indigenous Reform Agreement**, the NSW Government has committed to close the gap in life expectancy and in child mortality within a generation, by 2033.

Indicator	Target	Progress
Life expectancy	Close the gap in life expectancy within a generation	In NSW in 2005 to 2007: Life expectancy for Aboriginal males was 69.9 years, which is 8.6 years less than for all NSW males. Life expectancy for Aboriginal females was 75.0 years, which is 7.4 years less than for all NSW females (ABS 2009a).
Child mortality	Close the gap in child mortality within a generation	The mortality rate for Aboriginal children in NSW in 2007 was 2.5 times the rate for non-Aboriginal children. There has been no significant change between 1997 and 2007.

Progress against indicators in NSW 2021: A plan to make NSW number one

Indicator	Target	Progress
Reduce smoking rates	Reduce smoking rates by 4% for Aboriginal people by 2015	In 2008, 48% of Aboriginal people in NSW were current smokers. There has been a decrease in smoking rates over the past 10 years for both Aboriginal and non-Aboriginal people.
	Reduce rates of smoking by pregnant Aboriginal women by 2% per year	In NSW in 2010, 48% of pregnant Aboriginal women (and 10% of pregnant non-Aboriginal women) reported being current smokers, decreasing from 59% in 2001. There has also been a significant decrease in the gap between Aboriginal and non-Aboriginal smoking rates in pregnancy.
Reduce overweight and obesity rates	Reduce overweight and obesity rates of children and young people (5–16 years) to 21% by 2015	The data are not available for Aboriginal children and young people due to the small sample size in current surveys. In 2010, the prevalence of combined overweight and obesity among all NSW children and young people was 22.8% (Hardy 2011).
	Stabilise overweight and obesity rates in adults by 2015, and then reduce by 5% by 2020	An estimated 60% of Aboriginal people (and 54% of non-Aboriginal people) reported being overweight or obese in NSW in 2010, an increase from 49% in 2001 (and 45% for non-Aboriginal people).
Reduce total risk drinking	Reduce total risk drinking to below 25% by 2015	In NSW in 2008, Aboriginal people in NSW were less likely to drink alcohol, with 33% of Aboriginal people abstaining compared to 15% of non-Aboriginal people. Approximately 48% of Aboriginal adults drank at low risk levels compared with 51% of the total NSW adult population, and 6% of Aboriginal adults drank at high risk levels compared with 8% of non-Aboriginal adults.

Close the gap in Aboriginal infant mortality	Halve the gap between Aboriginal and non-Aboriginal infant mortality rates by 2018	In NSW in the period 2008 to 2010, the Aboriginal infant mortality rate was 5.2 deaths per 1000 live births (1.3 times the rate for non-Aboriginal infants). There has been a significant decrease in the Aboriginal infant mortality rate over the past 10 years, from 10.9 deaths per 1000 live births (1999 to 2001), and a decrease in the gap between Aboriginal and non-Aboriginal infant deaths.
Reduce potentially preventable hospitalisations	Reduce the age-standardised rate of potentially preventable per cent hospitalisations by 2.5% for Aboriginal people by 2014–15	Potentially preventable hospitalisation rates were 2.5 times higher for Aboriginal people (5771 per 100 000) compared to non-Aboriginal people (2291 per 100 000) in 2010–11 in NSW. In the past 10 years, the rates of potentially preventable hospitalisations have significantly increased for Aboriginal people, with no significant change in the difference in rates between Aboriginal and non-Aboriginal people over this time.

Note: Data for the mental health indicators in **NSW 2021** were not available at the time of publishing this Report.

Summary of trends: areas of improvement and areas of continuing concern that require targeted effort

Life expectancy and child mortality

Improvements

- The mortality rate for Aboriginal infants has decreased significantly over the past 10 years, and the difference in rates between Aboriginal infants and all NSW infants has narrowed. However the rate for Aboriginal infants continues to be 1.3 times the rate for all non-Aboriginal infants.
- The rate of avoidable deaths for Aboriginal males in NSW has decreased significantly over the past 10 years, and the gap in avoidable deaths between Aboriginal and non-Aboriginal males has decreased.

Continuing concern

- The gap in life expectancy between Aboriginal people and the total NSW population is 8.6 years for males and 7.4 years for females. Trend data are not available due to changes in statistical methods.
- There has been no significant change in mortality rates for Aboriginal children less than 5 years of age, and no significant change in the difference between Aboriginal children and non-Aboriginal children. The mortality rate for Aboriginal children was 2.5 times the rate for non-Aboriginal children in 2007.
- The mortality rate for Aboriginal people is 1.5 times higher than the rate for non-Aboriginal people and there has been no significant change over the past 10 years. The leading causes of death for Aboriginal people in the period 2003 to 2007 were cardiovascular disease (31%), cancers (21%), and injury and poisoning (12%).
- The rate of avoidable deaths for Aboriginal women has not changed over the past 10 years.

Health of mothers, babies and children

Improvements

- There has been a significant decrease in the proportion of babies born to Aboriginal mothers who are of low birth-weight, from 14% in 2001 to 11% in 2010.
- There has been a significant increase in the proportion of Aboriginal mothers attending antenatal care before 14 weeks' gestation over the past 10 years, from 64% in 2001 to 80% in 2010, and a significant decrease in the difference in attendance rates between Aboriginal and non-Aboriginal women.
- The proportion of Aboriginal women who reported smoking during pregnancy has decreased over the past 10 years, from 59% in 2001 to 48% in 2010.

Continuing concern

- There has been no significant change in the disparity in rates between low birth-weight babies born to Aboriginal and non-Aboriginal mothers.
- Over the past 10 years there has been no significant change in the proportion of babies that are preterm born to Aboriginal mothers, and no significant change in the disparity in prematurity rates between babies born to Aboriginal and non-Aboriginal mothers. In 2010, 12% of babies born to Aboriginal mothers were preterm.
- Aboriginal women were 4.8 times more likely to report smoking during pregnancy than non-Aboriginal women in 2010.
- Aboriginal children are 1.2 times more likely to be hospitalised than non-Aboriginal children, and the rates of hospitalisations for Aboriginal children are increasing. This increased rate may reflect a greater need for hospitalisation which is of continuing concern; however it may also indicate improved access to hospitals and improved reporting of Aboriginal people. Compared with non-Aboriginal children, Aboriginal children aged less than 5 years are more likely to be admitted for skin conditions, respiratory diseases, injury and infectious diseases than non-Aboriginal children.
- Aboriginal children experience more dental decay than non-Aboriginal children. For children aged 5–6 years, the average number of decayed, missing or filled teeth was 3.0 for Aboriginal children and 1.4 for non-Aboriginal children.

Risk and protective factors for health

Improvements

- There has been a decrease in smoking rates over the past 10 years for both Aboriginal and non-Aboriginal people.
- The 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) results for NSW indicated 48.2% of Aboriginal people (15 years and over) were current smokers, 29.9% had never smoked, and the remaining 21.9% were ex-smokers (ABS 2009b). In comparison with the total NSW population from the National Health Survey 2007–08, 21.6% were current smokers, 46.8% had never smoked and 31.6% were ex-smokers.

Continuing concern

- In NSW in 2008, 48% of Aboriginal people (15 years and over) and 22% of the total NSW population were current smokers.
- An estimated 60% of Aboriginal people (and 54% of non-Aboriginal people) reported being overweight or obese in NSW in 2010, an increase from 49% in 2001 (and 45% for non-Aboriginal people).
- In the period 2009 to 2010, the 2-yearly breast screening rate for Aboriginal women aged 50–69 years was 36% compared with 53% for all NSW women aged 50–69 years.
- Aboriginal people are less likely to be vaccinated against influenza than non-Aboriginal people. In the past 10 years, vaccination against influenza has increased in non-Aboriginal people and has remained constant in Aboriginal people.

Burden of ill-health

Continuing concern

- Hospitalisation rates for Aboriginal people are 1.7 times the rate for non-Aboriginal people. In the past 10 years, there has been a greater increase in hospitalisation rates for Aboriginal people than for non-Aboriginal people, and an increase in the difference in hospitalisation rates between Aboriginal and non-Aboriginal people. This increased rate may reflect a greater need for hospitalisation which is of continuing concern; however it may also indicate improved access to hospitals and improved reporting of Aboriginal people.
- Aboriginal people were 2.7 times more likely to be hospitalised for diabetes than non-Aboriginal people which reflects the higher prevalence of diabetes among Aboriginal people. The rate for Aboriginal people has increased significantly over the past 10 years.
- Hospitalisation rates for Aboriginal people for cardiovascular disease, stroke, chronic obstructive pulmonary disease and chronic kidney disease have increased significantly over the past 10 years, and there has been a significant increase in the difference in hospitalisation rates between Aboriginal and non-Aboriginal people for all these causes.

- Over the past 10 years, Aboriginal people had higher notification rates of newly acquired hepatitis C and meningococcal disease than non-Aboriginal people, and higher hospitalisation rates for influenza and pneumonia.
- In 2010, Aboriginal people were estimated to be 2.2 times more likely to report high or very high levels of psychological distress than non-Aboriginal people, and were 2.9 times more likely to be hospitalised for intentional self-harm than non-Aboriginal people.
- In the past 10 years there has been a significant increase in the hospitalisation rate for injury and poisoning for Aboriginal people, and a significant increase in the gap between Aboriginal and non-Aboriginal people. This is likely to reflect a greater occurrence of injury among Aboriginal people, and may also indicate improved access to hospitals and improved reporting of Aboriginal people.
- In the period 1999 to 2007 in NSW, Aboriginal males were diagnosed with cancer at 1.1 times the rate for the total male population, and Aboriginal females were diagnosed with cancer at a rate of 1.1 times higher than the total female population.

Health services delivery

Improvements

- Over the past 10 years, the proportion of Aboriginal people who discharge from hospital against medical advice has decreased, and the gap between the proportion of Aboriginal and non-Aboriginal people who discharge against medical advice has decreased.

Continuing concern

- Aboriginal people were 4.3 times more likely to discharge against medical advice than non-Aboriginal people in the past 10 years.
- Admission rates for potentially preventable hospitalisations are 2.5 times higher in Aboriginal than non-Aboriginal people, with no significant change in the difference between Aboriginal and non-Aboriginal people in the past 10 years.
- In NSW in 2010–11, unplanned readmissions to hospital within 28 days were 1.3 times higher among Aboriginal people (6.3% of all admissions compared to 8.1%). There has been no significant change in the rate over the past 10 years, and no significant change in the difference between Aboriginal and non-Aboriginal people.
- In NSW in 2010, Aboriginal people were 20% less likely to access high volume surgical procedures than non-Aboriginal people.
- Aboriginal people are significantly less likely to receive revascularisation procedures than non-Aboriginal people. While the rate of procedures for Aboriginal people has increased over the past 10 years, there has been no significant change in the gap between the rates for Aboriginal and non-Aboriginal people.
- Aboriginal people have lower rates of cataract procedures than non-Aboriginal people, despite a higher prevalence of cataracts.

While the rate of cataract procedures for Aboriginal people has increased over the past 10 years, there has been no significant change in the gap between rates for Aboriginal and non-Aboriginal people.

- Aboriginal people are more likely to leave the Emergency Department before completing treatment than non-Aboriginal people in the past 10 years.
- Aboriginal people are more likely to re-present to the same Emergency Department within 48 hours of a previous presentation.

Re-presentation rates have increased significantly over the past 10 years, and the gap between rates for Aboriginal and non-Aboriginal people has increased.

Note: Only trends that are statistically significant ($p < 0.05$) are reported. Where there is no statistically significant trend, 'no significant change' is reported.

Introduction

The health of the people of NSW: Report of the Chief Health Officer has been produced regularly since 1996 and is a flagship publication of the NSW Ministry of Health. The hard copy Report has changed from 2012 and will provide either an in-depth picture of the health of a particular sub-population or health issue in NSW rather than an overview of the health of the total population of NSW as in past editions. Indicators of the health of the whole population of NSW are now provided in the web-based reporting application **Health Statistics NSW (**accessible at **www.healthstats.nsw.gov.au**).

This 2012 edition of the **Report of the Chief Health Officer** is a special Report on the health of Aboriginal people in NSW. Increased reporting will facilitate improved monitoring of progress towards closing the gap between Aboriginal and non-Aboriginal people across key population health and health system indicators, in the following five areas:

1. **Life expectancy and child mortality**
2. **Health of mothers, babies and children**
3. **Risk and protective factors for health**
4. **Burden of ill-health**
5. **Health service delivery**

Key policies that include indicators relevant to understanding and monitoring the health of Aboriginal people include the **National Health Care Agreement** (COAG 2008), the **National Indigenous Reform Agreement** (COAG 2009c), the **Aboriginal and Torres Strait Islander Health Performance Framework** (Australian Government 2011), and **NSW 2021: A plan to make NSW number one**, which outlines Aboriginal health targets for NSW (NSW Government 2011).

The term 'closing the gap' refers to a policy commitment in 2008 made by all Australian governments through the Council of Australian Governments (COAG) to close the gap in life expectancy between Aboriginal and non-Aboriginal people within a generation. This term is used throughout this Report to refer to the disparity between Aboriginal and non-Aboriginal people in NSW in accessing health services, receiving equitable care, and experiencing the same health outcomes as non-Aboriginal people. Although there is a policy focus on 'closing the gap', improving the health of Aboriginal people is the most important goal, whether there is inequality between Aboriginal and non-Aboriginal people or not. Further information on state and national plans is provided in Appendix 3.

Aboriginal people in NSW

In 2011 an estimated 172 621 Aboriginal people were living in NSW, comprising 2.5% of the total population and 31.5% of the total Aboriginal population in Australia. More Aboriginal people live in NSW than in any other state or territory. The Aboriginal population of NSW is younger, with approximately 36% of the population less than 15 years of age, compared with 19% of the non-Aboriginal population. The proportion of the Aboriginal population aged 65 years or older is approximately 4% compared with 15% of the non-Aboriginal population (ABS 2011).

There is a large disparity in estimated life expectancy and health outcomes between Aboriginal and non-Aboriginal people in NSW. Aboriginal people experience significant socioeconomic disadvantage compared with non-Aboriginal people, which has a major impact on the health of individuals, families and communities.

Estimating the size and composition of the Aboriginal population of NSW is difficult for a range of reasons, in particular the under-reporting of Aboriginal people in administrative data collections. Accurate reporting is usually better in rural and remote regions than in major cities (NSW Health 2010c).

The health system in NSW

The health system in NSW is complex, with responsibility for service provision shared across a range of stakeholders. The NSW Ministry of Health, Local Health Districts, Medicare Locals, the Aboriginal Health and Medical Research Council of NSW and Aboriginal Community Controlled Health Services are key providers of strategic policy, planning and services in Aboriginal health. Aboriginal Community Controlled Health Services, general practitioners and community health services play a central role in the provision of primary health care and integration of care across primary, secondary and tertiary health services. Medical specialists working in both the public and private system, and hospitals, also play a critical role in providing care, and making sure Aboriginal people are able to access services and procedures at rates that are equitable to non-Aboriginal people, and relative to need.

Key stakeholders in the NSW health system are listed below:

- NSW Ministry of Health supports the executive and statutory roles of the NSW Minister for Health and for Medical Research and monitors the performance of the NSW public health system.
- Local Health Districts, of which there are 15 in NSW (plus two specialist networks and the St Vincent's Health network), provide and purchase services for the population of their District.
- Aboriginal Health and Medical Research Council of NSW is the peak representative body for Aboriginal Community Controlled Health Services (ACCHSs).
- Aboriginal Community Controlled Health Services deliver culturally appropriate, comprehensive primary health care to their communities, and represent self-determination in the provision of holistic health care.
- Medicare Locals are primary health-care organisations established to coordinate the primary health care delivered by general practitioners and community health providers, and address local health-care needs and service gaps.
- The four pillars: the Agency for Clinical Innovation, the Bureau of Health information, the Clinical Excellence Commission, the Health Education and Training Institute and the Cancer Institute is another health statutory body.
- Health and medical research organisations.
- Non-government health and health-related organisations.
- Service providers – in addition to the above, key clinical and other service providers include general practitioners, medical specialists, nurses, allied health providers, Aboriginal Health Workers, researchers and other health-related professionals.

The data in this Report

Indicators included in the Report

Health indicators provide a measured estimation of health concerns, and the extent of health issues within a population. They are used to monitor the quality and effectiveness of the health system in meeting the needs of Aboriginal people. The indicators presented in this Report were selected to represent health issues that contribute most to the burden of disease and injury experienced by Aboriginal people in NSW, or where there is a large disparity in terms of both health care and health outcomes for Aboriginal compared with non-Aboriginal people. Many of the indicators presented contribute to national targets and benchmarks set by all Australian governments to close the gap in life expectancy and improve the health of Aboriginal people, and align with those already publicly reported for monitoring health (Australian Government 2011). The indicators presented in the Report are part of broader public health reporting on the health of the entire NSW community. Many of the indicators are available online at Health Statistics NSW: **www.healthstats.nsw.gov.au**

Data sources and data quality

There are well documented limitations to the quality and availability of data in NSW on health service use and health outcomes for Aboriginal people:

- Life expectancy estimates are limited in that they are only calculated every 5 years based on the Census. Due to changes in methodology, trend information is not available.
- Under-reporting of Aboriginal people in NSW health data sets impacts on many aspects of reporting on the health of Aboriginal people. Under-reporting creates uncertainty about the size and composition of the Aboriginal population in NSW, the estimated size of health issues reported, and the size of the difference between Aboriginal and non-Aboriginal people in terms of health service use and health status.
- The limited availability of data to provide a complete picture of some health issues. Ideally information on prevalence and incidence, primary health care and medication use would be reported for health issues covered in this Report. For some indicators, only information on hospitalisations is available, which does not reflect the true burden of disease, particularly for conditions that generally do not require hospitalisation or are usually treated through primary health care.
- Population health information on risk and protective factors (such as smoking rates) and perceived health status can be limited by small sample size in currently available surveys. The accuracy of information from surveys can be limited, as the information is self-reported and is often collected by telephone, which requires people surveyed to have a telephone land line. This may result in a sample of people that does not accurately represent the broader Aboriginal population, and therefore may underestimate, or overestimate the extent of health issues.

This Report is based on the best available data at the time of publication. Wherever possible, steps have been taken to account for the factors described previously in the analysis.

Only trends that are statistically significant (to a p-value of < 0.05) are reported. They are described as being 'significant'. Where there is no statistically significant trend, 'no significant change' is reported. Where available, information on Aboriginal and non-Aboriginal people is presented. Otherwise, indicators are reported for Aboriginal people and the total population.

NSW Health is working to improve the quality of data collected and information reported on the health of Aboriginal people, and on services delivered to Aboriginal people. Chapter 5 reports information on many health service delivery indicators for the first time by Local Health District disaggregated by Aboriginality. In particular, it provides information on the under-reporting of Aboriginal people in NSW Health data collections by Local Health District, the result of a data linkage project completed over the past 3 years. Health Statistics NSW, which was launched in December 2011, is an interactive web-based application that includes information in parts of this Report and is available at: **www.healthstats.nsw.gov.au**

For further information on data sources, and data quality and limitations, please refer to Appendix 1.

Guide to interpreting Figures

Some Figures report indicators by financial year (1 July–30 June) and others by calendar year (1 January–31 December). The type of year is determined by the source of the data used for a particular indicator. Where data are reported by financial year, the format 2010–11 is used. The latest available information is presented, including hospitalisation data to 2010–11, deaths data to 2007, NSW Adult Population Health Survey data to 2010, mothers and babies data to 2010, cancer incidence data to 2007, and communicable diseases data to 2011. Throughout the Report, information on trends for 'the past 10 years' is described. 'The past 10 years' refers to the 10 years before the latest year of data. For most indicators this usually refers to the years 2001 to 2011, or 2001–01 to 2010–11, depending on the data source used for that indicator.

There is potential for updates to be made to the information in this Report. For the most up-to-date information, please refer to Health Statistics NSW: **www.healthstats.nsw.gov.au**

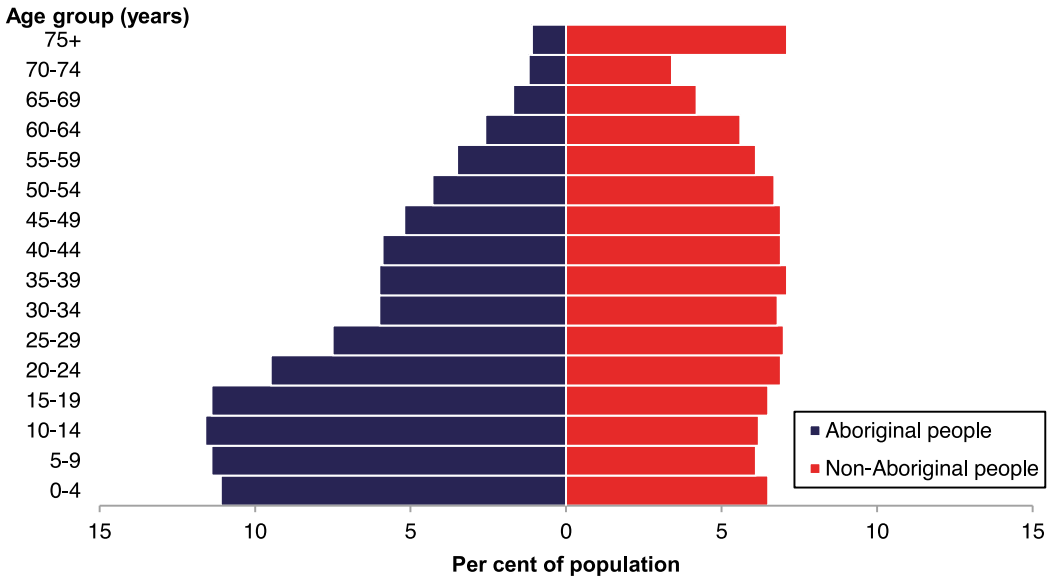
A number of sections contain graphs of 'age-standardised rates', and 'trajectories required to close the gap by 2033'. The following sections explain these terms and how to correctly interpret information in the graphs.

Age-standardised rates

The Aboriginal population in NSW has a much higher proportion of young people when compared with the non-Aboriginal population (Figure 1). Since most health-related problems change with age, it is important to account for this difference in the population structure when comparing rates in the Aboriginal population with rates in the non-Aboriginal population. For example, a health issue that is more common in older age may appear to have a lower rate in the Aboriginal population, but is due to a smaller percentage of the Aboriginal population being of older age. Age-standardisation of rates takes this effect into account by applying the Aboriginal and non-Aboriginal rates within each age group to the same standard Australian population.

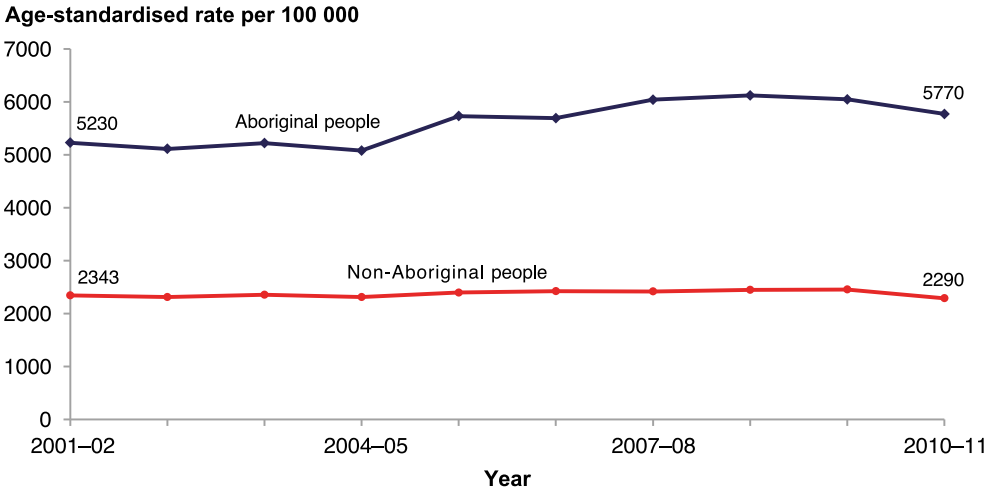
Figure 2 shows the trend graphs used in this Report. It indicates the trend in potentially preventable hospitalisation rates for Aboriginal and non-Aboriginal people in NSW. Since the data used to produce this graph (NSW Admitted Patient Data Collection) are reported by financial year, information is shown for the 10-year period 2001–02 to 2010–11. After adjusting for the different age distributions, the age-standardised rate of potentially preventable hospitalisations per 100 000 people in the Aboriginal population is higher than that for non-Aboriginal people.

Figure 1: Estimated population by Aboriginality and age, NSW, 2011



Source: ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 2: Potentially preventable hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Note: After July 2010, rates were affected by a significant change in coding standards for diabetes, a substantial contributor to total preventable hospitalisations. See Figure 47.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

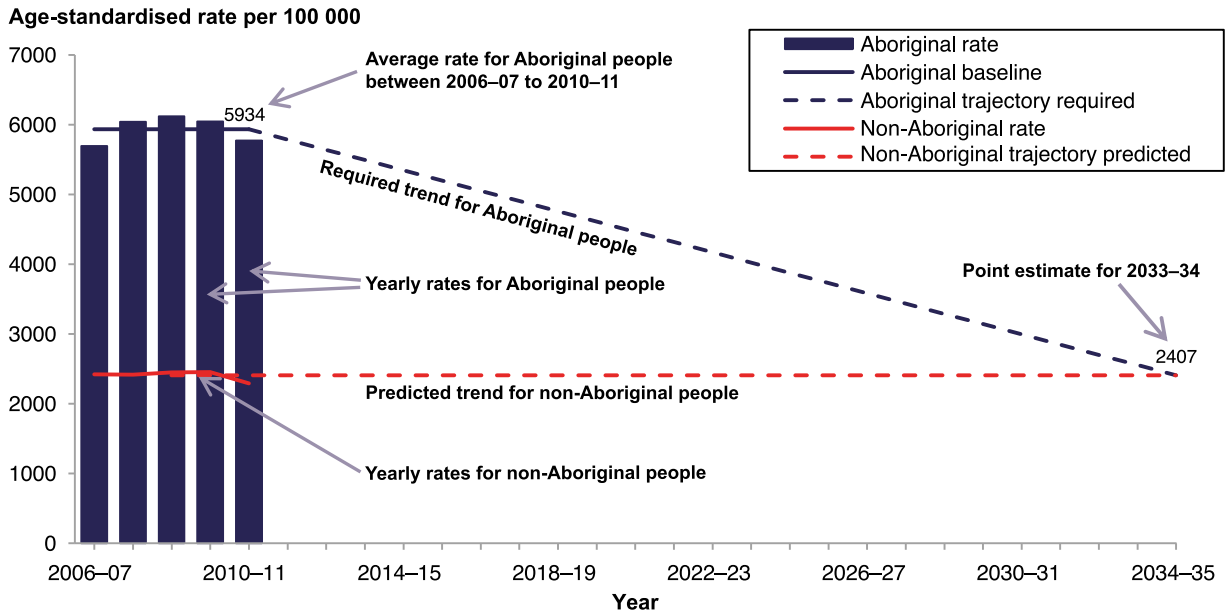
Smoothed estimates for self-reported population health data

Where NSW Adult Population Health Survey data are used, indicators are presented as 'smoothed estimates' of trend over time. This statistical method accounts for the large amount of year-to-year variability due to the small numbers of Aboriginal people surveyed. These estimates should be interpreted as an indication of trend, not as yearly estimates of actual rates.

Required trajectories to close the gap

Where indicators have been defined as key targets for closing the gap, the Figures show a 'required trajectory' to close the gap in health between Aboriginal and non-Aboriginal people within a generation (by 2033). In other words, the graph shows the projected figures for the years ahead that would need to be achieved for the disparity in health to disappear. For example, Figure 3 gives the required trajectory to close the gap for the indicator 'potentially preventable hospitalisations'. The rate for non-Aboriginal people has remained constant over the past 10 years. Assuming that this rate remains constant until 2033, the Aboriginal trajectory shown is the downward trend that would be required for the rate for Aboriginal people to equal the rate for non-Aboriginal people in 2033.

Figure 3: Annotated required trajectory to close the gap in potentially preventable hospital admissions between Aboriginal and non-Aboriginal people in NSW in 2033



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 1: Life expectancy and child mortality

This chapter presents information on life expectancy and mortality indicators for Aboriginal children and adults. Higher rates of diseases, lower life expectancy and early death are experienced by Aboriginal people for many reasons, including: a history of dispossession, poor community and social capital, low socioeconomic status, impaired access to and quality of health and other services, health-related behaviours and environmental factors. The greatest contributors to higher mortality rates and excess deaths in Aboriginal people are chronic disease and injury (Vos et al. 2007). These conditions are largely preventable, or respond well to early intervention and appropriate treatment through effective primary health care and hospital care. When sick, Aboriginal people are more likely to die than non-Aboriginal people, highlighting the importance of ensuring equitable and timely access to culturally-competent health services (Vos et al. 2007). Access to high quality antenatal care for Aboriginal families is also critical for improving health outcomes in early childhood and later life (Australian Government 2008).

The difference in life expectancy between Aboriginal people and the general population is estimated to be 7–9 years, in NSW. This is substantially lower than previous estimates, however it does not represent an improvement in estimated life expectancy, rather a change in statistical methods.

Trajectories have been provided for indicators which have agreed national targets for closing the gap. These are broad projections of the improvements in health outcomes for Aboriginal people that are required over time in order to close the gap in life expectancy between Aboriginal and non-Aboriginal people. More information about the methodology used and the limitations of the data are shown in Appendix 1, Section 1.3.

Improving the health of Aboriginal and Torres Strait Islander peoples and closing the gap in life expectancy and child mortality rates between Aboriginal and Torres Strait Islander people and non-Indigenous Australians is a key target for the Council of Australian Governments (COAG) under the **National Indigenous Reform Agreement** (COAG 2009c), and for the NSW Government under **NSW 2021** (NSW Government 2011).

Readers of this chapter should note that only trends that are statistically significant (to a p-value of < 0.05) are reported as 'significant'. No statistically significant trend is reported as 'no significant change'. Where the relevant information is available, indicators are reported for Aboriginal and non-Aboriginal people. Otherwise, indicators are reported for Aboriginal people and the total population.

Key facts

- Life expectancy at birth for Aboriginal males in NSW in the period 2005 to 2007 was estimated to be 69.9 years, 8.6 years less than for all NSW males.
- Life expectancy at birth for Aboriginal females in NSW in the period 2005 to 2007 was estimated to be 75 years, 7.4 years less than for all NSW females.
- For the period 2008 to 2010, the infant mortality rate for Aboriginal infants in NSW was 5.2 deaths per 1000 live births, compared with 4.1 deaths per 1000 live births for all non-Aboriginal infants.
- The child mortality rate for Aboriginal children aged less than 5 years is 2.5 times the rate for non-Aboriginal children.
- Aboriginal and non-Aboriginal adults have the same leading causes of deaths: cardiovascular disease and cancers.
- Compared to non-Aboriginal people, Aboriginal people have higher rates of death due to: injury and poisoning; digestive system disease; endocrine diseases; maternal, neonatal and congenital conditions; and certain infectious and parasitic diseases.

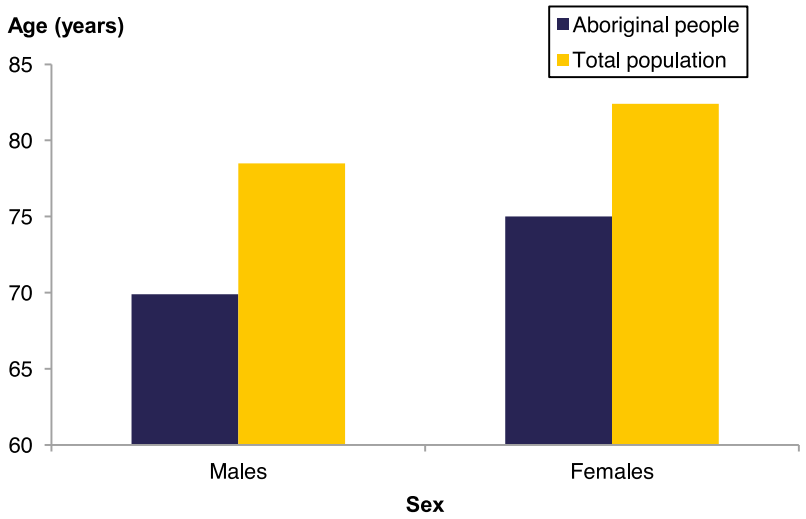
1.1 Life expectancy at birth

Health issue: Life expectancy is the average number of years a person could expect to live, assuming that the current rates of death for each age group will remain the same for the lifetime of that person. Life expectancy provides a key measure of the health of a population. It reflects the combined impact of socioeconomic factors including employment, income, education, social capital including social inclusion and self-determination, access to high quality health care throughout life, health behaviours and environmental factors (Australian Government 2011).

Health disparity: Life expectancy at birth for Aboriginal males in NSW in the period 2005 to 2007 was estimated to be 69.9 years, which is 8.6 years less than for the total NSW male population. Life expectancy at birth for Aboriginal females in the period 2005 to 2007 was estimated to be 75 years, 7.4 years less than for the total NSW female population (Figure 4) (ABS 2009a). Changes in life expectancy over recent times are not available due to changes in the statistical methods used for estimating life expectancy (ABS 2009a).

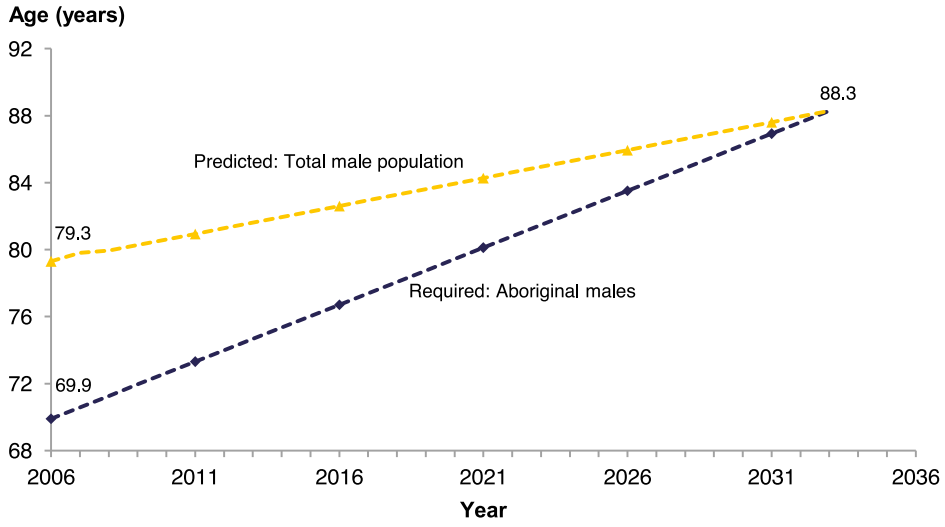
Closing the gap: The trajectory required to close the gap in life expectancy estimates between Aboriginal people and the general population by 2033 is shown in Figure 5 for males and Figure 6 for females. Achieving the target of closing the gap in life expectancy by 2033 will require action that addresses health, social, economic and environmental factors that impact throughout life, with targeted efforts in the prevention of disease (Vos et al. 2007).

Figure 4: Life expectancy at birth by Aboriginality and sex, NSW, 2005 to 2007



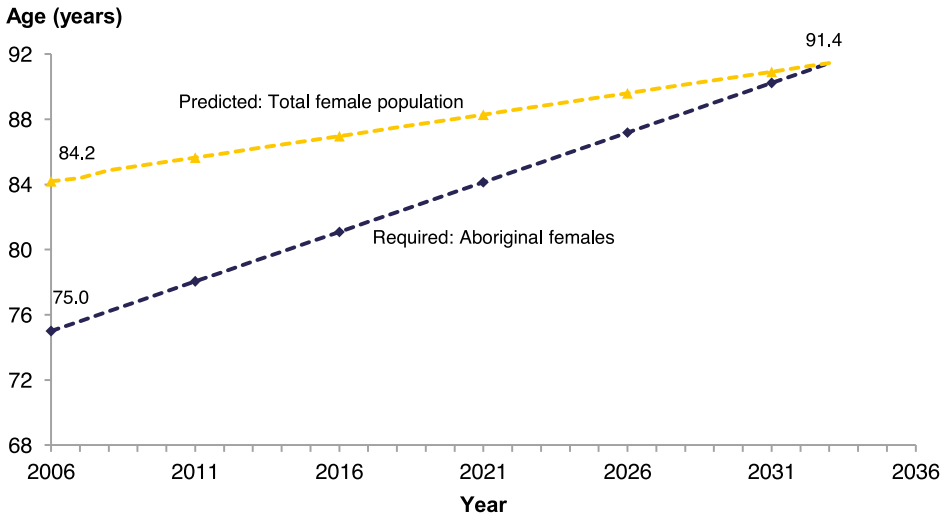
Source: Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007. Catalogue number 3302.0.55.003. Canberra: ABS, May 2009. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 5: Life expectancy at birth by Aboriginality, trajectory required to close the gap, males, NSW, 2006 to 2033



Source: Aboriginal estimate for 2006: Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007. Catalogue number 3302.0.55.003. Canberra: ABS, May 2009. non-Aboriginal estimate for 2006: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 6: Life expectancy at birth by Aboriginality, trajectory required to close the gap, females, NSW, 2006 to 2033



Source: Aboriginal estimate for 2006: Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007. Catalogue number 3302.0.55.003. Canberra: ABS, May 2009. non-Aboriginal estimate for 2006: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

1.2 Infant and child mortality

Health issue: The perinatal mortality rate is the number of stillbirths and deaths within 28 days of birth per 1000 total births. Infant mortality is defined as the death of a live-born baby within the first year of life. Child mortality is the number of deaths among children aged 0–4 years. These are key indicators of the general health and wellbeing of a population (NSW Health 2008a). The most common causes of infant mortality and child mortality in Aboriginal children are conditions originating in the perinatal period such as prematurity, problems with foetal growth, complications of pregnancy and respiratory and cardiovascular disorders specific to the perinatal period (Australian Government 2008).

Health disparity: In 2010, the perinatal death rate for infants of Aboriginal mothers was 13.4 per 1000 births and 8.0 per 1000 births of non-Aboriginal mothers (Figure 7). This difference is significant, with the perinatal death rate for Aboriginal children being 1.7 times the rate for non-Aboriginal children. There was no significant change in the perinatal death rate for Aboriginal mothers between 2001 and 2010.

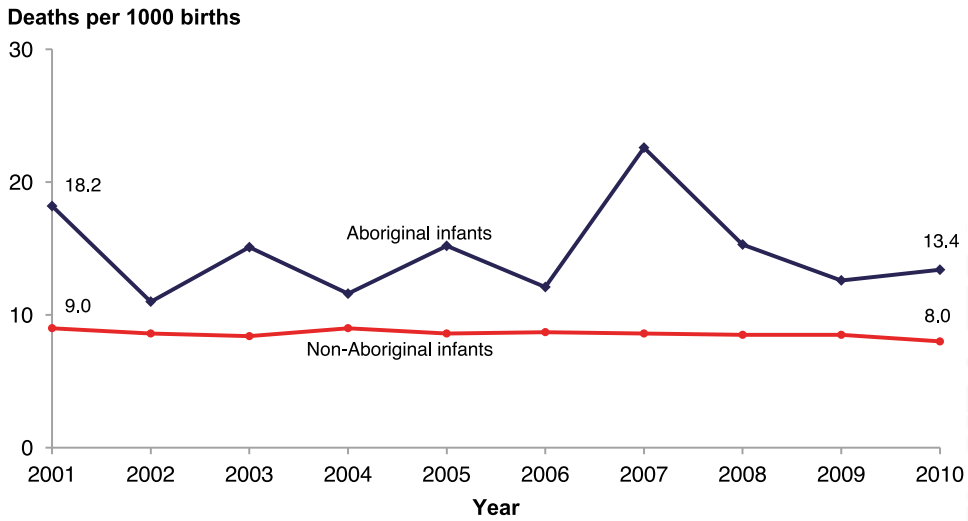
In the period 2008 to 2010, the infant mortality rate for Aboriginal infants in NSW was 5.2 deaths per 1000 live births, compared with 4.1 deaths per 1000 live births for non-Aboriginal infants. This difference is significant, with the Aboriginal infant mortality rate 1.3 times the non-Aboriginal infant mortality rate. There has been a significant decrease in the Aboriginal infant mortality rate over the past 10 years, from 10.9 deaths per 1000 live births in the period 1999 to 2001, and a significant decrease in the gap in rates between Aboriginal infants and non-Aboriginal infants in the years 1999 to 2010 (Figure 8).

In 2007, the mortality rate for Aboriginal children less than 5 years of age was 234 deaths per 100 000; the rate for non-Aboriginal children less than 5 years of age was 91 deaths per 100 000 (Figure 9). This difference is significant, with the child mortality rate for Aboriginal children being 2.5 times the rate for non-Aboriginal children. There was no significant change in Aboriginal child mortality rates between 1998 and 2007.

Closing the gap: Reducing infant and child mortality rates requires addressing access to antenatal and obstetric services and the quality of population health strategies, as well as broader issues such as social and community cohesion, socioeconomic and environmental factors and behavioural risk and protective factors (Australian Government 2011).

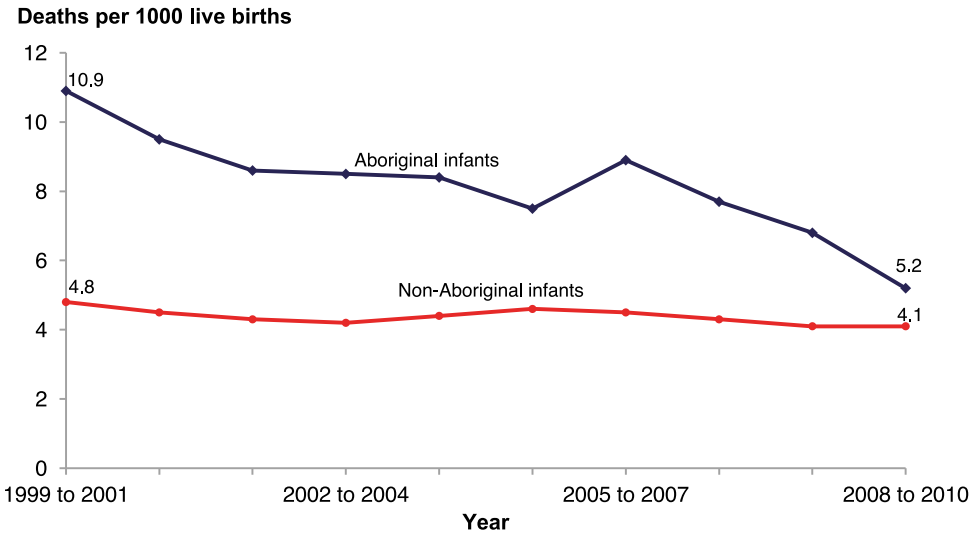
To close the gap in mortality rates, in 2010 approximately 17 fewer perinatal deaths of Aboriginal babies would have been required (from a total of 42 Aboriginal perinatal deaths), approximately eight fewer Aboriginal infant deaths would have been required in 2009 (from approximately 15 Aboriginal infant deaths), and approximately 27 fewer deaths of Aboriginal children would have been required in 2007 (from a total of 44 Aboriginal child deaths).

Figure 7: Perinatal deaths by mother's Aboriginality, infants aged 28 days or less, NSW, 2001 to 2010



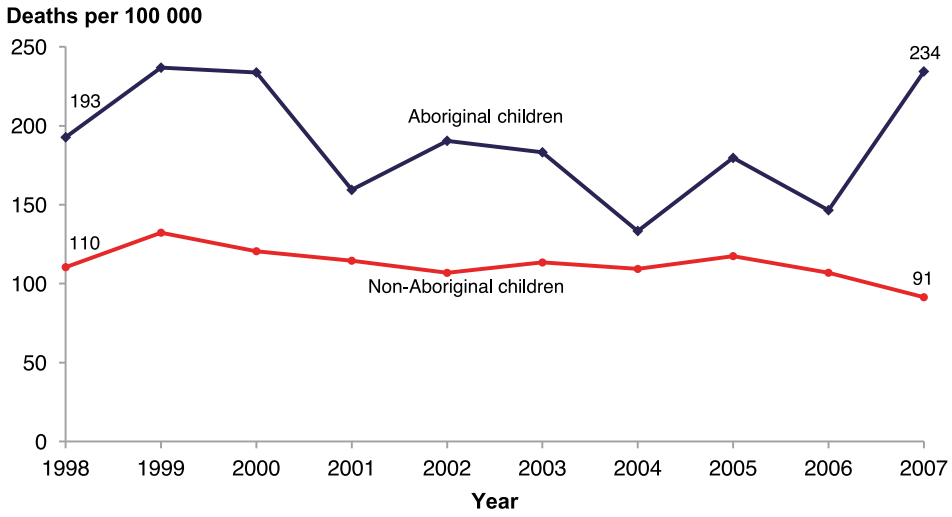
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 8: Infant deaths by Aboriginality, NSW, 1999 to 2010



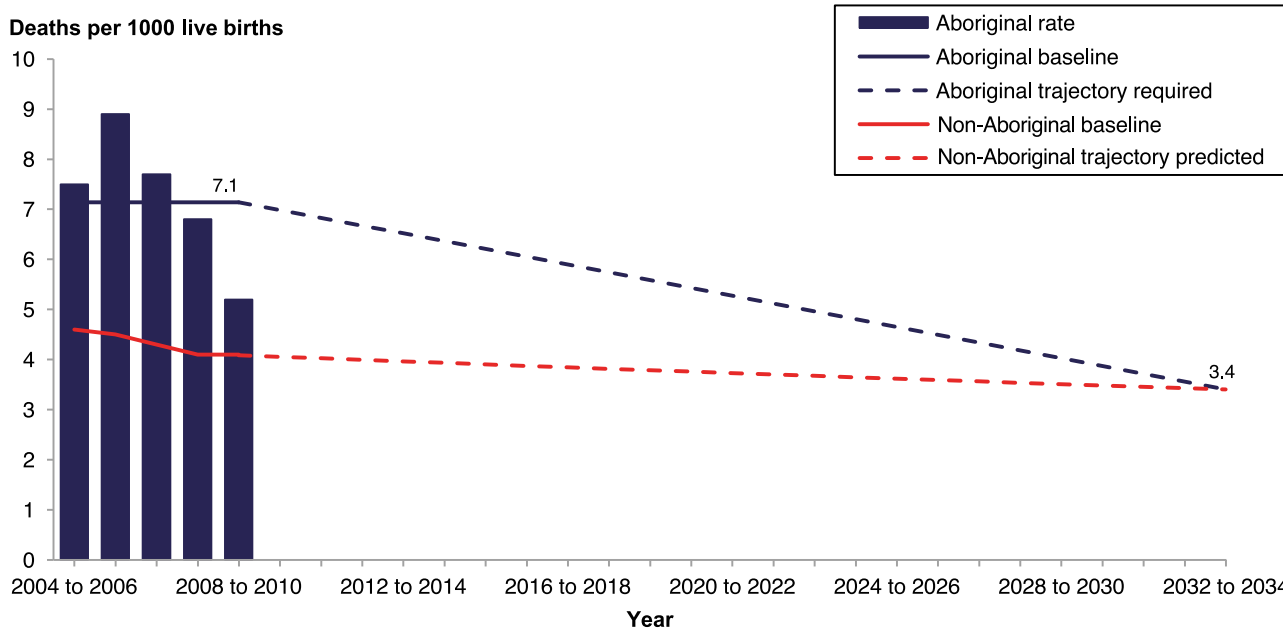
Source: Australian Bureau of Statistics. Deaths. Catalogue number 3302.0. Canberra: ABS, 2010. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 9: Deaths from all causes by Aboriginality, children aged 0–4 years, NSW, 1997 to 2007



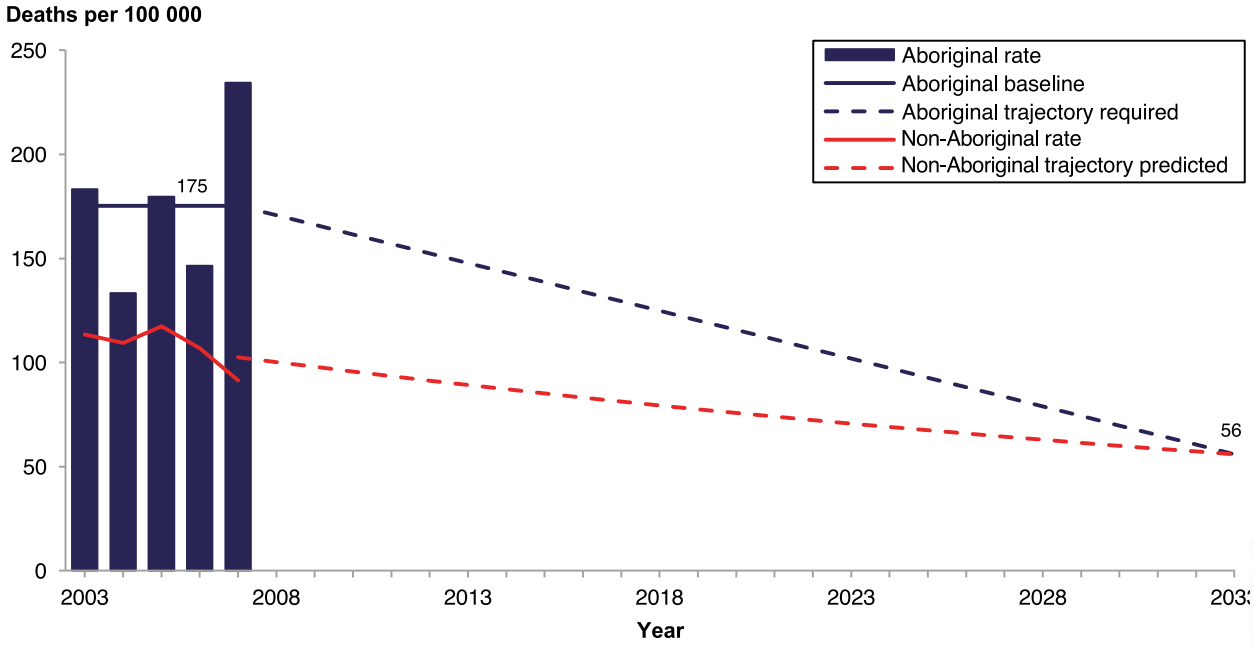
Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 10: Infant death rates by Aboriginality, trajectory required to close the gap in NSW by 2033



Source: Australian Bureau of Statistics. Deaths. Catalogue number 3302.0. Canberra: ABS, 2010. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 11: Child (0–4 years) death rates by Aboriginality, trajectory required to close the gap in NSW by 2033



Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

1.3 Death rates and causes of death

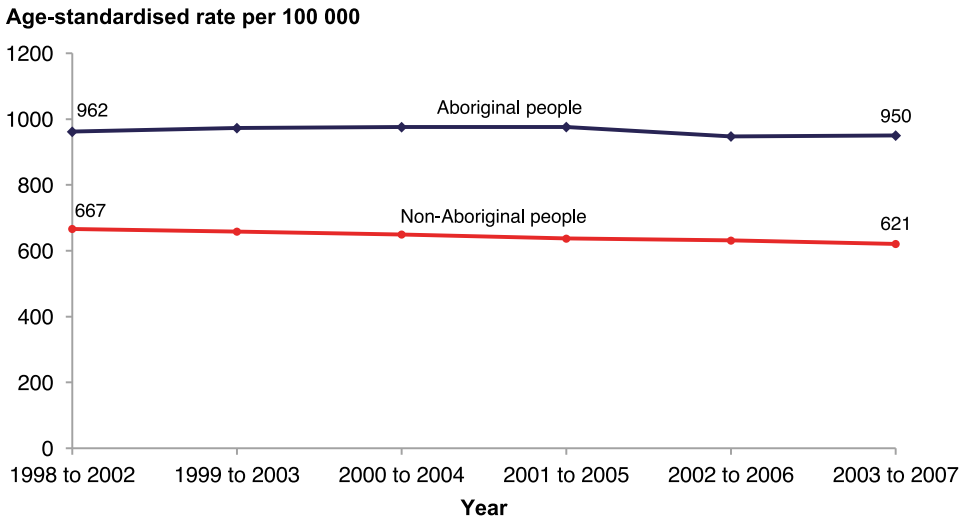
Health issue: Deaths from all causes, expressed as the mortality of a population, provides a summary measure of the overall health status of a population and is used to monitor change in health status over time. Causes of death provide information on the diseases that contribute to higher deaths rates among Aboriginal people. They reflect the quality of population health strategies, health service delivery, as well as broader issues such as social and community cohesion, socioeconomic and environmental factors and behavioural risk and protective factors (Australian Government 2011).

Health disparity: In the period 2003 to 2007, the death rate for Aboriginal people in NSW was 950 deaths per 100 000 compared with 621 deaths per 100 000 for non-Aboriginal people. This difference is significant, with the rate for Aboriginal people being 1.5 times higher than for non-Aboriginal people (Figure 12). There has been no significant change over this time in death rates for Aboriginal people.

In the period 2003 to 2007, the leading causes of death for Aboriginal adults were cardiovascular disease (30.8%), cancers (21.1%) and injury and poisoning (11.7%). In the same period, the leading causes of death for non-Aboriginal people were cardiovascular diseases (36.5%), cancers (28.6%) and respiratory diseases (8.7%) (Figure 13). Aboriginal people had a higher proportion of deaths due to injury and poisoning, digestive system diseases, endocrine diseases, ill-defined and unknown causes, maternal, neonatal and congenital causes and certain infectious and parasitic diseases.

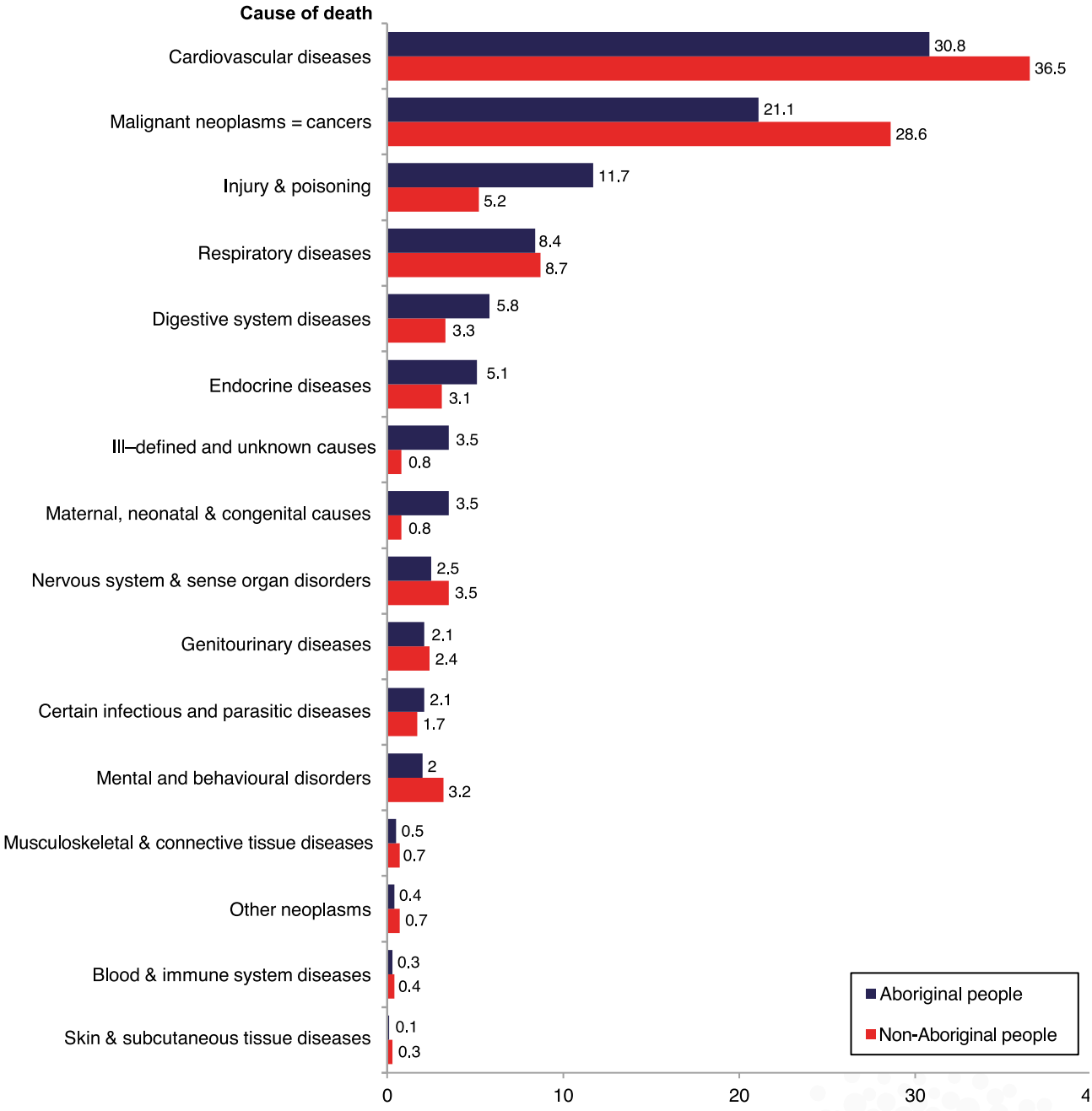
Closing the gap: To close the gap in mortality rates between Aboriginal and non-Aboriginal people by 2033 there would need to be a 57% reduction of the current age-standardised mortality rate for Aboriginal people (Figure 14).

Figure 12: Deaths from all causes by Aboriginality, NSW, 1998 to 2007



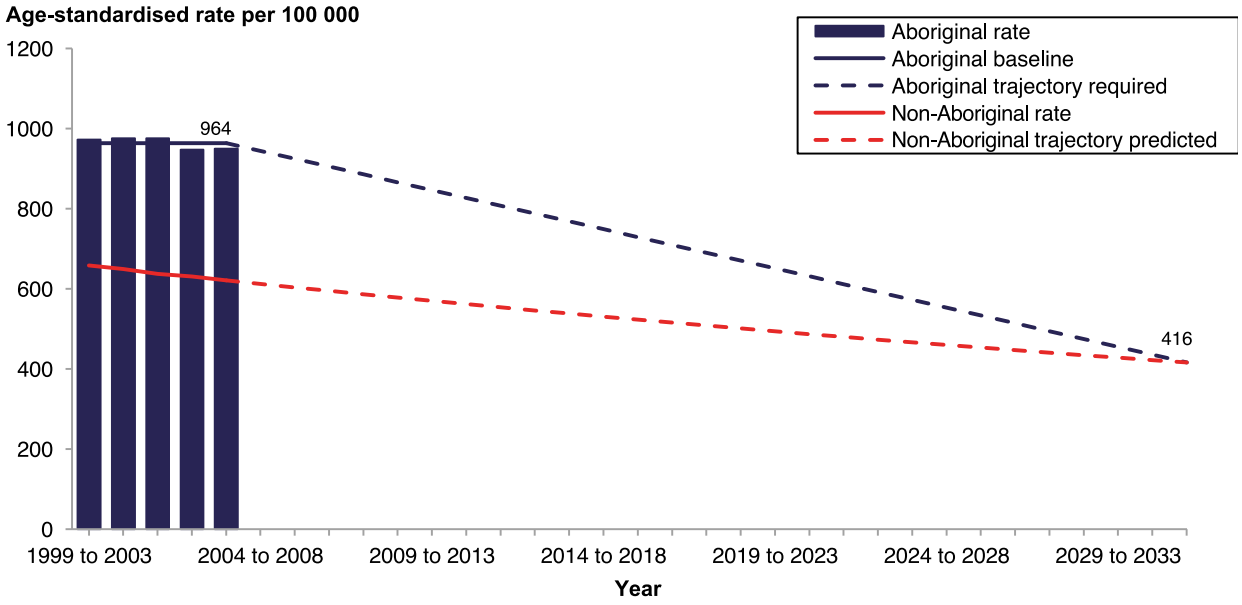
Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 13: Cause of death by Aboriginality, NSW, 2003 to 2007



Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 14: Death rates for Aboriginal and non-Aboriginal people, trajectory required to close the gap in NSW by 2033



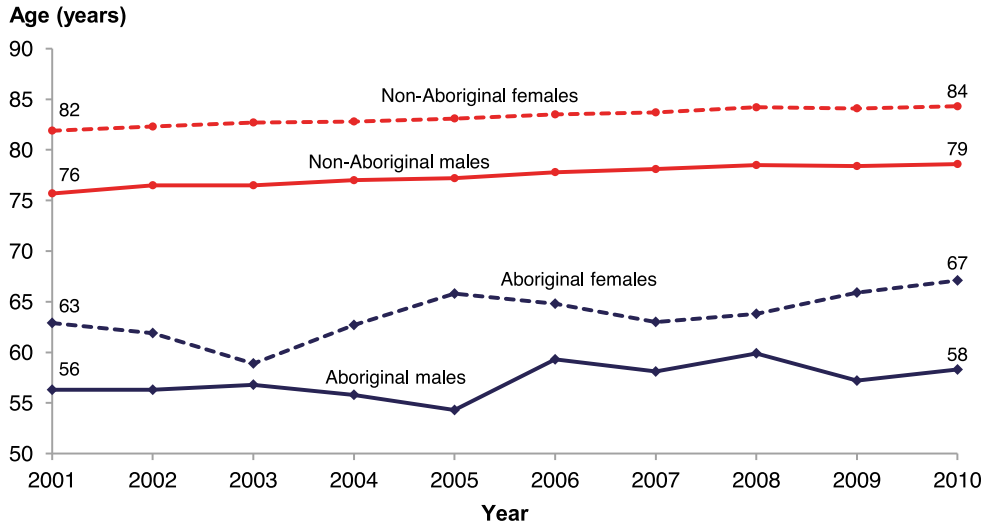
Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

1.4 Age at death

Health issue: Age at death is a general measure of the health status of the population. The median age at death represents the age at which exactly half the deaths registered in a given time period were of people above that age and exactly half were of people below that age (Australian Government 2011). Median age at death is used as an indicator to provide additional information to life expectancy estimates and mortality rates; however it does have limitations in its applicability due to varying age structures in the Aboriginal and non-Aboriginal populations (Coory and Baade 2003).

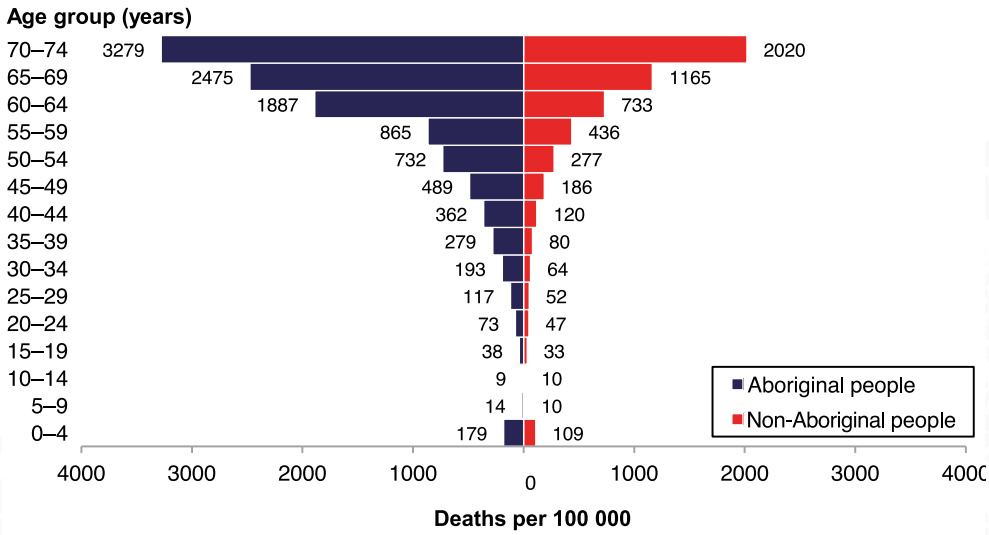
Health disparity: In NSW in 2010, the median age at death was 58 years for Aboriginal males and 79 years for non-Aboriginal males, a difference of 21 years (Figure 15). During the same period, the median age at death for Aboriginal females was 67 years, 17 years less than non-Aboriginal females. Aboriginal people also have higher rates of death in all age groups compared with non-Aboriginal people (Figure 16).

Figure 15: Median age at death by Aboriginality, NSW, 2001 to 2010



Source: Australian Bureau of Statistics. Deaths. Catalogue number 3302.0. Canberra: ABS, 2010. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 16: Age group at death by Aboriginality, people aged less than 75 years, NSW, 2003 to 2007



Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

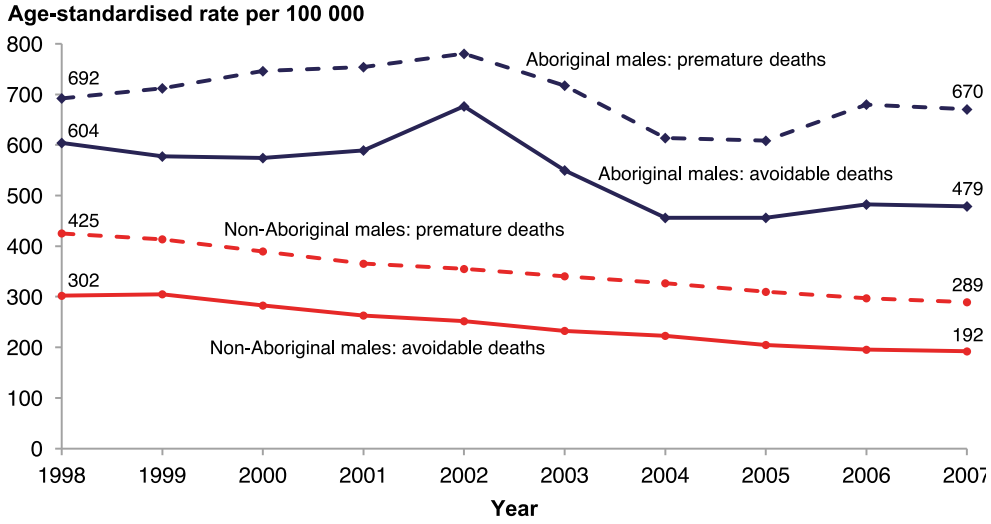
1.5 Potentially avoidable and premature deaths

Health issue: Premature deaths are deaths that occur before the age of 75 years. Premature deaths can be classified as 'potentially avoidable' and 'unavoidable'. Potentially avoidable deaths are those that could potentially have been avoided given our current understanding of the causes of disease, the availability of disease prevention and effective health care (ABS 2010a). The leading causes of potentially avoidable deaths are cancers, cardiovascular disease and injury and poisoning (NSW Health 2008a).

Health disparity: In NSW in 2007, the rate of potentially avoidable deaths in Aboriginal males was 479 per 100 000, compared with 192 per 100 000 for non-Aboriginal males (Figure 17). The rate for Aboriginal males has decreased significantly in the 10 years 1998 to 2007, and the gap between Aboriginal and non-Aboriginal males has narrowed. In 2007 the rate of premature deaths in Aboriginal males was 670 per 100 000 compared with 289 per 100 000 for non-Aboriginal males.

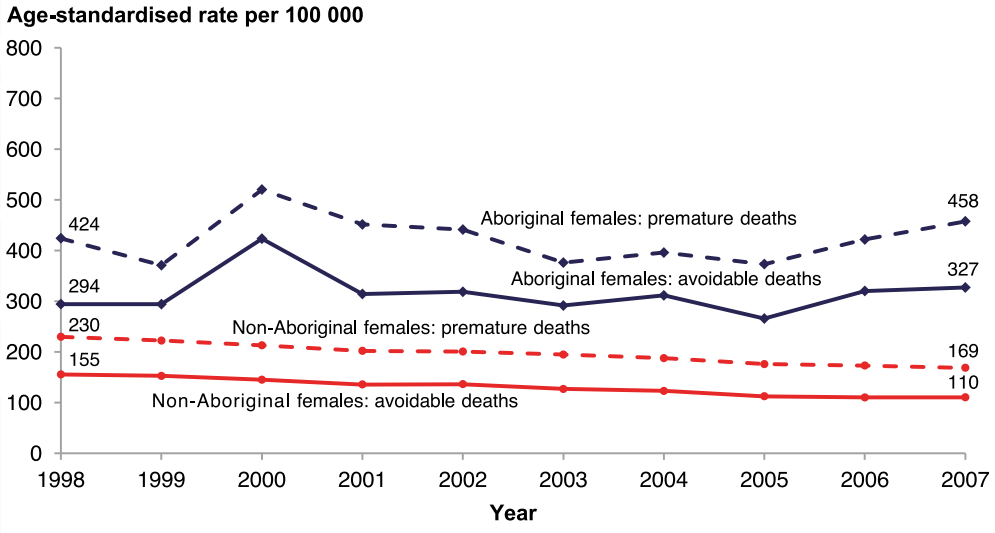
In NSW in 2007, the rate of potentially avoidable deaths in Aboriginal females was 327 per 100 000, compared with 110 per 100 000 for non-Aboriginal females. The rate for non-Aboriginal females did not change significantly in the 10 years to 2007. In 2007 the rate of premature deaths in Aboriginal females was 458 per 100 000, compared with 169 per 100 000 for non-Aboriginal females (Figure 18).

Figure 17: Potentially avoidable and premature deaths by Aboriginality, males aged less than 75 years, NSW, 1998 to 2007



Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 18: Potentially avoidable and premature deaths by Aboriginality, females aged less than 75 years, NSW, 1998 to 2007



Source: ABS mortality data and population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 2: Health of mothers, babies and children

The health of Aboriginal mothers, babies and children is important for reducing mortality early in life, and increasing life expectancy. There are strong links between the health of mothers during pregnancy and early child developmental outcomes, school readiness and educational achievement, and incidence of chronic disease later in life (Carson et al. 2007). The health of mothers is affected by the social determinants of health, protective and risk factors and access to quality antenatal care (Panaretto et al. 2007). Targeted programs for pregnant Aboriginal women and their families delivered by Local Health Districts and Aboriginal Community Controlled Health Services (ACCHSs) in NSW can be effective in improving attendance at antenatal care, with an emphasis on early presentation, and regular visits throughout pregnancy. Reducing maternal smoking in Aboriginal mothers will positively influence health outcomes for Aboriginal mothers and babies in NSW.

The National Indigenous Reform Agreement (COAG 2009c) includes a commitment to halve the gap in mortality rates for Aboriginal children aged less than 5 years within a decade, and **NSW 2021** (NSW Government 2011) sets a target to halve the gap between Aboriginal and non-Aboriginal infant mortality rates by 2018 (see Chapter 1). The **National Partnership Agreement for Indigenous Early Childhood Development** (COAG 2009b) has two overarching outcomes regarding the health of Aboriginal children: that Aboriginal children are born healthy and remain healthy, and that Aboriginal children have the same health outcomes as non-Aboriginal children. This Agreement identifies a number of key indicators to monitor progress towards achieving these outcomes, which are reported here.

This chapter reports on key indicators of the health of Aboriginal mothers, babies and children. It includes indicators of access to antenatal care, incidence of prematurity and low birth-weight in babies born to Aboriginal mothers, and smoking during pregnancy. Child health indicators include child hospitalisation rates and the main reasons for Aboriginal children being hospitalised, and details two key child health issues with a high burden of disease in Aboriginal children – oral health and ear health. Information on how Local Health Districts performed in a number of key indicators for the health of mothers and babies is available in Chapter 5 (Health service delivery).

Readers of this chapter should note that only trends that are statistically significant (to a p-value of < 0.05) are reported as 'significant'. No statistically significant trend is reported as 'no significant change'.

Key facts

- Between 2001 and 2010, the number of Aboriginal women who attended antenatal care in the first trimester of their pregnancy has increased.
- Aboriginal mothers are more than four times more likely to report smoking during pregnancy than non-Aboriginal mothers.
- Aboriginal mothers are 90% more likely to have low birth-weight babies than non-Aboriginal mothers.
- Approximately 12% of babies born to Aboriginal mothers are preterm, compared with 7% of babies born to non-Aboriginal mothers.
- The rate of hospitalisation of Aboriginal children aged 0–4 years is currently increasing for Aboriginal children in NSW. Aboriginal children have higher rates of hospitalisations for respiratory disease, gastrointestinal disease and skin disease – conditions linked to inadequate environmental health in 2010–11.
- Aboriginal children aged 5–6 years have twice the number of decayed, missing and filled teeth than non-Aboriginal children.
- Parents and carers of children aged 0–14 years report that 5% of Aboriginal children in their care suffer complete or partial hearing loss, compared with less than 1% of non-Aboriginal children.

2.1 Attendance at antenatal care

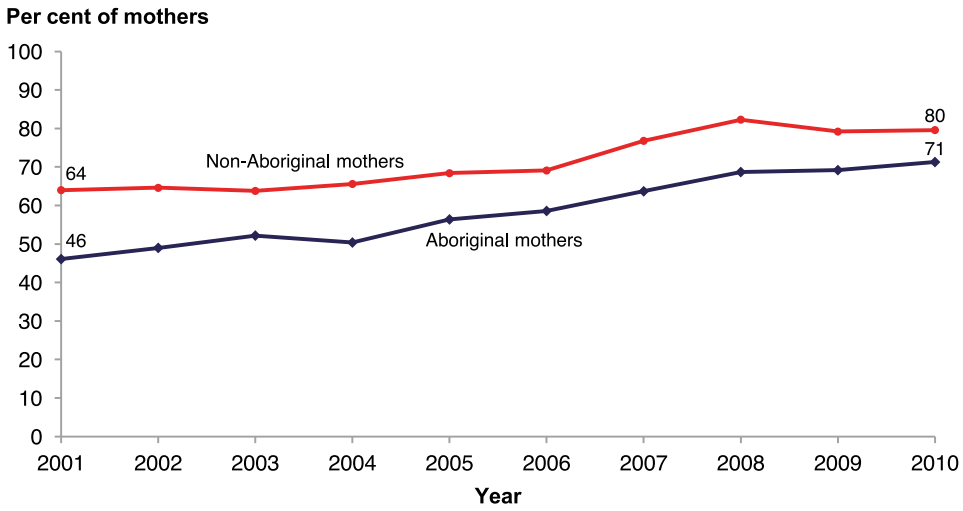
The health issue: Antenatal care involves assessment, and appropriate advice and treatment, during pregnancy. High quality and accessible antenatal care is important for monitoring the health of mothers and babies and to identify pregnancy complications early so that appropriate treatment can be provided. Antenatal care is particularly important for Aboriginal women, who are at higher risk of giving birth to low birth-weight babies and can experience anaemia, poor nutritional status, hypertension, gestational diabetes and risk factors such as smoking in pregnancy.

The health disparity: In NSW mothers in 2010, 71% of Aboriginal mothers attended antenatal care before 14 weeks' gestation, compared with 80% of non-Aboriginal women. This difference is significant, with Aboriginal mothers attending antenatal care before 14 weeks' gestation at approximately 0.9 times the rate of non-Aboriginal women in 2010. Between 2001 and 2010, there has been a significant increase in the proportion of Aboriginal mothers attending antenatal care before 14 weeks' gestation, from 46% in 2001, and a significant decrease in the gap between Aboriginal and non-Aboriginal mothers (Figure 19).

Closing the gap: For the proportion to be the same for Aboriginal and non-Aboriginal mothers' attendance at antenatal care before 14 weeks' gestation in NSW in 2010, an additional 257 Aboriginal mothers would have needed to attend antenatal care before 14 weeks' gestation from a total of 3091.

Antenatal care in NSW is delivered through primary health care and community settings. Aboriginal women often access antenatal care later in pregnancy and less frequently than non-Aboriginal women (Australian Government 2011). Services such as those provided through Aboriginal Community Controlled Health Services and Aboriginal Maternal and Infant Health Services have been shown to be effective in increasing access to antenatal care services for Aboriginal women, and improving perinatal outcomes for babies of Aboriginal women (Panaretto et al. 2007; Eades 2004).

Figure 19: First antenatal visit before 14 weeks' gestation by mother's Aboriginality, NSW, 2001 to 2010



Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

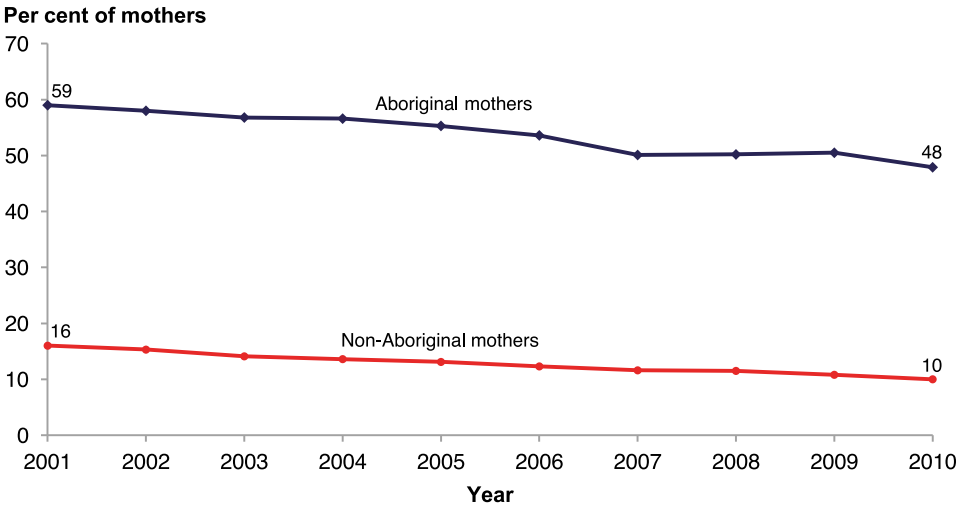
2.2 Smoking during pregnancy

The health issue: Smoking during pregnancy increases the risk of adverse outcomes for both the mother and the child. For the mother, smoking during pregnancy increases the risk of placental abruption, placenta praevia, preterm labour and preterm rupture of membranes. For the baby, maternal smoking is a risk factor for poor growth in the uterus, low birth-weight, preterm delivery, perinatal death, and sudden infant death syndrome (Laws et al. 2006; British Medical Association 2004).

The health disparity: In NSW in 2010, the percentage of women who reported smoking during pregnancy was 48% for Aboriginal women, and 10% for non-Aboriginal women. This difference is significant, with Aboriginal women 4.8 times more likely to report smoking during pregnancy than non-Aboriginal women. Between 2001 and 2010, there was a significant decrease in the proportion of Aboriginal women who reported smoking during pregnancy, from 59% in 2001, and a significant decrease in the gap between Aboriginal and non-Aboriginal women's smoking rates during pregnancy (Figure 20).

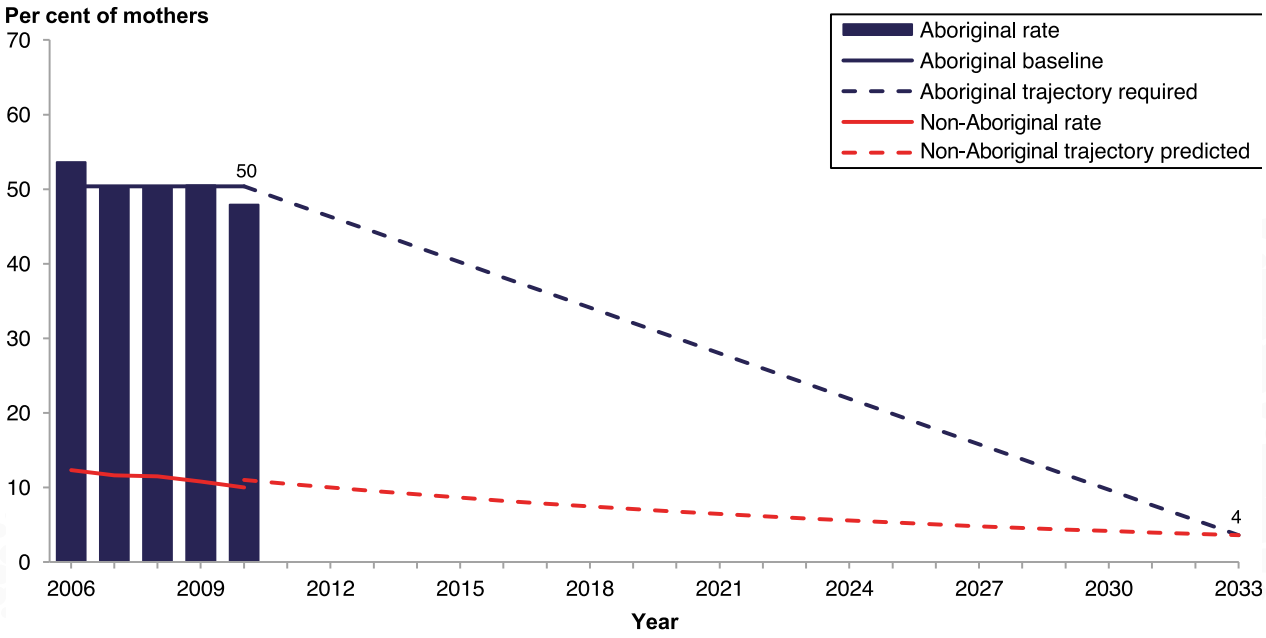
Closing the gap: NSW 2021 (NSW Government 2011) outlines a target to reduce the rate of smoking in pregnant Aboriginal women by 2% per year. Figure 21 charts the trajectory required for pregnancy smoking rates in Aboriginal and non-Aboriginal mothers to be the same by 2033. For smoking rates to be the same during pregnancy for Aboriginal and non-Aboriginal mothers in 2010, this would have required 1172 fewer Aboriginal mothers to have smoked during pregnancy from a total of 3091. Counselling on smoking cessation in the perinatal period has been proven to be effective (Lumley et al. 2009). The best strategy for producing long-term abstinence rates and reducing relapse is to use intense cessation counselling and evidence-based medication (Fiore et al. 2008).

Figure 20: Smoking during pregnancy by mother's Aboriginality, NSW, 2001 to 2010



Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 21: Smoking during pregnancy by mother's Aboriginality, trajectory required to close the gap in NSW by 2033



Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

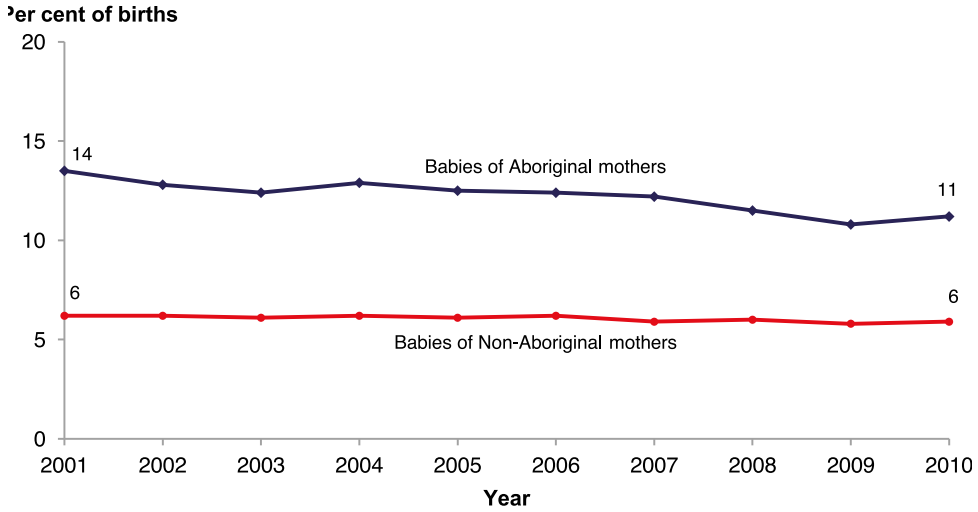
2.3 Low birth-weight babies

The health issue: Low birth-weight babies, weighing less than 2500 grams at birth, are at greater risk of poor health outcomes including disability and death. Low birth-weight may be due to preterm birth (being born before 37 weeks' gestation) or to poor growth in the uterus (Laws et al. 2010), and may reflect the health of a mother during her pregnancy and the quality of antenatal care received.

The health disparity: In NSW in 2010, 11% of babies born to Aboriginal mothers were of low birth-weight, compared with 6% of babies born to non-Aboriginal mothers (Figure 22). This difference is significant, with babies of Aboriginal mothers 1.9 times more likely to be of low birth-weight than babies of non-Aboriginal mothers. Between 2001 and 2010, there has been a significant decrease in the proportion of babies of Aboriginal mothers who are of low birth-weight, from 14% in 2001. However, there has been no significant change in the difference in rates between Aboriginal and non-Aboriginal babies.

Closing the gap: For the proportion of Aboriginal and non-Aboriginal babies born with low birth-weight to be the same in 2010, this would have required 166 fewer low birth-weight babies of Aboriginal mothers from a total of 3128 births. Protective factors for reducing the risk of low birth-weight babies include improving the mother's socioeconomic status, in particular educational attainment, reducing the prevalence of smoking and other substance use during pregnancy, and improving the nutrition and growth of girls during childhood and women during pregnancy (Ashdown-Lambert 2005; Mohsin et al. 2003; McCormick 1985; Horta et al. 1997).

Figure 22: Low birth-weight babies by mother's Aboriginality, NSW, 2001 to 2010



Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

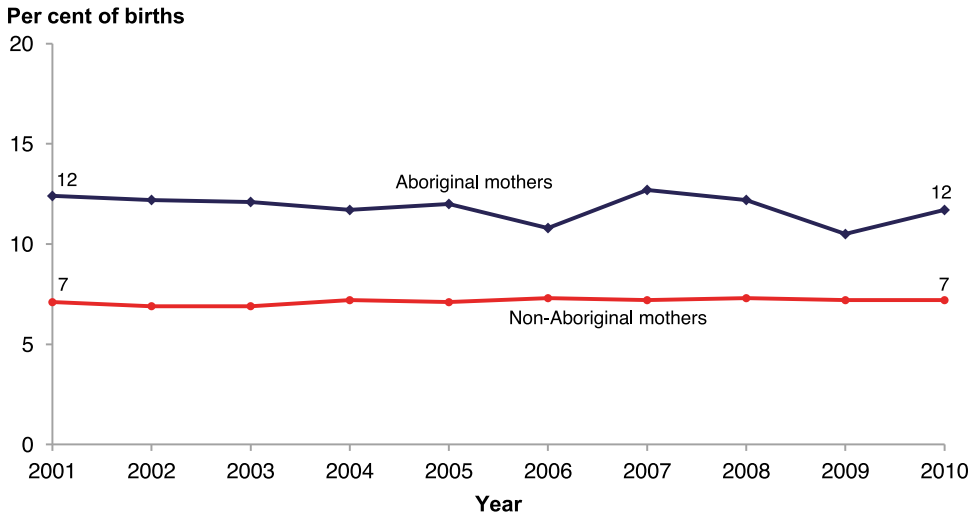
2.4 Preterm babies

The health issue: Preterm babies are babies born before 37 weeks' gestation. Preterm birth, along with infection and low birth-weight, is an important determinant of perinatal mortality. Preterm births and low birth-weight can have long-term impacts on child health, development, education attainment and employment and chronic disease later in life.

The health disparity: In NSW in 2010, 12% of births to Aboriginal mothers were preterm, compared with 7% of babies born to non-Aboriginal mothers. This difference is significant, with babies of Aboriginal mothers 1.6 times more likely to be preterm than babies of non-Aboriginal mothers. Between 2001 and 2010, there has been no significant change in the proportion of preterm babies born to Aboriginal mothers and no significant change in the gap in the preterm birth rate between babies born to Aboriginal and non-Aboriginal mothers (Figure 23).

Closing the gap: For the proportion of preterm babies born to Aboriginal and non-Aboriginal mothers to be the same in 2010 in NSW this would have required 141 fewer preterm births in babies born to Aboriginal mothers from a total of 3128 births. Protective factors for reducing the risk of preterm births include appropriate antenatal care, healthy maternal body mass index, and not smoking during pregnancy (Panaretto et al. 2006). There is some evidence that targeted antenatal care services for Aboriginal women may be effective in decreasing the rate of preterm birth by Aboriginal mothers (Panaretto et al. 2007; Herceg 2005).

Figure 23: Preterm births by mother's Aboriginality, NSW, 2001 to 2010



Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.5 Hospitalisations in children

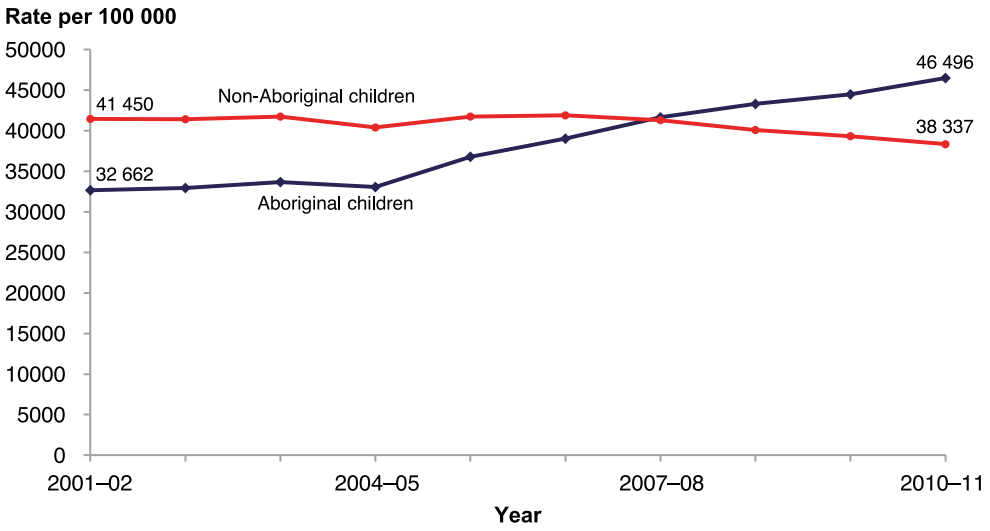
Health issue: Hospitalisation rates are an indication of the incidence of acute illnesses and conditions requiring hospital care. Aboriginal children aged less than 5 years in NSW have higher rates of hospital admission than non-Aboriginal children, particularly for acute respiratory infections, skin conditions and gastro-intestinal issues.

Health disparity: In NSW in 2010–11, hospitalisation rates for children aged less than 5 years were 46 496 per 100 000 Aboriginal children, compared with 38 337 per 100 000 non-Aboriginal children. This difference is significant, with Aboriginal children 1.2 times more likely to be hospitalised than non-Aboriginal children. Between 2001–02 and 2010–11, there has been a significant increase in the rate of hospitalisations for Aboriginal children, from 32 662 per 100 000 in 2001, and a significant increase in the gap between Aboriginal and non-Aboriginal children (Figure 24). This increased hospitalisation rate may indicate increased rates of illness in Aboriginal children, improved reporting of Aboriginal children attending hospital, or improved access to hospital care for Aboriginal children appropriate to need.

The main cause of hospitalisation for Aboriginal children less than 5 years of age is maternal, neonatal and congenital conditions (Figure 25). Compared with non-Aboriginal children, Aboriginal children aged less than 5 years are 2.9 times more likely to be admitted for skin conditions, 1.7 times more likely to be admitted for respiratory diseases, 1.6 times more likely to be admitted for injury and 1.6 times more likely to be admitted for infectious diseases.

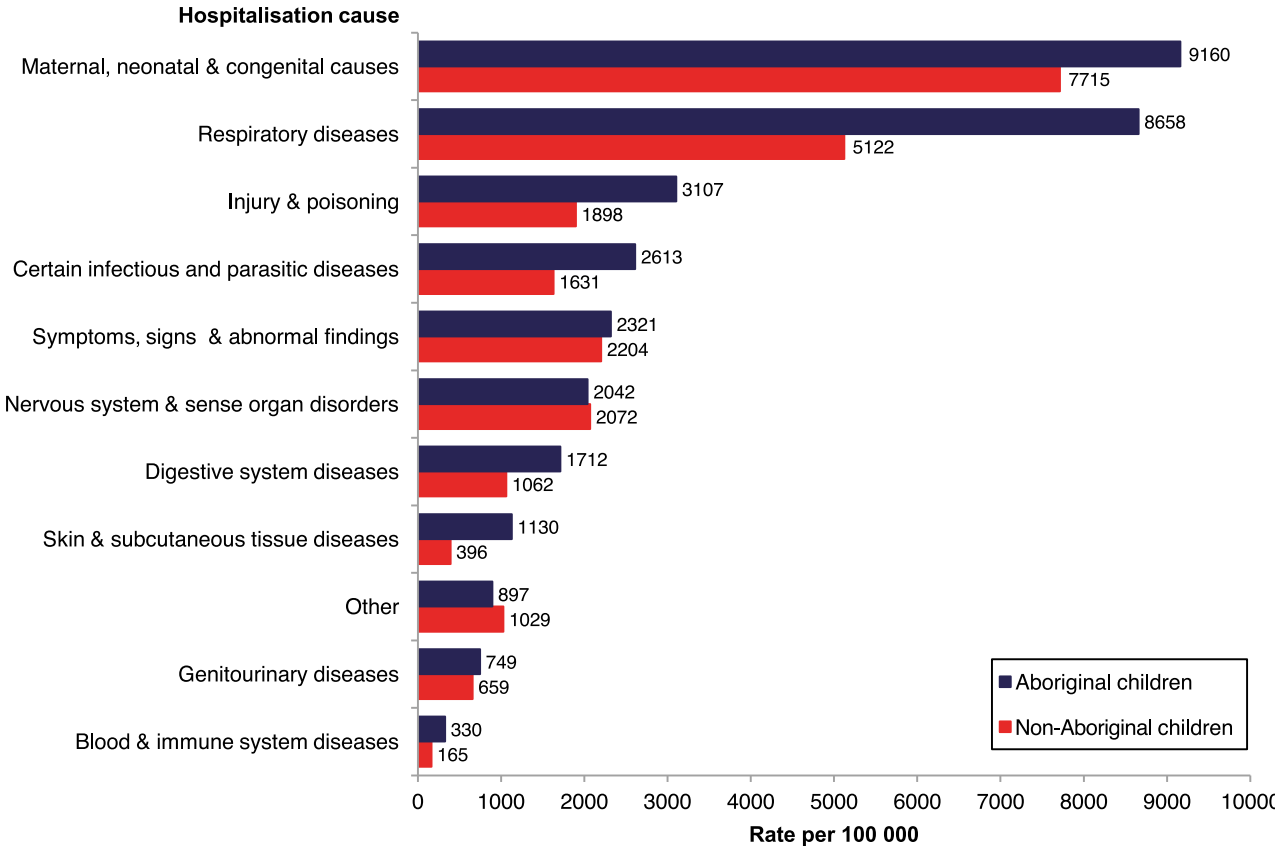
Closing the gap: Adequate and safe housing, reduced exposure to environmental tobacco smoke, and access to quality antenatal care and health services during the first 5 years of life are protective factors against conditions that can lead to hospitalisations in children (Australian Government 2011; NSW Health 2010a). The National Partnership Agreement for Indigenous Early Childhood Development identifies that if Aboriginal and Torres Strait Islander children have the same health outcomes as non-Indigenous children, the proportion of hospital admissions of Aboriginal and Torres Strait Islander children aged 0–4 years would be reduced (COAG 2009b). However this rate is currently increasing for Aboriginal children in NSW, which is likely to reflect a higher prevalence of disease. The reduction in the disparity in disease burden between Aboriginal and non-Aboriginal children, as reflected in disparate hospitalisation rates, requires targeted effort in antenatal care, and addressing social determinants of health. Primary health care plays an important role in reducing preventable hospitalisations among Aboriginal children (Page et al. 2007).

Figure 24: Hospitalisation rates by Aboriginality, children aged 0–4 years, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 25: Hospitalisation rates by category of cause and Aboriginality, children aged 0–4 years, NSW, 2010–11



Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.6 Oral health in children

Health issue: Early childhood caries is defined as at least one decayed lesion affecting a deciduous or permanent tooth. Early childhood caries is a common dental decay disease with a large health burden, despite being mostly preventable. Early childhood caries is painful and, when severe, can require hospitalisation for the removal and restoration of teeth (Yengopal et al. 2009). Early childhood caries can adversely affect growth, cognitive development, speech, communication, self image and social functioning (Douglass et al. 2004), and children who experience dental caries are more likely to experience other dental problems as they grow older (Li and Wang 2002).

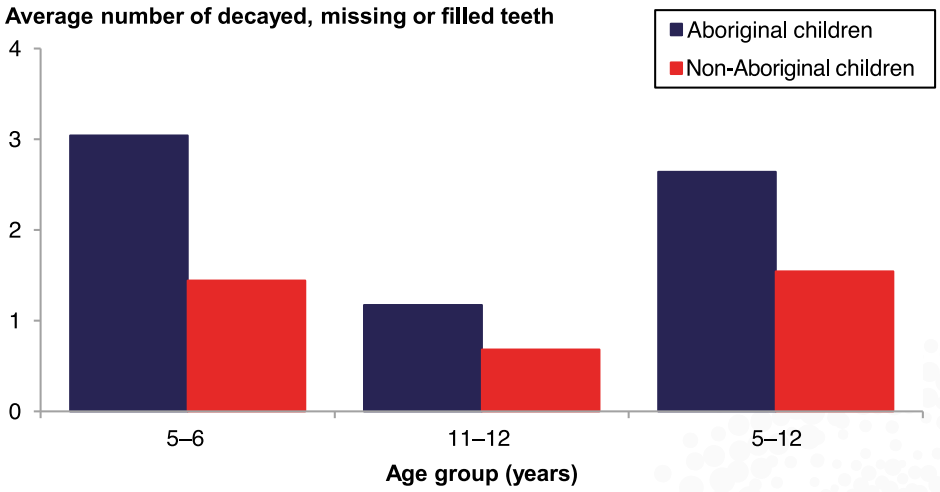
Health disparity: The NSW Child Dental Health Survey 2007 (Centre for Oral Health Strategy NSW 2009) showed Aboriginal children experience a higher burden of dental disease than non-Aboriginal children (Figure 26). For children aged 5–6 years, the average number of decayed, missing or filled teeth was 3.0 for Aboriginal children and 1.4 for non-Aboriginal children. Aboriginal children aged 5–6 years have on average twice the rate of untreated decay in their deciduous (baby) teeth than non-Aboriginal children. In children aged 11–12 years, the average number of decayed, missing or filled teeth was 1.2 for Aboriginal children and 0.7 for non-Aboriginal children.

There is a significant difference in the proportion of Aboriginal and non-Aboriginal children with no history of dental decay (Figure 27). For children aged 5–6 years, 35% of Aboriginal children and 62% of non-Aboriginal children have never suffered dental decay. For children aged 11–12 years, 54% of Aboriginal children and 67% of non-Aboriginal children demonstrated no experience of dental decay in their permanent teeth.

Data on hospitalisations for the removal or restoration of teeth for dental caries also demonstrate a significant disparity between Aboriginal and non-Aboriginal children for treatment of severe oral health conditions (Figure 28). In NSW in 2010–11, the hospitalisation rate for removal and restoration of teeth for dental caries for children aged 0–4 years was 798 per 100 000 Aboriginal children, and 299 per 100 000 non-Aboriginal children. This difference is significant, with Aboriginal children aged less than 5 years being 2.7 times more likely to be hospitalised for removal and restoration of teeth than non-Aboriginal children. Aboriginal children aged 5–14 years are 1.3 times more likely to be admitted to hospital for removal and restoration of teeth than non-Aboriginal children of the same age.

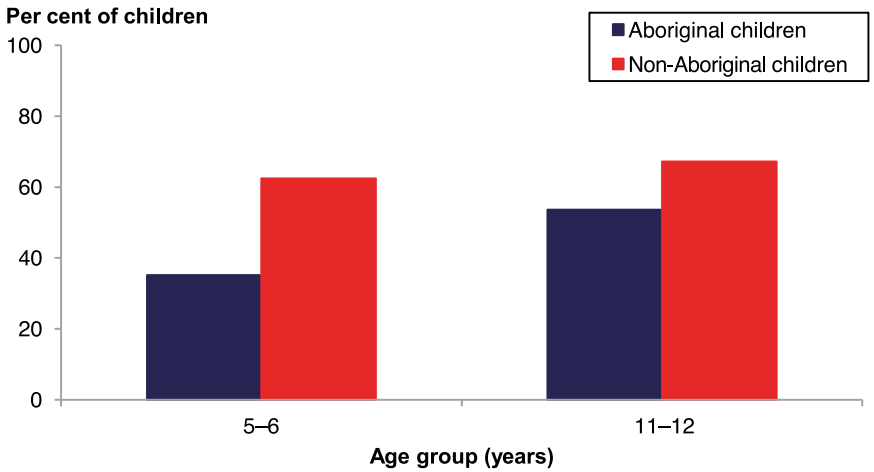
Closing the gap: Dental caries can be largely prevented through changed bottle feeding practices, dietary modification, fluoride delivery, and good oral hygiene (Gussy et al. 2006).

Figure 26: Decayed, missing and filled teeth by Aboriginality, children aged 5–12 years, NSW, 2007



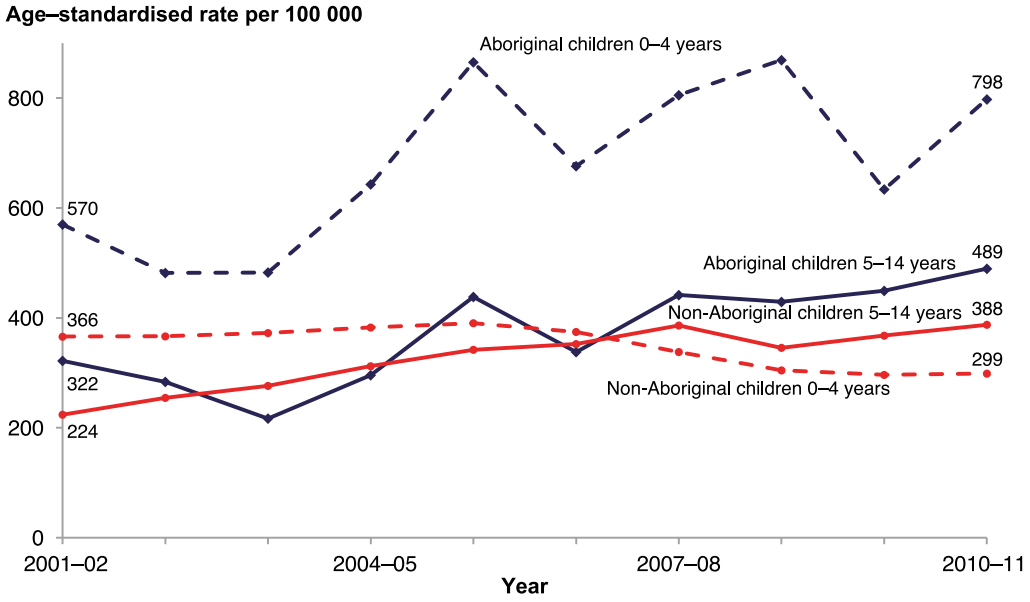
Source: The New South Wales Child Dental Health Survey 2007. Centre for Oral Health Strategy, NSW Ministry of Health.

Figure 27: No history of dental decay by Aboriginality, children aged 5–12 years, NSW, 2007



Source: The New South Wales Child Dental Health Survey 2007. Centre for Oral Health Strategy, NSW Ministry of Health.

Figure 28: Removal and restoration of teeth for dental caries: hospitalisations by Aboriginality, children aged 0–14 years, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.7 Ear health in children

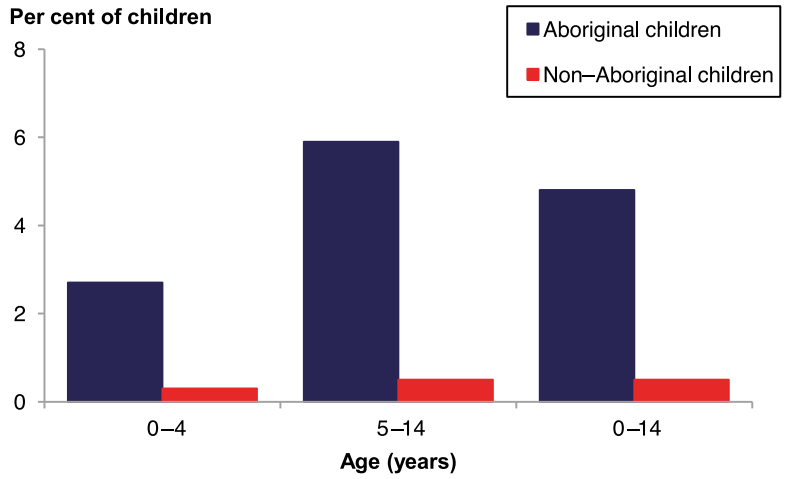
Health issue: Hearing loss is more common in Aboriginal children than non-Aboriginal children. The main causes of hearing loss are disorders of the middle ear, including otitis media (middle ear infection). Otitis media is common in children following an upper respiratory infection. Repetitive unresolved episodes of otitis media can lead to perforations of the eardrum, hearing loss and, particularly in younger children, delayed speech development, reduced learning ability and reduced social interaction (Australian Government 2011).

Health disparity: There are limited recent data on the prevalence of hearing loss in Aboriginal children in NSW. In 2004–05, about 10% of Aboriginal children aged 0–14 years in NSW were found to have ear or hearing problems compared with 2% of non-Aboriginal children. In NSW, 5% of Aboriginal children aged 0–14 years reported complete or partial hearing loss or deafness compared with less than 1% of non- Aboriginal children (Figure 29) (AIHW 2011a).

In NSW, there is a significant difference between Aboriginal and non-Aboriginal children in the rate of hospitalisation for tympanoplasty – a surgical intervention often needed to treat a perforated eardrum associated with chronic otitis media. Aboriginal children are more likely to be admitted to hospital for this procedure than non-Aboriginal children. In 2010–11 the rate of hospitalisation was 44 per 100 000 Aboriginal children, and 22 per 100 000 non-Aboriginal children (Figure 30), which is likely to reflect the higher prevalence of persistent otitis media in Aboriginal children.

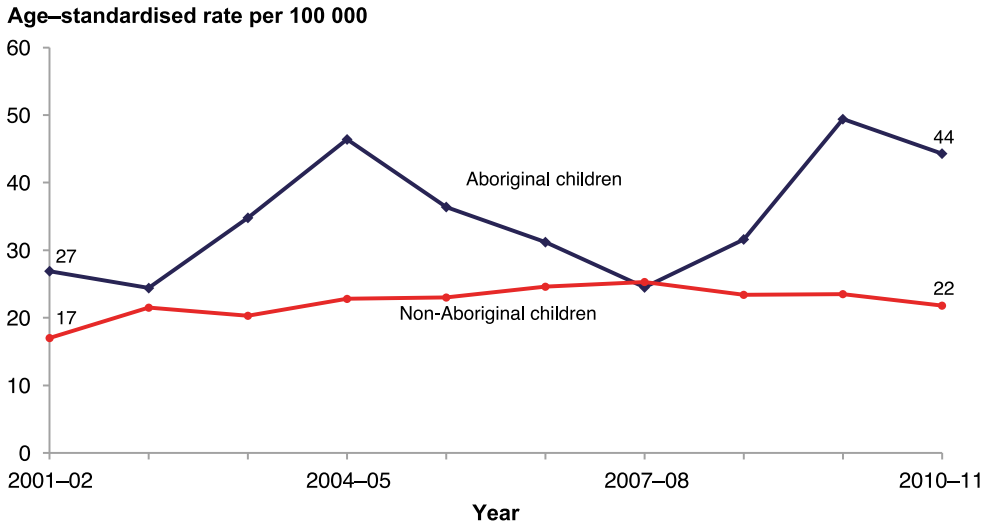
Closing the gap: Factors that prevent hearing loss may include improved socioeconomic status, improved environmental factors such as adequate housing and access to good quality water, reduced environmental smoke exposure, improved nutrition and improved access to quality health care including surgical interventions.

Figure 29: Complete or partial deafness or hearing loss by Aboriginality, children aged 0–14 years, NSW, 2004–2005



Source: ABS and AIHW analyses of the National Aboriginal and Torres Strait Islander Health Survey, 2004–05, and the National Health Survey 2004–05.

Figure 30: Hospitalisations for tympanoplasty for otitis media, by Aboriginality, children aged less than 15 years, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 3: Risk and protective factors for health

This chapter presents information on the social determinants of health, including social capital, education and employment; environmental factors including functional housing and exposure to tobacco smoke; and risk and protective health factors including smoking, alcohol consumption, physical activity, overweight and obesity, diet and health-care seeking behaviour. These factors affect the health of individuals, families and communities, and how people access health care.

The Council of Australian Government's commitment to closing the gap in life expectancy between Aboriginal and non-Aboriginal people included investment by all Australian governments under the **National Partnership Agreement for Closing the Gap in Indigenous Health Outcomes** (COAG 2009a). The seven building blocks for addressing disadvantage experienced by Aboriginal people outlined in the **National Partnership Agreement on Closing the Gap in Indigenous Health Outcomes** (COAG 2009a) include early childhood, schooling, health, economic participation, healthy homes, safer communities and governance and leadership. Together these building blocks aim to find long-term solutions to the social determinants of health, and to address key risk factors for disease such as smoking.

This section uses data from the NSW Adult Population Health Survey in a number of the indicators, and Appendix 1 describes the survey methodology and its limitations. Where possible, additional information for each indicator from alternative data sources is also provided, primarily from the National Aboriginal and Torres Strait Islander Social Survey (2008) and the National Aboriginal and Torres Strait Islander Health Survey (2004–05).

Readers of this chapter should note that only trends that are statistically significant (to a p-value of < 0.05) are reported as significant. No statistically significant trend is reported as 'no significant change'. Where the relevant information is available, indicators are reported for Aboriginal and non-Aboriginal people. Otherwise, indicators are reported for Aboriginal people and the total population.

3.1 Social determinants

The holistic view of health defined by Aboriginal people recognises the importance of the social, emotional and cultural wellbeing of the community, as well as the physical wellbeing of an individual. Social, environmental and economic factors that contribute to the poorer health experienced by Aboriginal people include inequitable community social capital, education, employment and housing. The following information summarises some key social issues and determinants that influence the health of Aboriginal people.

'Social capital is the collective social and economic assets of individuals within a group of people. This capital facilitates engagement and development within the group and between other groups at an individual or group level' (Coleman 1988). The social capital of Aboriginal people is an important factor in being included and engaged in society. Without strong social capital, Aboriginal people will continue to be disempowered and marginalised (Carson et al. 2007).

Self-determination is the right to freely choose how our life is governed, including political status and economic, social and cultural development, and the right to participate in decisions affecting our life. The self-determination of Aboriginal and Torres Strait Islander peoples is a central right of the **UN Declaration on the Rights of Indigenous Peoples** (United Nations 2007). This principle is recognised in the **National Partnership Agreement on Closing the Gap in Indigenous Health Outcomes** (COAG 2009a), and requires governments to recognise the collective and group identities of Aboriginal and Torres Strait Islander peoples including nations, language groups, clans, family alliances or communities (United Nations 2007).

While still limited, growing evidence supports self-determination as a mechanism for cultural continuity, leading to improved health and wellbeing for Indigenous peoples (Burgess et al. 2005; Rowley et al. 2008; Lalonde 2009; Chandler and Lalonde 1998). Examples of mechanisms and structures considered to support self-determination within NSW include: Aboriginal Community Controlled Health Services; Aboriginal Lands Councils; Native Title; Local Aboriginal Education Consultative Groups; Aboriginal Cultural Centres; Aboriginal Child and Family Support Services; Aboriginal Legal Services; Aboriginal Child Care Services; Aboriginal Housing Trusts; and Circle Sentencing.

Education

Evidence suggests that improving the educational outcomes of Aboriginal children will lead to positive benefits for lifetime health and wellbeing (Brown 2001). A number of initiatives exist to improve educational outcomes, including early engagement in education in pre-school, creation of a culturally-appropriate education system and tutorial support for students. However, there still remains a large gap in the education of Aboriginal children compared with non-Aboriginal children in NSW:

- **Reading:** in NSW in 2011, 78% of Aboriginal students achieved the Year 9 reading benchmark compared with 94% of non-Aboriginal students (ACARA 2011)..
- **Writing:** in NSW in 2011, 56% of Aboriginal students achieved the Year 9 persuasive writing benchmark compared with 86% of non-Aboriginal students; 77% of Aboriginal students achieved the Year 9 spelling benchmark compared with 93% of non-Aboriginal students; and 67% of Aboriginal students achieved the Year 9 grammar and punctuation benchmark compared with 91% of non-Aboriginal students (ACARA 2011).
- **Numeracy:** in NSW in 2011, 75% of Aboriginal students achieved the Year 9 numeracy benchmark compared with 94% of non-Aboriginal students (ACARA 2011).
- **School retention:** in NSW in 2011, 24% of Aboriginal people had completed year 12 or equivalent, compared with 52% of non-Aboriginal people, and 32% of Aboriginal people had completed year 10 or equivalent compared with 25% of non-Aboriginal people (ABS 2011)**.**
- **School readiness:** The Australian Education Development Index (AEDI) is a population measurement of children's development when they enter school. The AEDI reports on five domains of early childhood development, including physical and emotional wellbeing, social competence, emotional maturity, language and cognitive skills, communication skills and general knowledge. In each domain, children in the 0-10th percentile are considered 'developmentally vulnerable' (Appendix 2). In NSW in 2009, 38.7% of Aboriginal children were developmentally vulnerable compared to 20.4% of non-Aboriginal children on one or more AEDI domains. In Australia, 47.4% of Aboriginal and Torres Strait Islander children were developmentally vulnerable on one or more AEDI domains compared to 22.4% of non-Indigenous children.

Employment and income

Employment and income are important for self-esteem, opportunities for self-development, participation in the community, living standards, and social and emotional wellbeing (AIHW 2011a). There is also a connection between physical and psychological health and employment status (Marmot and Wilkinson 2006).

- In 2011 in NSW, the labour force participation rate for the Aboriginal population aged 15–64 years was estimated to be 54%, with 15% of the Aboriginal labour force unemployed. In comparison, the labour force participation rate for the non-Aboriginal population was 78%, with 5% of non-Aboriginal people unemployed (ABS, 2012).
- In 2011 in NSW the median personal weekly income for people aged 15 years and over was $375 for Aboriginal people and $566 for non-Aboriginal people. The median weekly household income was $941 for Aboriginal households compared with $1247 for non-Aboriginal households. The average number of people per household was 3.1 for Aboriginal households and 2.6 for non-Aboriginal households (ABS 2011).

Housing

Home ownership is an indicator of housing security and is linked to health status (Hulse and Burke 2009). Aboriginal people are more likely to be without housing (homeless) than non-Aboriginal people within Australia (AIHW 2011b). In 2011 in NSW, approximately 39% of Aboriginal households were owned or being purchased and 56% of households were renting, compared with 67% of non-Aboriginal households which were owned or being purchased, and 29% who rented (ABS 2011).

Imprisonment

In NSW, Aboriginal people were imprisoned at a rate of at least 14 times higher than the general population, with 22% of adult males and 29% of adult females in custody, identifying as being Aboriginal (2174 from a total of 9680), and approximately half of young people in custody (168 from 391). Aboriginal people in prison have poorer physical and mental health than Aboriginal people in the community, are more likely to be from regional areas where there is less access to health and support services. Approximately one quarter of Aboriginal adults have never accessed any health care prior to prison (Indig et al. 2010).

Key facts

- Aboriginal children are more likely to leave school early, and are less likely to achieve national benchmarks for literacy and numeracy.
- Aboriginal people have higher rates of unemployment, imprisonment, and have lower household income levels.
- Aboriginal people have lower rates of home ownership in NSW.

3.2 Environmental factors

This section focuses on selected environmental health indicators – functional housing and smoke-free households – and considers their impact on health outcomes for Aboriginal people. Functional housing is important as lack of access to clean water, adequate sanitation and reliable electricity services is associated with higher rates of infectious diseases (Australian Government 2011). Some Aboriginal people in NSW continue to live in overcrowded dwellings and poor quality housing, which can lead to the spread of infectious diseases.

Key facts

- In 2008, approximately 15% of Aboriginal people in NSW reported living in an overcrowded house, compared with 5% of non-Aboriginal people.
- Exposure to tobacco smoke within the home is also a key environmental factor affecting health. In 2010, using smoothed estimates from the NSW Adult Population Health Survey, 84% of Aboriginal people reported living in a smoke-free household, compared with 95% of non-Aboriginal people.
- In 2010, Aboriginal children were 2.1 times more likely than non-Aboriginal children to be hospitalised for acute respiratory diseases. These higher rates of respiratory disease in children may be affected by poor housing.

Functional housing

The health issue: Housing and infrastructure are major environmental factors affecting the health of people. Inadequate or poorly-maintained housing and the absence of functioning infrastructure, such as a safe drinking water supply and an effective sewerage system, can pose serious health risks. In Australia, Aboriginal people are more likely to live in overcrowded dwellings and poor quality housing, which can lead to the spread of infectious diseases (AIHW 2005).

For housing to support good health, residents require functioning health hardware (toilets, lights, drains, taps, showers and kitchens) to improve their health and reduce infectious diseases such as diarrhoeal disease, skin infections, pneumonia and eye infections. Improving essential health hardware (e.g. fixing a leaking toilet, electrical repairs, ensuring sufficient hot water for the number of tenants, having somewhere to wash a baby or child) can lead to improvements in health status and reduce the risk of disease and injury (Pholeros et al. 1993).

According to the Canadian National Occupancy Standard for housing appropriateness, overcrowding within a household is determined by considering the number of bedrooms required in a dwelling based on the numbers, age, sex and relationships of household members. Households that require one more bedroom to meet the standard are considered to experience a moderate degree of overcrowding, whereas households requiring two or more additional bedrooms are said to experience a high degree of overcrowding. Overcrowding can put excess pressure on existing hardware resulting in failure, which may increase the risk of infectious diseases, and may also increase psychological stress. It also adversely affects the study opportunities for students in the household thereby influencing educational outcomes.

The health disparity: In NSW in 2011, using the Canadian National Occupancy Standard (above), approximately 9% Aboriginal households required one or more additional bedrooms, compared with 4% of non-Aboriginal households (ABS 2011).

Functional housing: Since 1999, the NSW Ministry of Health in partnership with other State and Commonwealth agencies has been delivering Housing for Health projects in the Aboriginal community housing sector across NSW. The targeted Program has surveyed and serviced over 2146 houses in Aboriginal communities in the period 1999 to 2009, and baseline data on health hardware within houses before servicing provides objective information on the quality of housing of those receiving the Program. Of all the houses surveyed before servicing, 18% had satisfactory waste water removal, 61% had flush toilets working, 27% had adequate laundry services, 59% had adequate facilities for washing a young child, 36% had adequate showers and 7% had satisfactory facilities to store, prepare and cook food. In terms of safety, 17% met the fire safety requirements of the Program, 30% were structurally safe with adequate access and only 8% were electrically safe.

A 2008 study of housing in Aboriginal communities showed that the major causes of 'house failure' (i.e. failure to deliver functioning health hardware) was a lack of routine maintenance (65%) and either poor initial construction or faulty equipment (25%) (Torzillo et al. 2008). Of the houses surveyed, only 10% of house failure was due to householder damage, overuse, misuse or vandalism.

In 2010, a 10-year evaluation of the Housing for Health Program demonstrated that the intervention, which aims to test and repair or replace health hardware so that houses are safe and the occupants have the ability to carry out healthy living practices, reduced hospitalisations for infectious diseases by 40%, compared to the rest of the rural NSW Aboriginal population (NSW Health 2010a). Of all the houses surveyed after servicing (1773 houses), 62% had satisfactory waste water removal, 90% had flush toilets working, 73% had adequate laundry

services, 90% had adequate facilities for washing a young child, 86% had adequate showers and 25% had satisfactory facilities to store, prepare and cook food. In terms of safety, 68% met the fire safety requirements of the Program, 65% were structurally safe with adequate access and 72% were electrically safe.

Closing the gap: A holistic approach to health is required to address environmental health risk factors, such as poor housing, overcrowding and exposure to smoke in the home, which significantly affect the health and wellbeing of Aboriginal people. The Housing for Health Program and the NSW Aboriginal Community Water and Sewerage Program are important in addressing environmental health risk factors. There is evidence to show that these programs are effective in ensuring Aboriginal people have access to safe, secure housing and facilities that are critical for healthy living, and in turn build the capacity of Aboriginal communities to participate in the economic and social life of the broader community.

Environmental exposure to tobacco smoke

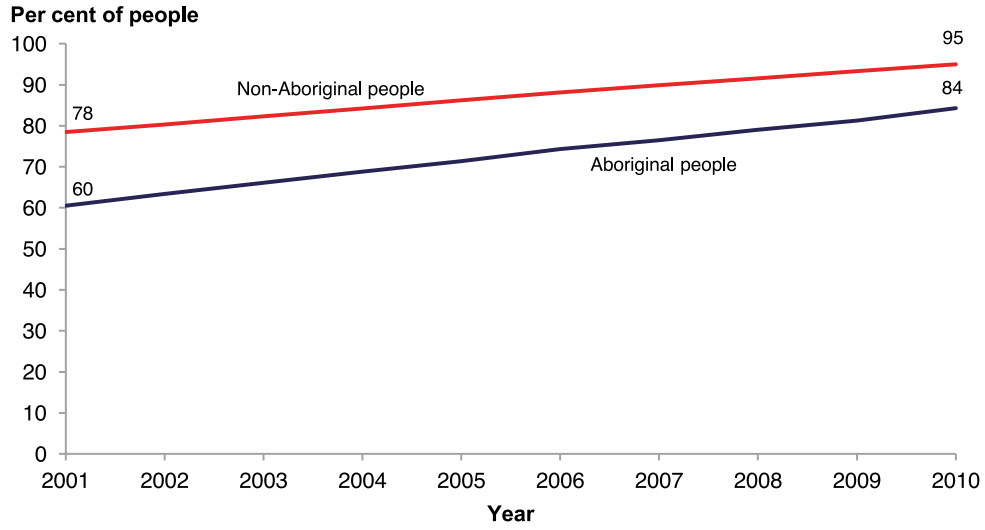
Health issue: Exposure to environmental tobacco smoke is known as passive smoking. It increases a non-smoker's risk of lung cancer and ischaemic heart disease (NHMRC 1997) and is associated with an increased risk of respiratory disease in adults and middle ear infection in children (Jacoby et al. 2008). Exposure to environmental tobacco smoke for newborn children is a major risk factor for sudden infant death syndrome (SIDS) (Australian Government 2011).

The home is the most likely setting for exposure to environmental tobacco smoke. Those at particular risk are pregnant women and children who live with parents or relatives who smoke. Overcrowding in housing also increases the risk of exposure to environmental tobacco smoke (Australian Government 2011). Smoking in cars is also a common environment for child exposure to second-hand smoke.

Health disparity: Using smoothed estimates from the NSW Adult Population Health Survey in 2010, 84% of Aboriginal people were living in a smoke-free household compared with 95% of non-Aboriginal people (Figure 31). Using these estimates, Aboriginal people were 10% less likely to live in a smoke-free home than non-Aboriginal people. In the past 10 years, the percentage of both Aboriginal and non-Aboriginal people living in a smoke-free home has increased, from an estimated 60% and 78% in 2001, and over this time the gap between Aboriginal and non-Aboriginal people appears to have narrowed slightly.

Closing the gap: In order to reduce higher rates of exposure to environmental tobacco smoke among Aboriginal people, effective health promotion programs and services are needed that reduce smoking in the home and car and also target reducing the uptake of smoking in young people (Carson et al. 2011; Priest et al. 2008). Reducing exposure to environmental tobacco smoke will reduce the incidence of short, medium and long-term health effects in non-smokers, and reduce the subsequent uptake of smoking in children of smokers (Australian Government 2011). The recent NSW Tobacco Legislation Amendment Bill 2012 has increased restrictions on smoking in public outdoor places and will be introduced in January 2013.

Figure 31: Living in a smoke-free home by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

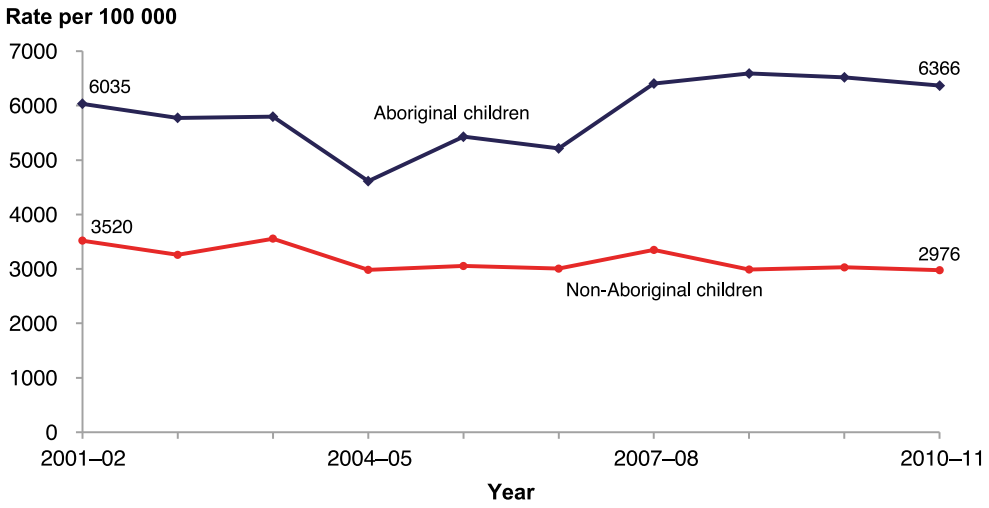
Hospitalisations for environmental health-related disease

Health issue: Hospitalisations among children for infectious diseases that are most likely to be affected by environmental conditions include respiratory infections, gastro-intestinal infections, skin infections, and eye and ear infections. While some of these conditions may not be life threatening for adults, they can be for children, particularly those aged less than 5 years. Hospitalisation rates for children aged less than 5 years for these conditions can indicate a burden of infectious diseases linked to environmental factors.

Health disparity: Aboriginal children aged less than 5 years are 1.7 times more likely to be admitted to hospital for respiratory diseases than non-Aboriginal children. They are also 1.6 times more likely to be admitted to hospital for infectious diseases than non-Aboriginal children, and 2.9 times more likely to be admitted to hospital for skin conditions than non-Aboriginal children (Figure 25). In the past 10 years there has been a significant increase in the rates of hospitalisations of Aboriginal children for acute respiratory infections, from 6035 per 100 000 in 2001–02 to 6366 per 100 000 in 2010–11, and a significant increase in the gap between Aboriginal and non-Aboriginal children over this time (Figure 32).

Closing the gap: There is evidence demonstrating a relationship between improved living environments and the improved health of populations (NSW Health 2010a). Literature suggests that targeting repairs to 'health hardware' and improving the ability of a house to support healthy living practices contributes to a reduction in the spread of infectious disease. Programs which address functional housing in Aboriginal communities have demonstrated an impact on lowering hospitalisation rates for infectious diseases. For the NSW Housing for Health Program there is an association between exposure to the Program and hospital separations for specific environmentally-related infectious disease groups (i.e. intestinal infections, skin infections, acute respiratory infections and otitis media) (NSW Health 2010a). People who lived in properties where the Housing for Health intervention was implemented had a significantly reduced rate of hospital separations for these diseases – 40% less than the hospital separation rate for the rest of the rural NSW Aboriginal population living in properties where the Housing for Health intervention was not implemented.

Figure 32: Acute respiratory infection hospitalisations by Aboriginality, children aged 0–4 years, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

3.3 Risk and protective health factors

This section reports on risk and protective health factors that contribute to the higher burden of disease and injury experienced by Aboriginal people. Risk factors that contribute most include smoking, physical inactivity, poor diet and alcohol use. Protective health factors are also reported, including accessing breast cancer screening, and adult vaccination uptake. Although these factors are reported as individual behaviours, they are influenced by historical, social, economic and environmental factors operating at the community level. Access to affordable healthy food, for example, can greatly affect people's ability to make healthy food choices.

Tackling smoking in the Aboriginal community is a key priority of the **National Partnership Agreement on Closing the Gap in Indigenous Health Outcomes** (COAG 2009a). **NSW 2021** has set a target to reduce smoking rates in Aboriginal people by 4% by 2015 (NSW Government 2011) and to reduce rates of smoking by pregnant Aboriginal women by 2% per year. The State Plan also sets targets

for the whole population in NSW to: reduce overweight and obesity rates of children and young people (5–16 years) by 21% by 2015; and to stabilise overweight and obesity rates in adults by 2015, and then reduce by 5% by 2020; and to reduce total risk drinking to below 25% by 2015.

Key facts

- Using smoothed estimates from the NSW Adult Population Health Survey:
  - Aboriginal people were 2.2 times more likely to report current smoking than non-Aboriginal people (2010)
  - 60% of Aboriginal people reported being overweight or obese, compared with 54% of non-Aboriginal people (2010)
  - Aboriginal people and non-Aboriginal people reported undertaking physical activity at similar levels (2010)
  - Aboriginal people were 10% less likely than non-Aboriginal people to report vaccination against influenza in the previous 12 months (2010)
- Aboriginal males were 3.1 times more likely to be hospitalised for alcohol-related causes than non-Aboriginal males and Aboriginal females were 2.3 times more likely to be hospitalised for alcohol-related causes than non-Aboriginal females (2010–11)
- The breast screening rate for Aboriginal women aged 50–69 years was 36% compared with 53% for all NSW women aged 50–69 years (2009–10)

Smoking

Health issue: Smoking is a major risk factor for cardiovascular disease, chronic lung disease and some cancers. As a preventable risk factor, smoking contributes most to the higher mortality rate for many cancers among Aboriginal people, and is a risk factor for other diseases including cardiovascular disease and chronic lung disease (Ivers 2011). Burden of disease data attribute 17% of the difference in health outcomes between Aboriginal and non-Aboriginal people to smoking (Vos et al. 2009). Smoking during pregnancy is a major risk factor for low birth-weight, infant mortality and sudden infant death syndrome (SIDS). Exposure to environmental tobacco smoke (passive smoking) increases the risk of infectious disease such as otitis media, respiratory infection, cardiovascular disease and cancer (Ivers 2011).

Health disparity: Smoking prevalence rates for Aboriginal people in NSW vary depending on data sources used and differing methodologies. National population-based surveys, which use face-to-face interviews, report a higher prevalence of smoking among Aboriginal people than the NSW Adult Population Health Survey, which uses telephone interviews. For this indicator, NSW results from the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) (ABS 2009b) are presented as well as trend information from the NSW Adult Population Health Survey.

The NATSISS results for NSW indicated 48.2% of Aboriginal people (15 years and over) were current smokers, 29.9% had never smoked, and the remaining 21.9% were ex-smokers (ABS 2009b). In comparison with the total NSW population from the National Health Survey 2007–08, 21.6% were current smokers, 46.8% had never smoked and 31.6% were ex-smokers (ABS 2009c).

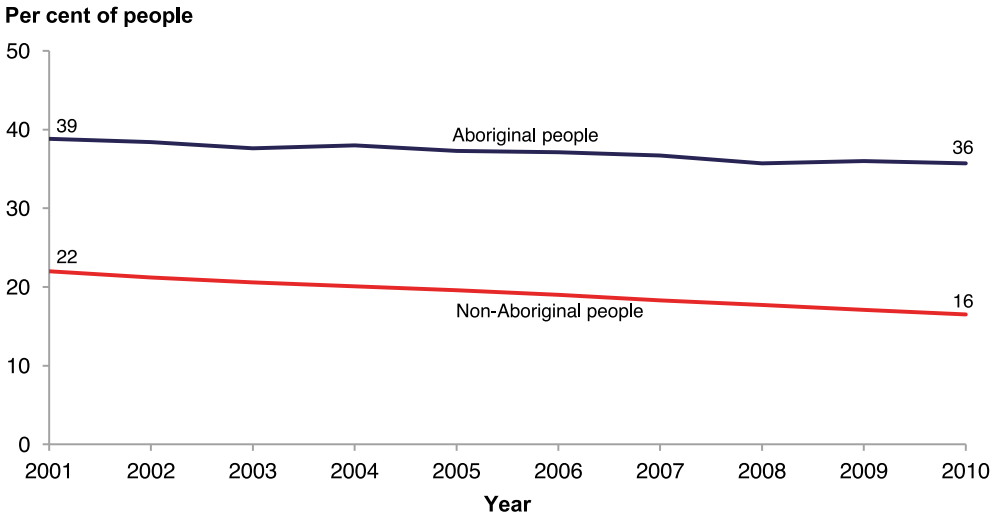
NSW population health data provides useful information on trends in smoking rates for Aboriginal people in NSW. While estimates of smoking prevalence vary between the national and NSW surveys, both demonstrate a large disparity in smoking rates between Aboriginal and non-Aboriginal people, a high prevalence of smoking among Aboriginal people, and a downward trend in smoking rates for both Aboriginal and non-Aboriginal people (AIHW 2011d; Steering Committee for the Review of Government Service Provision 2011).

In the past 10 years, using smoothed estimates from the NSW Adult Population Health Survey, the daily or occasional smoking rates in both Aboriginal and non-Aboriginal people have decreased from an estimated 39% for Aboriginal people and 22% for non-Aboriginal people in 2001, to 36% and 16% respectively in 2010. The gap between Aboriginal and non-Aboriginal people has remained constant over this time (Figure 33). Aboriginal people were 2.2 times more likely to smoke than non-Aboriginal people.

The rate of smoking-attributable hospitalisations has significantly increased in Aboriginal males and females in NSW in the past 10 years (Figure 34). In 2010–11, Aboriginal males were 2.5 times more likely to have a smoking-related hospitalisation than non-Aboriginal males and Aboriginal females were 3.6 times more likely to have a smoking-related hospitalisation than non-Aboriginal females.

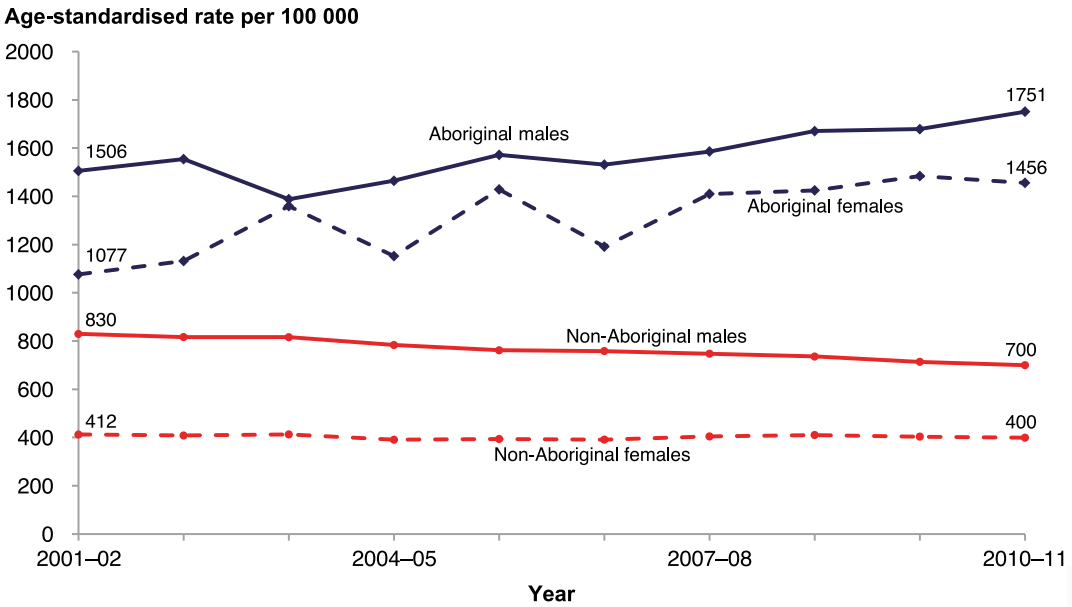
Closing the gap: There is approximately 18% difference in smoking rates between Aboriginal and non-Aboriginal people. **NSW 2021** sets a target to reduce smoking rates by 4% by 2015 for Aboriginal people (NSW Government 2011). Brief interventions such as motivational interviewing, nicotine replacement therapy, group-based programs, and coordinated multi-component programs are effective in supporting people to quit smoking (Bellew 2007; Fiore et al. 2008). The trajectory required to close the gap in the prevalence of smoking between Aboriginal and non-Aboriginal people from 2008 to 2033 is shown in Figure 35.

Figure 33: Current daily or occasional smoking by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



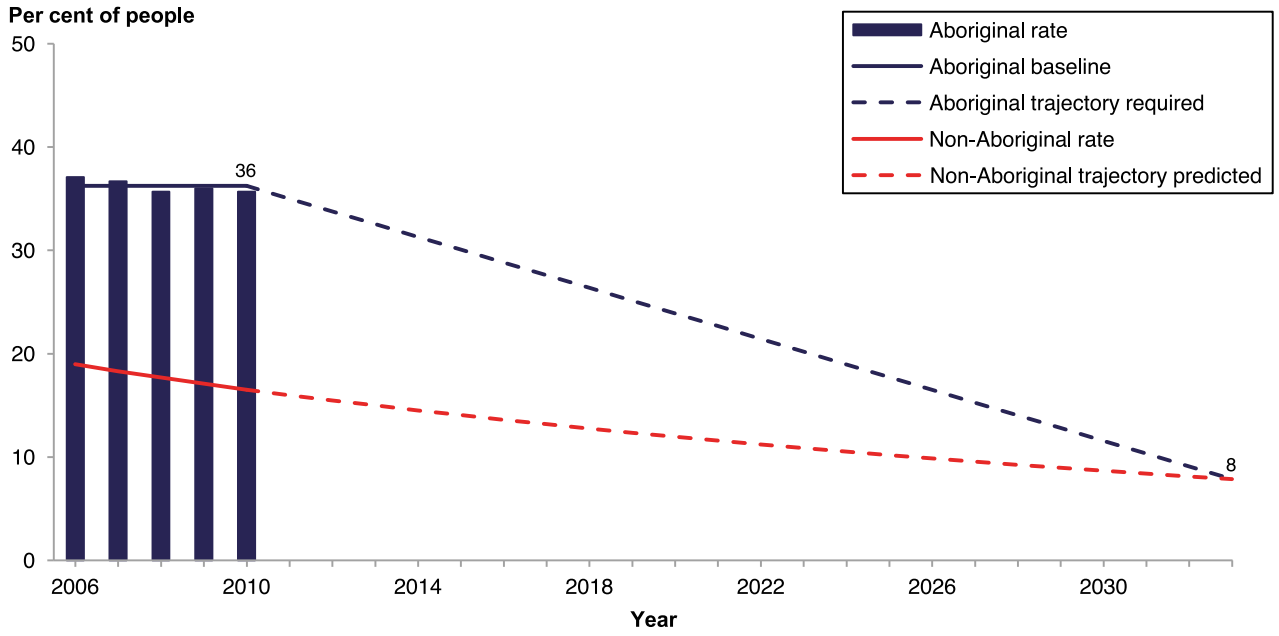
Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 34: Smoking-attributable hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 35: Reducing smoking rates, trajectory required to close the gap in NSW by 2033



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Alcohol use

Health issue: Alcohol misuse is a major risk factor for conditions such as liver disease, pancreatitis, diabetes and some types of cancer, and contributes to motor vehicle accidents, falls, burns and suicide (Australian Government 2011). Alcohol misuse has also been associated with social and emotional harms such as family violence, and can lead to community dysfunction and incarceration (Wilson et al. 2010). Fetal alcohol spectrum disorders may occur when mothers have consumed alcohol during pregnancy. Burden of disease data attribute 4% of the difference in health outcomes between Aboriginal and non-Aboriginal people to alcohol misuse (Vos et al. 2009).

Health disparity: Results from the NATSISS 2008 (compared with the total NSW population from the National Health Survey 2007–08) (ABS 2009b, 2009c) showed the following:

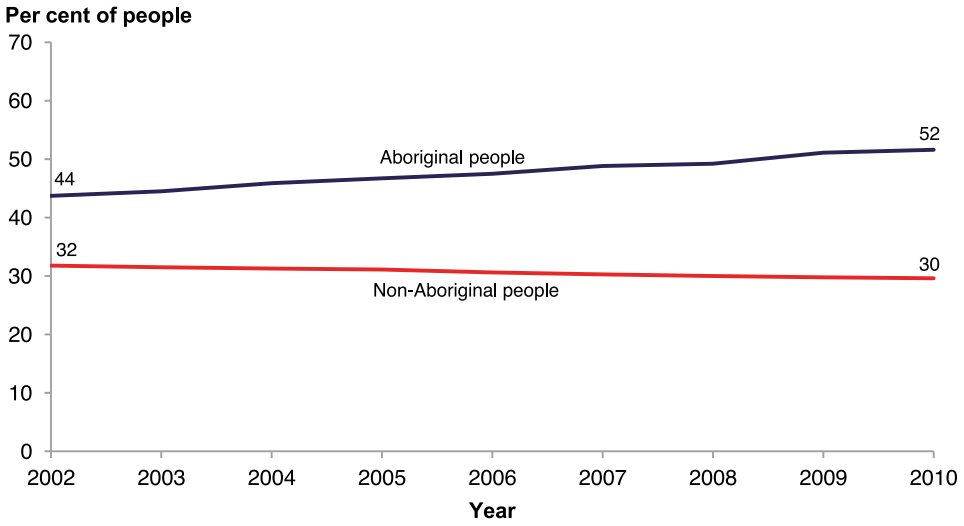
- Aboriginal people aged 15 years and over were more likely to report having abstained from alcohol consumption in the past 12 months (33% compared to 15%).
- Approximately 48% of Aboriginal people drank at low-risk levels in the past 12 months, compared with 51% in the total NSW population – low-risk alcohol intake is defined as up to four standard drinks on a day for males, and up to two standard drinks for females.
- Approximately 11% of Aboriginal people drank at risky levels in the past 12 months, compared with 7% in the total NSW population – risky alcohol intake is defined as five or six standard drinks on a day for males, and three or four standard drinks for females.
- Approximately 6% of Aboriginal people in NSW drank at high-risk levels in the past 12 months compared with 8% of non-Aboriginal people – high-risk alcohol intake is defined as more than six standard drinks on a day for males, and more than four standard drinks for females (ABS 2009b, 2009c).

In 2010 in NSW, using smoothed estimates from the NSW Adult Population Health Survey, 52% of Aboriginal people consumed more than two standard drinks on a day when drinking alcohol, compared with 30% of non-Aboriginal people (Figure 36). Aboriginal people were 1.7 times more likely to report alcohol use above the recommended guidelines than non-Aboriginal people. In the past 10 years, alcohol use in Aboriginal people above the recommended guidelines has increased, from an estimated 44% in 2002, and the difference between Aboriginal and non-Aboriginal people appears to be widening (Figure 36).

In the past 10 years the rate of alcohol-attributable hospitalisations for Aboriginal males increased from 1967 to 2277 per 100 000, and the rate for Aboriginal females rose from 1015 to 1133 per 100 000 (Figure 37). In 2010–11, Aboriginal males were 3.1 times more likely to be hospitalised for alcohol-related causes than non-Aboriginal males, and Aboriginal females were 2.3 times more likely to be hospitalised for alcohol-related causes than non-Aboriginal females.

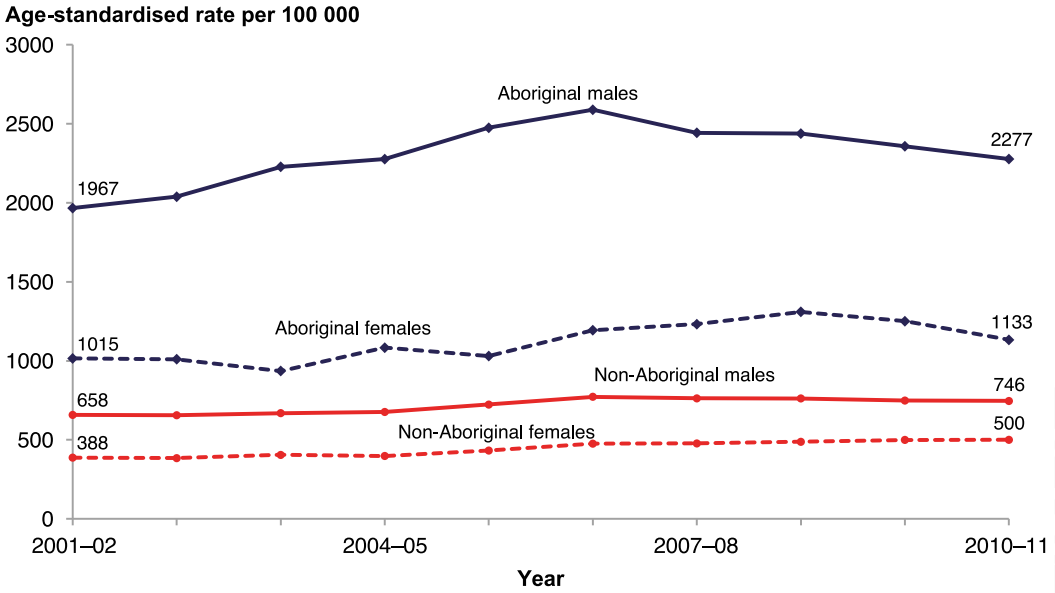
Closing the gap: Evidence shows that alcohol screening and brief intervention in primary health care can be an effective treatment for reducing alcohol misuse (Kaner et al. 2007; Vos et al. 2010), and these interventions can be delivered through ACCHSs (Clifford and Shakeshaft 2010). **NSW 2021** outlines a general target for all NSW adults to reduce the prevalence of total risk drinking to below 25% by 2015 (from 30% in 2010) (NSW Government 2011).

Figure 36: More than two standard drinks on a day when drinking alcohol by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2002 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 37: Alcohol-attributable hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Note: Reported rates of alcohol use for Aboriginal people in NSW vary depending on data sources used. Variations in results between state and national surveys may be due to survey methodology, sample size and analysis technique. For this indicator, NSW information from the National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) has been presented as well as information on trends from the NSW Adult Population Health Survey.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Overweight and obesity

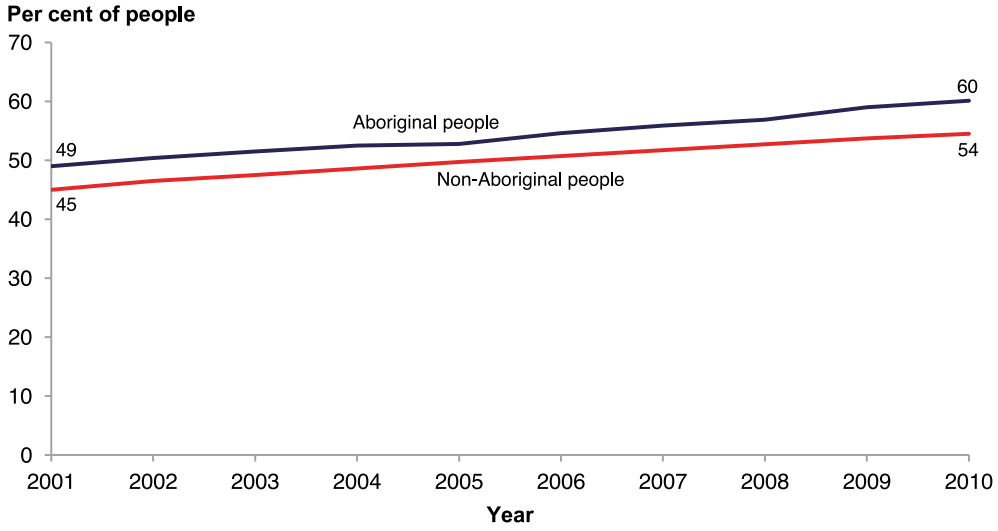
Health issue: Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health (WHO 2000). Body mass index (BMI) is a simple index of weight-for-height that is used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in metres (kg/m^2) and on a population basis there is a strong association between BMI and health risk (NHMRC 2003).

Being overweight or obese is a risk factor for chronic diseases including diabetes and cardiovascular disease and is associated with higher rates of morbidity and mortality among Aboriginal people (Australian Government 2011; NHMRC 2000). Burden of disease data attribute 16% of the difference in health between Aboriginal and non-Aboriginal people to high body mass, second only to smoking as the major cause of the health disparity (Vos et al. 2009).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Adult Population Health Survey data, 60% of Aboriginal people were calculated as being overweight or obese (BMI > 25 kg/m^2), compared with 54% of non-Aboriginal people (Figure 38). In the past 10 years, the proportion of Aboriginal and non-Aboriginal people who are overweight or obese has increased, from an estimated 49% and 45% in 2001, respectively, although the difference appears to be remaining constant.

Closing the gap: NSW 2021 outlines a general target to stabilise overweight and obesity rates in all NSW adults by 2012, and then to reduce the rates by 5% by 2020. The target for children is to reduce overweight and obesity rates of children and young people (5–16 years) to 21% by 2015. For all NSW children (5–16 years), 22.8% were overweight or obese in 2010, using child overweight and obesity definitions (Hardy 2011; Cole et al. 2000). No data for overweight and obesity is currently available for Aboriginal children (5-16 years) in NSW.

Figure 38: Overweight and obesity by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



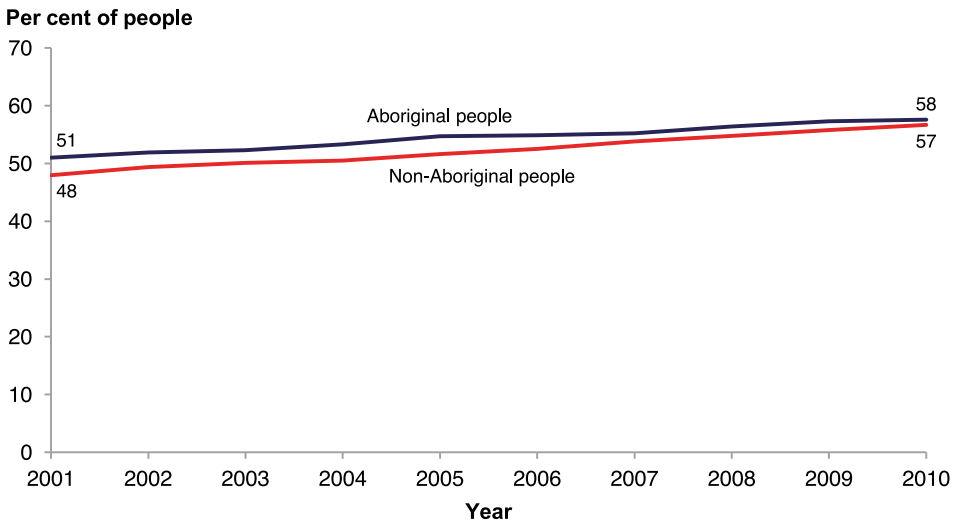
Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Levels of physical activity

Health issue: An adequate level of physical activity is defined as a total of at least 150 minutes of physical activity every week over five separate occasions (NHFA/CSANZ 2012). Regular physical activity is a health factor protective against the development of health conditions such as obesity, diabetes, heart disease and hypertension (Australian Government 2011). Physical activity can also improve the treatment and management of depression, anxiety and stress (Australian Government 2011). Burden of disease data attribute 12% of the disparity in health between Aboriginal and non-Aboriginal people to physical inactivity (Vos et al. 2009). Physical inactivity contributes 55% to the burden of ischaemic heart disease in Aboriginal people, and 33% of the burden of diabetes in Aboriginal people (Australian Government 2011).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Adult Population Health Survey, 58% of Aboriginal people reported adequate levels of physical activity compared with 57% of non-Aboriginal people. In the past 10 years, adequate levels of physical activity have increased in both Aboriginal and non-Aboriginal people, from an estimated 51% and 48% in 2001, respectively, and the difference appears to be narrowing (Figure 39).

Figure 39: Adequate physical activity by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Fruit and vegetable intake

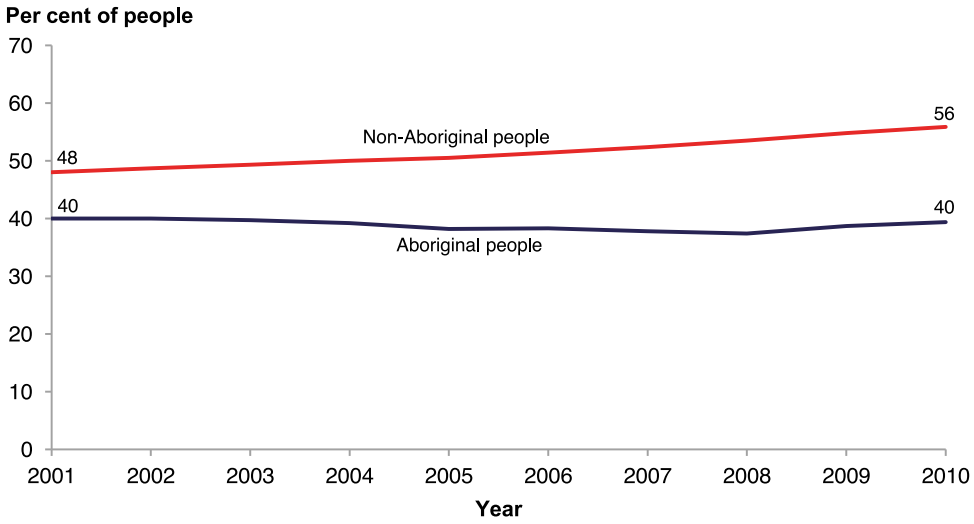
Health issue: Eating enough fruit and vegetables has a protective effect against nutrition-related diseases such as heart disease, Type 2 diabetes and renal diseases, which are common among Aboriginal people (Australian Government 2011). Burden of disease data attribute 5% of the difference in health between Aboriginal and non-Aboriginal people to low fruit and vegetable intake (Vos et al. 2009). Access to affordable fruit and vegetables affects people's ability to maintain a healthy diet in line with recommended guidelines, particularly in remote areas (Australian Government 2011).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Adult Population Health Survey, 40% of Aboriginal people were consuming the recommended intake of fruit (two or more serves a day), compared with 56% of non-Aboriginal people. In the past 10 years, the proportion of Aboriginal people consuming the recommended amount of fruit has remained constant while the proportion of non-Aboriginal people is increasing, therefore the gap is widening (Figure 40).

In 2010, an estimated 9% of Aboriginal people were consuming the recommended intake of vegetables (five or more serves a day), compared with 10% of non-Aboriginal people. In the past 10 years, the proportion of both Aboriginal and non-Aboriginal people eating the recommended daily amount of vegetables is low, and has not changed over this time (Figure 41).

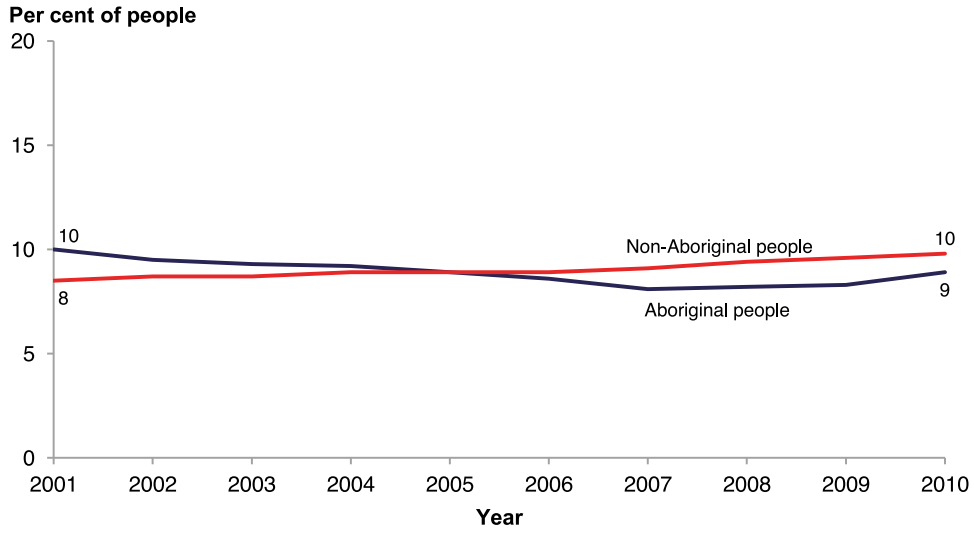
Closing the gap: Diets rich in plant foods are associated with a lower incidence of cardiovascular disease, Type 2 diabetes, some cancers, and cataract and macular degeneration of the eyes (Australian Indigenous HealthInfoNet 2008a). While there is limited evidence in relation to promoting healthy eating among Aboriginal people, some promising approaches include using settings-based action areas such as families and communities, early childhood care, school community, worksites and primary health-care services as they provide an integrated way of reaching specific target groups and influencing behavioural and social and environmental factors (NSW Centre for Public Health Nutrition 2005; Bellew 2007).

Figure 40: Two or more serves of fruit a day, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 41: Five or more serves of vegetables a day, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

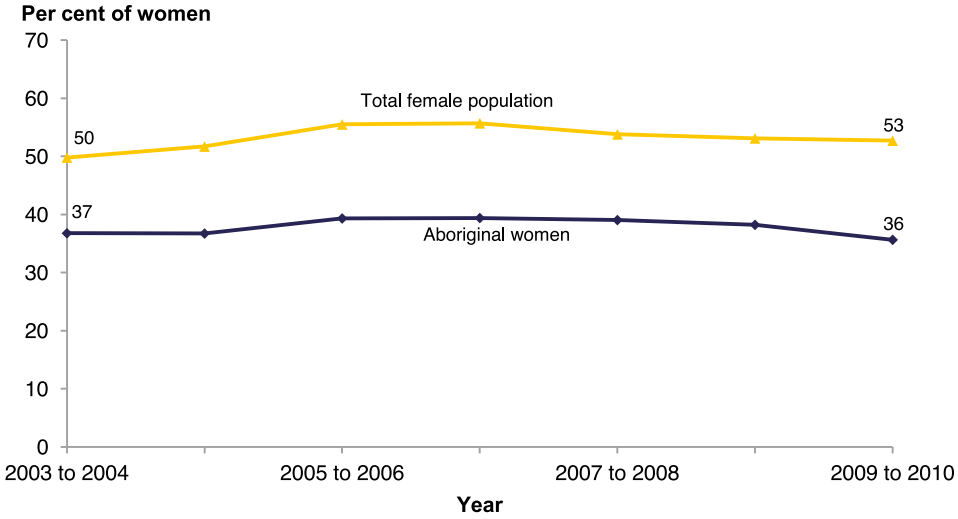
Breast cancer screening

Health issue: Breast cancer screening can reduce mortality and morbidity from breast cancer by screening women aged 50–69 years for early detection of the disease. In the period 2000 to 2004, breast cancer was the most common cancer experienced by Aboriginal women, accounting for 25% of all cancers diagnosed among Aboriginal women in NSW. Breast cancer incidence rates and mortality rates are higher among Aboriginal women than in the total female population (Cancer Institute NSW 2012).

Health disparity: In the period 2009 to 2010, the 2-yearly breast screening rate for Aboriginal women aged 50–69 years was 36% compared with 53% for all NSW women aged 50–69 years (Figure 42).

Closing the gap: To increase breast cancer screening among Aboriginal women, culturally-appropriate health promotion and screening services are required as part of organised screening programs as well as in primary care services. Higher mortality rates among Aboriginal women may reflect inequitable access to screening programs, later diagnosis and therefore poorer outcomes (Stumpers and Thomson 2009).

Figure 42: Breast cancer screening by Aboriginality, women aged 50–69 years, NSW, 2003 to 2010



Source: BreastScreen NSW and ABS population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Adult vaccination rates

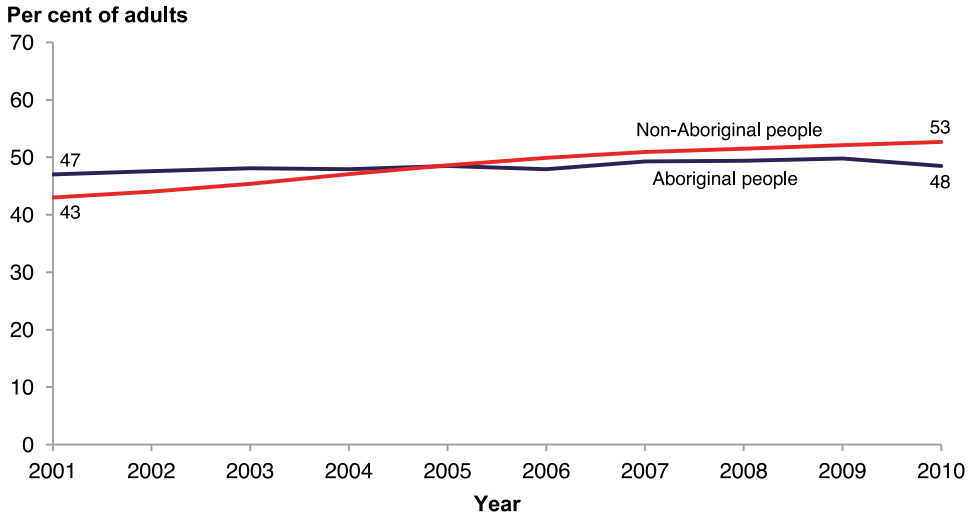
Health issue: Aboriginal people have higher rates of morbidity and mortality due to vaccine-preventable diseases than non-Aboriginal people. Respiratory disease is a major cause of preventable illness and death in Aboriginal communities, with some Aboriginal communities, within Australia, having the highest incidence of invasive pneumococcal disease in the world (Australian Government 2009). Influenza and pneumonia account for many deaths in the elderly Aboriginal population (Australian Government 2011). More vaccines are becoming available and are recommended for use during adulthood, and of those vaccines recommended for adults, seasonal influenza and pneumococcal polysaccharide vaccines are currently funded under the National Immunisation Program in NSW.

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Adult Population Health Survey, 48% of Aboriginal adults aged 50 years and over were vaccinated against influenza in the past 12 months, compared with 53% of non-Aboriginal people. In the past 10 years vaccination against influenza increased in non-Aboriginal people and remained constant in Aboriginal people (Figure 43).

In 2010, an estimated 33% of Aboriginal adults aged 50 years and over were vaccinated against pneumococcal disease, compared with 34% of non-Aboriginal people. In the past 10 years, vaccination against pneumococcal disease for both Aboriginal and non-Aboriginal people has increased, from an estimated 26% and 22% respectively in 2002 (Figure 44).

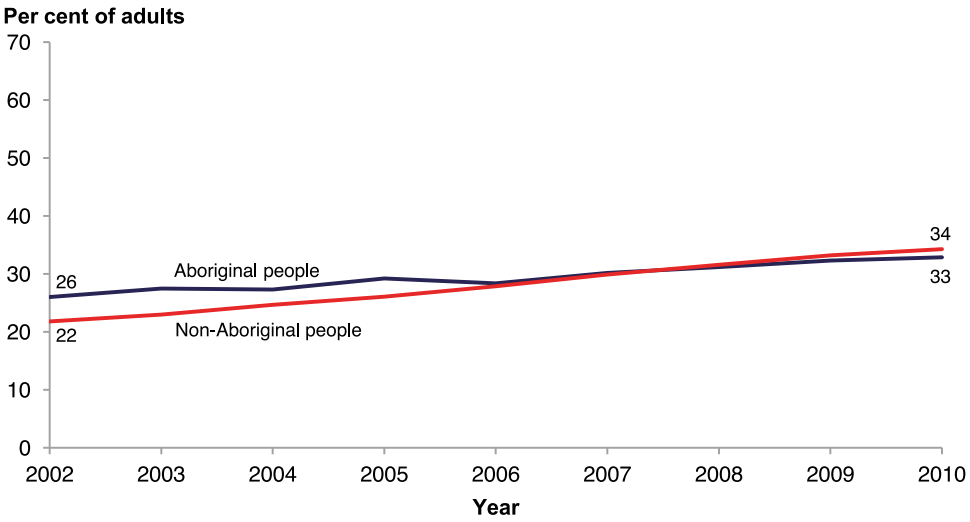
Closing the gap: While there is not a disparity between Aboriginal and non-Aboriginal vaccination rates, further uptake of timely vaccinations for both Aboriginal and non-Aboriginal people through culturally-competent services and programs may be beneficial to prevent the spread of vaccine-preventable disease.

Figure 43: Vaccination against influenza in the past 12 months by Aboriginality, adults aged 50 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 44: Vaccination against pneumococcal disease in the past 5 years by Aboriginality, adults aged 50 years and over, smoothed estimates, NSW, 2002 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 4: Burden of ill-health

This chapter covers leading chronic diseases, communicable diseases, social and emotional wellbeing, injury and poisoning, cancer and oral health. Together these health issues are major contributors to the burden of disease and injury among Aboriginal people and to the health disparity between Aboriginal and non-Aboriginal people in NSW.

Only trends that are statistically significant (to a p-value of < 0.05) are reported as 'significant'; no statistically significant trend is reported as 'no significant change'.

4.1 Chronic disease

Chronic conditions including cardiovascular disease, diabetes, chronic respiratory disease and cancer account for approximately 70% of the health disparity between Aboriginal and non-Aboriginal people and 59% of excess mortality for Aboriginal people (Vos et al. 2009). Aboriginal people living in NSW experience a higher prevalence of most chronic diseases compared with non-Aboriginal people, particularly at younger ages, which has a major impact on the wellbeing of families and communities. Factors contributing to the higher burden of chronic disease in Aboriginal people include lower socioeconomic status and other social determinants of health, both of which are barriers in accessing timely, comprehensive primary health care for the prevention and early diagnosis of disease. Differences in access to culturally-competent hospital and specialist care also result in Aboriginal people presenting to health services later in the course of the disease, which results in higher rates of complications and death (NSW Health 2008b; Steering Committee for the Review of Government Service Provision 2009).

Managing chronic diseases well requires coordination between multiple service providers, and culturally-competent communication between providers and patients (Peiris et al. 2009; Cass et al. 2002). Despite improvements in screening programs for chronic disease in Aboriginal populations, levels of preventive screening for chronic disease could be substantially increased. For example, lower participation in cancer screening programs such as Pap test screening (Condon 2004), and delayed diagnoses in Aboriginal people, contribute markedly to lower cancer survival rates (Lowenthal et al. 2005).

Key facts

- In 2010–11 the most common groups of conditions causing hospitalisation of Aboriginal people were dialysis, injury and poisoning, respiratory diseases and maternal, neonatal and congenital causes.
- In 2009–10, Aboriginal people were 2.7 times more likely to be hospitalised for diabetes than non-Aboriginal people.
- In 2010–11, Aboriginal people were 1.6 times more likely to be hospitalised for cardiovascular disease and 1.7 times more likely to be hospitalised for stroke than non-Aboriginal people.
- Aboriginal people experience higher rates of respiratory diseases such as chronic obstructive pulmonary disease and asthma.

Hospitalisations

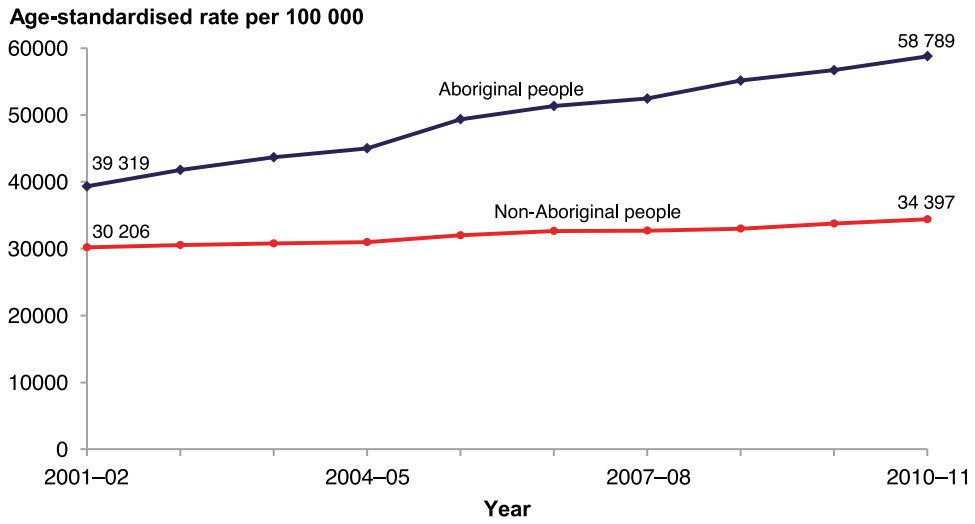
Health issue: The rates at which people are admitted to hospital indicate the occurrence in a population of serious acute illnesses and conditions requiring inpatient hospital treatment, and also reflect how people who are sick access and use hospital inpatient treatment (Australian Government 2011). Hospitalisation rates for a particular disease do not directly indicate the level of occurrence of that disease in the population. For example, in diseases that do not require admission to hospital, or can be treated in primary health-care settings, a high prevalence of the disease will not result in high hospitalisation rates. Increases in hospitalisations may represent an increase in the occurrence or incidence of disease, or may reflect improvements in access to hospitals services relative to need, or improvements in the reporting of Aboriginal people in NSW health data collections.

Health disparity: In 2010–11, Aboriginal people accounted for 3% of all hospitalisations in NSW, and the age-adjusted hospital separation rates for Aboriginal people were 1.7 times the rates for the non-Aboriginal population. This difference is significant between Aboriginal and non-Aboriginal people. In the past 10 years there has been a significant (50%) increase in hospitalisation rates for Aboriginal people compared with a 14% increase for non-Aboriginal people, and a significant change in the difference in rates between Aboriginal and non-Aboriginal people (Figure 45). The steep increase in hospital separation rates for Aboriginal people partly reflects improvements in the correct reporting of Aboriginal people in hospital data over this period, and may also reflect better access to health services, relative to need.

In 2010–11, the most common groups of conditions causing hospitalisation of Aboriginal people were health conditions requiring dialysis; injury and poisoning; respiratory diseases; and maternal, neonatal and congenital causes (Figure 46). The most common principal diagnosis on hospital admissions among Aboriginal people in NSW is respiratory disease, followed by disease of the digestive system. The greatest differences in hospitalisation rates between Aboriginal people and non-Aboriginal people in NSW are for mental and behavioural disorders, and respiratory disease.

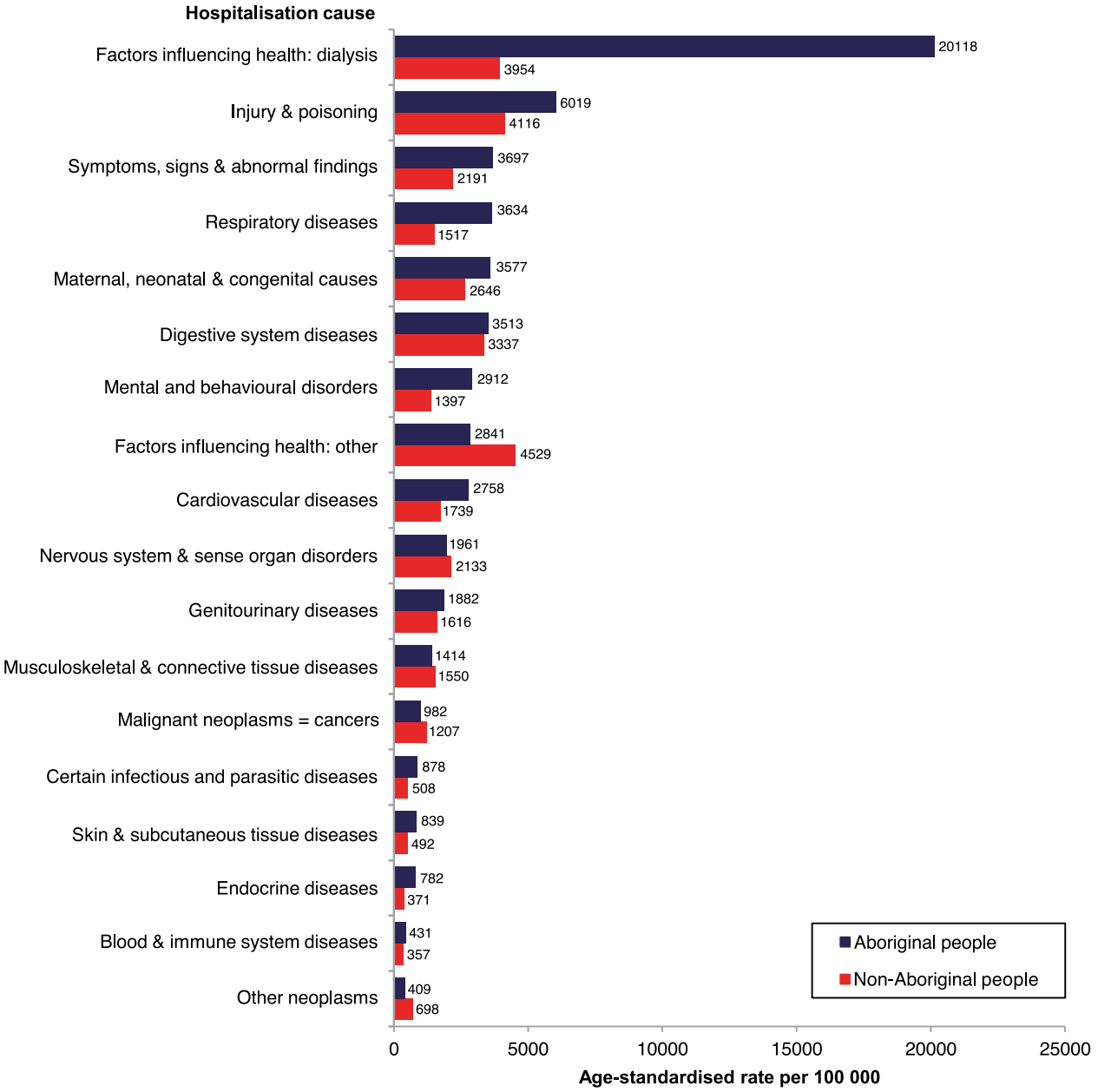
Closing the gap: NSW 2021 (NSW Government 2011) has a target of reducing the age-standardised rate of potentially preventable hospitalisations by 2.5% for Aboriginal people by 2014–15. Potentially preventable hospitalisations are those that could have been avoided by providing accessible, timely and effective preventive care or early medical treatment delivered through primary health care (Australian Government 2011; Porter et al. 2007). The **National Indigenous Reform Agreement** (COAG 2009c) has a target of fixing gaps and improving the patient journey (see Appendix 2). To lower the excess burden of disease experienced by Aboriginal people which leads to higher rates of potentially preventable hospitalisations, a reduction in the prevalence of risk factors and of chronic and communicable diseases among Aboriginal people is needed, and a reduction in the rates of injury and poisoning.

Figure 45: Hospitalisation rates by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 46: Hospitalisation rates by cause and Aboriginality, NSW, 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Diabetes

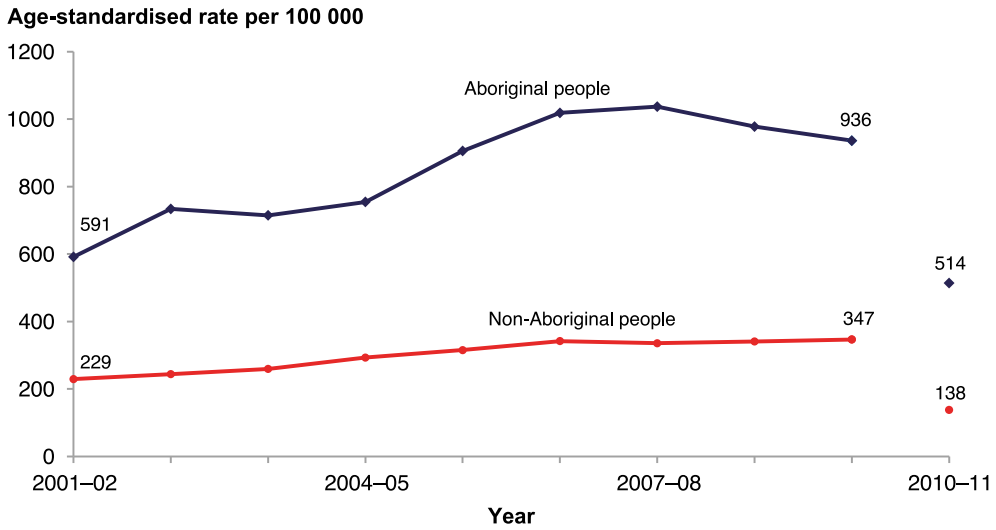
Health issue: Diabetes, particularly Type 2 diabetes, is a major contributor to excess burden of disease among Aboriginal people and to the health gap between Aboriginal and non-Aboriginal people. The onset of diabetes occurs earlier among Aboriginal people, which leads to a greater burden of illness associated with the complications of diabetes, including kidney damage, loss of vision, peripheral nerve damage and peripheral vascular diseases (NSW Health 2008a). Self-reported information on prevalence and incidence, and hospitalisation rates, were available for reporting on diabetes.

Health disparity: In NSW in 2010–11, hospitalisation rates for diabetes were 514 per 100 000 for Aboriginal people and 138 per 100 000 for non-Aboriginal people. This difference is significant. In 2009–10, Aboriginal people were 2.7 times more likely to be hospitalised for diabetes than non-Aboriginal people. In the past 10 years there has been a significant increase in hospitalisation rates for diabetes for Aboriginal people, from 591 per 100 000 in 2001–02, to 936 per 100 000 in 2009–10, and no significant change in the difference in rates between Aboriginal and non-Aboriginal people (Figure 47). Increases in hospitalisations may represent an increase in the occurrence or incidence of disease, or may reflect improvements in access to hospitals services relative to need, or improvements in the reporting of Aboriginal people in NSW health data collections.

In 2010, the NSW Adult Population Health Survey estimated 10% of Aboriginal people self-reported having diabetes or high blood glucose levels, compared with 8% of non-Aboriginal people (Figure 48). This means that Aboriginal people were 1.2 times more likely to have diabetes or high levels of blood glucose than non-Aboriginal people. In the past 10 years self-reported levels of diabetes or high blood glucose levels have increased, with the gap between Aboriginal and non-Aboriginal people narrowing slightly.

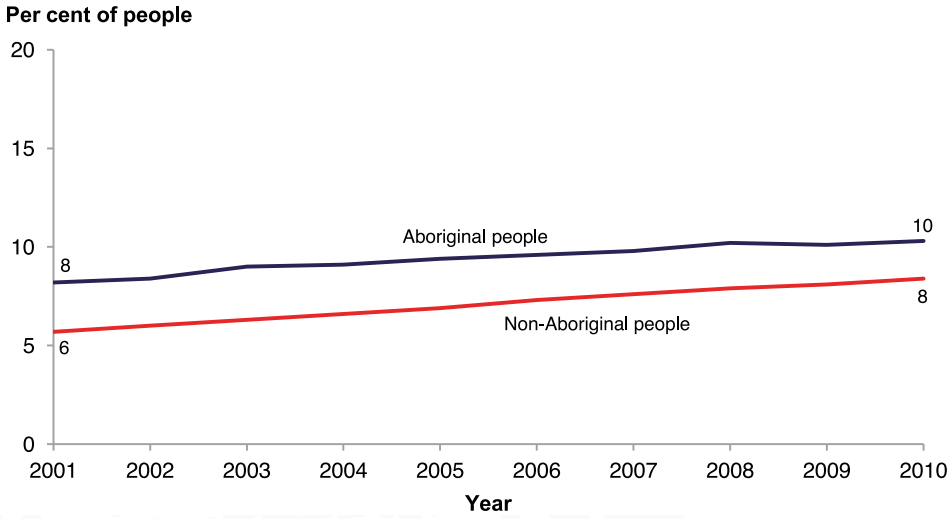
Closing the gap: In order to reduce the higher burden of diabetes and high blood glucose levels in Aboriginal people, primary health-care and health promotion programs have a critical role: in preventing risk factors such as smoking and high body mass; in the early diagnosis and treatment of diabetes; in enabling effective self-management; and in the coordination of services. The **National Guide to Preventative Health Assessment for Aboriginal and Torres Strait Islander People** outlines recommendations such as screening, lifestyle modification advice, chemoprophylaxis for people at high risk and environmental changes for diabetes prevention and early detection (NACCHO/RACCP 2012).

Figure 47: Diabetes hospitalisations by sex and Aboriginality, NSW, 2001–02 to 2010–11



Note: In July 2010, the Australian Coding Standard for diabetes was revised resulting in a change in the way diabetes is coded in hospital data, as either a principal diagnosis or an additional diagnosis (or co-morbidity). This change is responsible for the decrease in the number and rate of hospitalisations for diabetes as a principal diagnosis in NSW between 2009–10 and 2010–11 (around a 60% drop, as shown above). As a result, only data from 2001–02 to 2009–10 (excluding 2010–11) were analysed to assess changes in the gap.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 48: Diabetes or high blood glucose levels by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Cardiovascular diseases

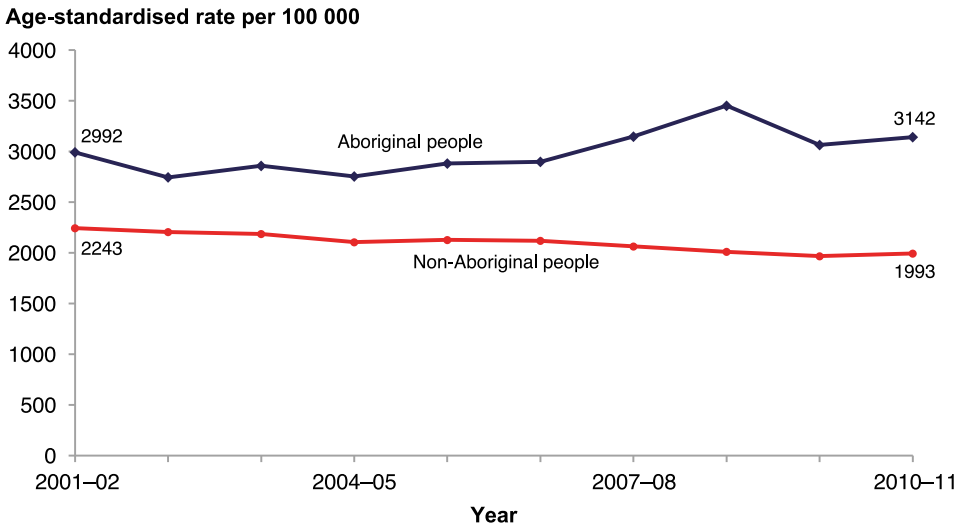
Health issue: Coronary heart disease and stroke are the main forms of cardiovascular disease which cause high rates of hospitalisation for Aboriginal people. Cardiovascular disease is the leading cause of death for Aboriginal males and females in NSW, and is estimated to contribute 23% of the excess burden of disease for Aboriginal people compared with non-Aboriginal people (Vos et al. 2009). Only hospitalisation rates were available for reporting on cardiovascular disease and stroke.

Health disparity: In 2010–11 in NSW, the rate of cardiovascular hospitalisations for Aboriginal people was 3142 per 100 000 and 1993 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 1.6 times more likely to be hospitalised for cardiovascular disease than non-Aboriginal people. In the past 10 years there has been a significant increase in rates of cardiovascular disease hospitalisations for Aboriginal people, from 2992 per 100 000 in 2001–02, and a significant widening in the gap between Aboriginal and non-Aboriginal people (Figure 49).

In 2010–11 the rate of hospitalisations for stroke was 386 per 100 000 for Aboriginal people and 234 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 1.7 times more likely to be hospitalised for stroke than non-Aboriginal people. In the past 10 years there has been a significant increase in rates of stroke hospitalisations for Aboriginal people, from 303 per 100 000 in 2001–02, and a significant widening in the difference in rates between Aboriginal and non-Aboriginal people (Figure 50). Increases in hospitalisations may represent an increase in the occurrence or incidence of disease, or may reflect improvements in access to hospitals services relative to need, or improvements in the reporting of Aboriginal people in NSW health data collections.

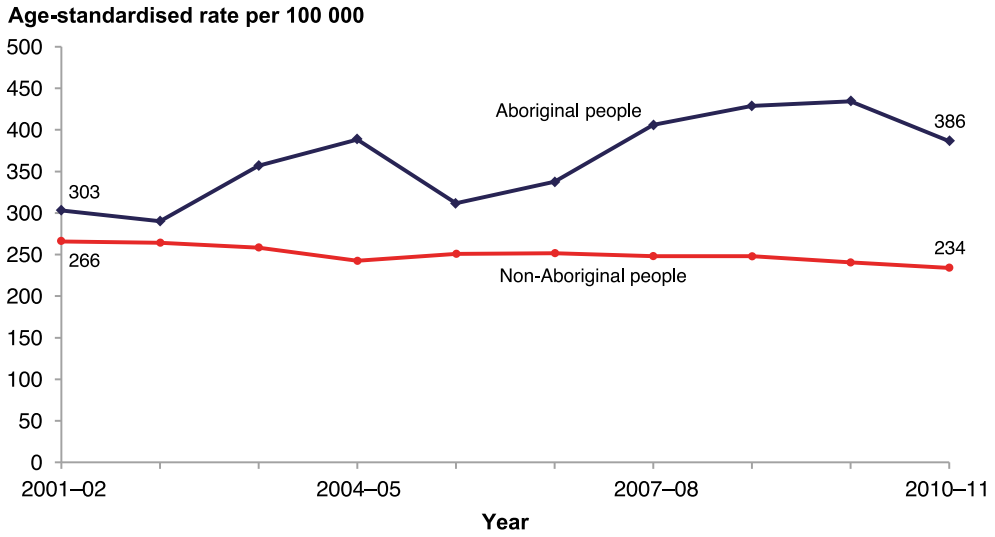
Closing the gap: Reducing risk factors such as tobacco smoking, physical inactivity, poor diet and alcohol consumption will reduce the higher rates of cardiovascular disease among Aboriginal people (NSW Health 2008a). Primary health-care and health promotion programs play a critical role in the prevention of risk factors; in the early diagnosis and treatment of cardiovascular disease; in enabling effective self-management; and in coordination of services. Interventions should focus on reducing risk factors and improving access to services, including rehabilitation services (Katzenellenbogen et al. 2011).

Figure 49: Cardiovascular disease hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 50: Stroke hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

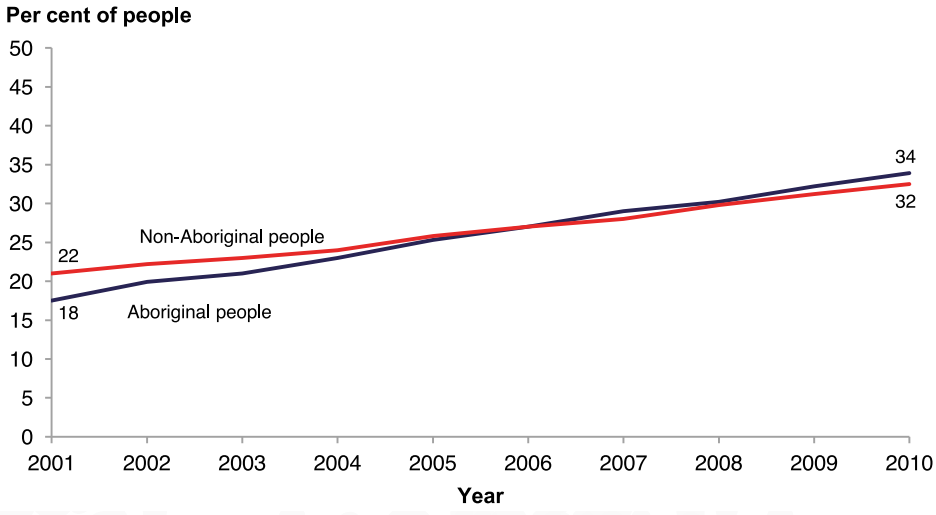
High blood pressure

Health issue: For use in Australian surveys, high blood pressure is defined as systolic blood pressure greater than or equal to 140 mmHg, or diastolic blood pressure greater than or equal to 90 mmHg, or a person receiving medication for high blood pressure (AIHW 2011e). High blood pressure is a risk factor for serious diseases of the circulatory system, including angina and heart attack, stroke and reduced blood flow to many organs, which can lead to deteriorating vision, kidney failure, chronic leg ulcers and gangrene (Australian Government 2011). Burden of disease data estimate that high blood pressure accounts for 6% of the health gap between Aboriginal people and non-Aboriginal people (Vos et al. 2009).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Population Health Survey, 34% of Aboriginal people were found to have high blood pressure, compared with 32% of non-Aboriginal people (Figure 51). In the past 10 years, high blood pressure has increased for both Aboriginal and non-Aboriginal people, from smoothed estimates of 18% and 21% in 2001 respectively.

Closing the gap: While there is not a significant difference in rates of high blood pressure between Aboriginal and non-Aboriginal people, primary health-care and health promotion programs are critical for reducing risk factors such as smoking and in early detection and appropriate treatment. Protective factors for reducing high blood pressure include increasing physical activity and eating a healthy diet, having a healthy weight and, if needed, taking appropriate medication.

Figure 51: High blood pressure by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

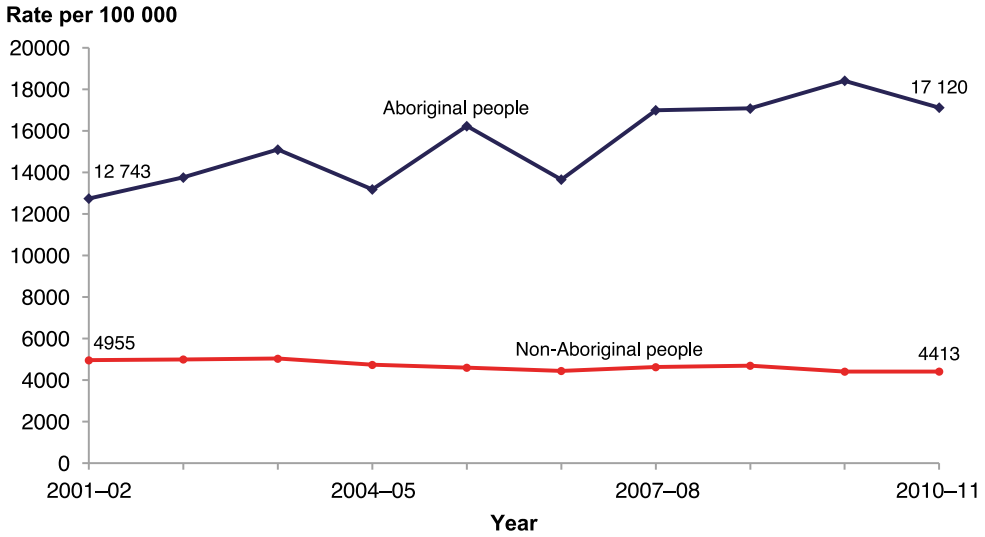
Chronic obstructive pulmonary disease

Health issue: Chronic obstructive pulmonary disease (COPD) is a lung disease characterised by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. The more familiar terms 'chronic bronchitis' and 'emphysema' are no longer used, but are now included within the COPD diagnosis. COPD is not simply a smoker's cough but an under-diagnosed, life-threatening lung disease (WHO 2012). Only hospitalisation rates were available for reporting on COPD.

Health disparity: In 2010–11 in NSW, the rate of COPD hospitalisations for Aboriginal people was 17 120 per 100 000 and 4413 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 3.9 times more likely to be hospitalised for COPD than non-Aboriginal people. In the past 10 years there has been a significant increase in COPD hospitalisation rates for Aboriginal people, from 12 743 per 100 000 in 2001–02, with a significant widening in the difference between Aboriginal and non-Aboriginal people (Figure 52). Increases in hospitalisations may represent an increase in the occurrence or incidence of disease, or may reflect improvements in access to hospitals services relative to need, or improvements in the reporting of Aboriginal people in NSW health data collections.

Closing the gap: Evidence suggests that quitting smoking remains the single most effective measure for reducing the risk of development and progression of COPD (Firth et al. 2001). The **National Guide to Preventative Health Assessment for Aboriginal and Torres Strait Islander People** provides recommendations on influenza and pneumococcal immunisation, screening, lifestyle modification advice, pharmacotherapy and environmental strategies for prevention of COPD (NACCHO/RACCP 2012).

Figure 52: Chronic obstructive pulmonary disease hospitalisations, people aged 65 years and over, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

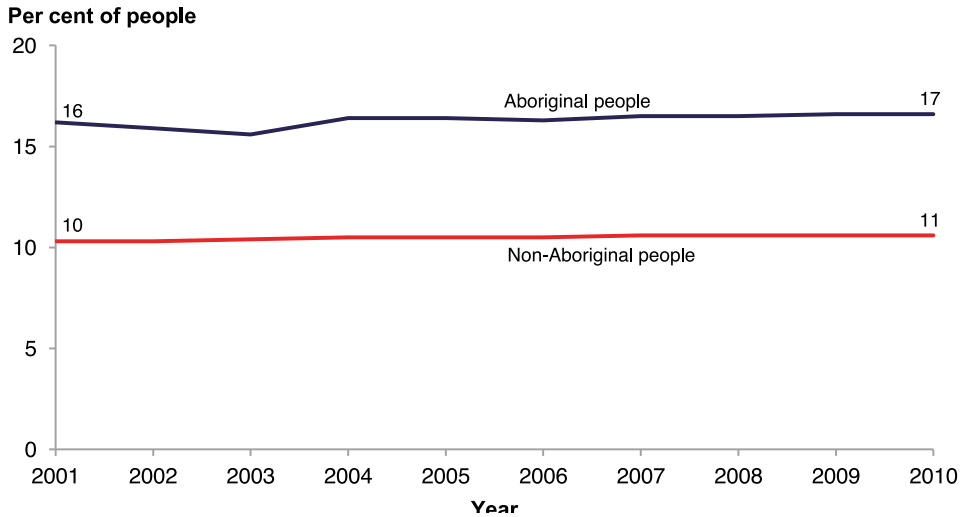
Asthma

Health issue: Asthma is an inflammatory condition of the airways that results in episodes or attacks of breathing problems (such as coughing, wheezing, chest tightness and shortness of breath). Symptoms arise because inflammation of the airways, which is largely a result of hyper-responsiveness to allergens and irritants, results in airflow obstruction (Australian Indigenous HealthInfoNet 2005b).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Population Health Survey, 17% of Aboriginal people self-reported having asthma, compared with 11% for non-Aboriginal people (Figure 53). Using these estimates, Aboriginal people were 1.6 times more likely to self-report having current asthma than non-Aboriginal people. In the past 10 years rates have remained constant for both Aboriginal and non-Aboriginal people, and the difference between Aboriginal and non-Aboriginal people has also remained constant (Figure 53).

Closing the gap: Asthma contributes to the high levels of respiratory disease experienced by Aboriginal people. The **National Guide to Preventative Health Assessment for Aboriginal and Torres Strait Islander People** outlines behavioural and environmental recommendations to assist in the prevention of asthma (NACCHO/RACCP 2012).

Figure 53: Asthma by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

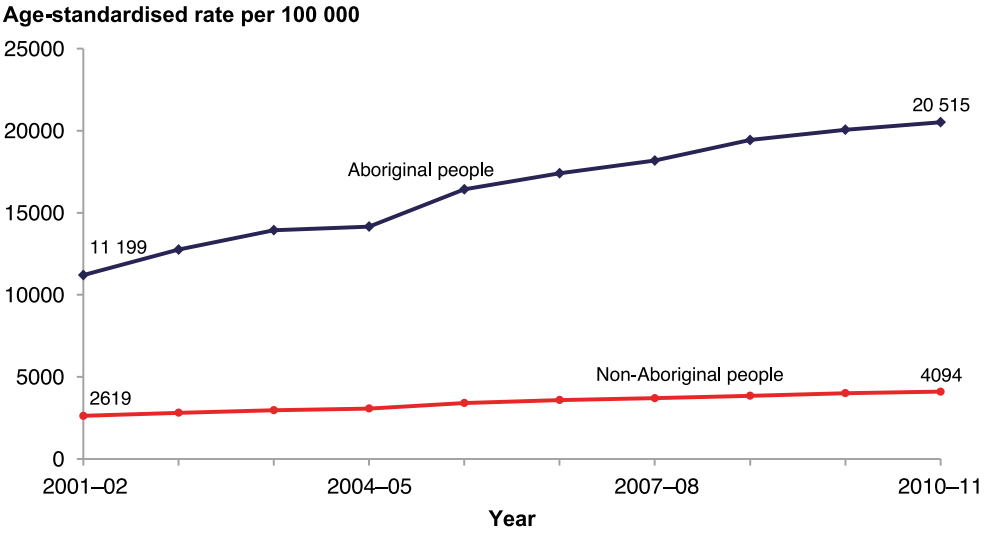
Chronic kidney disease

Health issue: Kidney disease, renal disease and renal disorder are collective terms for chronic kidney diseases, and refer to a variety of disease processes that affect the kidneys. The higher prevalence of diabetes among Aboriginal people contributes to higher rates of renal disease. Only hospitalisation data were available for reporting on chronic kidney disease.

Health disparity: In 2010–11 in NSW, the rate of chronic kidney disease hospitalisations for Aboriginal people was 20 515 per 100 000 and 4094 per 100 000 for non-Aboriginal people. In 2010–11 there was a significant difference between Aboriginal and non-Aboriginal people, with Aboriginal people five times more likely to be hospitalised for chronic kidney disease. In the past 10 years there has been a significant increase in chronic kidney disease hospitalisations for Aboriginal people, from 11 199 per 100 000 in 2001–02, and a significant increase in the difference in rates between Aboriginal and non-Aboriginal people (Figure 54). Increases in hospitalisations may represent an increase in the occurrence or incidence of disease, or may reflect improvements in access to hospitals services relative to need, or improvements in the reporting of Aboriginal people in NSW health data collections.

Closing the gap: To reduce the higher burden of chronic kidney disease in Aboriginal people, primary health-care and health promotion programs play a critical role in preventing risk factors such as smoking and high body mass, and in reducing the onset and improving the early diagnosis and treatment of diabetes and chronic kidney disease.

Figure 54: Chronic kidney disease hospitalisations (dialysis, diabetic nephropathy and chronic renal disease), NSW, 2001–02 to 2010–11



Note: After July 2010, rates were affected by a change in coding standards for diabetes, a contributor to chronic kidney disease hospitalisations. See Note Figure 47.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

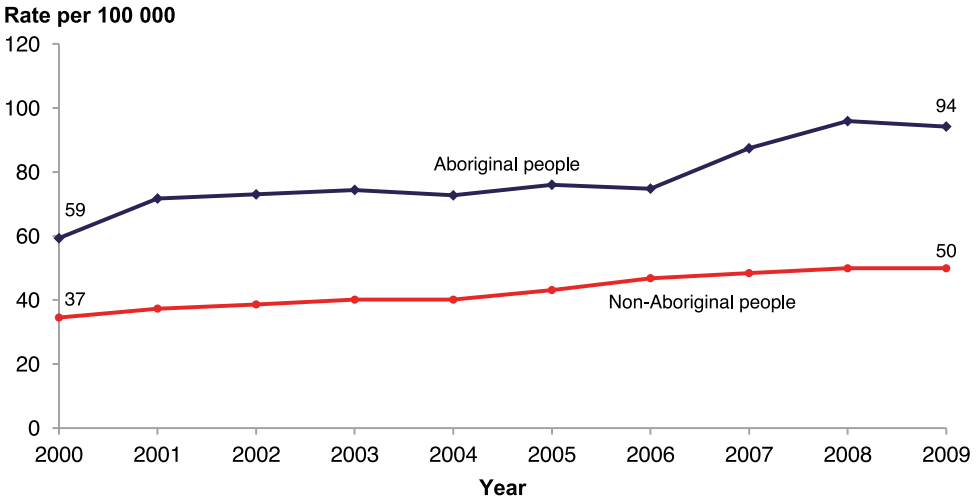
End-stage renal disease

Health issue: End-stage renal disease is the most severe form of chronic kidney disease, where kidney function deteriorates so much that dialysis or kidney transplantation is required to survive. Kidney failure has a number of causes, with the most common being Type 2 diabetes, kidney disease (called glomerulonephritis) and high blood pressure. For people with severe kidney failure (end-stage renal disease), regular dialysis is required until a kidney transplant becomes available. Many Aboriginal people have dialysis three times a week, which affects their quality of life and social and emotional wellbeing, however fewer Aboriginal people than non-Aboriginal people receive kidney transplants (Australian Government 2011).

Health disparity: In 2009 in NSW, the crude rate of Aboriginal people receiving dialysis was 94 per 100 000 compared with 50 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 1.9 times more likely to be receiving dialysis for end-stage renal disease. In the past 10 years there has been a significant increase in the rate of Aboriginal people receiving dialysis. However, there has been no significant change in the gap between Aboriginal and non-Aboriginal people over this time (Figure 55).

Closing the gap: A greater focus on primary prevention, detection and management of diabetes, cardiovascular conditions and acute kidney infections is needed to reduce the higher burden of end-stage kidney disease in Aboriginal people.

Figure 55: Dialysis for end-stage kidney disease by Aboriginality, people receiving haemodialysis and peritoneal dialysis on 31 December of each year, NSW, 2000 to 2009



Source: Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.2 Communicable disease

Communicable diseases remain a significant public health priority in Australia. Communicable diseases include foodborne diseases; sexually transmissible diseases and bloodborne viruses; vectorborne diseases; and vaccine-preventable diseases. Aboriginal people in NSW experience disadvantage in regard to all social determinants of health, in particular, poverty, disempowerment and social disadvantage, and these factors are compounded by poor access to relevant health information and health services. This disadvantage increases the risk of communicable diseases in Aboriginal communities.

The information reported in this section has been obtained from the NSW Ministry of Health's Notifiable Conditions Information Management System (NCIMS). The information represents notifications to NCIMS as required under the *Public Health Act 2010* (NSW). Complete reporting of Aboriginal people in notification data depends on clinicians, laboratories and public health professionals correctly recording a person's Aboriginality. Notification rates are reported here for diseases where public health follow-up is initiated and therefore are likely to have more accurate reporting of Aboriginality.

The information presented in this section is for diagnosed cases only, as the source data do not include those people who have a condition but have not yet been diagnosed. For some diseases such as tuberculosis and invasive meningococcal disease, the notification and incidence rates are likely to be similar due to high case ascertainment. However for some diseases, such as newly acquired hepatitis B and hepatitis C, the notification rate is likely to underestimate the incidence of disease because infections are often asymptomatic and therefore patients are

less likely to be tested for the disease. Notification rates are also dependent on the case definition, accuracy of tests, and whether there is systematic screening for conditions that are common but frequently asymptomatic. Changes in primary health-care practices can lead to increased screening and testing and a corresponding increase in notification rates for some diseases (Australian Government 2011).

Key facts

- The notification rates of human immunodeficiency virus (HIV) infection for Aboriginal and non-Aboriginal people in NSW are similar.
- Over the past 10 years, Aboriginal people had higher notification rates of newly acquired hepatitis C and meningococcal disease than non-Aboriginal people.
- There has been an increase in tuberculosis cases in Aboriginal people over the past 10 years.
- The rate of hospitalisations for Aboriginal people has been consistently higher than for non-Aboriginal people for influenza and pneumonia over the past 10 years.

Bloodborne viruses and sexually transmissible infections

Health issue: Sexually transmissible infections (STIs) are infections that are passed on during unprotected sexual contact with a partner with the infection. A bloodborne virus (BBV) is a virus that is transmitted in blood, or body fluids that contain blood, from a person with the infection to another person. STIs and BBVs include chlamydia, genital herpes, hepatitis B, hepatitis C, HIV and syphilis. Most STIs occur in sexually active teenagers and young adults, which may affect notification rates in Aboriginal people given the much younger age structure of the Aboriginal population. STIs can be asymptomatic or produce only mild symptoms, and many people remain undiagnosed or only find out they have an infection through screening and contact tracing. STIs can usually be effectively treated if diagnosed early; however if left untreated, these infections may lead to complications.

Health disparity: The rate of newly diagnosed HIV notification among Aboriginal people in NSW is similar to that of the general population. Between 2002 and 2010, there was an average of six cases per year among Aboriginal people, and 323 cases per year among non-Aboriginal people.

While numbers of notified cases of newly acquired hepatitis B (three per year on average) and hepatitis C (six per year on average) among Aboriginal people were low between 2002 and 2011, the rate of hepatitis B notification for Aboriginal people was five times the rate for non-Aboriginal people, and for hepatitis C was nine times higher for Aboriginal people. On average, 35 cases of newly acquired hepatitis B and 36 cases of newly acquired hepatitis C were notified per year among non-Aboriginal people between 2002 and 2011. Cases of hepatitis B and C with unspecified and unknown duration are not included here. There may also be geographic variation in accurate recording of Aboriginality due to enhanced case follow-up in some smaller communities.

Between 2002 and 2011 there was an average of six notifications of infectious syphilis per year (i.e. syphilis that is acquired in the previous 2 years) among Aboriginal people, and 299 among non-Aboriginal people in NSW. On average between 2002 and 2011, the notification rate for infectious syphilis among Aboriginal people was seven times the rate among non-Aboriginal people.

Closing the gap: The NSW **HIV/AIDS, Sexually Transmissible Infections and Hepatitis C Strategies: Implementation Plan for Aboriginal People** provides the framework and directions for efforts to reduce the incidence and impact of BBVs and STIs in NSW (NSW Health 2007a). Priority focus areas of the Plan include: Aboriginal community participation and involvement; the development of local policies, protocols and education resources; bridging of services and strategies; a focus on risk; and workforce development, research, surveillance and data quality.

Vaccine-preventable disease

Health issue: Notification rates for two vaccine-preventable conditions, measles and meningococcal disease, are presented in this section. Measles is a highly infectious disease spread by airborne droplets. It is characterised by fever, cough, conjunctivitis and a rash. Measles is a serious illness and is often complicated by middle ear infections and pneumonia. Rarely, measles can infect the brain and cause death or serious permanent brain damage.

Meningococcal disease is a bacterial infection that can cause septicaemia (blood poisoning) and meningitis (inflammation of the lining of the brain). Historically, the most common strains of meningococcal bacteria in Australia are serogroups B and C. A meningococcal vaccine for use in children has been available in Australia since 2002, but it is protective only against meningococcal C disease. Before the introduction of the vaccine, serogroup C meningococcal disease accounted for around one-third of cases and about half the deaths related to meningococcal cases in Australia.

Health disparity: Notification rates for measles were low for both Aboriginal and non-Aboriginal people in NSW between 2002 and 2010 (Menzies et al. 2004a, 2004b). However, in 2011, 90 cases of measles were reported in NSW – the largest number reported since 1999. Of these, 10 cases (associated with three outbreaks) were notified as being Aboriginal people. In 2011, the rate of measles for Aboriginal people (6.0 per 100 000) was therefore substantially higher than the rate for non-Aboriginal people (1.1 per 100 000).

There were an average of eight notifications of meningococcal disease per year among Aboriginal people and an average of 109 per year among non-Aboriginal people between 2002 and 2011. Over this time, the rate of meningococcal disease in Aboriginal and non-Aboriginal people decreased, however the rate of notifications of meningococcal disease among Aboriginal people remained about four times the rate among non-Aboriginal people.

Closing the gap: The best protection against measles is immunisation with two doses of a vaccine for measles, mumps and rubella (MMR) which should be given to children in two doses at ages 12 months and 4 years. Measles has become a rare communicable disease in Australia since national campaigns were introduced for primary school children and young adults. The vaccine is recommended at 12 months of age with a booster at 4 years of age (NHMRC 2008). Immunisation campaigns and coordination with maternal and child health services that specifically target Aboriginal people can assist in reducing the occurrence of vaccine-preventable diseases and delivering more equitable public health programs.

Tuberculosis

Health issue: Tuberculosis (TB) is primarily a lung infection caused by the bacterium *Mycobacterium tuberculosis*. The most common risk factor for people diagnosed with tuberculosis in Australia is exposure to tuberculosis while living in a country with a high burden of the disease. Other risk factors include close contact with an infectious person, overcrowding, malnutrition, diabetes mellitus, low body weight, smoking, alcohol misuse, advanced renal disease, and HIV infection (Australian Indigenous HealthInfoNet 2008b).

Health disparity: Between 2002 and 2010, there was an average of four cases of tuberculosis per year among Aboriginal people, and an average of 46 per year among Australian-born non-Aboriginal people. When compared to Australian-born non-Aboriginal people, the notification rate of tuberculosis among Aboriginal people was three times higher over the period. There has been an increase in tuberculosis cases in Aboriginal people in NSW over the past 10 years in NSW with a cluster of 30 cases linked to an ongoing outbreak of disease.

Closing the gap: The national strategic plan for tuberculosis has a goal of reducing the incidence of tuberculosis in the Aboriginal population to equal that of the Australian-born non-Aboriginal population (CDNA 2002).

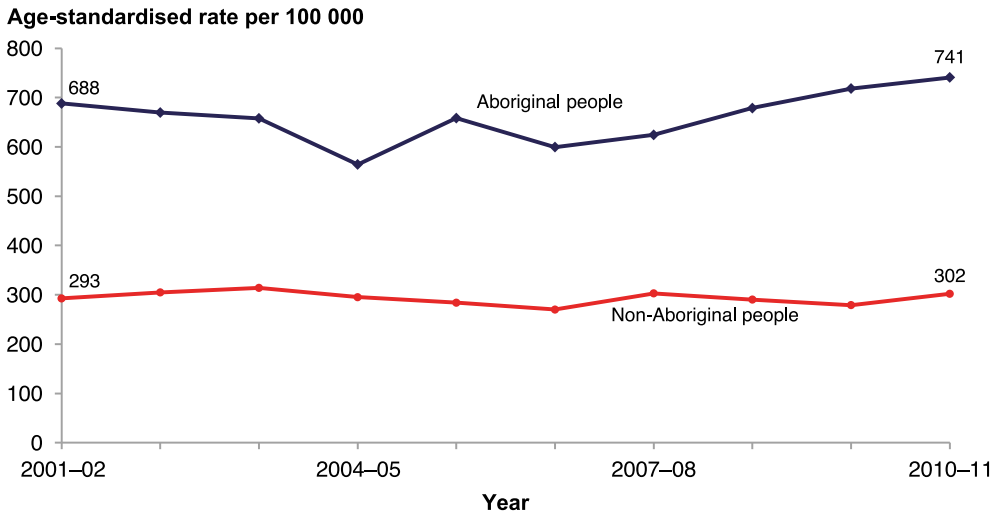
Pneumonia and influenza

Health issue: Aboriginal people experience higher levels of mortality and morbidity from pneumonia and invasive pneumococcal disease than non-Aboriginal people. These high rates of pneumonia are associated with higher rates of common risk factors including infectious and chronic conditions, such as respiratory diseases, poor living conditions, malnutrition, smoking and alcohol misuse. The groups at most risk are young children and elderly people. Although hospitalisation statistics reflect admissions to hospital rather than the prevalence or incidence of pneumonia in the community, hospitalisation statistics are a measure of the occurrence of severe pneumonia requiring acute hospital care.

Health disparity: In 2010–11 in NSW, the hospitalisation rate for pneumonia and influenza was 741 per 100 000 for Aboriginal people and 302 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 2.5 times more likely than non-Aboriginal people to be hospitalised for pneumonia and influenza. In the past 10 years there has not been a significant change in hospitalisation rates for pneumonia and influenza, and there has been no significant change in the difference between Aboriginal and non-Aboriginal people over this time (Figure 56).

Closing the gap: Improving access for Aboriginal people to vaccination for influenza (Section 3.3) will assist in reducing the prevalence of influenza, and impact on hospitalisation rates for influenza between Aboriginal and non-Aboriginal people.

Figure 56: Influenza and pneumonia hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.3 Social and emotional wellbeing

Social and emotional wellbeing refers to how people feel about themselves emotionally, socially and spiritually, and about people's ability to cope with everyday life and the stressful events that may come up, to reach goals and work productively and be a part of the community they live in. Aboriginal people often take a holistic view or whole-of-life approach to social and emotional wellbeing which includes the physical, social, emotional and cultural wellbeing of the community (Australian Indigenous HealthInfoNet 2012a). Mental illness contributes 10% of the disparity in burden of disease between Aboriginal and non-Aboriginal people (Vos et al. 2009). Aboriginal people experience higher levels of mortality and morbidity from mental illness, and from related injury and suicide, than the general population.

This section reports on social and emotional wellbeing indicators including self-reported social and emotional wellbeing and suicide and hospitalisations for self-harm. Information on prevalence, incidence, hospitalisations and primary health care are required to provide an overall picture of the burden of disease within a community. In this section, hospitalisation rates for intentional self-harm are included in addition to prevalence of self-reported psychological distress from the NSW Population Health Survey.

NSW 2021 (NSW Government 2011) does not include a specific Aboriginal mental health target, but does aim: to reduce mental health readmissions within 28 days to any facility; to increase the rate of community follow-up within 7 days of discharge from a NSW public mental health unit; and to increase the number of adults and adolescents with mental illness who are diverted from court into treatment. At the time of writing of this Report, data on community-based mental health services delivered to Aboriginal people in NSW were not available.

Key facts

- In 2010, Aboriginal people were estimated to be 2.2 times more likely to report high or very high levels of psychological distress than non-Aboriginal people.
- In 2010–11, Aboriginal people were 2.9 times more likely to be hospitalised for intentional self-harm than non-Aboriginal people.

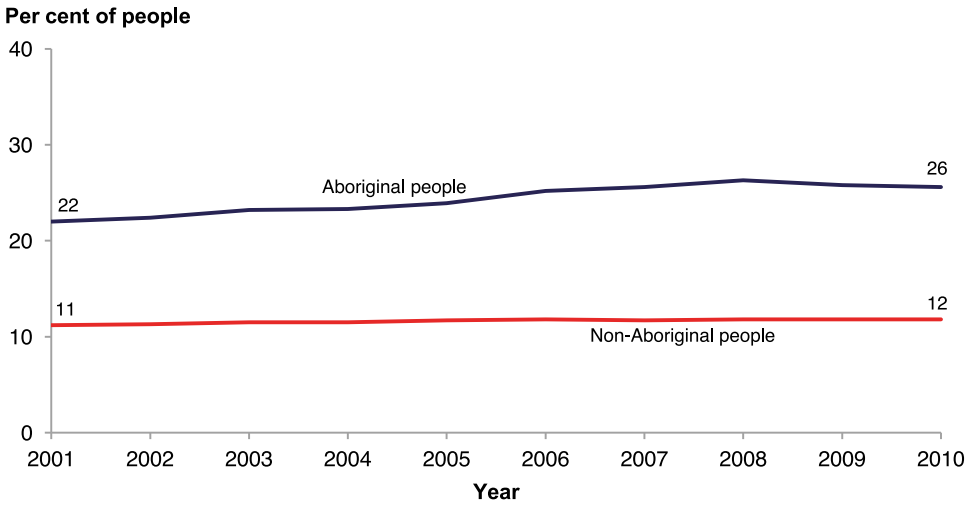
Social and emotional wellbeing

Health issue: Social and emotional wellbeing is a holistic concept that includes not just individual physical wellbeing but the 'social, emotional and cultural wellbeing of the whole community' (Australian Government 2011). It differs from an illness or clinical perspective, recognising the importance of connection to land, culture, spirituality, ancestry, family and community, and how these affect the individual (AIPA [date unknown]).

Health disparity: In 2010 in NSW, using smoothed estimates from the NSW Population Health Survey, 26% of Aboriginal adults were calculated to have high or very high psychological distress using the Kessler 10 mental health screening tool (Appendix 2) compared with 12% of non-Aboriginal adults (Figure 57). Aboriginal adults were 2.2 times more likely to report high or very high psychological distress than non-Aboriginal adults. In the past 10 years the proportion of Aboriginal adults reporting high or very high psychological distress has remained constant, and the gap between Aboriginal and non-Aboriginal adults has not changed over this time.

Closing the gap: NSW 2021 (NSW Government 2011) provides targets for improving outcomes in mental health for Aboriginal and non-Aboriginal people. Strategies need to support Aboriginal views of health, build on strengths and resilience, and recognise trauma and loss within Aboriginal communities and the important historical and cultural diversity within communities (Australian Government 2011).

Figure 57: High or very high psychological distress by Aboriginality, people aged 16 years and over, smoothed estimates, NSW, 2001 to 2010



Source: NSW Adult Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

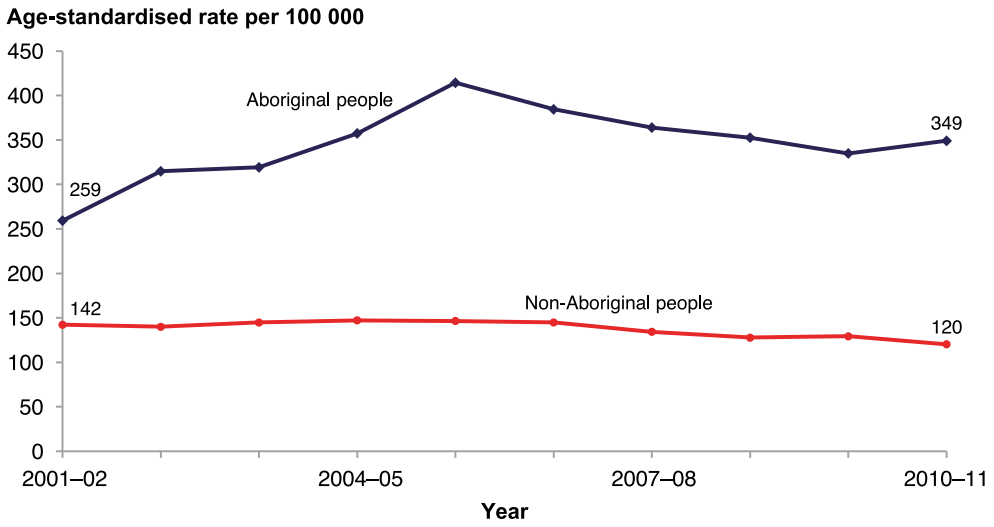
Intentional self-harm

Health issue: Intentional self-harm hospitalisations include deliberately self-inflicted injury or poisoning which may or may not be suicidal in nature (Steenkamp and Harrison 2000). The **NSW Health Suicide Prevention Strategy 2010–15** reports high rates of self-harm and suicide among Aboriginal people, and attributes this to a number of factors including: poverty, low socioeconomic status, lack of education and poor employment prospects, reduced access to culturally appropriate services, poor overall health, living in rural or remote communities, high rates of incarceration, domestic violence or abuse, and alcohol and other drug misuse. The interrelated nature of these factors can lead to a cycle of despair and depression (NSW Health 2010b).

Health disparity: In 2010–11 in NSW, the hospitalisation rate for intentional self-harm for Aboriginal people was 349 per 100 000, and 120 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 2.9 times more likely to be hospitalised for intentional self-harm than non-Aboriginal people. In the past 10 years there has been a significant increase in the hospitalisation rate for intentional self-harm for Aboriginal people (Figure 58), from 259 per 100 000 in 2001–02, and a significant increase in the difference between Aboriginal and non-Aboriginal people over this time.

Closing the gap: The **NSW Health Suicide Prevention Strategy 2010–15** outlines a whole-of-government strategy promoting a whole-of-community approach for suicide prevention. The Strategy includes considerations for Aboriginal people, including taking a preventive approach to improving pathways to health services and ensuring those services are culturally appropriate (NSW Health 2010b). Self-determination and connection to culture has been shown to reduce suicide rates in Indigenous populations in Canada (Chandler and Lalonde 2008).

Figure 58: Intentional self-harm hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.4 Injury and poisoning

Injury and poisoning presents a major burden of ill-health among Aboriginal people in NSW. However, assessing the overall impact of injury is difficult as the majority of injuries do not result in hospitalisation or death and there are limited data routinely collected on self-reported injury. A number of factors contribute to the higher rates of injury and poisoning among Aboriginal people, including the impacts of dispossession, trauma and loss of community and family cohesion, socioeconomic disadvantage, geographical isolation and increased road usage, exposure to hazardous environments, substance use, violence, and barriers in accessing health and social support services (Australian Indigenous HealthInfoNet 2005a).

Key facts

- In 2010–11, Aboriginal people were 1.5 times more likely than non-Aboriginal people to be hospitalised for injury and poisoning.
- The leading causes of hospitalisations for injury and poisoning in Aboriginal people in NSW are falls, interpersonal violence and transport accidents.
- In 2010–11, Aboriginal people were 1.2 times more likely than non-Aboriginal people to be hospitalised for falls, 6.7 times more likely than non-Aboriginal people to be hospitalised for interpersonal violence and 1.2 times more likely than non-Aboriginal people to be hospitalised for transport accidents.

Injury and poisoning

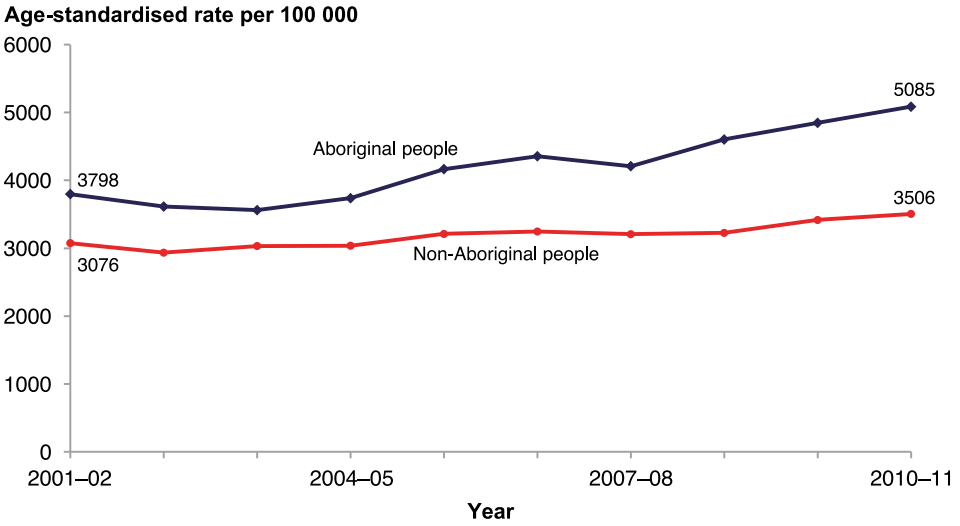
Health issue: Injury and poisoning is the third leading cause of death for Aboriginal people in NSW. Burden of disease data attribute 15% of the difference in health between Aboriginal and non-Aboriginal people to injury, in particular road traffic accidents, suicide, homicide and violence (Vos et al. 2009). Grief, loss and suffering can increase the risk of physical injury, especially if the feelings are severe, prolonged or widespread in a community (Australian Government 2011). Injuries can have long-term consequences on families, including the continuation of the cycle of grief, the burden on care givers for people with disabilities, and reduced financial security and workforce participation.

Hospitalisations for injury reflect hospital attendances for the condition rather than the extent of injury in the community. Hospitalisations for injury and poisoning are the second most common reason for hospital admissions for Aboriginal people in NSW, after dialysis.

Health disparity: In NSW in 2010–11, the rate of hospitalisations for injury and poisoning for Aboriginal people was 5085 per 100 000 and 3506 per 100 000 for non-Aboriginal people (Figure 59). This difference is significant, with Aboriginal people 1.5 times more likely to be hospitalised for injury and poisoning than non-Aboriginal people. In the past 10 years there has been a significant increase in the injury and poisoning hospitalisation rate for Aboriginal people, from 3798 per 100 000 in 2001–02, and a significant increase in the difference in rates between Aboriginal and non-Aboriginal people over this time.

Closing the gap: While there is limited evidence for injury prevention in Aboriginal communities a recent review of effective injury-prevention projects in Aboriginal communities has identified the characteristics of effective programs. These include multi-faceted strategies and initiatives that will lead to statewide policy reform on injury prevention issues, include community engagement and consultation, are sustainable, have or can achieve a high level of acceptability and support, are based on community-owned models for injury prevention, and that ensure ongoing injury information systems (Senserrick et al. 2010).

Figure 59: Injury and poisoning hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Leading causes of injury and poisoning

Health issue: The leading causes of hospitalisations for injury and poisoning in Aboriginal people in NSW are falls, interpersonal violence and transport accidents, and hospitalisation rates for these three causes are presented in this section. Falls are the leading cause of hospitalisations for injury for Aboriginal people in NSW. The greatest disparity in injury hospitalisation rates by cause between Aboriginal and non-Aboriginal people are for interpersonal violence.

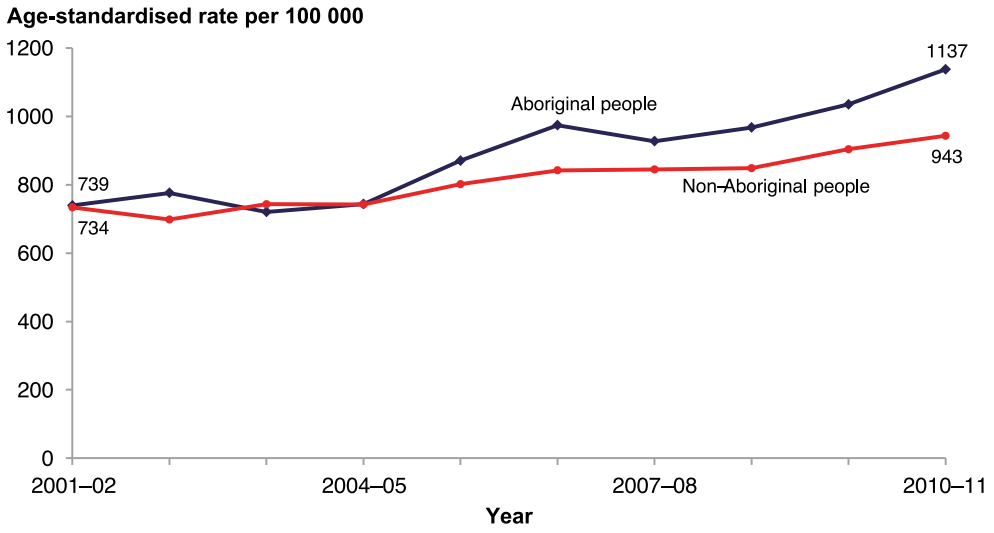
Health disparity: In 2010–11 in NSW, the rate of hospitalisations for falls among Aboriginal people was 1137 per 100 000 and 943 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 1.2 times more likely than non-Aboriginal people to be hospitalised for falls. In the past 10 years there has been a significant increase in hospitalisation rates for falls for Aboriginal people, from 739 per 100 000 in 2001–02, and there has been a significant increase in the gap between falls rates for Aboriginal and non-Aboriginal people over this time (Figure 60).

In 2010–11 in NSW, the rate of hospitalisations for interpersonal violence for Aboriginal people was 484 per 100 000 and 73 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 6.7 times more likely than non-Aboriginal people to be hospitalised for interpersonal violence. In the past 10 years there has not been a significant change in interpersonal violence hospitalisation rates for Aboriginal people. However, there has been a significant increase in the gap between Aboriginal and non-Aboriginal people over time due to a gradual decrease in hospitalisation rates for non-Aboriginal people (Figure 61).

In 2010–11 in NSW, the rate of hospitalisations for transport accidents for Aboriginal people was 309 per 100 000 and 255 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people 1.2 times more likely than non-Aboriginal people to be hospitalised for transport accidents. In the past 10 years there has been a significant increase in hospitalisations of Aboriginal people for transport accidents, from 262 per 100 000 in 2001–02 (Figure 62).

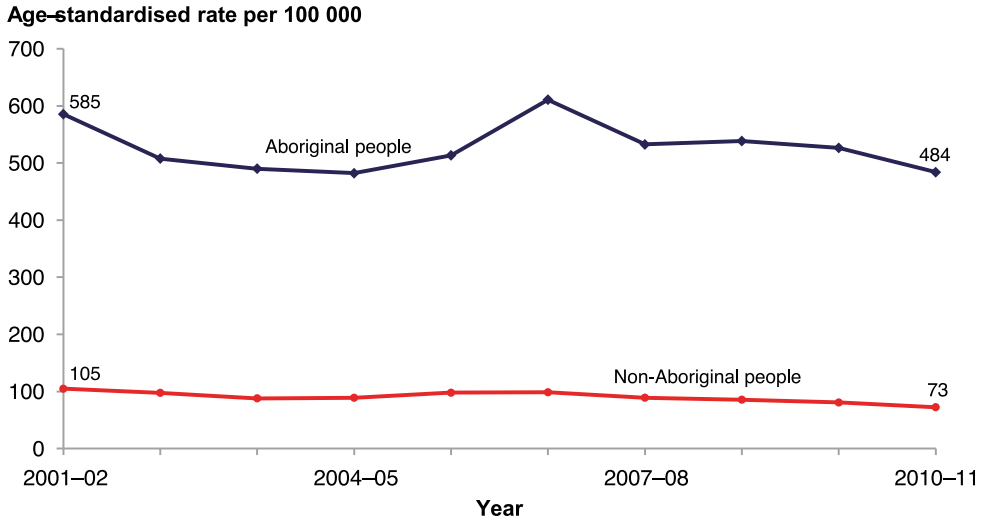
Closing the gap: NSW 2021 (NSW Government 2011) provides a target of reducing the age-standardised rate of potentially preventable hospitalisations by 2.5% for Aboriginal people by 2014–15. Prevention of injury and poisoning hospitalisations in Aboriginal people will contribute towards achieving this goal. Further evidence of effective injury prevention strategies is needed for reducing injuries among Aboriginal people and communities.

Figure 60: Falls hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



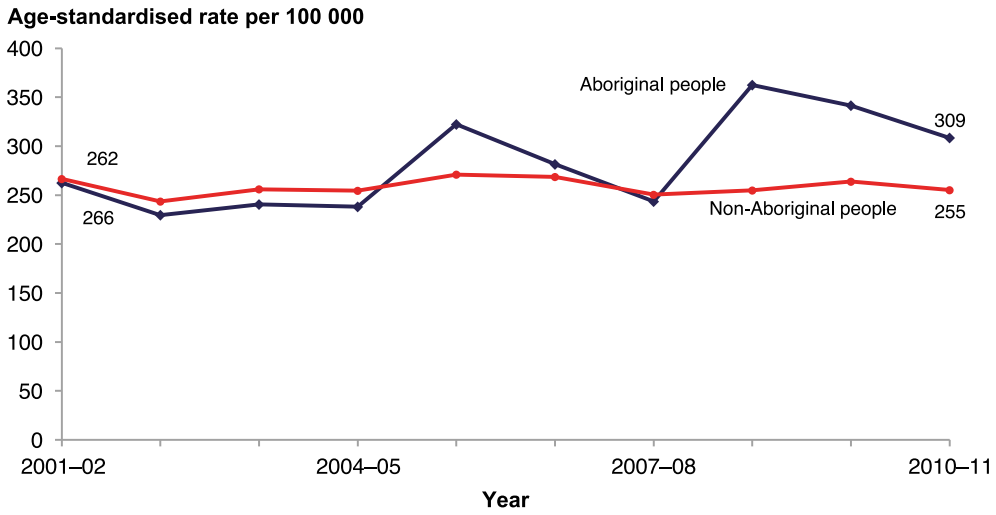
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 61: Interpersonal violence hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 62: Transport accident hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.5 Cancer

Key facts

- Using average annual cancer incidence rates for 1999 to 2007, Aboriginal people were diagnosed with cancer at a 10% higher rate than the total NSW population.
- In the period 1999 to 2007 in NSW, when compared with the total male population, Aboriginal males were diagnosed with prostate cancer at an 18% lower rate, were diagnosed with lung cancer at a 90% higher rate and had a similar rate of large bowel (colorectal) cancer.
- In the period 1999 to 2007 in NSW, when compared with the total female population, Aboriginal females were diagnosed with lung cancer at a 2.4 times higher rate, and had similar rates of breast and large bowel (colorectal) cancer.

Health issue: Cancer is the second leading cause of death for Aboriginal and non-Aboriginal people in NSW, after cardiovascular disease. Compared with non-Aboriginal people, Aboriginal people in NSW have a higher incidence of cancer, higher mortality rates due to cancer, and significantly lower rates of cancer survival (Morrell et al. 2012; Cancer Institute NSW 2012). Key contributing factors to higher cancer incidence and lower survival rates in Aboriginal people may include health risk behaviours including high prevalence of tobacco smoking and alcohol misuse, poorer diet, lower participation in cancer screening programs, delayed diagnoses, and cultural competency of services to support completion of treatment.

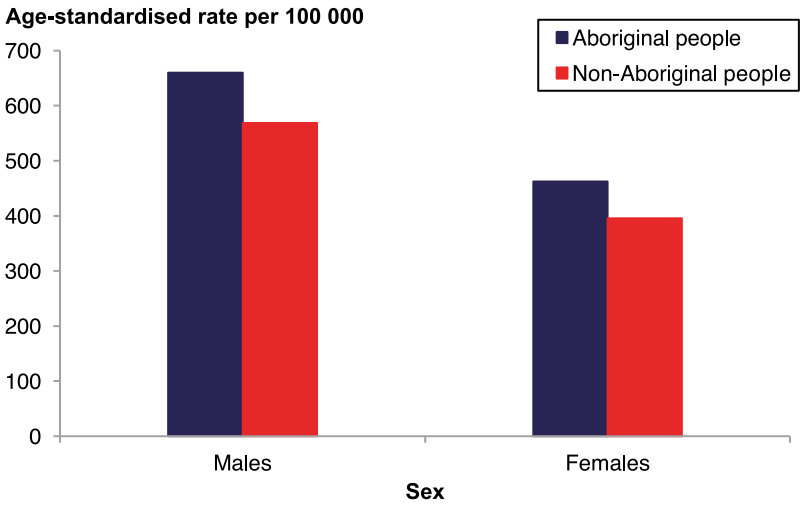
Health disparity: In the period 1999 to 2007 in NSW, the average annual cancer incidence rate for Aboriginal males was 660 per 100 000 compared with 569 per 100 000 for non-Aboriginal males. In the same period, the average annual cancer incidence rate for Aboriginal females was 462 per 100 000 and 396 per 100 000 for non-Aboriginal females (Figure 63). Compared with the total NSW population, Aboriginal males and females were diagnosed with cancer at 1.1 times the rate for the total NSW population.

The most common cancers for Aboriginal and non-Aboriginal males are prostate, lung and large bowel (colorectal) cancer (Figure 64). When compared with the total male population in NSW in the period 1999 to 2007, Aboriginal males were diagnosed with prostate cancer at an 18% lower rate, were diagnosed with lung cancer at a 1.9 times higher rate, and had a similar rate of large bowel (colorectal) cancer.

The most common cancers for Aboriginal and non-Aboriginal females are breast, lung and large bowel (colorectal) cancer (Figure 65). When compared to the total female population in NSW in the period 1999 to 2007, Aboriginal females were diagnosed with lung cancer at a 2.4 times higher rate, and had similar rates of breast cancer and large bowel (colorectal) cancer.

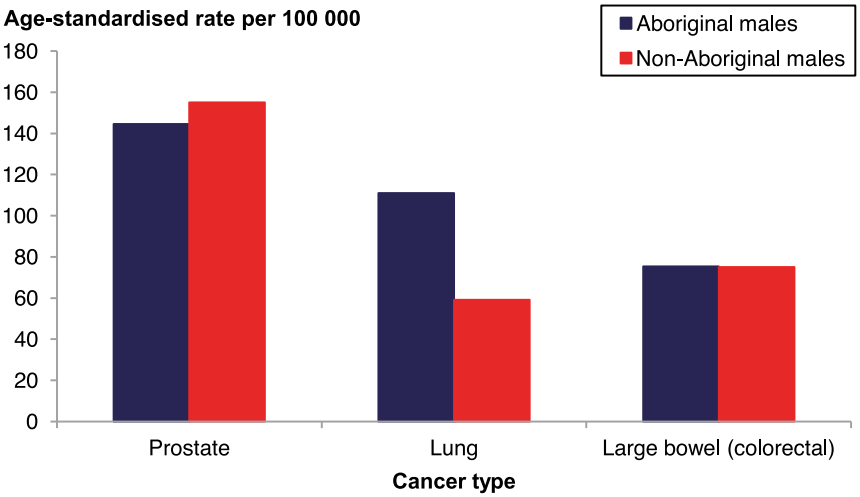
Closing the gap: Reducing the prevalence of smoking and other risk factors associated with a higher incidence of cancer in Aboriginal people is needed through culturally-competent programs and services (Stumpers and Thomson 2009).

Figure 63: Cancer incidence by sex and Aboriginality, average annual incidence rates, NSW, 1999 to 2007



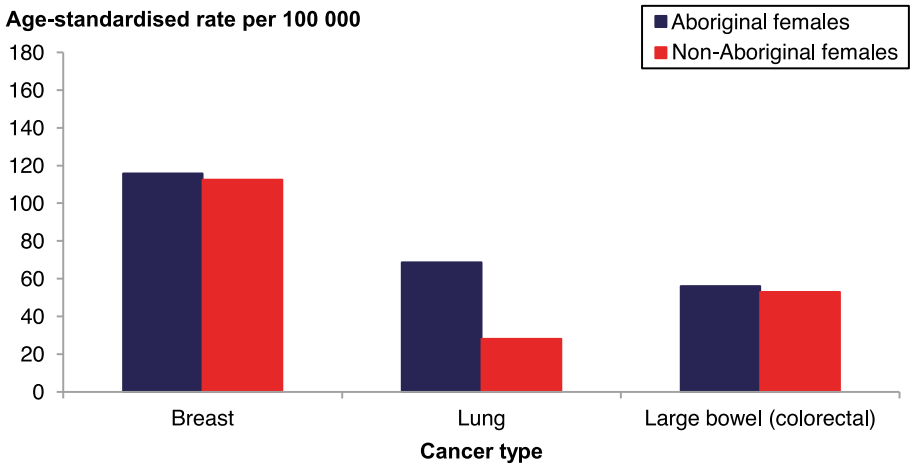
Note: Incidence rates were calculated using a multiple imputation method to account for incomplete recording of Aboriginal status.
Source: Cancer Institute NSW. Cancer in New South Wales Aboriginal People: Incidence, mortality and survival. Sydney: Cancer Institute NSW, 2012. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 64: Common cancers by Aboriginality, average annual incidence rates, males, NSW, 1999 to 2007



Note: Incidence rates were calculated using a multiple imputation method to account for incomplete recording of Aboriginal status.
Source: Cancer Institute NSW. Cancer in New South Wales Aboriginal People: Incidence, mortality and survival. Sydney: Cancer Institute NSW, 2012. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 65: Common cancers by Aboriginality, average annual incidence rates, females, NSW, 1999 to 2007



Note: Incidence rates were calculated using a multiple imputation method to account for incomplete recording of Aboriginal status.
Source: Cancer Institute NSW. Cancer in New South Wales Aboriginal People: Incidence, mortality and survival. Sydney: Cancer Institute NSW, 2012. Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.6 Oral health

Key fact

In 2010–11, the hospitalisation rate for removal and restoration of teeth in adults was nearly 2.5 times higher in the non-Aboriginal population than the Aboriginal population.

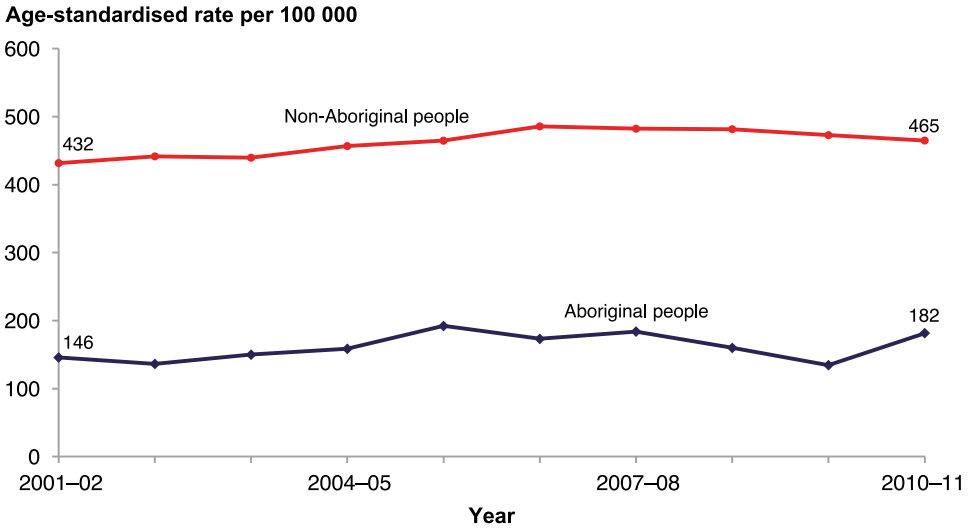
Health issue: Oral health relates to the health of the mouth and related tissues, which enables an individual to eat, speak and socialise.Poor oral health is widespread, but is largely preventable through population-level interventions, good personal oral hygiene and regular, preventive dental care (AIHW 2011f). Oral health issues share common risk factors with other diseases and poor oral health occurs alongside a range of conditions such as cardiovascular disease, cerebrovascular disease, diabetes, preterm and low birth-weight babies, aspiration pneumonia, bloodborne disease, infective endocarditis and otitis media (Australian Government 2011). Oral health in Aboriginal communities, particularly in rural and remote locations, is affected by factors that operate from infancy through to old age, including water quality and fluoridation, diet, smoking, alcohol consumption, stress, infection, the cost and availability of dental services and transport issues (NACOH 2004).

Health disparity: In NSW in 2010–11, the hospitalisation rate for removal and restoration of teeth for people aged over 15 years was 182 per 100 000 for Aboriginal people and 465 per 100 000 for non-Aboriginal people. This difference is significant, with non-Aboriginal people nearly 2.5 times more likely to be hospitalised than Aboriginal people. The difference is due to difficulties in accessing preventive dental services, as well a 30% higher proportion of Aboriginal people having dental caries and a 41% higher proportion of injury compared with non-Aboriginal people (2010–11). In the past 10 years there has been a significant increase in oral health hospitalisation rates for Aboriginal people, from 146 per 100 000 in 2001–02 (Figure 66). There has not been a significant change in the difference between Aboriginal and non-Aboriginal people for oral health hospitalisation rates over this time.

Prevalence of dental decay obtained from survey data provides additional information to oral health hospitalisations. The 2004–06 National Oral Health Survey identified that untreated decay was more than twice as high among Aboriginal people compared with non-Aboriginal people (AIHW 2007a). From 2004–05 national survey data, 11% of Aboriginal people aged 15 years and over reported they had never visited a dentist or other health professional about their teeth (ABS 2006).

Closing the gap: Increased access to preventive dental services and hospital services by Aboriginal people is required to improve oral health. At the time of publication, the NSW Ministry of Health was developing a strategic framework for oral health in NSW that prioritises Aboriginal people, as well as developing an Aboriginal oral health services plan.

Figure 66: Hospitalisations for removal and restoration of teeth by Aboriginality, people aged 15 years and over, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 5: Health service delivery

In this chapter, key health service indicators in Aboriginal health are reported by NSW Local Health District. To identify the indicators for inclusion in this Report, the policy context and reporting commitments under key agreements were considered. Indicators were included where data were available, reliable, of sufficient quality, and with sufficient numbers to disaggregate by Aboriginality and Local Health District of residence. Indicators were only included where it was considered that Local Health Districts could feasibly improve health outcomes by making services more accessible, equitable and culturally-competent for Aboriginal people.

Monitoring and improving the delivery of accessible, equitable, and culturally-competent public health services to Aboriginal people will contribute to improving health, and closing the gap in health outcomes. Key policies with performance indicators relevant to Aboriginal people include the **National Health Care Agreement** (COAG 2008), the **National Indigenous Reform Agreement** (COAG 2009c), the **Aboriginal and Torres Strait Islander Health Performance Framework** (Australian Government 2011), and **NSW 2021: A plan to make NSW number one**, which outlines Aboriginal health targets for NSW (NSW Government 2011).

Only trends that are statistically significant (to a p-value of < 0.05) are reported as 'significant'; no statistically significant trend is reported as 'no significant change'. Fourteen indicators are reported, mostly using data sourced from the Admitted Patient Data Collection and the Emergency Department Data Collection, reflecting services to people who attend hospitals. Statewide comprehensive data from the outpatient and primary health-care settings are not available.

5.1 Hospital admissions

This section examines the differences in hospital admissions between Aboriginal and non-Aboriginal people in NSW. Potentially preventable hospitalisations are hospital admissions that could have been avoided by providing appropriate preventive care or early medical treatment in primary health-care settings. Unplanned readmissions within 28 days, and discharge against medical advice from inpatient care, are indicators of the quality of care provided to Aboriginal people while inpatients in hospital and are used as a measure of the cultural competence of the health service (Betancourt et al. 2003). A culturally-competent health service is one that 'acknowledges and incorporates the importance of culture, assessment of cross-cultural relations, and vigilance towards the dynamics that result from cultural differences, expansion of cultural knowledge, and adaption of services to meet culturally unique needs' (Betancourt et al. 2003). Improving the cultural competence of health services may contribute to decreasing the rates of unplanned readmissions and the proportion of Aboriginal people who discharge from hospital against medical advice. The NSW Ministry of Health has developed **Respecting the Difference: An Aboriginal Cultural Training Framework for NSW Health** to increase cultural respect training in health services in NSW.

Key facts

- Aboriginal people were 2.5 times more likely to be admitted for potentially preventable hospitalisations than non-Aboriginal people in 2010–11.
- Rates of potentially preventable hospitalisations for Aboriginal people have increased over the past 10 years.
- Aboriginal people were 4.3 times more likely to discharge themselves from hospital against medical advice than non-Aboriginal people in 2010–11.

Potentially preventable hospitalisations

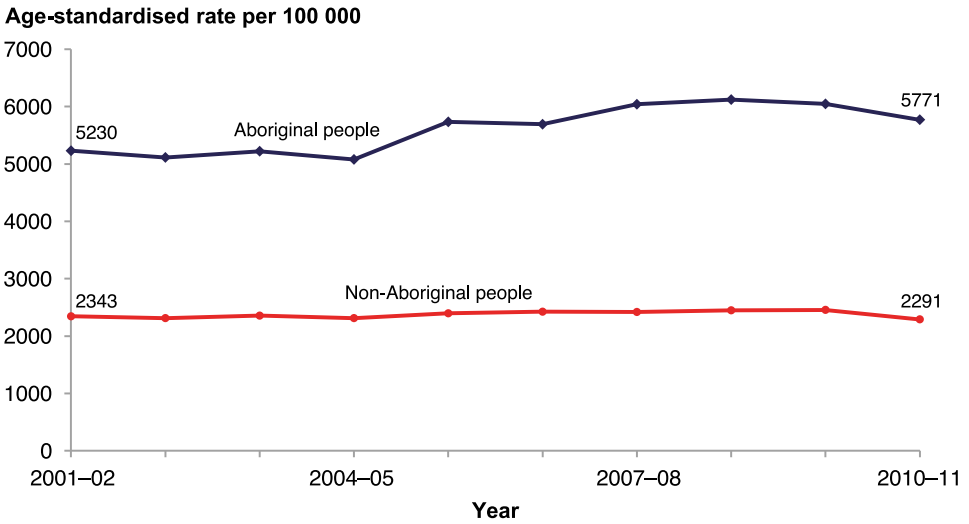
Health issue: Potentially preventable hospitalisations are hospital admissions that could have been avoided by providing accessible, timely, and effective preventive care or early medical treatment delivered through primary health care (Australian Government 2011; Porter et al. 2007).

Health disparity: In NSW in 2010–11, admission rates for potentially preventable hospitalisations were 5771 per 100 000 population for Aboriginal people, 2.5 times higher than the rate for non-Aboriginal people of 2291 per 100 000 population (Figure 67). Aboriginal people were 3.2 times more likely to be admitted for potentially preventable hospitalisations due to chronic conditions than non-Aboriginal people, and 2.0 times more likely to be admitted for potentially preventable hospitalisations due to acute conditions than non-Aboriginal people. In the past 10 years the rates of potentially preventable hospitalisations have significantly increased for Aboriginal people, with no significant change in the difference in rates between Aboriginal and non-Aboriginal people over this time.

The five Local Health Districts with the highest rates of potentially preventable hospitalisations for Aboriginal people in 2010–11 were: Mid North Coast (9569 per 100 000), Far West (7995), Western NSW (7780), Southern NSW (7512) and Northern NSW (7211) (Figure 68).

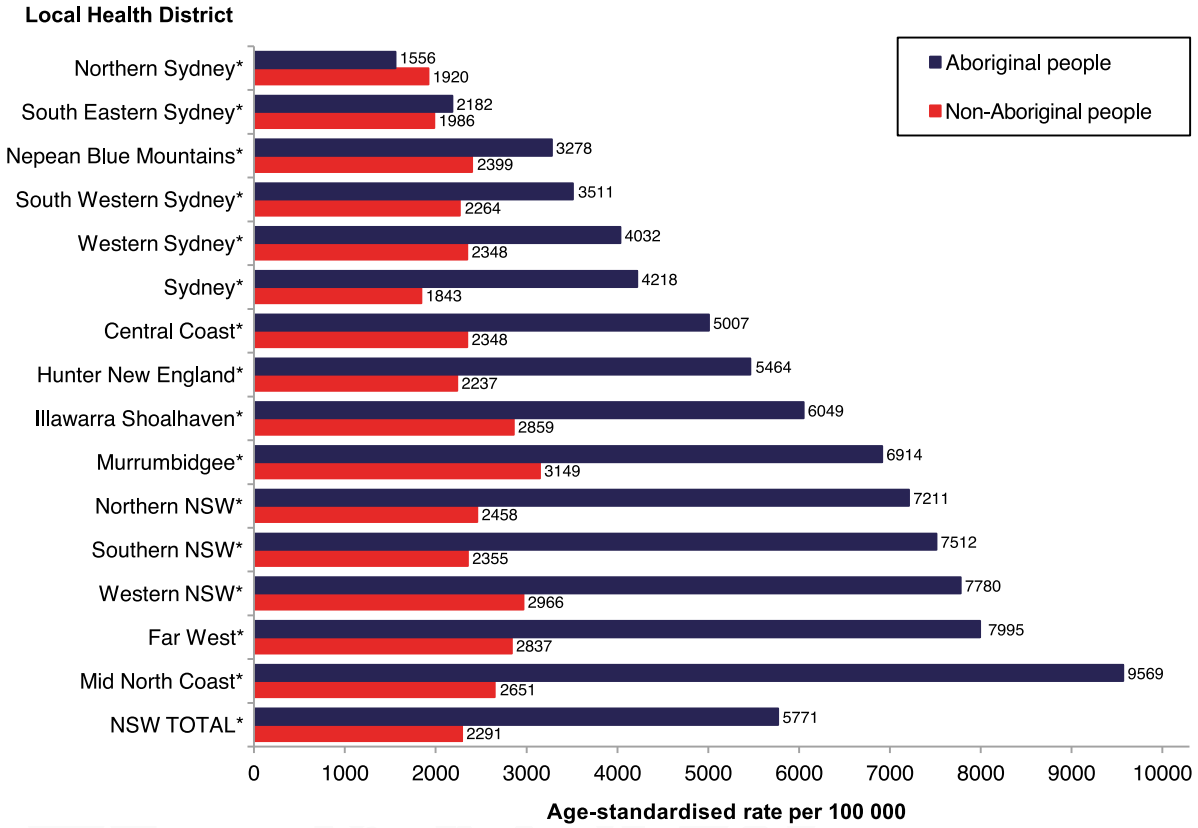
Closing the gap: Differences in the rates of potentially preventable hospital admissions between Aboriginal and non-Aboriginal people may indicate gaps in the effectiveness of population health interventions, access to and quality of primary care services, and continuity of care support (Australian Government 2011). The **NSW 2021** (NSW Government 2011) target is to decrease potentially preventable hospitalisations for Aboriginal people by 2.5% from 2010–11 to 2014–15. Figure 69 is a trajectory that would be required for rates of potentially preventable hospitalisations to be the same for Aboriginal and non-Aboriginal people by 2033.

Figure 67: Potentially preventable hospitalisations by Aboriginality, NSW, 2001–02 to 2010–11



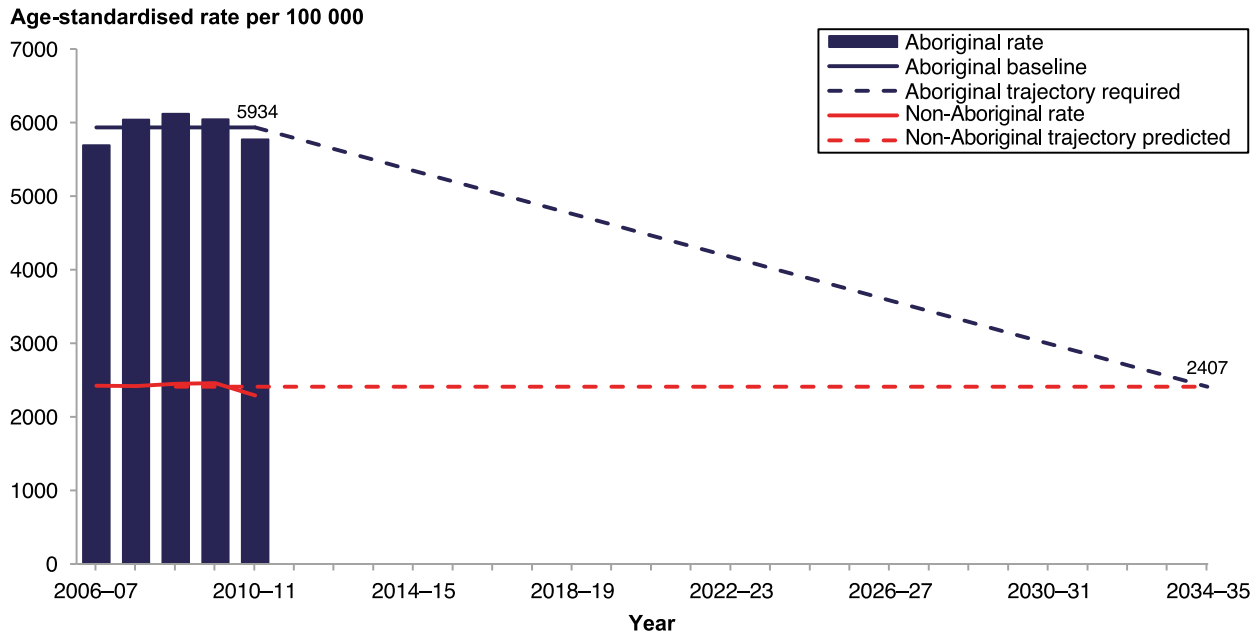
Note: After July 2010, rates were affected by a change in coding standards for diabetes, a substantial contributor to total preventable hospitalisations. See Figure 47.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 68: Potentially preventable hospitalisations by Aboriginality and Local Health District of residence, NSW, 2010–11



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 69: Potentially preventable hospitalisations, trajectory required to close the gap in NSW by 2033



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Unplanned hospital readmissions within 28 days

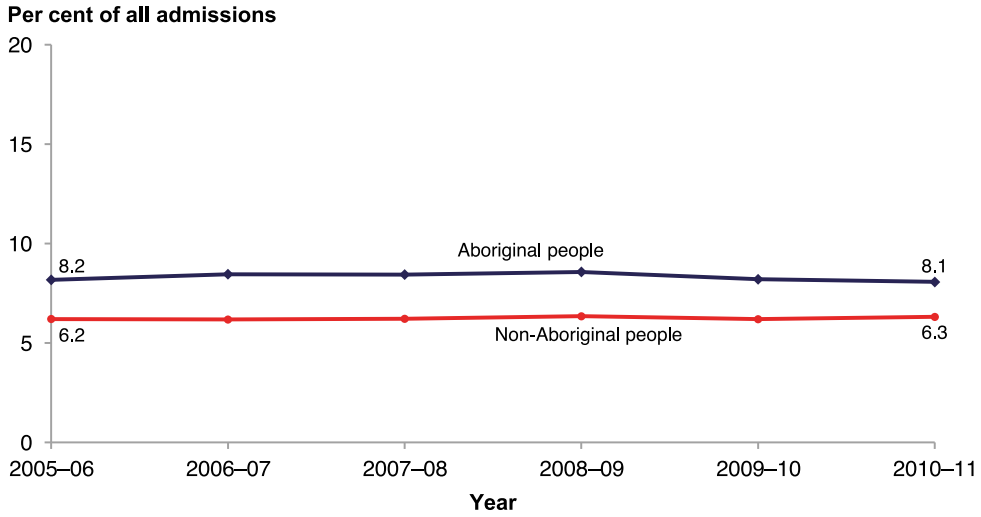
Health issue: An unplanned hospital readmission is defined as a readmission within 28 days of discharge from the first admission to the same facility which was not planned. It is an indicator of the quality and continuity of care provided to patients while in hospital and in the weeks following discharge (van Walvaren et al. 2011). 'Unplanned readmissions' is an indicator in **NSW 2021** (NSW Government 2011).

Health disparity: In NSW in 2010–11, unplanned readmissions within 28 days occurred in 8.1% of all admissions for Aboriginal people, and 6.3% of all admissions for non-Aboriginal people (Figure 70). This difference was significant, with Aboriginal people 1.3 times more likely to have an unplanned readmission. There has been no significant change in the rate of unplanned admissions for Aboriginal people over the past 10 years, and no significant change in the difference in rates between Aboriginal and non-Aboriginal people.

The five Local Health Districts with the highest proportion of unplanned readmissions within 28 days for Aboriginal people were Southern NSW (13.2%), Mid North Coast (11.0%), Illawarra Shoalhaven (9.8%), Western NSW (8.4%) and Sydney (8.3%) (Table 1).

Closing the gap: The higher proportion of unplanned hospital admissions within 28 days among Aboriginal people in 2010 resulted in 711 additional readmissions that needed to be avoided through appropriate out of hospital care and support for rates to be the same between Aboriginal and non-Aboriginal people. At the Local Health District level, the difference proportion amounted to 136 additional readmissions of Aboriginal people in the Mid North Coast, 129 additional readmissions in Western NSW, and 85 additional readmissions in Southern NSW (Table 1).

Figure 70: Unplanned readmissions within 28 days as a proportion of all admissions in NSW hospitals for Aboriginal and non-Aboriginal people, 2005–06 to 2010–11



Source: NSW Admitted Patient Data Collection (HIE). Demand and Performance Evaluation Branch, NSW Ministry of Health.

Table 1: Unplanned readmissions within 28 days as a proportion of all admissions in hospitals by Aboriginality and Local Health District of residence, NSW, 2008–09 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number needed to be prevented to close the gap#
	2008–09	2009–10	2010–11	2010–11	2010–11
	%	%	%	%	
Central Coast	9.7	6.5	7.3	7.2	2
Far West	10.8	11.6	8.2	8.3	0
Hunter New England*	6.1	6.4	6.7	6.1	54
Illawarra Shoalhaven	9.3	9.0	9.8	9.3	12
Mid North Coast*	11.2	11.7	11.0	7.2	136
Murrumbidgee	9.9	9.3	8.1	8.2	NA
Nepean Blue Mountains	8.9	6.0	6.1	6.8	NA
Northern NSW*	7.4	8.1	8.1	6.8	52
Northern Sydney*	4.6	3.7	3.0	5.8	NA
South Eastern Sydney*	7.3	6.5	7.3	5.8	15
South Western Sydney*	7.8	8.4	7.9	6.0	36
Southern NSW*	11.8	10.4	13.2	6.8	85
Sydney*	7.3	9.4	8.3	4.3	49
Western NSW*	9.9	9.2	8.4	6.5	129
Western Sydney	7.8	6.3	6.9	6.0	16
NSW TOTAL*	**8.6**	**8.2**	**8.1**	**6.3**	**711**

* Indicates a significant difference between Aboriginal and non-Aboriginal people for the Local Health District

The number of unplanned readmissions for Aboriginal people in 2010-11 that would have needed to have been avoided through appropriate care for the proportion to be the same between Aboriginal and non-Aboriginal people. This may underestimate the amount of services needed given the higher prevalence of disease and co-morbidity among Aboriginal people compared to non-Aboriginal people.

NA: Not Applicable

Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics.

Source: NSW Admitted Patient Data Collection (HIE). Demand and Performance Evaluation Branch, NSW Ministry of Health.

Patients who leave hospital against medical advice

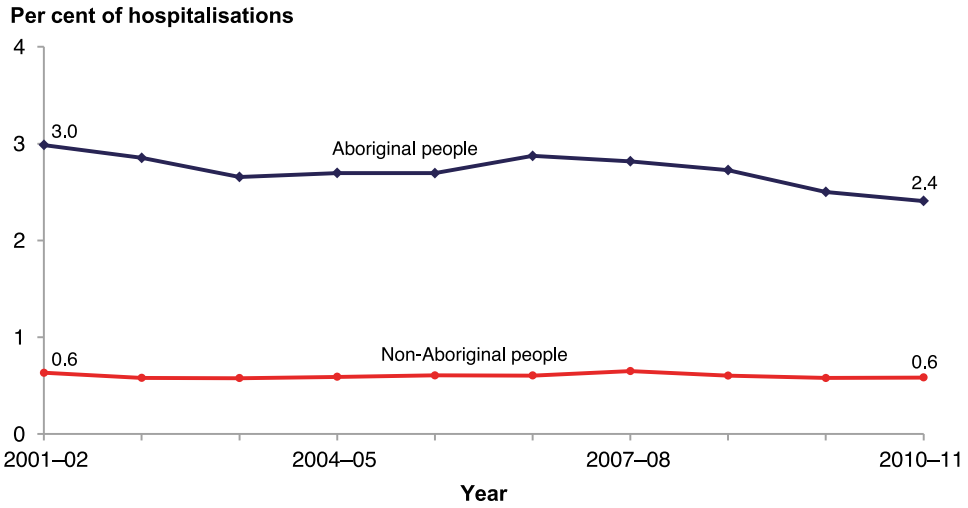
Health issue: Discharge against medical advice involves patients who have been admitted to hospital who leave against the expressed advice of their treating physician. Patients who discharge against medical advice have higher readmission rates, higher levels of multiple admissions, and a higher in-hospital mortality (Choi et al. 2011; Glasgow et al. 2010). This measure provides indirect evidence of the cultural competence of hospital services, and the extent of patient satisfaction with the quality of care provided (Australian Government 2011).

Health disparity: In 2010–11, the proportion of hospitalisations of Aboriginal people resulting in discharge against medical advice was 2.4%, compared with 0.6% for non-Aboriginal people. This difference is significant, with Aboriginal people 4.3 times more likely to discharge against medical advice than non-Aboriginal people. Over the past 10 years, the proportion of Aboriginal people discharging against medical advice has decreased, which has reduced the difference in rates between Aboriginal and non-Aboriginal people (Figure 71).

In 2010–11, the five Local Health Districts with the highest rates of discharge against medical advice for Aboriginal people were: Sydney (4.1%), Far West (4.0%), South Western Sydney (3.1%), Southern NSW (3.0%) and Nepean Blue Mountains (3.0%) (Table 2).

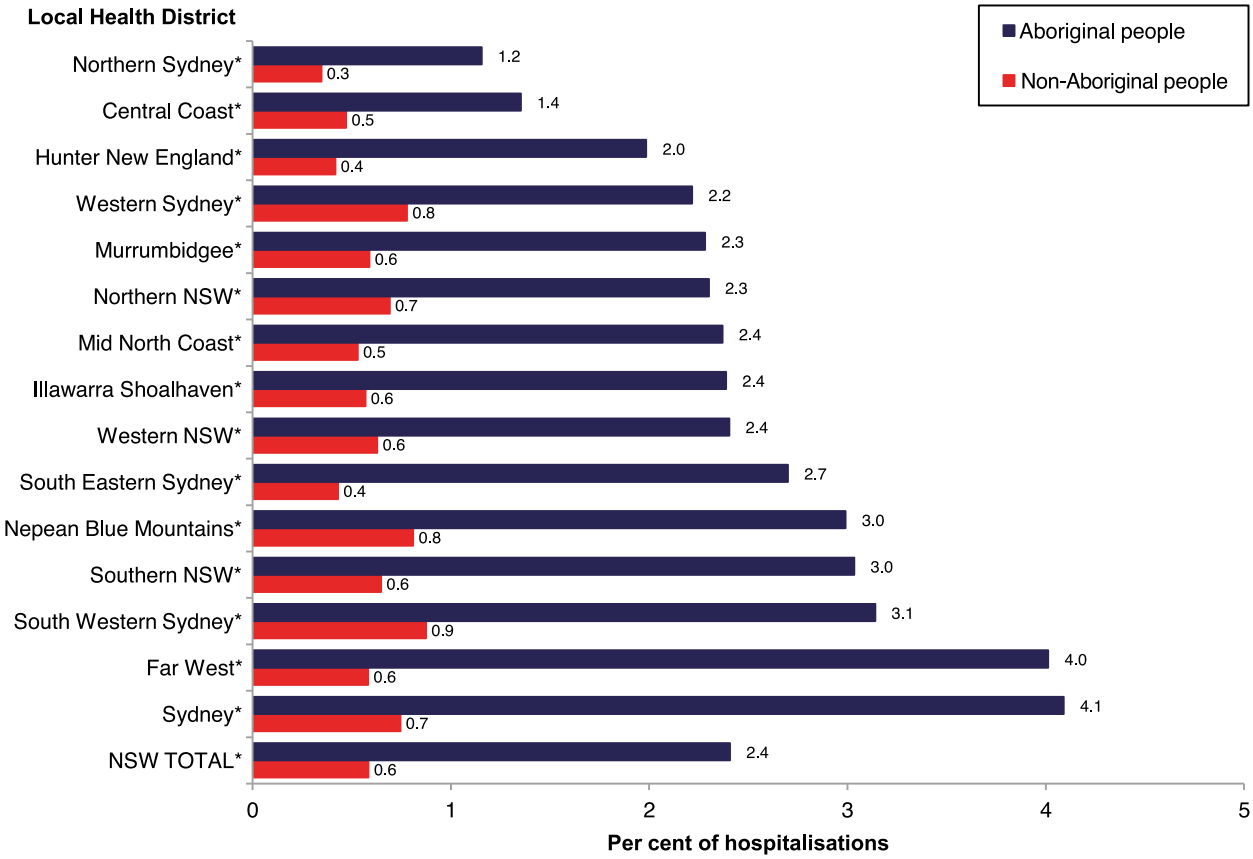
Closing the gap: For the proportion of Aboriginal and non-Aboriginal people who discharge against medical advice to be the same, in 2010–11, 1209 out of 1597 fewer occasions of discharge against medical advice for Aboriginal people were required. Three Local Health Districts would have each needed more than 100 fewer occasions of discharge against medical advice in 2010–11 to close the gap: Western NSW (242), Hunter New England (202) and Northern NSW (104) (Figure 72, Table 2).

Figure 71: Hospitalisations ending with discharge against medical advice by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 72: Hospitalisations ending with discharge against medical advice by Aboriginality and Local Health District of residence, NSW, 2010–11



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 2: Hospitalisations ending with discharge against medical advice by Aboriginality and Local Health District of residence, per cent of hospitalisations, NSW, 2008–09 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number needed to be prevented to close the gap#
	2008–09	2009–10	2010–11	2010–11	2010–11
	%	%	%	%	
Central Coast	2.8	1.9	1.4	0.5	23
Far West	2.8	4.9	4.0	0.6	44
Hunter New England	2.4	2.0	2.0	0.4	202
Illawarra Shoalhaven	2.9	1.9	2.4	0.6	75
Mid North Coast	2.1	2.9	2.4	0.5	97
Murrumbidgee	2.6	2.4	2.3	0.6	61
Nepean Blue Mountains	2.2	2.3	3.0	0.8	45
Northern NSW	2.8	2.4	2.3	0.7	104
Northern Sydney	0.8	1.5	1.2	0.3	3
South Eastern Sydney	2.1	1.6	2.7	0.4	40
South Western Sydney	3.9	3.2	3.1	0.9	65
Southern NSW	2.3	2.6	3.0	0.6	53
Sydney	3.7	3.6	4.1	0.7	77
Western Sydney	3.2	2.5	2.2	0.8	67
Western NSW	3.0	2.8	2.4	0.6	242
NSW TOTAL	**2.7**	**2.5**	**2.4**	**0.6**	**1209**

Number of occurrences of discharge against medical advice for Aboriginal people in 2010-11 that would need to be avoided in order for rates of discharge against medical advice to be the same for Aboriginal and non-Aboriginal admitted patients at the State and Local Health District level.
Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics.
Source: NSW Admitted Patient Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.2 Access to health services and procedures

Providing equitable access to hospital-based services is a critical responsibility of the health system (Australian Government 2011). Aboriginal people often do not have equal access to medical services and procedures, despite having higher rates of hospitalisation and a higher burden of disease (Cunningham 2002; Coory and Walsh 2005; Yeates et al. 2009). These disparities in access are not explained fully by diagnosis, gender, age, or location of residence (Cunningham 2002). This section highlights selected indicators of access to health services and procedures where there is a significant difference between Aboriginal and non-Aboriginal people which cannot be entirely explained by differences in health service needs. The differences may be an indication of the cultural competency and accessibility of services being delivered to Aboriginal people in NSW.

It is important to note that only selected indicators are highlighted. Disparities in procedure rates occur across many procedure types, therefore the effort required to address inequity in access will be much greater than just for those procedures highlighted in this report. For many health conditions, Aboriginal people experience a higher prevalence and incidence of disease and injury creating a greater need for procedures compared to non-Aboriginal people. Therefore, closing the gap in procedure rates may underestimate the amount of procedures required to achieve equity between Aboriginal and non-Aboriginal people based on health needs.

Key facts

- In NSW in 2010, Aboriginal people were 20% less likely to access high volume surgical procedures than non-Aboriginal people.
- Aboriginal people are significantly less likely to receive revascularisation procedures than non-Aboriginal people, and receive procedures at 72% of the rate for non-Aboriginal people.
- Aboriginal people have lower rates of access to cataract procedures than non-Aboriginal people. For cataract procedure rates to be the same for Aboriginal and non-Aboriginal people in 2010, an additional 388 cataract procedures would have been required for Aboriginal people in NSW, however this does not account for a higher prevalence of cataracts among Aboriginal people.
- In NSW in the period 2006–07 to 2010–11, the age-standardised rate of total knee and total hip replacements was 176 per 100 000 for Aboriginal people, and 288 per 100 000 for non-Aboriginal people.
- There has been a significant increase in the rate of inpatient rehabilitation services for Aboriginal people; however the difference in rates between Aboriginal and non-Aboriginal people has also increased significantly in the past 10 years.

Access to high volume surgical procedures

Health issue: Aboriginal people have higher rates of hospitalisation and higher rates of many diseases but are less likely than non-Aboriginal people to access common surgical procedures to treat or manage a range of conditions.

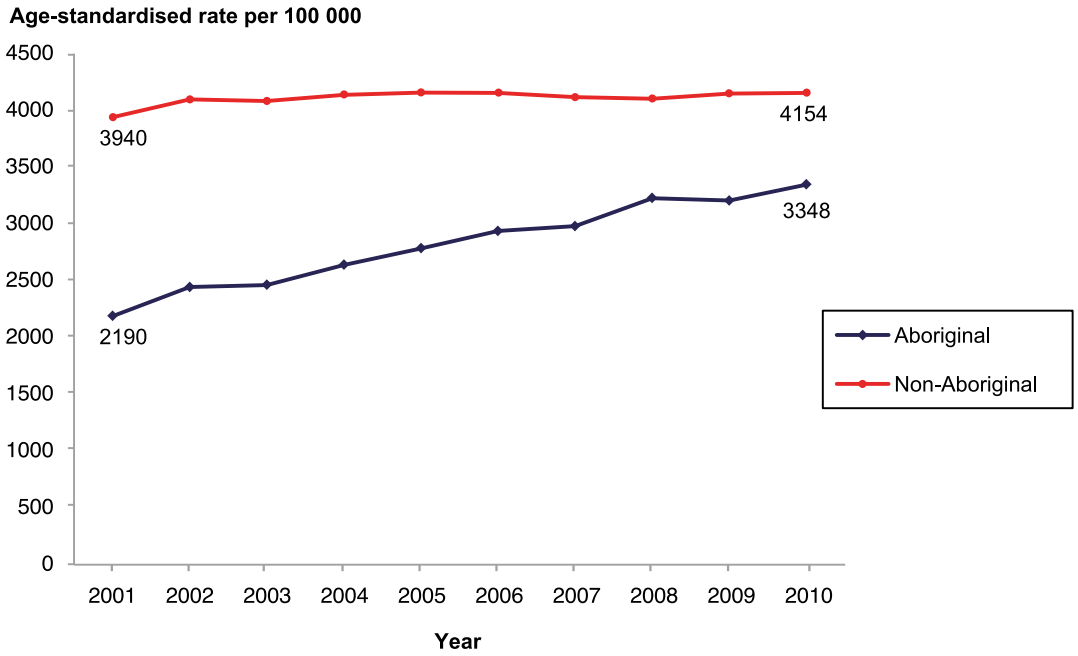
Health disparity: In 2010, the rate of access to high volume surgical procedures[#] was 3348 per 100 000 in Aboriginal people compared to 4154 per 100 000 in non-Aboriginal people. This difference is significant, with Aboriginal people 20% less likely to access high volume surgical procedures than non-Aboriginal people. Rates of procedures for Aboriginal people have increased over the past 10 years, from 2190 per 100 000 people in 2001, which has significantly decreased the difference in rates between Aboriginal and non-Aboriginal people (Figure 73).

In 2010, rates of high volume surgical procedures were lower for Aboriginal people across all age groups compared to non-Aboriginal people, except 10-29 years, which may reflect increased burden of injury requiring surgical treatment in young Aboriginal people.

In 2010, the five Local Health Districts with the greatest disparity in rates of access to high volume surgical procedures between Aboriginal and non-Aboriginal people were South Eastern Sydney, Murrumbidgee, Northern Sydney, South Western Sydney and Western Sydney (Figure 74).

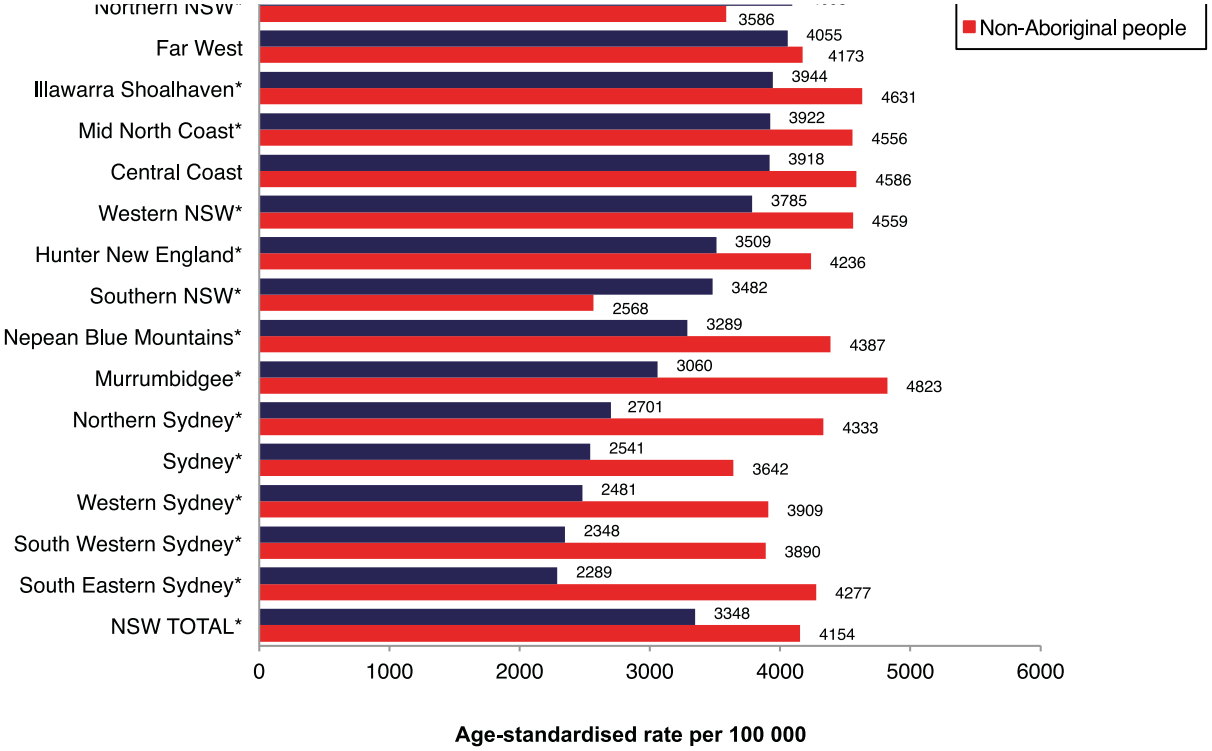
Closing the gap: An additional 573 high volume surgical procedures across NSW would be required to close the gap between Aboriginal and non-Aboriginal patients. However, this does not reflect increased need due to higher burden of injury and disease in Aboriginal people.

Figure 73: Access to high volume surgical procedures by Aboriginality in NSW, 2001-2010



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 74: Access to high volume surgical procedures by Aboriginality and Local Health District of residence, NSW, 2010



Note: * Indicates that the difference between Aboriginal and non-Aboriginal people is significant

Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

#The 26 selected 'high volume surgical procedures' include abdominal hysterectomy, appendectomy, arthroplasty of the hip, arthroplasty of the knee, arthroscopic menisectomy of the knee, caesarean section, cholecystectomy, colectomy, coronary artery bypass, curettage of the uterus, destruction procedures on the cervix, endarterectomy, fracture of the femur, major lens procedures, myringotomy, procedures for haemorrhoids, release of carpal tunnel, repair of abdominal aneurysm, repair of inguinal hernia, repair of tendon of the hand, repair of umbilical, epigastric or linea alba hernia, transluminal coronary angioplasty, transurethral prostatectomy, tonsillectomy or adenoidectomy and vaginal hysterectomy. The 26 procedures included were selected by key stakeholders in the NSW Ministry of Health in 2010. Some procedures included are medium volume but high cost. Some procedures may be classified as non-admitted care and will not be included in the counts of high volume surgical procedures in the NSW Admitted Patient Data Collection.

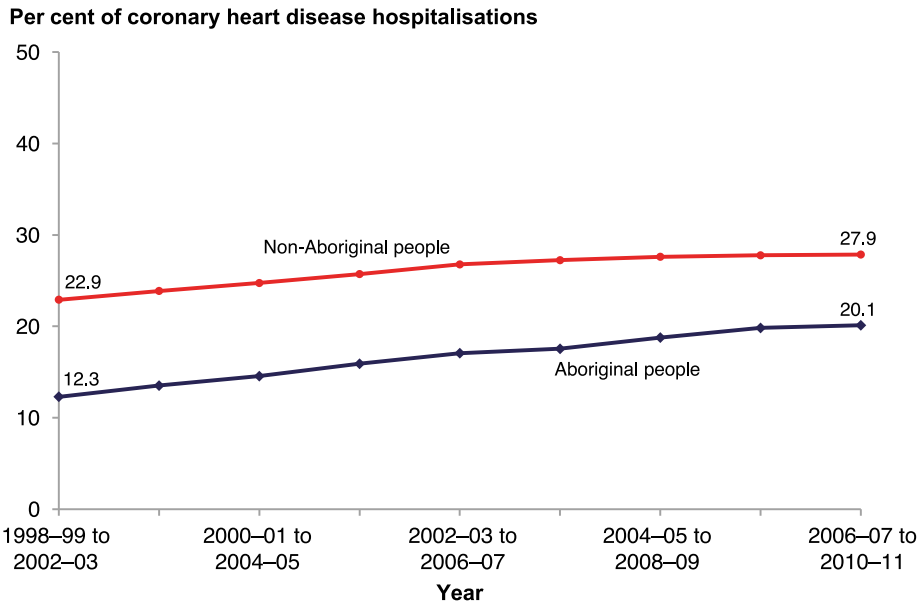
Coronary procedures

Health issue: Coronary revascularisation procedures, which include angioplasty and coronary artery bypass graft, are interventions for treating coronary heart disease. Aboriginal people have high rates of coronary heart disease, however Aboriginal people admitted to public hospitals with circulatory disease are less likely to have a diagnostic or therapeutic procedure (Cunningham 2002; Australian Government 2011), or to receive a revascularisation procedure after a heart attack (Coory and Walsh 2005). Equitable access to optimal care is an important aspect of public health system performance (Coory and Walsh 2005).

Health disparity: In NSW in the period 2006–07 to 2010–11, the rate of coronary revascularisation procedures (angioplasty or coronary artery bypass graft) as a proportion of all hospitalisations for coronary heart disease was 20% for Aboriginal people, and 28% for non-Aboriginal people. This difference is significant, with Aboriginal people receiving procedures at 72% of the rate of non-Aboriginal people. Rates of procedures for Aboriginal people have increased over the past 10 years, from 12% in the period 1998–99 to 2002–03, which has significantly decreased the difference in rates between Aboriginal and non-Aboriginal people (Figure 75).

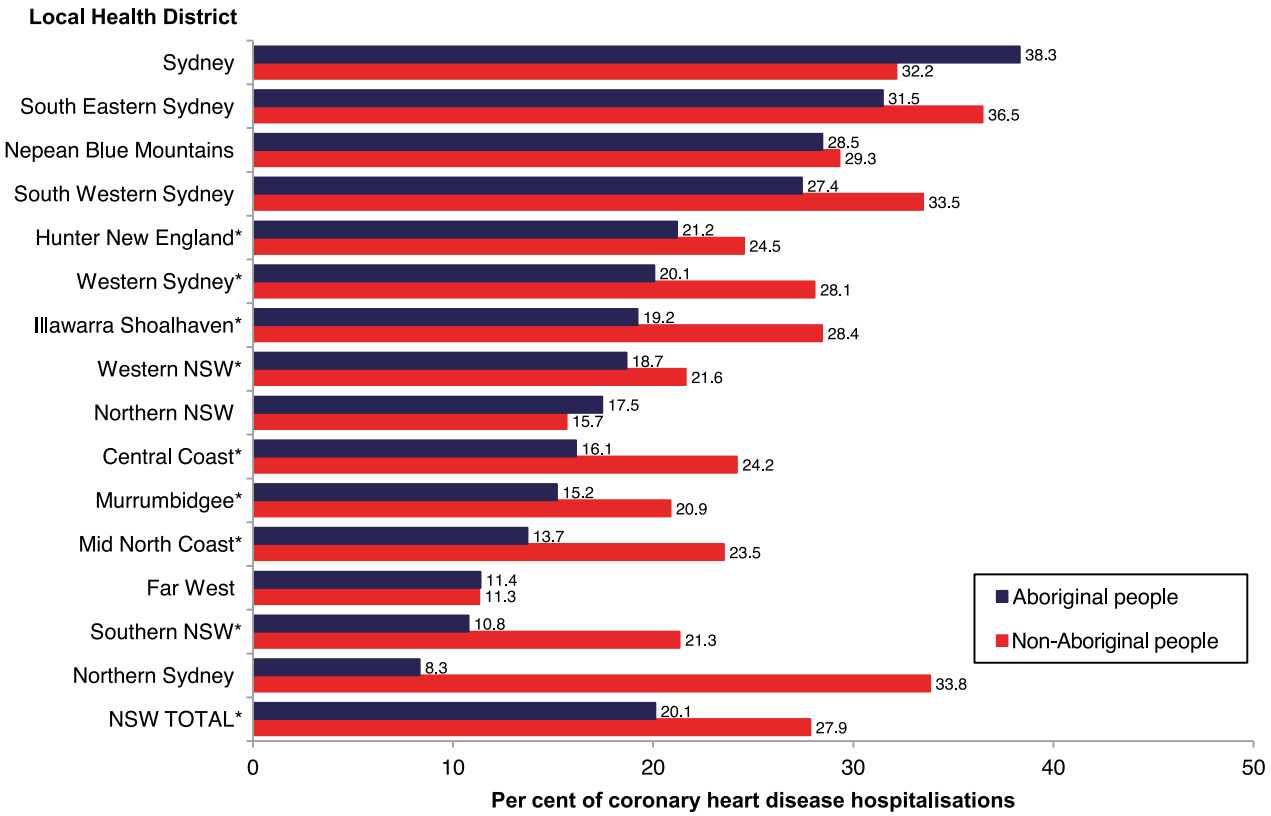
In the period 2006–07 to 2010–11, the five Local Health Districts with the lowest rates of revascularisation procedures as a proportion of all hospitalisations for coronary heart disease for Aboriginal people were: Northern Sydney, Southern NSW, Far West, Mid North Coast and Murrumbidgee (Figure 76, Table 3).

Figure 75: Revascularisation procedures as a proportion of all hospitalisations for coronary heart disease by Aboriginality, combined 5-year proportions, NSW, 1998–99 to 2010–11



Source: NSW Admitted Patient Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 76: Revascularisation procedures as a proportion of all hospitalisations for coronary heart disease by Aboriginality and Local Health District of residence, NSW, 2006–07 to 2010–11 combined



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.

Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 3: Revascularisation procedures as a proportion of all hospital admissions for coronary heart disease by Aboriginality and Local Health District of residence, combined 5-year percentages, NSW, 2002–03 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people
	2002–03 to 2006–07	2004–05 to 2008–09	2006–07 to 2010–11	2006–07 to 2010–11
	%	%	%	%
Central Coast	13.0	17.8	16.1	24.2
Far West	12.2	15.8	11.4	11.3
Hunter New England	17.3	19.6	21.2	24.5
Illawarra Shoalhaven	21.6	18.0	19.2	28.4
Mid North Coast	12.4	12.8	13.7	23.5
Murrumbidgee	10.5	15.5	15.2	20.9
Nepean Blue Mountains	24.5	26.2	28.5	29.3
Northern NSW	15.4	15.7	17.5	15.7
Northern Sydney	17.4	18.5	8.3	33.8
South Eastern Sydney	29.3	28.1	31.5	36.5
South Western Sydney	24.9	26.8	27.4	33.5
Southern NSW	15.0	19.6	10.8	21.3
Sydney	42.1	39.4	38.3	32.2
Western NSW	15.4	17.4	18.7	21.6
Western Sydney	16.7	18.1	20.1	28.1
NSW TOTAL	**17.1**	**18.8**	**20.1**	**27.9**

Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics.
Source: NSW Admitted Patient Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Cataract procedure rate

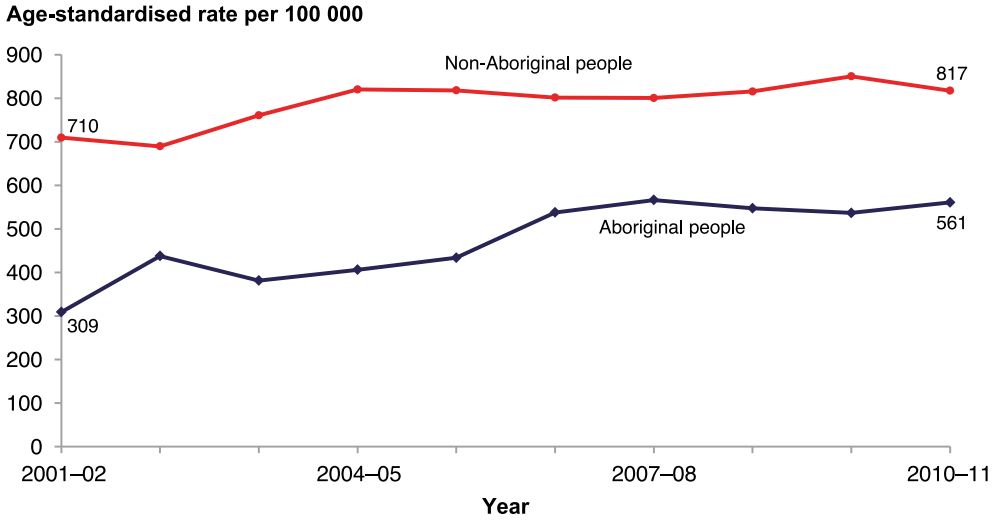
The health issue: Cataract procedures address vision loss and blindness due to cataracts, and the cataract procedure rate is a standard measure of the delivery of cataract surgical services used to monitor the coverage of cataract procedures (WHO 2007). Aboriginal people experience a higher burden of eye disease than the general population.

Health disparity: The occurrence of cataracts is higher in Aboriginal people, with 11% of Aboriginal and Torres Strait Islander people aged over 55 years reporting a history of cataracts, compared with 7% for non-Indigenous people (ABS 2006). Cataract causes 32% of blindness and 27% of low vision in Aboriginal and Torres Strait Islander adults (aged over 40 years), with only 65% of those with vision loss from cataract having received surgery (Taylor et al. 2010). The national blindness rate for Aboriginal and Torres Strait Islander adults is 1.9% (6.2 times the rate for non-Aboriginal people) and the low vision rate is 9.4% (2.8 times the rate for non-Aboriginal people) (Taylor et al. 2010).

The cataract procedure rate for NSW in 2010–11 was 561 per 100 000 for Aboriginal people and 817 for non-Aboriginal people (Figure 77). This difference is significant, with Aboriginal people accessing cataract procedures at 0.67 the rate of non-Aboriginal people. Over the past 10 years there has been an increase in the rate of cataract procedures for Aboriginal people, from 309 per 100 000 in 2001–02, however there has been no significant change in the gap between the rates for Aboriginal and non-Aboriginal people. Cataract procedure rates for Aboriginal people and non-Aboriginal people differ widely across NSW (Figure 78). Across Local Health Districts, the cataract procedure rates for Aboriginal people range from 159 per 100 000 in Sydney Local Health District, to 971 per 100 000 in Northern NSW Local Health District (Table 4).

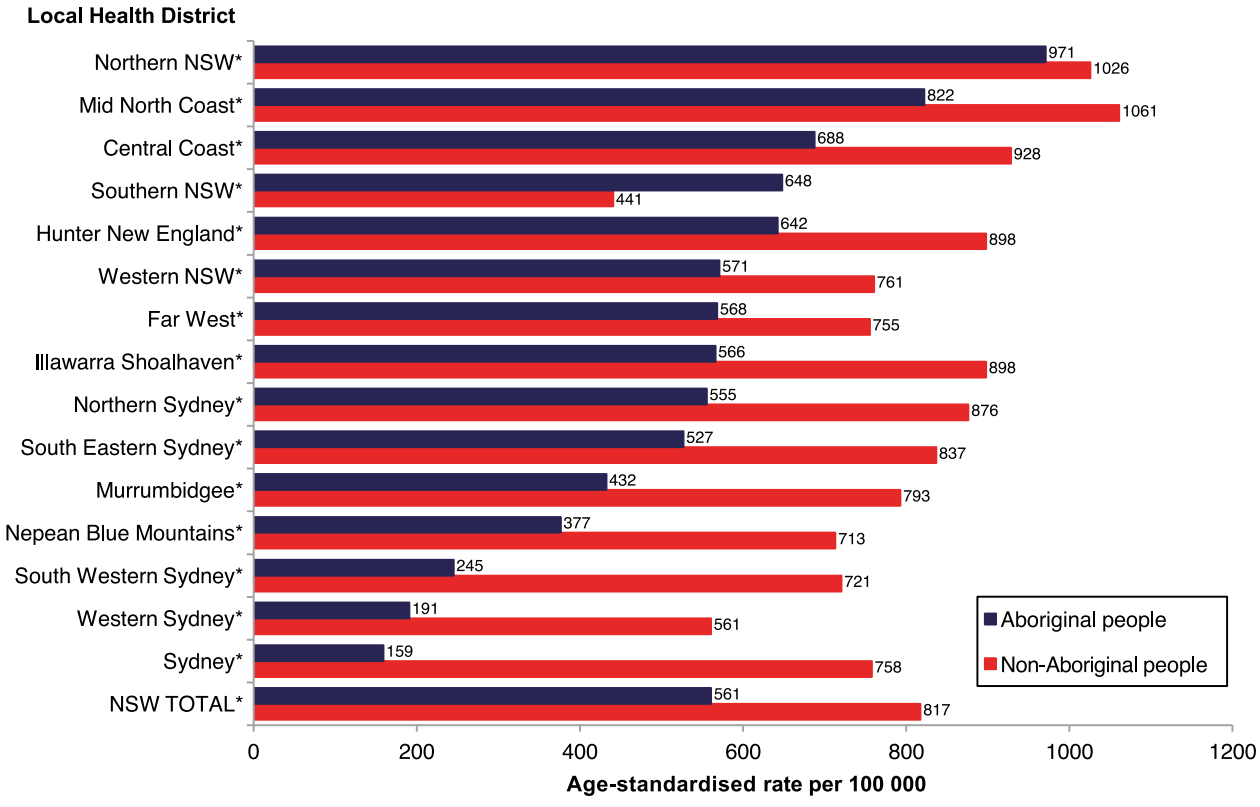
Closing the gap: To achieve equal cataract procedure rates for Aboriginal and non-Aboriginal people in 2010–11, an additional 388 cataract procedures above the 363 operations performed were required for Aboriginal people in NSW. However to provide equitable access to Aboriginal people, additional operations may be required given the higher prevalence of cataract among Aboriginal people. The three Local Health Districts with the highest number of additional cataract procedures required for Aboriginal people for the rate to be the same as the non-Aboriginal surgery rate were: Hunter New England (91 operations required), Western NSW (46 operations) and South Western Sydney (36 operations) (Table 4).

Figure 77: Cataract procedures by Aboriginality, NSW, 2001–02 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 78: Cataract procedures by Aboriginality and Local Health District of residence, NSW, 2010–11



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 4: Cataract procedures by Aboriginality and Local Health District of residence, age-standardised rates per 100 000, NSW, 2008–09 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number of additional procedures needed to close the gap in procedure rates#
	2008–09	2009–10	2010–11	2010–11	2010–11
Central Coast	742	450	688	928	15
Far West	1060	876	568	755	5
Hunter New England	631	557	642	898	91
Illawarra Shoalhaven	604	884	566	898	27
Mid North Coast	860	654	822	1061	27
Murrumbidgee	477	413	432	793	30
Nepean Blue Mountains	265	144	377	713	18
Northern NSW	887	932	971	1026	16
Northern Sydney	322	681	555	876	9
South Eastern Sydney	379	365	527	837	23
South Western Sydney	386	415	245	721	36
Southern NSW	1075	947	648	441	NA
Sydney	480	633	159	758	23
Western NSW	385	437	571	761	46
Western Sydney	65	101	191	561	26
NSW TOTAL	**547**	**537**	**561**	**817**	**388**

Number of additional cataract procedures required in 2010-11 for Aboriginal people in order for cataract procedure rates to be the same for Aboriginal and non-Aboriginal patients at the State and Local Health District level. Numbers are based on a 57% higher prevalence for Aboriginal people aged 55 years and over. Equal prevalence was assumed for younger age groups due to lack of prevalence data, which may underestimate number of procedures required.
NA: Not Applicable
Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics. Cataract procedures are mostly provided as inpatient care. Some cataract procedures are classified as non-admitted care and will not be included in the statistics.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Elective orthopaedic surgery

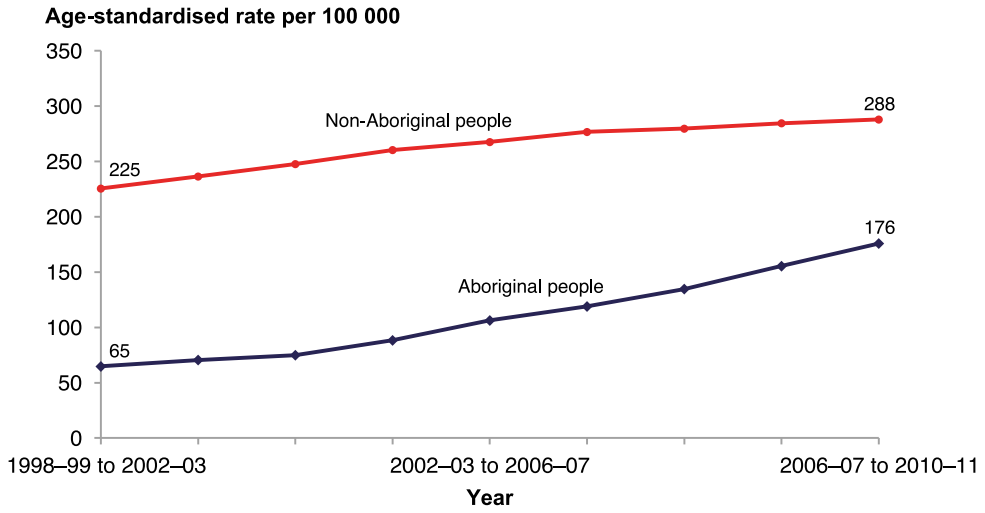
Health issue: Elective orthopaedic surgery includes total hip replacement and total knee replacement, which are operations most commonly used to address joint failure due to arthritis. Aboriginal people have a lower rate of both hip and knee replacement compared with non-Aboriginal people nationally despite having a similar prevalence of osteoarthritis (AIHW 2007b; Dixon et al. 2011). This may reflect lower access to these procedures, lower acceptance of the procedures, or co-morbidities precluding orthopaedic surgery (Dixon et al. 2011).

Health disparity: In NSW in the period 2006–07 to 2010–11, the rate of total knee and total hip replacements was 176 per 100 000 for Aboriginal people, and 288 per 100 000 for non-Aboriginal people. This difference is significant, with Aboriginal people accessing orthopaedic surgery at 0.61 the rate of non-Aboriginal people. Over the past 10 years the rate of hip and knee replacements has increased for Aboriginal people, from 65 per 100 000 in the period 1998–99 to 2002–03; and there has been a significant decrease in the gap between the rates for Aboriginal and non-Aboriginal people (Figure 79).

The three Local Health Districts with the lowest rates of total hip and knee replacements per 100 000 Aboriginal people for the period 2006–07 to 2010–11 were: South Eastern Sydney (88), Illawarra Shoalhaven (135) and Southern NSW (136) (Figure 80, Table 5).

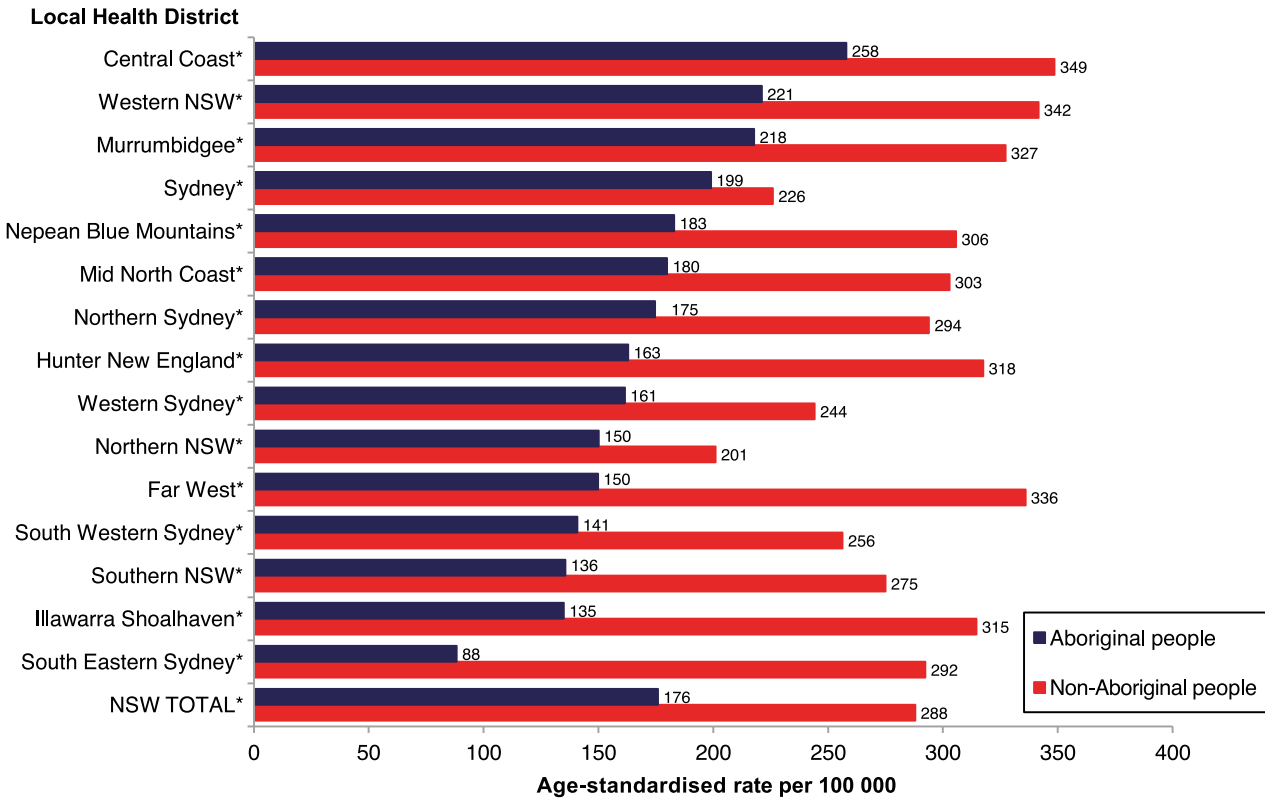
Closing the gap: For elective orthopaedic surgery rates to have been the same for Aboriginal and non-Aboriginal people in 2010–11, approximately 66 additional total knee and hip replacement operations would have been required for Aboriginal people across NSW from a total of 571 performed. For Local Health Districts, 2010–11 required approximately 21 additional operations in Hunter New England, and 12 additional operations in Western NSW (Table 5).

Figure 79: Total knee and total hip replacement surgery by Aboriginality, combined 5-year rates, NSW, 1998–99 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 80: Total knee and total hip replacement surgery by Aboriginality and Local Health District of residence, NSW, 2006–07 to 2010–11 combined



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 5: Total knee and total hip replacement surgery by Aboriginality and Local Health District of residence, combined 5-year age-standardised rates per 100 000, NSW, 2002–03 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number of additional procedures needed to close the gap in procedure rates#
	2002–03 to 2006–07	2004–05 to 2008–09	2006–07 to 2010–11	2006–07 to 2010–11	2006–07 to 2010–11
Central Coast	166	209	258	349	3
Far West	86	163	150	336	3
Hunter New England	102	135	163	318	21
Illawarra Shoalhaven	115	105	135	315	6
Mid North Coast	81	124	180	303	5
Murrumbidgee	181	221	218	327	5
Nepean Blue Mountains	71	102	183	306	4
Northern NSW	96	94	150	201	1
Northern Sydney	152	161	175	294	1
South Eastern Sydney	27	52	88	292	6
South Western Sydney	90	97	141	256	5
Southern NSW	152	156	136	275	3
Sydney	136	210	199	226	0
Western NSW	129	139	221	342	12
Western Sydney	24	100	161	244	4
NSW TOTAL	**88**	**122**	**176**	**288**	**66**

Number of additional total hip and knee replacement operations required each year between 2006-07 and 2010-11 for Aboriginal people in order to close the gap in elective orthopaedic procedure rates between Aboriginal and non-Aboriginal at the State and Local Health District level. This may underestimate the amount of procedures required if there is a higher need for procedures among Aboriginal people compare to non-Aboriginal people.
Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics. Hip and knee procedures are mostly provided as inpatient care.
Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Inpatient rehabilitation

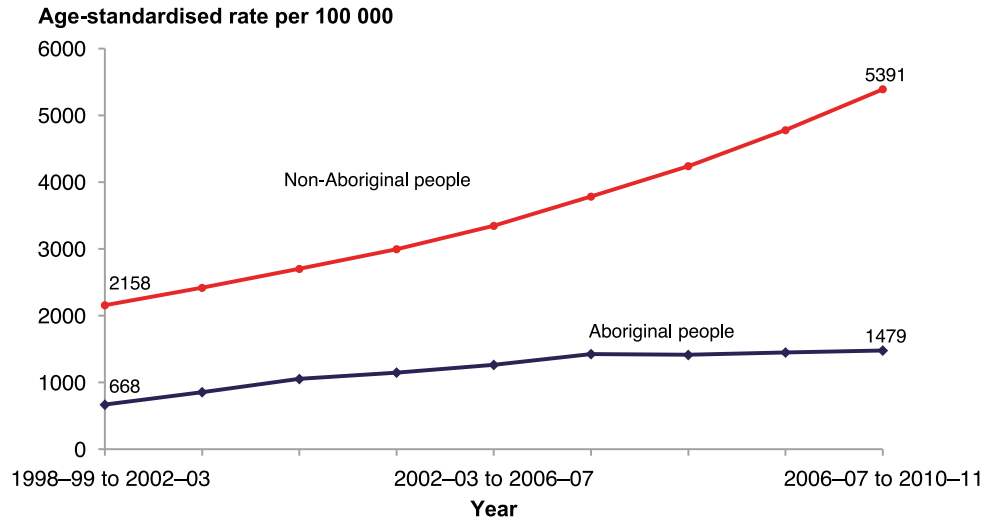
Health issue: Inpatient rehabilitation is the provision of multidisciplinary, medically-directed services that aim to improve the functioning of an individual after illness or injury (New and Poulos 2008). Aboriginal people may have an increased need for inpatient rehabilitation due to higher incidence of stroke (Katzenellenbogen et al. 2011) and injury than the general population, however Aboriginal people have lower rates of inpatient rehabilitation hospitalisation compared with non-Aboriginal people. Reviews suggest that referrals to inpatient rehabilitation can be influenced by a range of non-clinical patient factors, which can include the Aboriginal and Torres Strait Islander status of the patient (Foster et al. 2004).

Health disparity: In NSW in the period 2006–07 to 2010–11, the rate for inpatient rehabilitation hospitalisations was 1479 per 100 000 Aboriginal people and 5391 per 100 000 non-Aboriginal people. This is a significant difference, with Aboriginal people accessing rehabilitation services at 0.27 the rate of non-Aboriginal people. There has been a significant increase in the rate of inpatient rehabilitation services for Aboriginal people, from 668 per 100 000 in the period 1998–99 to 2002–03, however the difference in rates between Aboriginal and non-Aboriginal people has increased significantly over the past 10 years (Figure 81).

In the period 2006–07 to 2010–11, the five Local Health Districts with the lowest rates (per 100 000 population) of rehabilitation hospitalisations for Aboriginal people were: Nepean Blue Mountains (750), Central Coast (805), Northern NSW (818), Far West (919) and Hunter New England (1027) (Figure 82, Table 6).

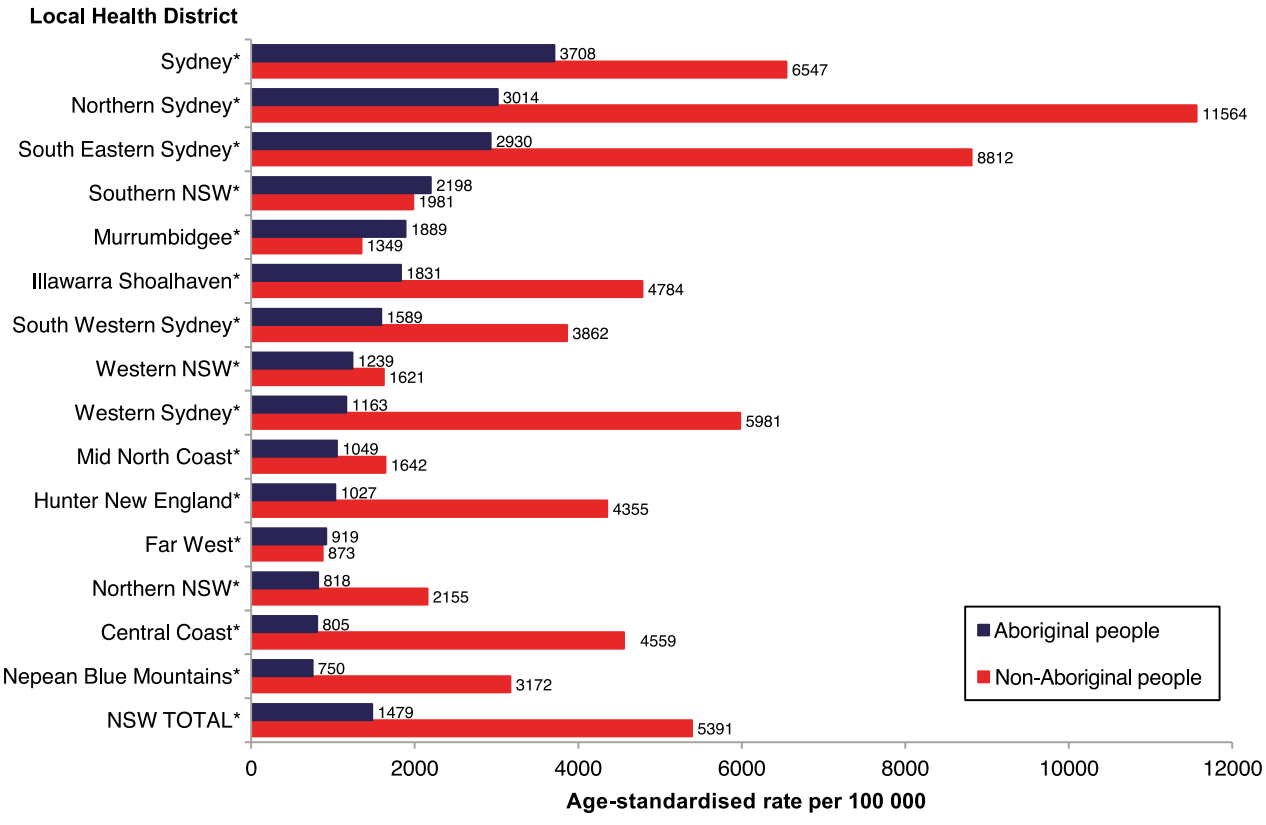
Closing the gap: For inpatient rehabilitation rates to have been the same for Aboriginal and non-Aboriginal people in 2010–11, an additional 473 inpatient rehabilitation hospitalisations for Aboriginal people were needed across NSW from a total of 882 hospitalisations. For Local Health Districts, an additional 87 inpatient rehabilitation episodes were required in Hunter New England, 38 in Western Sydney, and 37 in South Eastern Sydney (Table 6). This does not account for differences in need due to higher prevalence of illness and injury.

Figure 81: Rehabilitation episodes of care by Aboriginality, people aged 55 years and over, combined 5-year rates, NSW, 1998–99 to 2010–11



Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 82: Rehabilitation rates of episodes of care by Aboriginality and Local Health District of residence, people aged 55 years and over, NSW, 2006–07 to 2010–11 combined



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.

Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 6: Rehabilitation episodes of care by Aboriginality and Local Health District of residence, people aged 55 years and over, combined 5-year age-standardised rates per 100 000, NSW, 2002–03 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number of additional episodes of care needed to close the gap#
	2002–03 to 2006–07	2004–05 to 2008–09	2006–07 to 2010–11	2006–07 to 2010–11	2006–07 to 2010–11
Central Coast	815	1,096	805	4559	20
Far West	1384	963	919	873	NA
Hunter New England	1408	1323	1027	4355	87
Illawarra Shoalhaven	856	1643	1831	4784	24
Mid North Coast	659	488	1049	1642	2
Murrumbidgee	1038	1791	1889	1349	NA
Nepean Blue Mountains	767	951	750	3172	12
Northern NSW	1307	921	818	2155	9
Northern Sydney	2654	3336	3014	11 564	20
South Eastern Sydney	2446	3419	2930	8812	37
South Western Sydney	1120	1070	1589	3862	22
Southern NSW	974	1490	2198	1981	NA
Sydney	2136	2978	3708	6547	15
Western NSW	1108	1042	1239	1621	5
Western Sydney	973	924	1163	5981	38
NSW TOTAL	**1265**	**1414**	**1479**	**5391**	**473**

Number of additional rehabilitation separations required each year between 2006-07 and 2010-11 for Aboriginal people aged 55 years and over in order to close the gap in rehabilitation separation rates between Aboriginal and non-Aboriginal at the State and Local Health District level. This may underestimate the number of episodes of care required where there is a higher need for inpatient rehabilitation among Aboriginal people compared to non-Aboriginal people due to higher burden of disease and higher rates of co-morbidities.

NA: Not Applicable

Note: In relation to services provided to NSW or LHD residents, hospitalisations that occurred in interstate private hospitals are not included in the statistics. Rehabilitation is mostly provided as inpatient care. Some rehabilitation services are classified as non-admitted care and will not be included in the statistics.

Source: NSW Admitted Patient Data Collection and Australian Bureau of Statistics population estimates (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.3 Emergency Departments

In 2010–11, there were 82 108 attendances to NSW Emergency Departments recorded for Aboriginal people in NSW, with Aboriginal people 2.1 times more likely to attend Emergency Departments than non-Aboriginal people. The rates of access to Emergency Departments for Aboriginal people may be influenced by the availability, affordability, accessibility and cultural appropriateness of primary health-care options and the increased burden of acute and chronic disease experienced by Aboriginal people.

Key facts

- Aboriginal people are more likely to leave the Emergency Department before completing treatment than non-Aboriginal people, and are more likely to re-present to the same Emergency Department within 48 hours of a previous attendance.
- Aboriginal people are 1.2 times more likely to be admitted, referred or discharged within 4 hours of presentation to an Emergency Department than non-Aboriginal people.

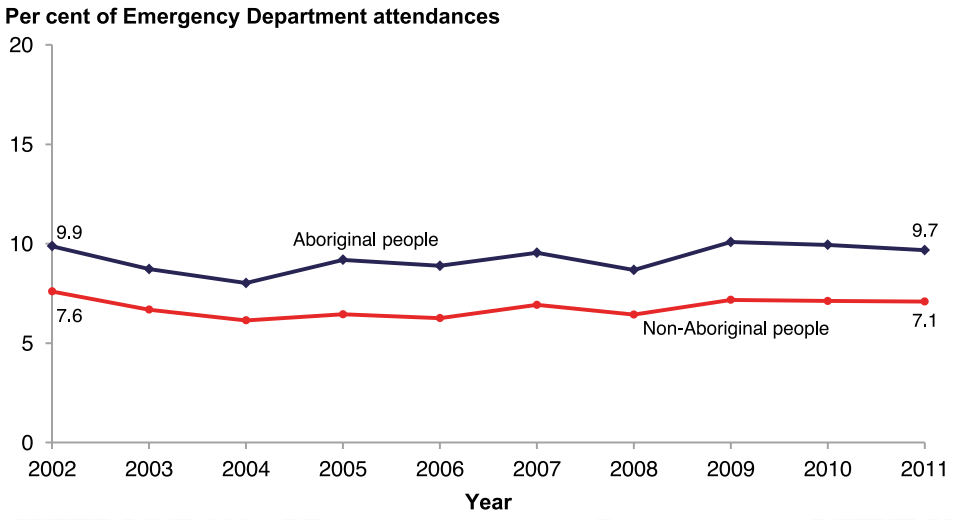
Incomplete Emergency Department attendances

Health issue: 'Did not wait' is a term used to describe patients who leave Emergency Departments before medical assessment, and 'left at own risk' refers to patients who leave Emergency Departments after medical assessment but before completion of care or medical discharge. Together, these incomplete Emergency Department attendances are a significant safety concern for people's health (Ding et al. 2007), and patients who do not wait are more likely to re-present to hospital (Hall and Jelinek 2007).

Health disparity: In NSW in 2011 the proportion of incomplete Emergency Department attendances was 9.7% (8047) for Aboriginal people and 7.1% (117 334) for non-Aboriginal people. This difference is significant, with Aboriginal people 1.4 times more likely to have an incomplete emergency attendance than non-Aboriginal people. Over the past 10 years there has been no significant change in rates for Aboriginal people and no significant change in the gap between Aboriginal and non-Aboriginal people (Figure 83). Five Local Health Districts had proportions of greater than 10% for incomplete Emergency Department attendances for Aboriginal people in 2011: Sydney (16.4%), Illawarra Shoalhaven (16.2%), South Western Sydney (13.3%), Western NSW (10.4%) and Northern NSW (10.1%) (Figure 84, Table 7).

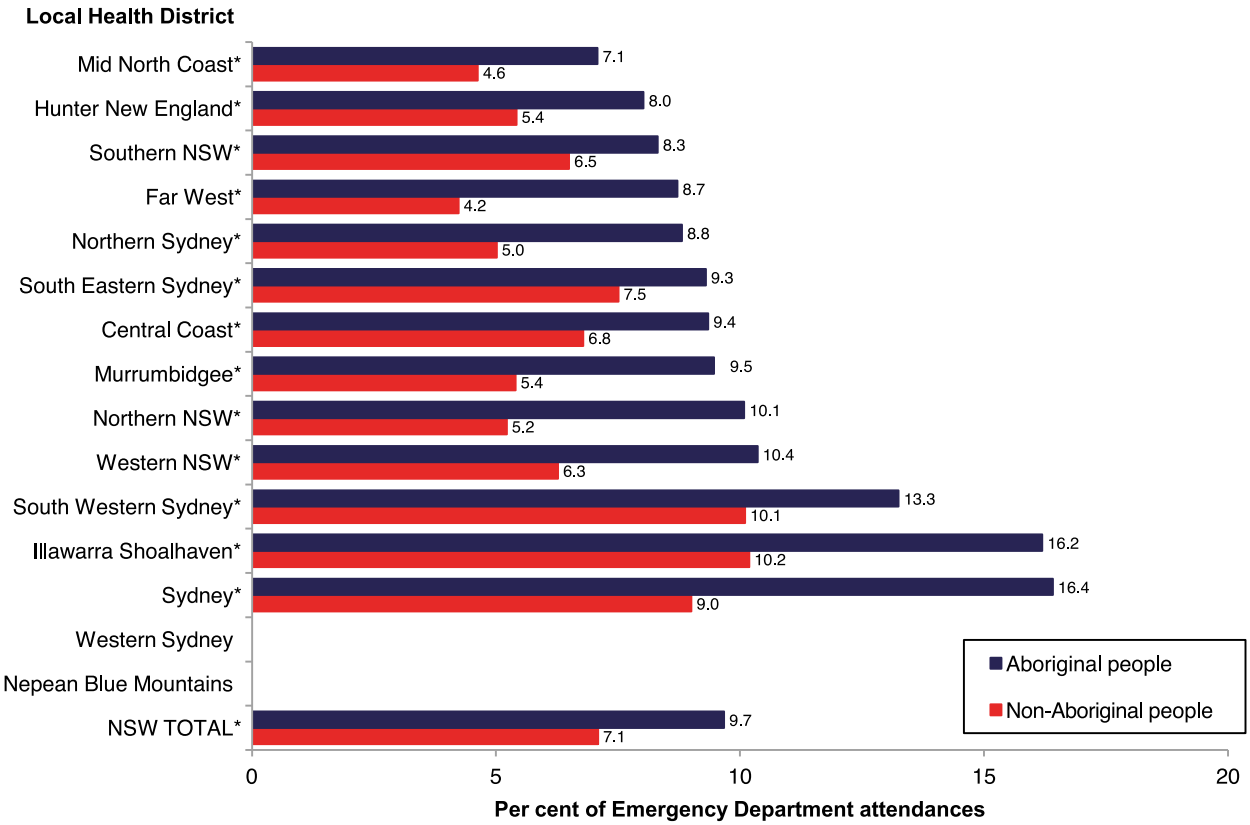
Closing the gap: For the rates of incomplete Emergency Department attendances to be the same between Aboriginal and non-Aboriginal people, Emergency Departments in NSW in 2011 needed to prevent 2149 occurrences of Aboriginal people who 'did not wait' or 'left at own risk' from a total of 8047. To close the gap at the Local Health District level, South Eastern Sydney Local Health District would have required 556 less occurrences of incomplete attendances for Aboriginal people, 332 less in Murrumbidgee, and 307 less in Northern NSW (Table 10).

Figure 83: Emergency Department attendances resulting in 'did not wait' or 'left at own risk' by Aboriginality, NSW, 2002 to 2011



Source: Emergency Department Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 84: Emergency Department attendances resulting in 'did not wait' or 'left at own risk' by Aboriginality and Local Health District of residence, NSW, 2011



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.

Note: Western Sydney and Nepean Blue Mountains Local Health Districts are unable to provide information on Emergency Department attendances for Aboriginal people.

Source: Emergency Department Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 7: Emergency Department attendances resulting in 'did not wait' or 'left at own risk' by Aboriginality and Local Health District of residence, per cent of admissions, NSW, 2009 to 2011

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number needed to be avoided to close the gap#
	2009 %	2010 %	2011 %	2011 %	2011
Central Coast	9.4	9.0	9.4	6.8	112
Far West	7.2	7.9	8.7	4.2	87
Hunter New England	9.0	9.1	8.0	5.4	65
Illawarra Shoalhaven	19.8	16.5	16.2	10.2	37
Mid North Coast	11.2	8.6	7.1	4.6	224
Murrumbidgee	8.3	8.7	9.5	5.4	332
Nepean Blue Mountains	NA	NA	NA	NA	NA
Northern NSW	9.0	8.6	10.1	5.2	307
Northern Sydney	6.7	8.4	8.8	5.0	229
South Eastern Sydney	10.5	9.2	9.3	7.5	556
South Western Sydney	10.4	11.6	13.3	10.1	62
Southern NSW	7.4	7.6	8.3	6.5	80
Sydney	13.5	14.7	16.4	9.0	70
Western NSW	9.0	10.4	10.4	6.3	210
Western Sydney	NA	NA	NA	NA	NA
NSW TOTAL	**10.1**	**9.9**	**9.7**	**7.1**	**2149**

Number of incomplete Emergency Department attendances for Aboriginal people in 2011 that were required to be avoided in order to close the gap in incomplete Emergency Department attendance rates between Aboriginal and non-Aboriginal at the State and Local Health District level.
NA: Not Available –Western Sydney and Nepean Blue Mountains Local Health Districts are unable to provide information on Emergency Department attendances for Aboriginal people for the majority of their hospitals.
Source: Emergency Department Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

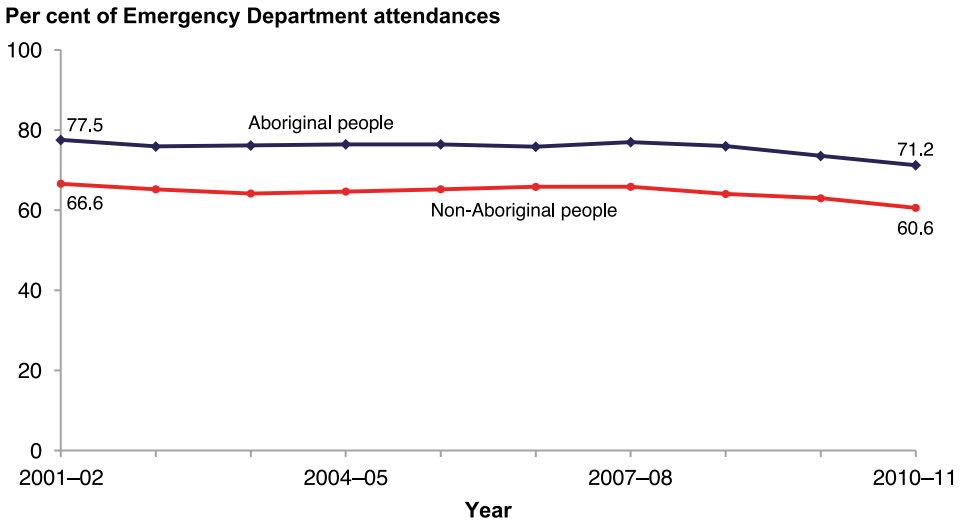
Emergency Department timeliness of treatment

Health issue: Emergency Department timeliness of treatment can be assessed in terms of the amount of time taken for clients assigned to each triage category to be admitted, referred or discharged from the Emergency Department. The proportion of Emergency Department patients who are admitted, referred or discharged within 4 hours of presentation, those categorised as Triage 3 who are treated within benchmark times, and those requiring admissions to mental health inpatient care who are admitted within 8 hours, are all key performance indicators for Local Health Districts in NSW.

Health disparity: In NSW in 2010–11, the proportion of Emergency Department attendances who were admitted, referred, or discharged within 4 hours of presentation was 71% for Aboriginal people and 61% for non-Aboriginal people (Figure 85). This difference is significant, with Aboriginal people 1.2 times more likely to be admitted, referred, or discharged within 4 hours of presentation than non-Aboriginal people.

In NSW in 2010–11, the proportion of Emergency Department attendances categorised as Triage 3 (people with potentially life threatening conditions who require treatment within 30 minutes) who were treated within benchmark times was 69% for Aboriginal people and 72% for non-Aboriginal people. This difference is not significant. In 2010–11, the proportion of Emergency Department patients who required admission to hospital to mental health inpatient care, and were admitted within 8 hours, was 74% for Aboriginal people and 70% for non-Aboriginal people. This difference is not significant.

Figure 85: Emergency Department patients admitted, referred or discharged within 4 hours, by Aboriginality, NSW, 2001–02 to 2010–11



Source: Emergency Department Data Collection (HIE). Demand and Performance Evaluation Branch, NSW Ministry of Health.

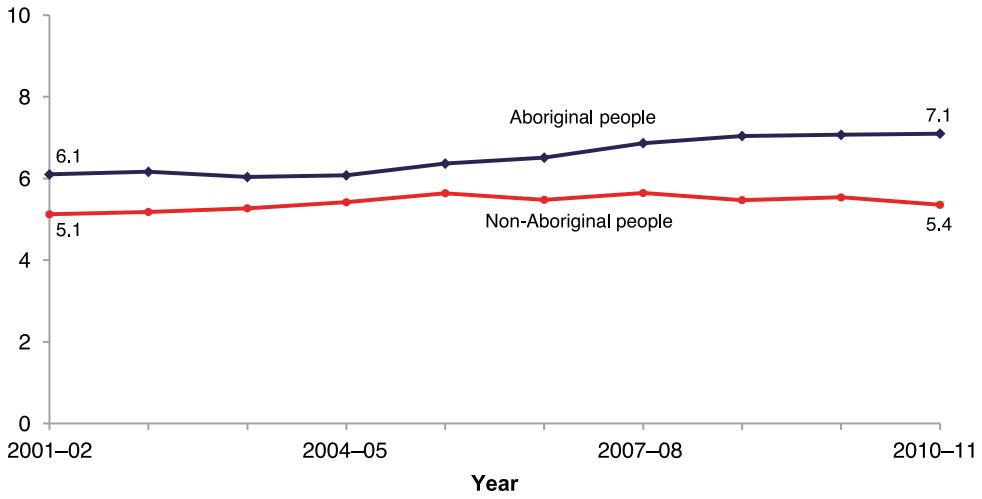
Emergency Department re-presentations

Health issue: An Emergency Department re-presentation is when a patient returns to an Emergency Department less than 48 hours after previously presenting to the same Emergency Department. 'Unplanned Emergency Department re-presentations to the same Emergency Department within 48 hours' is a key performance indicator for Local Health Districts in NSW. The indicator provides information on the effectiveness of Emergency Department care, and the adequacy of primary health-care follow-up for clients after attendance to an Emergency Department.

Health disparity: In 2010–11, the proportion of re-presentations to the same Emergency Department within 48 hours was 7.1% for Aboriginal people and 5.4% for non-Aboriginal people. This difference is significant, with Aboriginal people 1.3 times more likely to re-present than non-Aboriginal people. Over the past 10 years there has been a significant increase in the rate of Emergency Department re-presentations for Aboriginal people, from 6.1% in 2001–02, and the difference between the rates for Aboriginal and non-Aboriginal people has significantly increased (Figure 86). The five Local Health Districts with the highest proportion of Emergency Department representations in 2010–11 were: Western NSW (8.0%), Northern Sydney (8.2%), Far West (8.3%), Murrumbidgee (8.8%), and Hunter New England (7.6%) (Figure 87, Table 8).

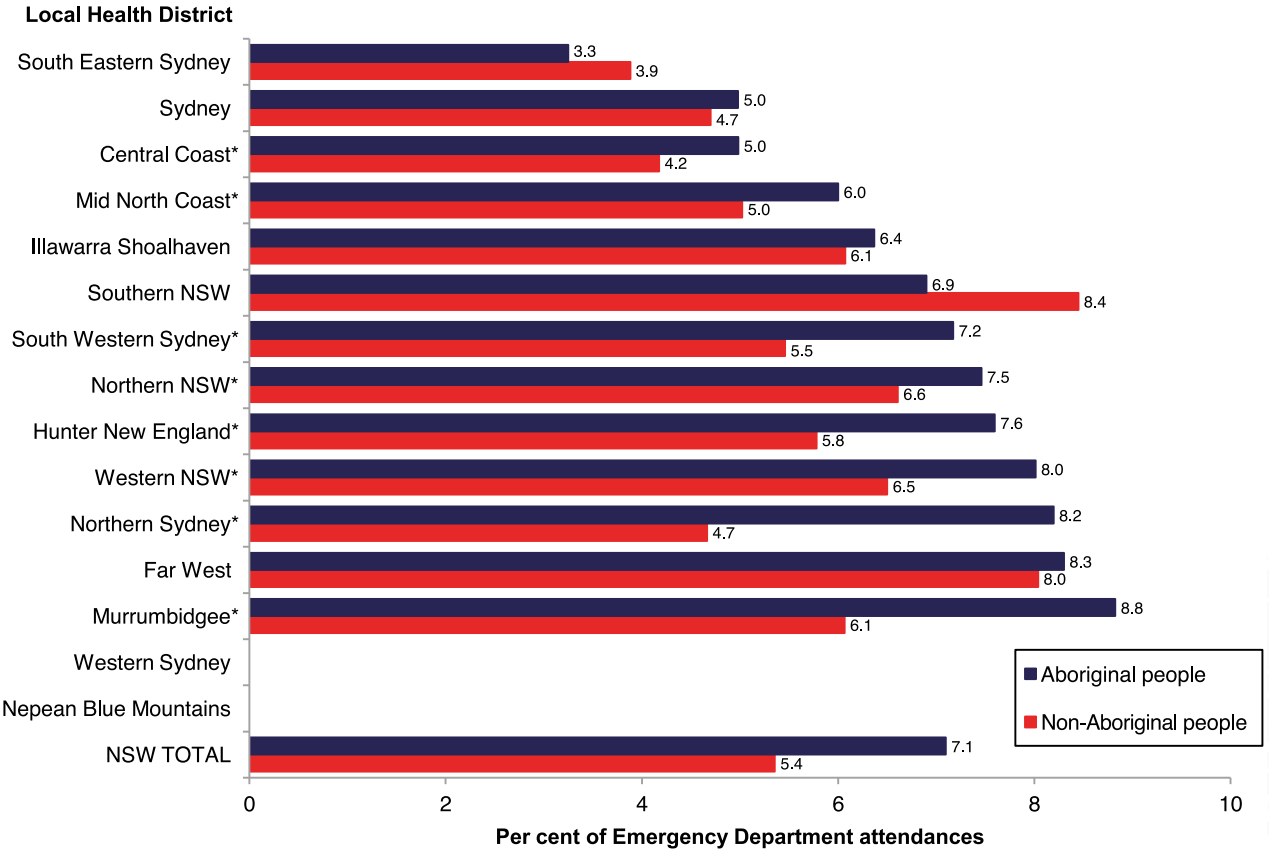
Closing the gap: In 2010–11 there were 973 more cases of Emergency Department re-presentations for Aboriginal people than would have been expected if Aboriginal and non-Aboriginal people had the same re-presentation rate. The total number of representations for Aboriginal people was 3963. At the Local Health District level, the higher rate resulted in 400 additional re-presentations in Hunter New England that would have needed to have been prevented through appropriate care, 96 in Western NSW, and 56 in Mid North Coast (Table 8).

Figure 86: Emergency Department re-presentations where the patient returns to an Emergency Department less than 48 hours after previously presenting to the same Emergency Department, by Aboriginality, NSW, 2001–02 to 2010–11



Source: Emergency Department Data Collection (HIE). Demand and Performance Evaluation Branch, NSW Ministry of Health.

Figure 87: Emergency Department re-presentations where the patient returns to an Emergency Department less than 48 hours after previously presenting to the same Emergency Department, by Aboriginality and Local Health District of residence, NSW, 2010–11



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Note: Western Sydney and Nepean Blue Mountains Local Health Districts are unable to provide information on Emergency Department attendances for Aboriginal people
Source: Emergency Department Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 8: Emergency Department re-presentations where the patient returns to an Emergency Department less than 48 hours after previously presenting to the same Emergency Department by Aboriginality and Local Health District of residence, percentage of attendances, NSW, 2008–09 to 2010–11

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number needed to be prevented to close the gap#
	2008–09	2009–10	2010–11	2010–11	2010–11
	%	%	%	%	
Central Coast	3.4	4.4	5.0	4.2	23
Far West	5.7	8.0	8.3	8.0	3
Hunter New England	8.2	7.9	7.6	5.8	400
Illawarra Shoalhaven	5.9	6.4	6.4	6.1	12
Mid North Coast	5.7	7.0	6.0	5.0	56
Murrumbidgee	6.9	6.0	8.8	6.1	77
Nepean Blue Mountains	NA	NA	NA	NA	NA
Northern NSW	7.3	7.7	7.5	6.6	35
Northern Sydney	3.6	6.2	8.2	4.7	13
South Eastern Sydney	4.6	4.7	3.3	3.9	NA
South Western Sydney	6.1	6.9	7.2	5.5	44
Southern NSW	6.1	4.4	6.9	8.4	NA
Sydney	4.9	6.4	5.0	4.7	4
Western NSW	7.1	6.7	8.0	6.5	96
Western Sydney	NA	NA	NA	NA	NA
NSW TOTAL	**7.0**	**7.1**	**7.1**	**5.4**	**973**

Number of Emergency Department re-presentations for Aboriginal people in 2010-11 that were required to be avoided through appropriate care in order for representation rates to be the same for Aboriginal and non-Aboriginal patients at the State and Local Health District level.
NA: Not Available.
Note: Western Sydney and Nepean Blue Mountains Local Health Districts are unable to provide information on Emergency Department attendances for Aboriginal people.
Source: Emergency Department Data Collection (HIE). Demand and Performance Evaluation Branch, NSW Ministry of Health.

5.4 Mothers and babies

Chapter 1 summarises infant and child mortality rates for Aboriginal and non-Aboriginal children, and Chapter 2 summarises key maternal, infant, and young children's health indicators for Aboriginal and non-Aboriginal children for NSW. In this section, three key indicators in maternal and child health are reported at the Local Health District level: antenatal care attendance, smoking during pregnancy, and low birth-weight babies.

Antenatal care

The health issue: Antenatal care is provided to pregnant women by primary health-care providers and includes recording medical history, assessment of individual needs, advice and guidance on pregnancy and delivery, screening tests, education on self-care during pregnancy, identification of conditions detrimental to health during pregnancy, first-line management and referral if necessary (WHO 2006). Antenatal care is important for monitoring the health of the mother and baby, and providing advice to promote health, and identify complications with pregnancy so that appropriate care can be provided at the earliest time.

Health disparity: In 2010, the five Local Health Districts with the lowest rates of attendance to antenatal care before 14 weeks' gestation for Aboriginal women were: Sydney (48%), South Western Sydney (54%), Mid North Coast (66%), Western NSW (66%) and South Eastern Sydney (70%) (Table 9).

Closing the gap: For the proportion of antenatal visits before 14 weeks' gestation to be the same for Aboriginal and non-Aboriginal women in 2010, an additional 18 Aboriginal women in Sydney needed to attend an antenatal visit before 14 weeks' gestation, 46 more Aboriginal women in Mid North Coast, 107 more Aboriginal women in Western NSW, and three more Aboriginal women in South Eastern Sydney (Table 9).

Table 9: First antenatal visit before 14 weeks' gestation by mother's Aboriginality and Local Health District of residence, percentage of mothers, NSW, 2008 to 2010

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number needed to close the health gap#
	2008	2009	2010	2010	2010
	%	%	%	%	
Central Coast*	82	86.4	80	89	11
Far West*	60.8	54.3	72.2	83	6
Hunter New England*	67.7	70.8	71.2	84.7	108
Illawarra Shoalhaven	76.3	74.7	84	82.6	NA
Mid North Coast*	70	66.2	65.9	86.7	46
Murrumbidgee*	69.7	65.6	74.8	88.1	21
Nepean Blue Mountains	85	80.5	85.7	89.8	5
Northern NSW*	68.1	73.9	75	87.4	27
Northern Sydney	81	85.7	77.8	86.6	3
South Eastern Sydney	52.6	57.8	69.6	73.4	3
South Western Sydney	67.6	51.2	54	53.8	0
Southern NSW	53.4	63.2	69.8	83	11
Sydney*	49	34.3	48.3	69.5	18
Western NSW*	62.9	68.7	66.3	87.1	107
Western Sydney*	77.1	84.2	79.4	92.4	27
NSW TOTAL*	**68.7**	**69.2**	**71.3**	**79.6**	**257**

* Indicates a significant difference between Aboriginal and non-Aboriginal people for the Local Health District
# Number of additional Aboriginal mothers in 2010 that would have been required to attend antenatal care before 14 weeks gestation in order for antenatal attendance rates to be the same for Aboriginal and non-Aboriginal mothers at the State and Local Health District level.
NA: Not Applicable.
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

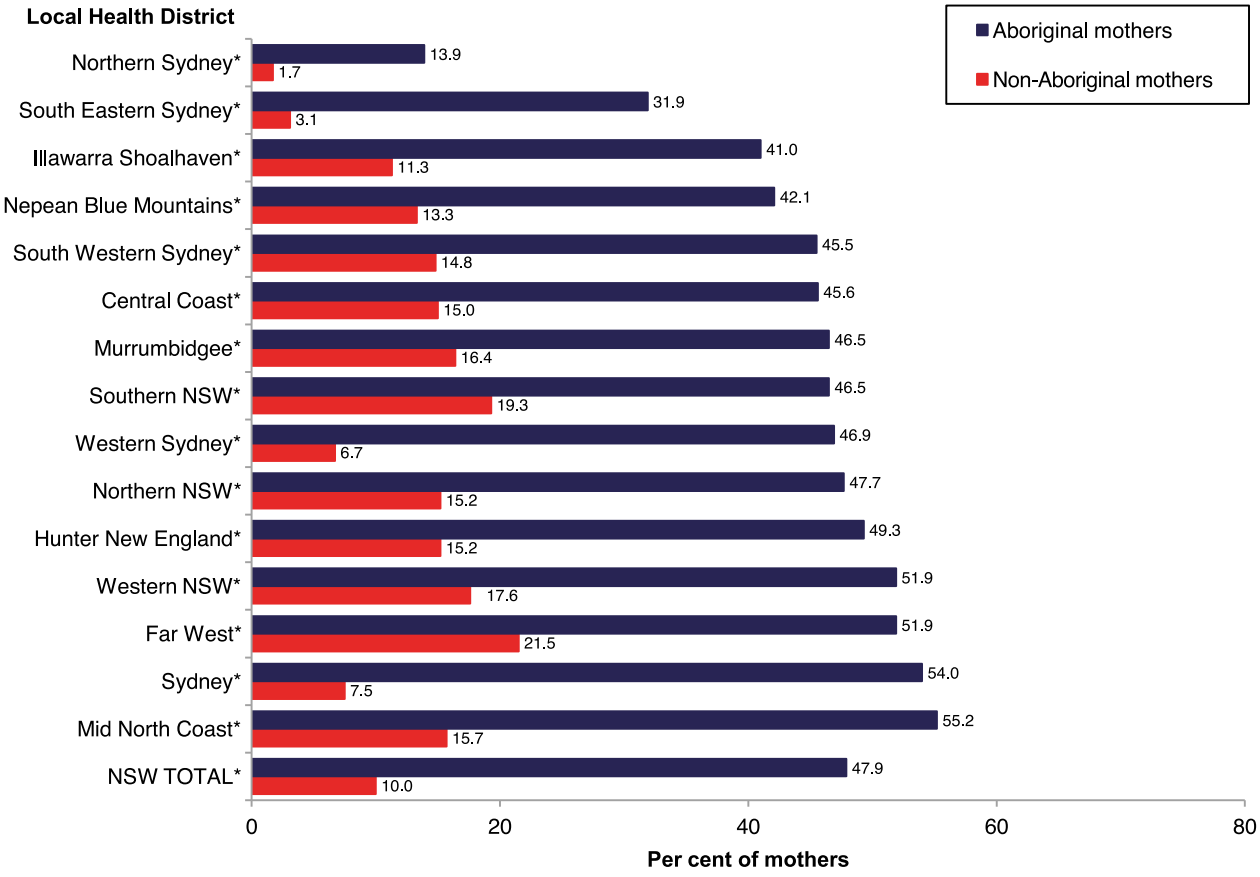
Smoking during pregnancy

The health issue: Maternal smoking during pregnancy increases the risk of adverse outcomes for both the mother and the child. For the mother, smoking during pregnancy increases the risk of placental abruption, placenta praevia, preterm labour and preterm rupture of membranes (Laws et al. 2006; British Medical Association 2004). For the baby, a mother's smoking during pregnancy is a risk factor for intrauterine growth retardation, low birth-weight, preterm delivery, perinatal death, and sudden infant death syndrome.

Health disparity: At the Local Health District level in 2010, the five Local Health Districts with the highest rates of smoking during pregnancy for Aboriginal women were: Mid North Coast (55%), Sydney (54%), Far West (52%), Western NSW (52%) and Hunter New England (49%) (Figure 88, Table 10).

Closing the gap: For smoking rates to be the same for pregnant Aboriginal and non-Aboriginal women at the Local Health District level in 2010, there would need to have been 88 fewer Aboriginal women smoking during pregnancy in the North Coast, 40 fewer in Sydney, 16 fewer in Far West, 176 fewer in Western NSW, and 274 fewer in Hunter New England (Table 10).

Figure 88: Smoking during pregnancy by mother's Aboriginality and Local Health District of residence, NSW, 2010



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

Table 10: Smoking during pregnancy by mother's Aboriginality and Local Health District of residence, percentage of mothers, NSW, 2008 to 2010

NSW Local Health District	Aboriginal people			Non-Aboriginal people	Number fewer needed to close the gap#
	2008	2009	2010	2010	2010
	%	%	%	%	
Central Coast	41.0	40.0	45.6	15.0	38
Far West	68.6	71.4	51.9	21.5	16
Hunter New England	52.1	52.3	49.3	15.2	274
Illawarra Shoalhaven	48.4	48.2	41.0	11.3	56
Mid North Coast	51.2	54.7	55.2	15.7	88
Murrumbidgee	46.7	50.3	46.5	16.4	47
Nepean Blue Mountains	43.6	50.4	42.1	13.3	36
Northern NSW	50.5	46.8	47.7	15.2	70
Northern Sydney	9.5	21.4	13.9	1.7	4
South Eastern Sydney	24.6	37.5	31.9	3.1	20
South Western Sydney	52.6	48.2	45.5	14.8	54
Southern NSW	58.6	60.3	46.5	19.3	23
Sydney	50.0	52.4	54.0	7.5	40
Western NSW	55.3	51.4	51.9	17.6	176
Western Sydney	47.3	49.8	46.9	6.7	84
NSW TOTAL	**50.2**	**50.5**	**47.9**	**10.0**	**1172**

Number of fewer occurrences of smoking in pregnancy in Aboriginal pregnant women in 2010 required for smoking in pregnancy rates to be the same for Aboriginal and non-Aboriginal women at the State and Local Health District level.
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

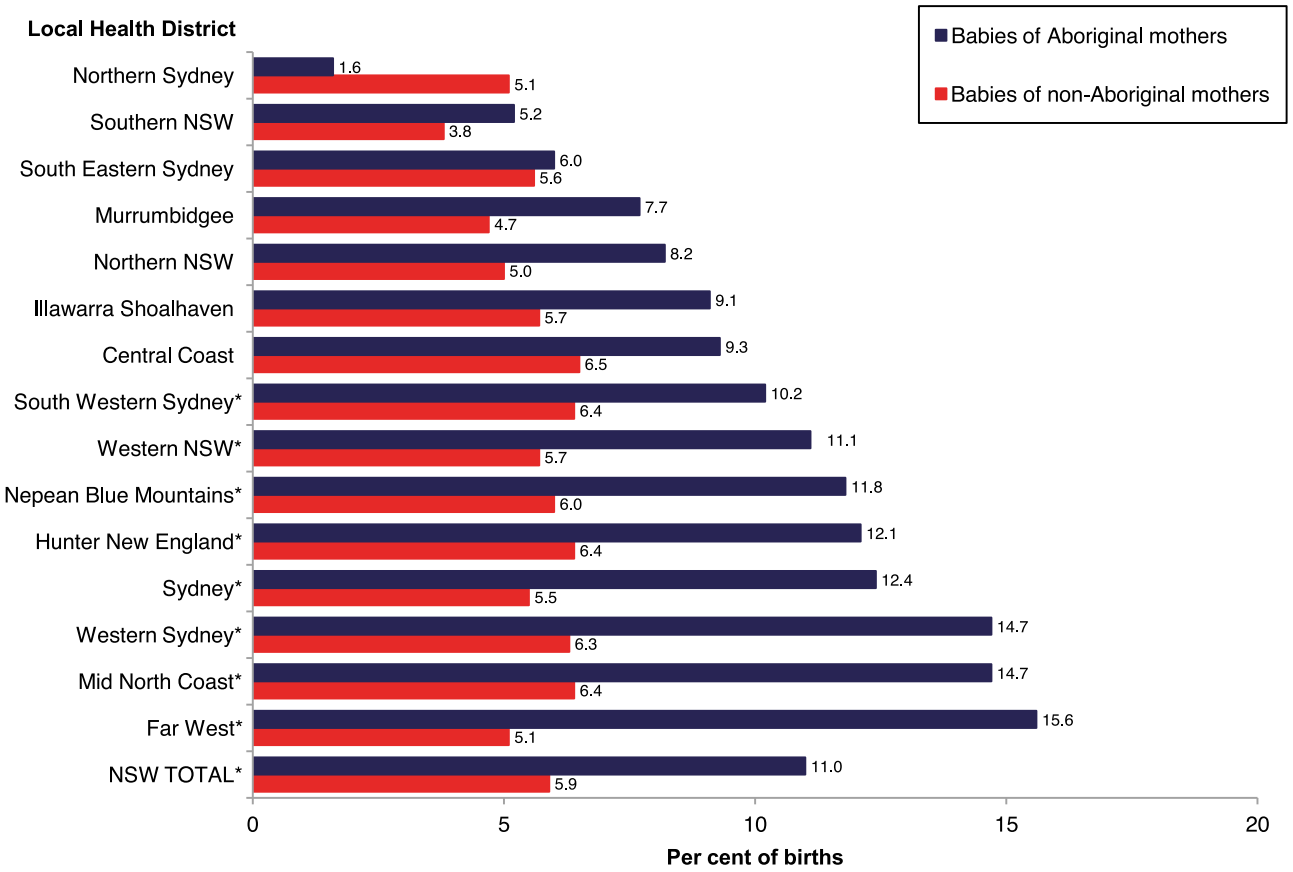
Low birth-weight babies

The health issue: Low birth-weight babies are those born with a weight of less than 2500 grams. Low birth-weight babies have a greater risk of poor health and mortality, require longer hospitalisation after birth, and are more likely to develop disabilities. See Chapter 2 for more information on low birth-weight babies.

Health disparity: The five Local Health Districts with the highest proportion of low birth-weight babies born to Aboriginal mothers were: Far West (15.6%), Mid North Coast (14.7%), Western Sydney (14.7%), Sydney (12.4%) and Hunter New England (12.1%) (Figure 89, Table 11).

Closing the gap: For rates of low birth-weight babies born to Aboriginal and non-Aboriginal mothers to have been the same in the period 2009 to 2010, five fewer occurrences of low birth-weight would have been required among babies born to Aboriginal mothers in Far West Local Health District, 19 fewer in Mid North Coast, 17 fewer in Western Sydney, seven fewer in Sydney, and 42 fewer in Hunter New England (Table 11).

Figure 89: Low birth-weight babies by mother's Aboriginality and Local Health District of residence, NSW, 2009 to 2010 combined



* Indicates that the difference between Aboriginal and non-Aboriginal people is significant.
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health

Table 11: Low birth-weight babies by mother's Aboriginality and Local Health District of residence, combined 2-year per cent of births, NSW, 2007 to 2010

NSW Local Health District	Aboriginal babies			Non-Aboriginal babies	Number fewer needed to close the gap#
	2007 to 2008	2008 to 2009	2009 to 2010	2009 to 2010	2009 to 2010
	%	%	%	%	
Central Coast	12.4	9.4	9.3	6.5	3
Far West	12.5	10.3	15.6	5.1	5
Hunter New England	12.9	12.3	12.1	6.4	42
Illawarra Shoalhaven	8.4	9.6	9.1	5.7	6
Mid North Coast	13.3	12.8	14.7	6.4	19
Murrumbidgee	9.6	9.9	7.7	4.7	5
Nepean Blue Mountains	8.8	9.7	11.8	6.0	7
Northern NSW	10.9	8.7	8.2	5.0	7
Northern Sydney	0.0	2.0	1.6	5.1	NA
South Eastern Sydney	10.3	9.7	6.0	5.6	0
South Western Sydney	14.1	13.0	10.2	6.4	7
Southern NSW	12.0	11.0	5.2	3.8	1
Sydney	15.9	14.8	12.4	5.5	7
Western NSW	11.8	10.8	11.1	5.7	29
Western Sydney	12.0	10.6	14.7	6.3	17
NSW TOTAL	**11.8**	**11.2**	**11.0**	**5.9**	**160**

Number of fewer occurrences of low birth-weight in babies born to Aboriginal mothers in the period 2009 to 2010 required for the proportion of low birth-weight babies to be the same for babies born to Aboriginal and non-Aboriginal mothers at the State and Local Health District level.
NA: Not Applicable.
Source: NSW Perinatal Data Collection (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.5 Reporting of Aboriginal people in NSW Health data

Reliable data on the health of Aboriginal people are essential for measuring the effectiveness of health services in meeting the health needs of Aboriginal people and achieving equitable health outcomes. Correct and consistent reporting of Aboriginal and Torres Strait Islander peoples in administrative data sets is required to meet these outcomes. The **National best practice guidelines for collecting Indigenous status in health data sets** (AIHW 2010) describes self-report in response to a standard Indigenous status question as the most accurate means of ascertaining if a person identifies as being of Aboriginal or Torres Strait Islander origin, and outlines clearly how to ask the question, record the response, and put the guidelines into practice.

Under-reporting occurs when Aboriginal and Torres Strait Islander origin information is not correctly recorded for all clients. Aboriginal and Torres Strait Islander peoples are known to be under-reported in population-based data collections in NSW. In all other chapters of this Report, the term 'Aboriginal people' has been used when describing the health of Aboriginal and Torres Strait Islander people in NSW, as Aboriginal people are the original inhabitants of NSW. For this section, the term 'Aboriginal and Torres Strait Islander peoples' is used, as it relates to the accurate recording of people in NSW who identify as Aboriginal and Torres Strait Islander peoples.

Improved reporting of Aboriginal and Torres Strait Islander peoples from population data sets using record linkage:

The NSW Ministry of Health has developed a method to improve the reporting of Aboriginal and Torres Strait Islander peoples from administrative data collections using record linkage, by using information from linked administrative data sets to update information on whether a person is Aboriginal (Neville et al. 2011). Record linkage was carried out by the Centre for Health Record Linkage (CHeReL) (CHeReL 2012) using the following data collections: Registry of Births, Deaths and Marriages (RBDM) birth registration data; NSW Perinatal Data Collection; Australian Bureau of Statistics (ABS) death registration data; NSW Admitted Patient Data Collection; NSW Emergency Department Data Collection; and the NSW Central Cancer Registry.

Enhanced reporting relies on having independent sources of information on whether a person is an Aboriginal or Torres Strait Islander. Each independent report was counted as a 'unit of information' that contributed to the weight of evidence as to whether a person was reported as Aboriginal or Torres Strait Islander.

The following algorithm was used:

(1) Where a person is reported as Aboriginal or Torres Strait Islander on the data set of interest this is accepted as reported; otherwise

(2) (a) If the person has three or more units of information, at least two indicating that the person is Aboriginal or Torres Strait Islander are required to report the person as Aboriginal or Torres Strait Islander; otherwise

(b) one unit of information is sufficient to report the person as Aboriginal or Torres Strait Islander.

Where a data set may contain more than one unit of information for a person, part (1) of the algorithm is modified to read: 'where a person is always reported as Aboriginal of Torres Strait Islander this is accepted as reported'.

It is important to note that this methodology is not able to recognise or include Aboriginal people who have not been previously reported as Aboriginal in any of the linked data collections, and as a result the levels of reporting calculated may be an over-estimate of the true value.

The estimated level of correct reporting for Aboriginal people in the Admitted Patients Data Collection in NSW in 2008 was 85.8% (Table 12, Figure 90). The estimated level of correct reporting for Aboriginal people in the Emergency Department Data Collection in NSW in 2008 was 70.6% (Table 12, Figure 91). The estimated level of correct reporting in the Perinatal Data Collection for Aboriginal mothers was 93.1% (Table 12, Figure 92). The estimated level of correct reporting for each data collection by Local Health Districts is shown in Table 12 and Figures 90–92.

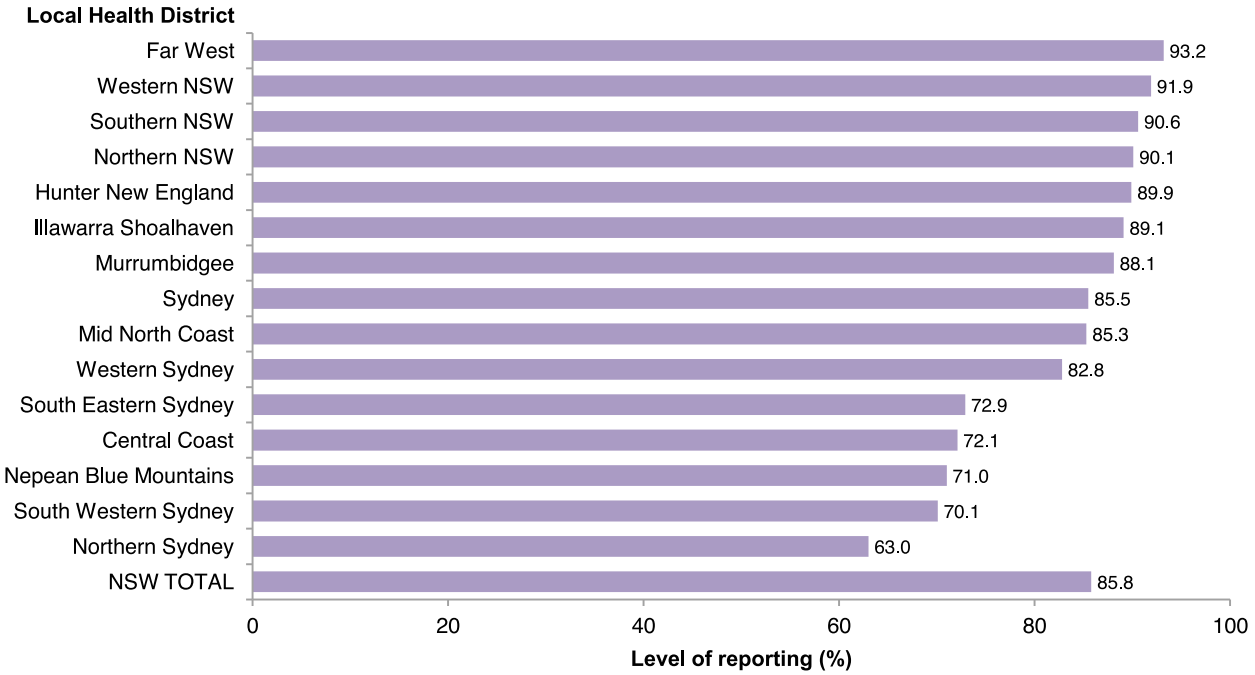
Table 12: The estimated level of reporting of Aboriginal people in the health data collections by Local Health Districts, NSW, identified through the improved reporting of Aboriginal and Torres Strait Islander peoples on population data sets using the record linkage project, 2007 to 2008

NSW Local Health District	Admitted Patient Data Collection 2007–08 %	Emergency Department Data Collection 2007–08 %	Perinatal Data Collection (mothers) 2008 %
Central Coast	72.1	74.8	98.2
Far West	93.2	88.8	94.6
Hunter New England	89.9	82.3	95.5
Illawarra Shoalhaven	89.1	73.4	95.6
Mid North Coast	85.3	75.5	96.7
Murrumbidgee	88.1	87.9	85.9
Nepean Blue Mountains	71.0	22.8	97.0
Northern NSW	90.1	62.9	93.0
Northern Sydney	63.0	43.3	92.9
South Eastern Sydney	72.9	41.6	90.5
South Western Sydney	70.1	51.1	91.8
Southern NSW	90.6	63.5	78.9
Sydney	85.5	80.0	96.3
Western NSW	91.9	83.0	90.8
Western Sydney	82.8	NA	89.9
NSW TOTAL	**85.8**	**70.6**	**93.1**

NA: Not Available – Western Sydney Local Health District was unable to provide information on Emergency Department attendances among Aboriginal people to the Emergency Department Data Collection.

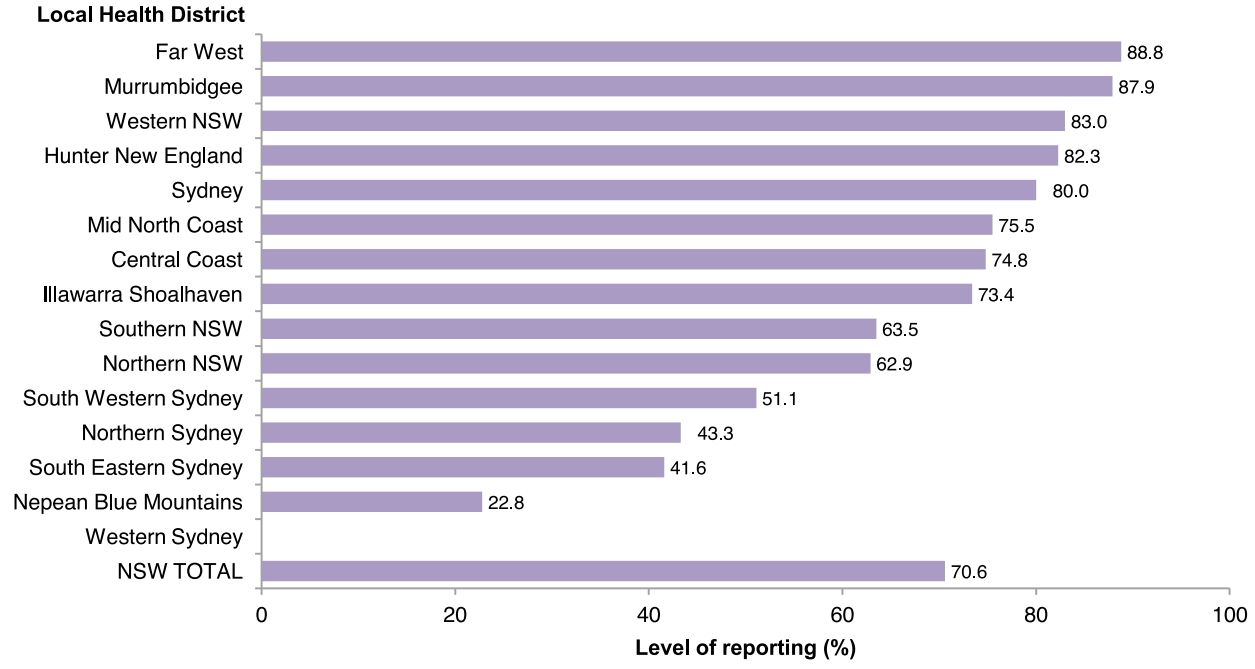
Source: Linked records of NSW Admitted Patient Data, NSW Emergency Department Data Collection, NSW Perinatal Data Collection, Australian Bureau of Statistics death registration data and Registry of Births, Deaths and Marriages birth registration data. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 90: Estimated level of reporting in the Admitted Patient Data Collection by Local Health District, NSW, 2007–08



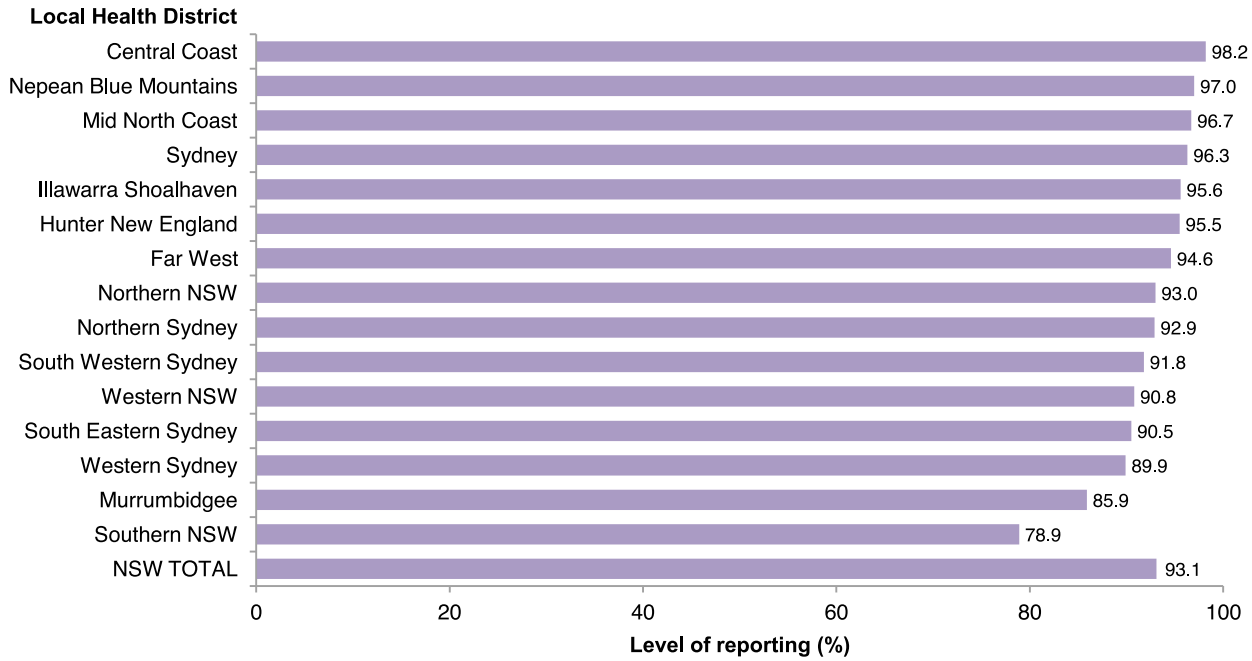
Source: Records of NSW Admitted Patient Data linked with records of the NSW Emergency Department Data Collection, NSW Perinatal Data Collection, Australian Bureau of Statistics death registration data and Registry of Births, Deaths and Marriages birth registration data. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 91: Estimated level of reporting in the Emergency Department Data Collection by Local Health District, NSW, 2007–08



Source: NSW Emergency Department Data Collection (EDDC) for 2007–08 linked with records of the NSW Admitted Patient Data, NSW Emergency Department Data Collection (2005–2007), NSW Perinatal Data Collection and Registry of Births, Deaths and Marriages birth registration data. Centre for Epidemiology and Evidence, NSW Ministry of Health.

Figure 92: Estimated level of reporting of babies born to Aboriginal and Torres Strait Islander mothers on the Perinatal Data Collection by Local Health District, NSW, 2008



Source: NSW Perinatal Data Collection records linked with records of NSW Admitted Patient Data (birth record only) and Registry of Births, Deaths and Marriages birth registration data. Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.6 Workforce

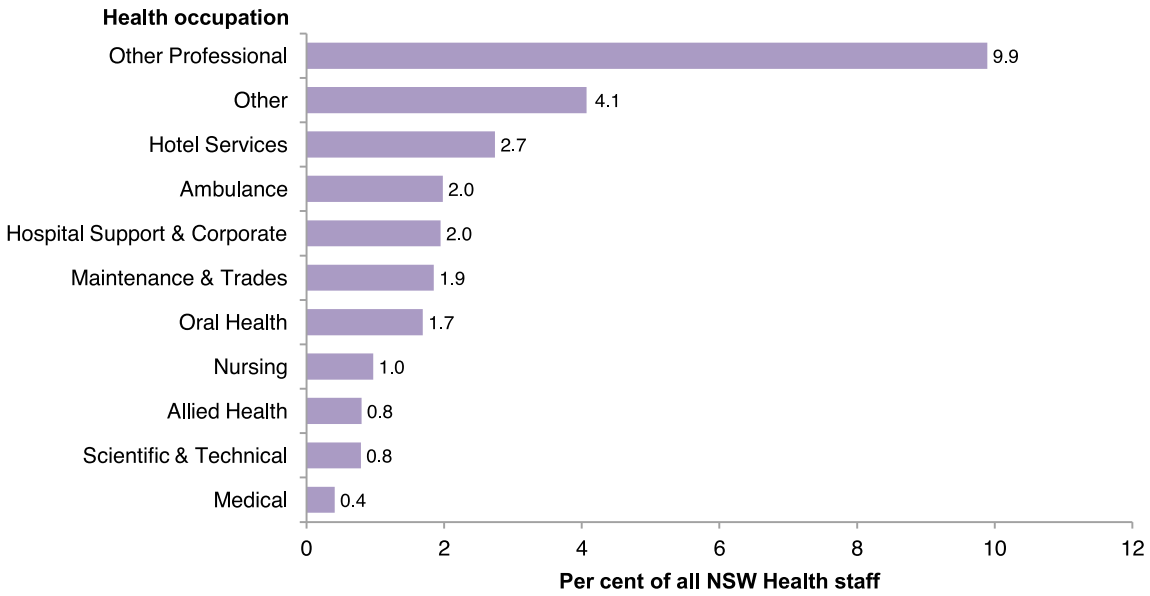
The health issue: Increasing the proportion of Aboriginal people in the health workforce in NSW will support the economic and social wellbeing of Aboriginal people, and will enable NSW health services to provide culturally safe and competent health services to Aboriginal people. Aboriginal people are best placed to determine and define the mechanics of support, assistance and delivery of health needs for Aboriginal individuals and communities. The engagement and support of the Aboriginal workforce is crucial in providing effective health services in NSW (NSW Health 2011).

In 2009 the NSW Government agreed to a whole-of-government Aboriginal workforce participation target of 2.6% by 2015, in line with the 2009 Council of Australian Governments (COAG) decision and ongoing state and national reporting requirements.

Current status: In 2011 NSW Health had 1721 Aboriginal employees, up from 1313 in 2007, 1304 in 2008, 1626 in 2009 and 1618 in 2010. Figure 93 shows the percentage of NSW Health staff who identified as Aboriginal people in 2011, by health occupation. Of all ambulance staff, 2.0% identified as Aboriginal. Of all nurses, 1.0% identified as Aboriginal, and of all medical staff, 0.4% identified as Aboriginal. Of all those included in the 'Other Professional' occupation group, 9.9% identified as Aboriginal, as this grouping includes a number of Aboriginal-identified roles including Aboriginal health coordinators and Aboriginal health education officers. Of all those included in the 'Other' group, 4.1% identified as Aboriginal; this group includes staff not included in any other grouping such as child-care workers, librarians and teachers.

Closing the gap: Aboriginal employees currently make up 1.8% of the NSW Health workforce. To achieve 2.6% representation, an increase of a further 1400 Aboriginal employees is needed by 2015. This is equivalent to an additional 280 people per year across NSW Health.

Figure 93: NSW Health staff who identify as Aboriginal people, by health occupation, 2011



Other professional: employees that are not included in medical, nursing and allied health professions, who provide, plan or support the provision of patient care, such as Aboriginal health co-ordinators and Aboriginal health education officers.
Other: employees not grouped elsewhere, such as child-care workers, librarians and teachers.
Hotel Services: employees who provide non-clinical services that include food services, cleaning, transport, care parking, security, linen, waste management and retail services.
Source: Health Information Exchange (HIE), NSW Ministry of Health.

Appendix 1. Methods

Information in this section describes the data sources and statistical methods used in this Report. Although the best available data at the time of publication were used, this appendix also includes a discussion of data limitations that should be considered when reading the Report. More information on specific indicators can be found in Appendix 2.

The majority of information in this section has been obtained from Health Statistics NSW, an interactive, web-based application that allows users to access data and tailor reports about the health of the NSW population for their own use. There is potential for minor updates to be made to the information in this Report. For the most up-to-date information, please refer to Health Statistics NSW: **www.healthstats.nsw.gov.au**

1.1 Data sources

NSW Health data sources

Admitted Patient Data Collection

All NSW public hospitals, public psychiatric hospitals, public multipurpose services, private hospitals and private day procedure centres in NSW report data to the NSW Ministry of Health on patients admitted for care. These reported data, from about 400 different facilities in NSW, are called the NSW Admitted Patient Data Collection (APDC). The collection also includes data relating to NSW residents hospitalised interstate in public hospitals and in Commonwealth Department of Veterans' Affairs facilities. Data from institutions for people with a developmental disability and private nursing homes are not included.

The APDC data used in this Report were accessed via SAPHaRI (Secure Analytics for Population Health Research and Intelligence, formerly called HOIST, a data warehouse of the Centre for Epidemiology and Evidence, Population and Public Health Division, NSW Ministry of Health), or directly from the Health Information Exchange (HIE). The HIE is a data warehouse maintained by NSW Health collecting statewide and Local Health District data on hospitalisations and other aspects of the health system. The APDC data are extracted from the HIE and undergo a quality assurance and standardisation process before being loaded onto SAPHaRI.

The APDC is a census of all inpatients treated in NSW and includes data on NSW residents treated in other states. Data recorded include patient demographics, stay, diagnosis and treatment, and are reported by financial year of leaving hospital (separation).

At the time the NSW Ministry of Health completes the ADPC, the previous 2 financial years of data on hospitalisations of NSW residents in other states are usually not available and so interstate hospitalisations for the latest 2 years are 'imputed' from the preceding 3 years. This imputation process estimates the number of hospitalisations occurring in public hospitals in other states for each diagnosis in previous years and adds these numbers to the latest year of data. For this Report, figures for hospitalisations in 2009–10 and 2010–11 include an estimate of the small number of interstate hospitalisations in public hospitals of NSW residents. As the real data become available, the numbers and rates calculated may change. For the most recent data, see: **www.healthstats.nsw.gov.au**

Emergency Department Data Collection

The Emergency Department Data Collection (EDDC) provides information about patient presentations to the Emergency Departments of public hospitals in NSW. The number of Emergency Departments submitting data to the Emergency Department Data Collection has been increasing, with 89 sites currently submitting data, representing approximately two million presentations per year, or approximately 85% of all NSW Emergency Department attendances (Bureau of Health Information 2011).

The EDDC contains information on patient demographics, and arrival, triage and treatment times. The EDDC data used in this Report were accessed either via SAPHaRI, or directly from HIE. Data accessed via SAPHaRI are reported by calendar year, and data accessed via HIE are reported by financial year.

The NSW EDDC is derived from computer databases used for managing patients in Emergency Departments. Due to variation in the number of Emergency Departments participating over time, computer programs used and data entry practices, the completeness and accuracy of data fields may vary. Analyses based on Emergency Department diagnoses should be considered indicative only, but may be useful for monitoring trends. Levels of Emergency Department activity may vary according to the availability of alternative primary care services such as general practice services.

Perinatal Data Collection

The NSW Perinatal Data Collection (PDC), formerly called the Midwives Data Collection (MDC), is a population-based collection covering all births in NSW public and private hospitals, and home births. It does not receive notifications of interstate births where the mother is a resident of NSW.

The PDC has operated continuously since 1990 and covers: up to 2005, all births in NSW of at least 400 grams birth-weight or 20 weeks' gestation; and from 2006, stillbirths of at least 400 grams birth-weight or 20 weeks' gestation and all live births. The information is recorded by either the midwife or medical practitioner and includes demographic, medical and obstetric information on the mother and condition of the infant.

The PDC database is compiled in the Demand and Performance Evaluation Branch of the NSW Ministry of Health. For this Report, the PDC was accessed via SAPHaRI. Data are presented for calendar years. Perinatal deaths data for all population in NSW are obtained from the Australian Bureau of Statistics, but perinatal death data for Aboriginal babies are available only from the NSW PDC.

NSW Population Health Survey

The NSW Ministry of Health has conducted the Adult Population Health Survey (since 1997) and the Child Population Health Survey (since 2001) through the NSW Population Health Survey, an ongoing survey of the health of people in NSW using computer-assisted telephone interviewing (CATI). The main aims of the surveys are to provide detailed information on the health of adults and children in NSW and to support planning, implementation and evaluation of health services and programs in NSW.

The survey instruments include question modules on health behaviours, health status and other associated factors. The methods and all questions are approved for use by the NSW Population and Health Services Research Ethics Committee. The instrument is translated into five languages: Arabic, Chinese, Greek, Italian and Vietnamese. The target population for the survey is all state residents living in private households. The target sample was approximately 1000 persons in each of the health administrative areas (total sample 8000–16 000 depending on the number of administrative areas).

From 1997 to 2010, the random digit dialling landline sampling frame was developed as follows: records from the Australia on Disk electronic white pages (phone book) were geo-coded using MapInfo mapping software (United Directory Systems 2004; PitneyBowes Software 1997). The geo-coded telephone numbers were assigned to statistical local areas and former Area Health Services (now Local Health Districts). The proportion of numbers for each telephone prefix was calculated by former Area Health Service. All prefixes were expanded with suffixes ranging from 0000 to 9999. The resulting list was then matched back to the electronic phone book. All numbers that matched numbers in the electronic phone book were flagged and the number was assigned to the relevant geo-coded Area Health Service. Unlisted numbers were assigned to the former Area Health Service containing the greatest proportion of numbers with that prefix. Numbers were then filtered to eliminate continuous non-listed blocks of greater than 10 numbers. The remaining numbers were then checked against the business numbers in the electronic phone book to eliminate business numbers.

When the Australia on Disk electronic white pages was available and reliable, introductory letters were sent to the selected households (1997–2008). Households were contacted using random digit dialling. Depending on the timeframe, either one person from the household was randomly selected or the mobile phone holder was selected for inclusion in the survey.

Interviews were carried out continuously between February and December each year. An 1800 freecall contact number and website details were provided to potential respondents, so they could verify the authenticity of the survey and ask any questions about it. Trained interviewers at the Health Survey Program CATI facility carried out interviews. Up to seven calls were made to establish initial contact with a household, and up to five calls were made in order to contact a selected respondent.

Notifiable Conditions Information Management System

The NSW Notifiable Conditions Information Management System (NCIMS) is a networked database used by public health units in NSW to register communicable disease notifications. Under authority of the *Public Health Act 2010* (NSW), the NSW Ministry of Health receives notifications of communicable disease via public health units from general practitioners, hospitals and pathology laboratories. Data are transferred weekly from public health units to the Ministry, for compilation of statewide data. The NSW Ministry of Health transfers a smaller data set to the Communicable Diseases Network of Australia and New Zealand health authority (maintained by the Commonwealth Department of Health and Ageing). Annual statewide data become available in April of the following year after duplicate records and errors are removed. For this Report, the NCIMS collection was accessed via SAPHaRI, and data are reported by calendar year.

Centre for Oral Health Strategy Child Dental Survey

The Child Dental Health Survey was conducted in 2007. It was a partnership between the Centre for Oral Health Strategy, Area Health Services (now Local Health Districts), the Australian Research Centre for Population Oral Health, University of Adelaide, and Population Oral Health, University of Sydney. The survey focused on children aged 5–12 years, with sampling stratified by former Area Health Service and then school. Standardised dental examinations and data collection to estimate the oral health status of children were collected for a total of 458

Aboriginal and 6591 non-Aboriginal children (Centre for Oral Health Strategy NSW 2009). Further information can be found at: http://www.health.nsw.gov.au/pubs/2009/pdf/cdhs_2007.pdf

Non-NSW Health data sources

Australian Bureau of Statistics Data

Death or mortality statistics are based on the information contained in death certificates. In order to complete a death registration in Australia, the death must be certified by either a doctor using the Medical Certificate of Cause of Death, or by a coroner. Natural causes are predominantly certified by doctors, whereas external and unknown causes or unaccompanied deaths are usually certified by a coroner. Approximately 85–90% of deaths each year are certified by a doctor and the remainder are reported to a coroner (ABS 2010).

The registration of deaths is the responsibility of the eight individual state and territory Registrars of Births, Deaths and Marriages. The information is subsequently provided to the Australian Bureau of Statistics by individual Registrars for coding and compilation into aggregate statistics. In addition, the Australian Bureau of Statistics supplements these data with information from the National Coroners Information System (NCIS) (ABS 2010b).

For this Report, deaths data were accessed via SAPHaRI, and data are reported by calendar year. Numbers for the latest year of data include an estimate of the small numbers of deaths that were registered in the subsequent year, data for which were unavailable at the time of publication.

Population data

Aboriginal population data were obtained from SAPHaRI. The data originate in the Australian Bureau of Statistics with further calculations by the Centre for Epidemiology and Evidence, NSW Ministry of Health.

The Australian Bureau of Statistics publishes estimates of the Aboriginal, non-Aboriginal and total populations after each Census (ABS 2008) for the Census year. Estimates are disaggregated by age (5-year age groups) and sex for state and territory, remoteness areas and Indigenous regions. Estimates for statistical local areas are available as a total for all ages only. These estimates are called 'experimental' in that the estimates are affected by changes in the propensity of people to identify as being of Indigenous origin on Census forms and where satisfactory data on births, deaths and migration are not generally available. The term 'experimental' reflects the uncertainty involved.

The experimental estimates published by the Australian Bureau of Statistics and disaggregated by age up to age 65 years (the past 5-year age group was 60–64 years) on the basis of Census 2006 were changed into the estimates up to age 75 years (with a matching non-Aboriginal population) by extrapolating data from the previous Census (in 2001) and all estimates were projected to obtain Aboriginal and non-Aboriginal population data matching health data up to and including financial year 2010–11.

National Aboriginal and Torres Strait Islander Health Survey and National Aboriginal and Torres Strait Islander Social Survey

The 2004–05 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) is the largest health survey of Aboriginal and Torres Strait Islander conducted by the Australian Bureau of Statistics (ABS 2006). The sample size was 10 439 persons (or about 1 in 45 of the total Indigenous population), of which 936 were people aged 16 years or over living in NSW. This survey, which was conducted in remote and non-remote areas throughout Australia, was designed to collect a range of information from Indigenous Australians about health-related issues, including health status, risk factors and actions, and socioeconomic circumstances. Results are compared with the non-Indigenous population surveyed in the 2001 and 2004–05 National Health Survey (ABS 2006).

The 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS) was conducted by the Australian Bureau of Statistics between August 2008 and April 2009, collecting information from approximately 13 300 Aboriginal and Torres Strait Islander living in private dwellings in remote and non-remote areas, including discrete communities (ABS 2009b). Of those surveyed in NSW, 830 were children aged 0–14 years, and 1140 were people aged 15 years or over. The survey provides information about the Aboriginal and Torres Strait Islander populations of Australia for a wide range of areas of social concern including health, education, culture and labour force participation. Results are compared with the non-Indigenous population surveyed in the Survey of Income and Housing 2007–08 (ABS 2009b).

1.2 Statistical methods

Crude rates and percentages

'Crude rates' represent an estimate of the proportion of a population that experiences an outcome during a specified period. They are calculated by dividing the number of people with an outcome in a specified period by the number at risk during that period (typically per

year). It does not take into account the age structure of the population studied and can be misleading when long-term trends are examined – or geographic areas are compared – because age structures of populations may vary over time or among areas. This is particularly relevant when considering comparisons between the Aboriginal and non-Aboriginal population, as the Aboriginal population has a higher proportion of younger people and a smaller proportion of older people.

Age-standardised rates

Age-adjustment of rates uses 'direct age-standardisation'. This method adjusts for the effects of differences in the age composition of populations across time or geographic regions. The directly age-standardised rate is the weighted sum of age-specific (5-year age group) rates, where the weighting factor is the corresponding age-specific population. For this Report, the Australian estimated residential population (persons) as at 30 June 2001 was used as the standard population. The same population was used for males and females to allow valid comparison of age-standardised rates between the sexes.

Analysis of NSW Adult Population Health Survey data

For analysis, the survey sample is weighted to adjust for differences in the probabilities of selection among subjects. These differences are due to the varying number of people living in each household, the number of residential telephone connections for the household, and the varying sampling fraction in each health area. Post-stratification weights are used to reduce the effect of differing non-response rates among males and females and different age groups on the survey estimates. These weights are adjusted for differences between the age and sex structure of the survey sample for Aboriginal people and the Australian Bureau of Statistics mid-year population estimates for Aboriginal people for each Area Health Service (excluding residents of institutions). This adjustment enables calculation of prevalence estimates for the state population rather than for the respondents selected.

Data were manipulated and analysed using SAS version 9.2 (SAS Institute 2009). The Taylor expansion method was used to estimate sampling errors of estimators based on the stratified random sample. The smoothed prevalence estimates for persons are calculated using the FORECAST procedure. The model for this procedure was Holt exponential smoothing, designed to use all of the observed annual prevalence estimates, which takes into account the increasing or decreasing trend in the prevalence estimates over time. The model uses past data as a basis for estimating future prevalence estimates. In this model, later prevalence estimates are given more importance than earlier prevalence estimates.

Further information on the methods and weighting process is provided elsewhere (NSW Health 2008c, 2008d).

Analysis of trend in key population health indicators

Trends in Aboriginal people and the gap between Aboriginal and non-Aboriginal people were assessed using regression techniques to look for a trend over time. Poisson or negative-binomial regression models were used to analyse age- and sex-adjusted trends in death rates, hospital separation rates, and communicable disease notification rates, depending on over-dispersion (Chiang 1984). A significance level of 5% was used to identify significant trends over time.

Trajectories

Trajectories were calculated for indicators having a performance target under one or more policy frameworks, highlighting the annual change required to meet these targets. Baseline levels for the Aboriginal and non-Aboriginal populations were calculated as the average of the indicator for the most recent 5 years of data. The non-Aboriginal population was assessed for evidence of a trend. Where a trend was evident in the non-Aboriginal population, it was assumed to continue and was modelled using linear or Poisson regression as appropriate. Where no trend was evident in the non-Aboriginal population, it was assumed that the indicator would stay at baseline levels. This approach allowed for projection of the indicator to 2033.

The Aboriginal trajectory is the annual reduction (or increase) required for the baseline rate for the Aboriginal population to be equal to the predicted rate for non-Aboriginal people in 2033. The trajectory is calculated as the difference between the baseline rate for Aboriginal people and the predicted 2033 rate for non-Aboriginal people, divided by the number of years between the latest baseline year and 2033.

Numbers needed to close the gap between Aboriginal and non-Aboriginal people

Where the indicator is a crude rate or proportion, it was possible to calculate the number of additional (or fewer) events that would need to have occurred in the most recent year for the rate for the Aboriginal population to be equal to the rate for the non-Aboriginal population. This calculation was done by multiplying the difference in rates between the Aboriginal and non-Aboriginal populations by the Aboriginal rate denominator for that year.

Where the indicator is related to health service delivery (Chapter 5), and is an age-standardised rate, the number of additional (or fewer) events required for the age-standardised rate for the Aboriginal population to equal the age-standardised rate for the non-Aboriginal population was also estimated. This calculation was done by applying the non-Aboriginal 5-year age-specific rate to the Aboriginal age-specific population, calculating the difference between these results and the number of events observed in each Aboriginal age group.

The number of additional (or fewer) events within each age group were then summed. This method assumes that the age-distribution of the indicator is the same in the Aboriginal and non-Aboriginal populations. Where there was a known difference in age-distribution, the numbers were adjusted accordingly.

High numbers needed to close the health gap may reflect a large Aboriginal population in a given area, such as a Local Health District, a large disparity between Aboriginal and non-Aboriginal people, or both. Note that due to age-standardisation and some imputation for recent years of hospitalisation data, the numbers needed to close the health gap within a Local Health District will not necessarily add up to the numbers needed to close the health gap statewide.

Small area

The term 'small area' refers to a small geographical area and a small population. Data from a small area are characterised by considerable variability. 'Smoothing' is a general term for statistical methods used to reduce the random variability of data. Examples include rounding, moving averages, extending the period of time in which cases are counted or increasing the size of the areas. To address this issue, in most cases in this Report, data were combined over a number of years, and the average of these reported. For health survey data, the predicted prevalence estimates for males, females and persons are calculated using the FORECAST procedure in SAS version 9.1. The model for this procedure was Holt exponential smoothing, designed to use all of the observed annual prevalence estimates, which takes into account the increasing or decreasing trend in the prevalence estimates over time. The model uses past data as a basis for estimating future prevalence estimates. In this model, later prevalence estimates are given more importance than earlier prevalence estimates.

Analysis of differences between Aboriginal and non-Aboriginal people within each Local Health District

The following is relevant for indicators related to health service delivery (Chapter 5).

To determine whether differences were significant:

Where the indicator is a crude rate or proportion it was possible to test whether the observed proportion for the Aboriginal population in the most recent year or time interval was equal to the observed proportion in the non-Aboriginal population. The hypothesis tested was whether number of cases within the Aboriginal population for a given Local Health District came from a binomial distribution with probability equal to the observed proportion in the non-Aboriginal population.

Where the indicator is an age-standardised rate, the standardised rate ratio was used to compare the difference between the age-standardised rate in the Aboriginal population (the numerator) and the age-standardised rate in the non-Aboriginal population (the denominator).

1.3 Data limitations

This Report is based on the best available data at the time of publication. However the following data limitations should be considered when reading the Report.

Timeliness of data

For some indicators there is a long delay in the availability of data, and life expectancy estimates are only able to be calculated every 5 years following the Census. Mortality indicators are based on the most recent available deaths data, which is from 2007. This delay in availability of data means that the information reported may not reflect the current differences in mortality between Aboriginal and non-Aboriginal people. Other data sources are also subject to delay. At the time of publication, perinatal data was available to 2010, and admitted patient data was available to 2010–11, with interstate hospitalisations included to 2008–09 only, and imputation used for 2009–10 and 2010–11.

Data based on surveys and studies depend on when the survey was last conducted. The NATSIHS survey was conducted in 2004–05 and NATSISS in 2007 and the most recent data from the NSW Aboriginal Adult Health Survey is for 2006–2009.

Under-reporting of Aboriginal people in administrative data

The under-reporting or identification of Aboriginal and Torres Strait Islander people is an ongoing issue in most administrative data collections including hospital morbidity and mortality data collections. Under-reporting is due to various factors, for example, whether the Indigenous status question is asked in the first instance, consistency in the way the question is asked, and the choice to respond. Work is underway to improve data quality; however caution should be exercised in the interpretation of the data presented in this Report, particularly estimates of trends over time, mortality data and indicators that report using small numbers.

In the primary care setting, only a minority of general practitioners have effective routine Aboriginal identification processes in place. Therefore, any data generated on Aboriginal people through general practice are currently problematic and have not been reported in this Report.

Small numbers

Some indicators in this Report relate to rare events in the Aboriginal population, particularly when Local Health District populations or narrow age groups are analysed. Analysis of rare events leads to small sample sizes for some indicators, and instability in rates between years. While methods have been used to account for this (see Section 1.2), only the most robust estimates have been reported.

Population survey methodology

The NSW Adult Population Health Survey methodology uses computer-assisted telephone interviewing which may result in an under-estimation of the prevalence of risk factors such as smoking due to non-response bias.

Appendix 2. Indicator notes

This section provides a detailed description of each indicator, including its definition, explanatory notes, the data sources used, and where additional information can be sourced. Additional methods specific to each indicator are also described here.

CHAPTER 1 – Life expectancy and child mortality

1.1 Estimated life expectancy and child mortality	Definition	Notes	Data sources	For more information
Estimated life expectancy at birth	Life expectancy is the average number of years a person could expect to live if they experienced the age-and sex-specific death rates that applied at their birth throughout their lifetime.	The most recent life expectancy data in Aboriginal people in NSW are for 2005 to 2007, available from the Australian Bureau of Statistics. The matching (2005 to 2007) total population life expectancy data are from the same source.	Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007. Catalogue number 3302.0.55.003. Canberra: ABS, May 2009.	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Estimated life expectancy – trajectory to close the gap	As above.	To calculate a trajectory to close the gap, historical estimates of life expectancy for the total NSW population were required. Therefore, the estimates used to calculate the predicted trajectory for the total NSW population came from Health Statistics NSW, and were calculated using the method of Chiang (1984) (Chiang 1984). These estimates for 2005 to 2007 differ from those calculated by the Australian Bureau of Statistics. Linear regression models (Neter et al. 1996) were used to analyse trends in life expectancy from birth in the total male and female NSW populations.	Australian Bureau of Statistics. Experimental life tables for Aboriginal and Torres Strait Islander Australians, 2005–2007. Catalogue number 3302.0.55.003. Canberra: ABS, May 2009. Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
1.2 Infant and child mortality	**Definition**	**Notes**	**Data sources**	**For more information**
Perinatal deaths	Numerator: Number of stillbirths and deaths within 28 days of birth. Denominator: All births.		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Infant deaths	Numerator: Number of deaths among infants aged less than 1 year. Denominator: Live births.		Australian Bureau of Statistics. Deaths, Australia 2010. Catalogue number 3302.0. Canberra: ABS, 2010.	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Deaths from all causes, children aged 0–4 years	Numerator: Number of deaths among children aged 0–4 years. Denominator: ABS population estimates (SAPHaRI).		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

1.3 Death rates and causes of death	Definition	Notes	Data sources	For more information
Deaths from all causes (all ages)	Numerator: Number of deaths per year. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Cause of death	Numerator: Deaths grouped by causes of death contained in separate chapters of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). Denominator: Number of deaths in time period.		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
1.4 Age at death	**Definition**	**Notes**	**Data sources**	**For more information**
Age group at death	Numerator: Number of deaths in people aged less than 75 years within each 5-year age group. Denominator: ABS population estimates (SAPHaRI).		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Median age at death	The median age at death represents the age by which exactly half the deaths registered occurred.		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
1.5 Potentially avoidable and premature deaths	**Definition**	**Notes**	**Data sources**	**For more information**
Avoidable and premature deaths	Numerator: Number of deaths classified as avoidable in persons aged less than 75 years. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		Australian Bureau of Statistics mortality data and population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 2 – Health of mothers, babies and children

2.1 Attendance at antenatal care	Definition	Notes	Data sources	For more information
First antenatal visit before 14 weeks' gestation	Numerator: Number of women who attended at least one antenatal visit in the first trimester (up to and including 13 completed weeks) and gave birth to at least one live-born or stillborn baby in a calendar year. Denominator: Total number of women who gave birth to at least one live-born or stillborn baby in a calendar year.		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.2 Smoking during pregnancy	Definition	Notes	Data sources	For more information
Smoking during pregnancy	Numerator: Number of women who reported smoking during pregnancy. Denominator: Total number of women who gave birth to at least one live-born or stillborn baby in a calendar year.		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.3 Low birth-weight babies	Definition	Notes	Data sources	For more information
Low birth-weight babies	Numerator: Number of low birth-weight babies (less than 2500 grams). Denominator: Total number of births (live-born and stillborn).		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.4 Preterm babies	Definition	Notes	Data sources	For more information
Preterm births	Numerator: Number of babies born prior to 37 weeks' gestation. Denominator: Total number of births (live-born and stillborn).		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.5 Hospitalisations in children	Definition	Notes	Data sources	For more information
Hospitalisation rates for children aged 0–4 years	Numerator: Number of hospitalisations for children aged 0–4 years. Denominator: ABS population estimates (SAPHaRI).		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Hospitalisation rates by cause for children aged 0–4 years	Numerator: Number of hospitalisations for children aged 0–4 years by category of cause. Denominator: ABS population estimates (SAPHaRI)	Categories of cause were defined according to International Classification of Diseases (ICD 10) Chapters. Includes all babies born in hospital.	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.6 Oral health in children	Definition	Notes	Data sources	For more information
Average number of decayed, missing and filled teeth	Numerator: Number of surveyed children with decayed, missing or filled deciduous or permanent teeth. Denominator: Total number of children surveyed (7975 children in NSW, 5.7% Aboriginal).		The New South Wales Child Dental Health Survey 2007.	Centre for Oral Health Strategy, NSW Ministry of Health. http://www.health.nsw.gov.au/pubs/2009/pdf/cdhs_2007.pdf
No history of dental decay	Numerator: Number of surveyed children with decayed missing or filled deciduous or permanent teeth. Denominator: Total number of children surveyed (7975 children in NSW, 5.7% Aboriginal).		The New South Wales Child Dental Health Survey 2007.	Centre for Oral Health Strategy, NSW Ministry of Health. http://www.health.nsw.gov.au/pubs/2009/pdf/cdhs_2007.pdf
Removal and restoration of teeth for dental caries: hospitalisations	Numerator: Number of children admitted to hospital for restoration and removal of teeth for dental caries. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

2.7 Ear health in children	Definition	Notes	Data Source	For more information
Complete/partial deafness or hearing loss in children	Numerator: Number of children with parent or carer reported complete/partial deafness or hearing loss. Denominator: Number of children surveyed in each age group.		ABS and AIHW analyses of the National Aboriginal and Torres Strait Islander Health Survey, 2004–05, and the National Health Survey 2004–05.	Australian Institute of Health and Welfare (AIHW). http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442458630
Tympanoplasty associated with otitis media: hospitalisations	Numerator: Number of children hospitalised for tympanoplasty associated with otitis media. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 3 – Risk and protective factors for health

3.1 Social Determinants	Definition	Notes	Data sources	For more information
School readiness				
Children who are developmentally vulnerable in one or more AEDI domains	Numerator: NSW children in their first year of school in the 0-10th percentile for one or more AEDI domains. Denominator: NSW children in their first year of school with score recorded for one or more AEDI domains (81,164 of 87,169 children in the survey).	The Australian Education Development Index (AEDI) reports on five areas of early childhood development: physical and emotional wellbeing, social competence, emotional maturity, language and cognitive skills and communication skills and general knowledge. In each domain, children in the 0-10th percentile are categorised as "developmentally vulnerable"	Australian Early Education Development Index national survey, NSW data, 2009.	Centre for Epidemiology and Evidence, NSW Ministry of Health; Australian Early Development Index (ww2.rch.org.au/aedi)
3.2 Environmental factors	**Definition**	**Notes**	**Data sources**	**For more information**
Environmental exposure to tobacco smoke				
Living in a smoke-free home	Numerator: Number of survey respondents indicating that they lived in a smoke-free home. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 196 Aboriginal people, and 10 104 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The survey question used to define the indicator was: -Which of the following best describes your home situation: my home is smoke free, people occasionally smoke in the house, or people frequently smoke in the house?	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Hospitalisations for environmental-health related disease				
Acute respiratory infection hospitalisations	Numerator: Hospitalisations for acute respiratory infections in children (0–4 years). Denominator: ABS population estimates (SAPHaRI).		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
3.3 Risk and protective health behaviours	**Definition**	**Notes**	**Data sources**	**For more information**
Smoking				
Current smoking	Numerator: Number of survey respondents indicating they were current daily smokers. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 200 Aboriginal people, and 10 228 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -Which of the following best describes your smoking status: smoke daily, smoke occasionally, do not smoke now but I used to, I have tried it a few times but never smoked regularly, or I have never smoked? Current daily smokers were identified if they responded with 'smoke daily' or 'smoke occasionally'.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

Smoking attributable hospitalisations	Numerator: Hospitalisations related to ICD-10 codes for smoking-related illness. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Alcohol misuse				
More than two standard drinks on a day when drinking	Numerator: Number of survey respondents that indicated they drank more than two standard drinks on a day when consuming alcohol. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 197 Aboriginal people, and 10 130 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The questions used to define the indicator were: -How often do you usually drink alcohol? -On a day when you drink alcohol, how many standard drinks do you usually have? A standard drink is equal to one middy of full-strength beer, one schooner of light beer, one small glass of wine, or one pub-sized nip of spirits. The indicator includes those who drink more than two standard drinks on a day when they drink alcohol, which is a guideline defined by the Australian guidelines to reduce health risks from drinking alcohol, as increasing the lifetime risk of alcohol-related harm (NHMRC 2009). It is reported as the per cent of all Aboriginal people, including those that reported they do not drink.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Alcohol-attributable hospitalisations	Numerator: Hospitalisations related to ICD-10 codes for alcohol-related illness. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Overweight and obesity				
Overweight and obesity	Numerator: Number of survey respondents that indicated their weight as overweight or obese. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 185 Aboriginal people, and 9783 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The questions used to define the indicator were: -How tall are you without shoes? -How much do you weigh without clothes or shoes? Body Mass Index (BMI) is used to assess overweight and obesity levels. The normal range of BMI is between 18.5 and 25. An adult is underweight if their BMI is less than 18.5, or overweight if the BMI is equal to or over 25. A person is obese if their BMI is equal to or over 30 (AIHW 2011a). The indicator includes those who are overweight or obese: that is with a BMI of 25.0 or higher. For 18 years and over, BMI is calculated as follows: BMI = weight (kg)/height(m)^2. Categories for this indicator include overweight (BMI from 25.0–29.9) and obese (BMI of 30.0 and over). For 16–17-year olds, the same categories are used but are linked to international cut-off points defined by sex to pass through a BMI of 16, 17, and 18.5 (for underweight), 25 (for overweight), and 30 (for obesity) at age 18 years (Cole et al. 2000; Cole et al. 2007)	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 3 – Risk and protective factors for health cont...

Levels of physical activity				
Adequate physical activity	Numerator: Number of survey respondents that indicated their weight as overweight or obese. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 188 Aboriginal people, and 9662 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The questions used to define the indicator were: -In the past week, how many times have you walked continuously for at least 10 minutes for recreation or exercise or to get to or from places? -What do you estimate was the total time you spent walking in this way in the past week? -In the past week, how many times did you do any vigorous physical activity that made you breathe harder or puff and pant? -What do you estimate was the total time you spent doing this vigorous physical activity in the past week? -In the past week, how many times did you do any other more moderate physical activity that you have not already mentioned? The indicator includes those who did adequate physical activity. Adequate physical activity is a total of 150 minutes a week on five separate occasions. The total minutes were calculated by adding minutes in the past week spent walking continuously for at least 10 minutes, minutes doing moderate physical activity, plus 2 x minutes doing vigorous physical activity.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Dietary behaviours				
Two or more serves of fruit a day	Numerator: Number of survey respondents that indicated they ate two or more serves of fruit per day. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 196 Aboriginal people, and 10 114 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -How many serves of fruit do you usually eat each day? The National Health and Medical Research Council's Australian Dietary Guidelines recommend that adults eat a minimum of two serves of fruit per day (NHMRC 2005). The indicator includes those who consumed two or more serves of fruit a day. The recommended fruit intake is at least two serves a day for persons aged 19 years and over, depending on their overall diet. For simplification this recommendation is applied to 16–18-year olds. One serve is equivalent to one medium piece or two small pieces of fruit.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

Five or more serves of vegetables a day	Numerator: Number of survey respondents that indicated they ate five or more serves of vegetables per day. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 197 Aboriginal people, and 10 051 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -How many serves of vegetables do you usually eat each day? The National Health and Medical Research Council's Australian Dietary Guidelines recommend that adults eat a minimum of five serves of vegetables per day (NHMRC 2005). The indicator includes those who consumed five or more serves of vegetables a day. The recommended vegetable intake is at least five serves a day for persons aged 16 years and over, depending on their overall diet. One serve is equivalent to 1/2 cup of cooked vegetables or 1 cup of salad vegetables.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Breast cancer screening				
Breast cancer screening	Numerator: Number of women aged 50–69 years who have undergone mammography screening at least once during a 2-year reporting period. Denominator: ABS population estimates (SAPHaRI).	The target population was derived from the Estimated Resident Female Population of NSW aged 50–69 years by taking an average of the populations within this age group over the 2-year period.	BreastScreen NSW and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Adult vaccination rates				
Vaccination against influenza	Numerator: Number of survey respondents aged 50 years or over that indicated they had been vaccinated against influenza in the past 12 months. Denominator: Number of survey respondents aged 50 years or over that answered this survey question (the average number of respondents each year from 2002 and 2010 was 87 Aboriginal people, and 6154 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -Were you vaccinated or immunised against flu in the past 12 months?	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Vaccination against pneumococcal disease	Numerator: Number of survey respondents aged 50 years or over that indicated they had been vaccinated against pneumococcal disease in the past 5 years. Denominator: Number of survey respondents aged 50 years or over that answered this survey question (the average number of respondents each year from 2002 and 2010 was 83 Aboriginal people, and 5907 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -When were you last vaccinated or immunised against pneumonia?	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 4 – Burden of ill-health

4.1 Chronic disease	Definition	Notes	Data sources	For more information
Hospitalisations				
Hospitalisation rates	Numerator: Number of hospital separations. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Hospitalisation rates by cause	Numerator: Hospital separations classified using ICD-10-AM classification and distributed according to ICD-10-AM chapters. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	Chapters on diseases of the nervous system, eye and ear and chapters on conditions relating to pregnancy, perinatal period and congenital diseases are combined into one category in the analysis. ICD-10-AM chapter 'Factors influencing health' has been divided into two categories: (a) Dialysis and (b) Other factors influencing health in the analysis.	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Diabetes				
Diabetes hospitalisations	Numerator: Hospital admissions where the principal diagnosis was diabetes (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	A change in diabetes coding affected the figures for rate of hospitalisations for diabetes in 2010–11, and as a result data analysis has only been completed on data until 2009–10 (see Chapter 4, Figure 47). Gestational and diabetes in pregnancy were included.	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Diabetes or high blood glucose	Numerator: Number of survey respondents indicating diabetes or high blood glucose level. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 200 Aboriginal people and 9958 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The questions used to define the indicator were: -Have you ever been told by a doctor or hospital you have diabetes? -Have you ever been told by a doctor or hospital you have high blood glucose levels? -If female, were you pregnant when you were first told you had diabetes or high blood glucose levels? -Have you ever had diabetes or high blood glucose level apart from when you were pregnant? The indicator includes those who either had diabetes or high blood glucose level but did not have gestational diabetes.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Cardiovascular diseases				
Cardiovascular disease hospitalisations	Numerator: Hospital admissions where principal diagnosis was cardiovascular disease (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

Stroke hospitalisations	Numerator: Hospital admissions where principal diagnosis was stroke (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
High blood pressure				
High blood pressure	Numerator: Number of survey respondents indicating they had high blood pressure. Denominator: Number of survey respondents that answered this question (the average number of respondents for the 3 years surveyed 2002, 2005 and 2008 was 195 Aboriginal people and 10 381 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The question used to define the indicator was: -Have you ever been told by a doctor or hospital you have high blood pressure, sometimes called 'hypertension'? The indicator includes those who have been told by a doctor or hospital they have high blood pressure or hypertension.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Chronic obstructive pulmonary disease (COPD)				
COPD hospitalisations	Numerator: Hospital admissions of people aged 65 years or over where principal diagnosis was chronic obstructive pulmonary disease (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI).		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Asthma				
Asthma	Numerator: Number of survey respondents indicating current asthma. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year from 2002 and 2010 was 200 Aboriginal people and 9977 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The questions used to define the indicator were: -Have you ever been told by a doctor or hospital you have asthma? -Have you had symptoms of asthma or treatment for asthma in the past 12 months? The indicator includes those who had symptoms of asthma or treatment for asthma in the past 12 months.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Chronic kidney disease				
Chronic kidney disease hospitalisations	Numerator: Hospital admissions where the principal diagnosis was dialysis, diabetic nephropathy or chronic renal disease (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	After July 2010, rates were affected by a significant change in coding standards for diabetes, a contributor to chronic kidney disease hospitalisations (see data note in Chapter 4, Figure 47).	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 4 – Burden of ill-health cont...

4.1 Chronic disease	Definition	Notes	Data sources	For more information
End-stage renal disease				
Dialysis for end-stage renal disease	Numerator: Number of dialysis patients. Denominator: ABS population estimates (SAPHaRI).	This indicator provides information on the prevalence of Aboriginal people receiving dialysis for end-stage renal disease as registered by the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). ANZDATA count the former Greater Southern Area Health Service as ACT not NSW, so rates are based on populations excluding that from the former Greater Southern Area Health Service.	Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.2 Communicable disease	Definition	Notes	Data sources	For more information
Bloodborne viruses and sexually transmissible infections				
HIV notifications	Numerator: Cases with laboratory evidence of HIV infection notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data is reported by date of onset of illness. 2011 HIV data were not available at time of publication.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Newly acquired hepatitis B notifications	Numerator: Cases with laboratory evidence of 'newly acquired' hepatitis B notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	Notifications of hepatitis B 'greater than 2 years or unspecified period of infection' – which are not routinely followed up for Indigenous status – have been excluded. The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data are reported by date of onset of illness.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Newly acquired hepatitis C notifications	Numerator: Cases with laboratory evidence of Hepatitis C notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	Notifications of hepatitis C 'greater than 2 years or unspecified period of infection' – which are not routinely followed up for Indigenous status – have been excluded. The number of notifications reflects healthcare-seeking behaviour and testing practices, which may vary across NSW. Data are reported by date of onset of illness.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Infectious syphilis notifications	Numerator: Cases with laboratory evidence of Infectious syphilis notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data are reported by date of onset of illness.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.

Vaccine-preventable disease				
Measles notifications	Numerator: Cases with laboratory evidence of Measles notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data are reported by date of onset of illness.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Meningococcal disease notifications	Numerator: Cases with laboratory evidence of Meningococcal disease (excluding conjunctivitis) notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data are reported by date of onset of illness.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Tuberculosis				
Tuberculosis notifications	Numerator: Cases with laboratory evidence of Tuberculosis notified to the NSW Notifiable Conditions Information Management System (NCIMS) under the *Public Health Act 1991* (NSW). Denominator: ABS population estimates (SAPHaRI).	The number of notifications reflects healthcare-seeking behaviour and testing practices which may vary across NSW. Data are reported by date of onset of illness. 2011 tuberculosis data not available at time of publication.	NSW Notifiable Conditions Information Management System and ABS population estimates (SAPHaRI).	Centre for Health Protection, NSW Ministry of Health.
Pneumonia and influenza				
Influenza and pneumonia hospitalisations	Numerator: Hospital admissions where principal diagnosis was either influenza or pneumonia (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 4 – Burden of ill-health cont...

4.3 Social and emotional wellbeing	Definition	Notes	Data sources	For more information
Social and emotional wellbeing				
High or very high psychological distress	Numerator: Number of survey respondents indicating high or very high psychological distress. Denominator: Number of survey respondents that answered this survey question (the average number of respondents each year between 2002 and 2010 was 196 Aboriginal people and 9866 non-Aboriginal people). These estimates have been age-and sex-adjusted to the NSW population, and Holt exponential smoothing applied.	The NSW Adult Population Health Survey uses Kessler 10 (K10) (Kessler & Mroczek 1992, 1994; Kessler et al. 2002) to measure psychological distress in people aged 16 years and over. K10 is a 10–item questionnaire that measures anxiety, depression, agitation, and psychological fatigue in the most recent 4-week period, with additional questions to establish the effect of the distress. At both the population and individual level, the K10 measure is a brief and accurate screening scale for mental health. This indicator includes those with a Kessler 10 (K10) score of 22 or above.	NSW Adult Population Health Survey (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Intentional self-harm				
Intentional self-harm hospitalisations	Numerator: Hospital admissions where principal diagnosis was intentional self-harm (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.4 Injury and poisoning	Definition	Notes	Data sources	For more information
Injury and poisoning				
Injury and poisoning hospitalisations	Numerator: Hospital admissions where the 'external cause' of admission was either circumstance of injury or activity undertaken when injured (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Leading causes of injury and poisoning				
Falls, interpersonal violence and transport accident hospitalisations	Numerator: Hospital admissions where the 'external cause' of admission was a fall, interpersonal violence or transport accident (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

4.5 Cancer	Definition	Notes	Data sources	For more information
Cancer incidence	Numerator: Multiple imputation estimate of number of new breast, prostate, lung and large bowel (colorectal) cancer cases, as well as overall cancer cases. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		Cancer Institute NSW: Cancer in New South Wales Aboriginal People: Incidence, mortality and survival. Sydney: Cancer Institute NSW, 2012.	Cancer Institute NSW.

4.6 Oral health	Definition	Notes	Data sources	For more information
Removal and restoration of teeth hospitalisations	Numerator: Hospital admissions for people aged 15 years and over where principal diagnosis was removal and restoration of teeth (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

CHAPTER 5 – Health service delivery

5.1 Hospital admissions	Definition	Notes	Data sources	For more information
Potentially preventable hospitalisations				
Potentially preventable hospitalisations	Numerator: Hospital admissions where a diagnosis was potentially preventable (ICD-10-AM codes). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	After July 2010, numbers and rates were affected by changes in coding standards for diabetes, a substantial contributor to total preventable hospitalisations (see data note in Chapter 4, Figure 47).	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Unplanned hospital readmissions within 28 days				
Unplanned readmissions	Numerator: The total number of unplanned admissions with admission date within reference period and patient previously discharged from the same facility in previous 28 days for any other purpose than mental health, chemotherapy, or dialysis. Denominator: Total number of admissions within reference period, excluding mental health, chemotherapy, or dialysis.	Patients with change of care type, patients who are transfers from other hospitals, and patients in small hospitals (facilities with peer groups below D2) are also excluded.	NSW Admitted Patient Data Collection (HIE).	Demand and Performance Evaluation Branch, NSW Ministry of Health.
Patients who leave against medical advice				
Hospitalisations ending with discharge against medical advice	Numerator: Number of hospitalisations resulting in discharge against medical advice. Denominator: Total number of hospitalisations.		NSW Admitted Patient Data Collection (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.2 Access to health services and procedures	Definition	Notes	Data sources	For more information
Access to high volume surgical procedures				
Access to high volume surgical procedures	Numerator: The number of high volume surgical procedures (abdominal hysterectomy, appendectomy, arthroplasty of the hip, arthroplasty of the knee, arthroscopic menisectomy of the knee, caesarean section, cholecystectomy, colectomy, coronary artery bypass, curettage of the uterus, destruction procedures on the cervix, endarterectomy, fracture of the femur, major lens procedures, myringotomy, procedures for haemorrhoids, release of carpal tunnel, repair of abdominal aneurysm, repair of inguinal hernia, repair of tendon of the hand, repair of umbilical, epigastric or linea alba hernia, transluminal coronary angioplasty, transurethral prostatectomy, tonsillectomy or adenoidectomy and vaginal hysterectomy). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	The 26 'high volume surgical procedures' were selected by key stakeholders in the NSW Ministry of Health in 2010. Some procedures included are medium volume but high cost.	NSW Admitted Patient Data Collection (SAPHaRI)	Centre for Epidemiology and Evidence, NSW Ministry of Health
Coronary procedures				
Revascularisation procedures	Numerator: Number of revascularisation procedures (coronary artery bypass graft or angioplasty). Denominator: Hospital admissions where a diagnosis was coronary heart disease (ICD-10-AM codes).	Data are collated into 5-year time periods due to low numbers	NSW Admitted Patient Data Collection (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.
Cataract procedure rate				
Cataract procedures	Numerator: The number of cataract operations conducted (identified by The Australian Classification of Health Interventions (7th Ed) procedure code blocks 195–200). Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.
Elective orthopaedic surgery				
Total knee and total hip replacement surgery	Numerator: Number of total hip and total knee replacement operations. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.	Data are collated into 5-year time periods due to low numbers	NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.

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Inpatient rehabilitation				
Rehabilitation episodes of care	Numerator: Number of separations coded as rehabilitation for people aged 55 years or over. Denominator: ABS population estimates (SAPHaRI). Rates are age-adjusted.		NSW Admitted Patient Data Collection and ABS population estimates (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.
5.3 Emergency Departments	**Definition**	**Notes**	**Data sources**	**For more information**
Incomplete Emergency Department attendances				
Emergency Department attendances resulting in 'did not wait' or 'left at own risk'	Numerator: Number of people who attended Emergency Department but did not wait or left at own risk. Denominator: All Emergency Department attendances in NSW.		NSW Emergency Department Data Collection (SAPHaRI).	Centre for Epidemiology and Evidence, NSW Ministry of Health.
Emergency Department timeliness of treatment				
Emergency Department patients admitted/referred/discharged within 4 hours	Numerator: All patients who have a length of stay from presentation time to actual departure time of less than or equal to 4 hours. Denominator: The total number of Emergency Department presentations reported in the reporting period.		NSW Emergency Department Data Collection (HIE).	Demand and Performance Evaluation Branch, NSW Ministry of Health.
Emergency Department re-presentations				
Emergency Department re-presentations	Numerator: Number of unplanned Emergency Department presentations where the previous Emergency Department presentation of the same patient to the same facility was in the previous 48 hours and resulted in the patient returning home following treatment. Denominator: Number of Emergency Department presentations where the patient returned home following treatment.		NSW Emergency Department Data Collection (HIE).	Demand and Performance Evaluation Branch, NSW Ministry of Health.

5.4 Mothers and babies	Definition	Notes	Data sources	For more information
Antenatal care				
First antenatal visit before 14 weeks' gestation	Numerator: Number of women who attended at least 1 antenatal visit in the first trimester (up to and including 13 completed weeks) and gave birth to at least one live-born or stillborn baby in a calendar year. Denominator: Total number of women who gave birth to at least one live-born or stillborn baby in a calendar year.		NSW Perinatal Data Collection (SAPHaRI).	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Smoking during pregnancy				
Smoking during pregnancy	Numerator: Number of women who reported smoking during pregnancy. Denominator: Total number of women who gave birth to at least one live-born or stillborn baby in a calendar year.		NSW Perinatal Data Collection (SAPHaRI)	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.
Low birth-weight babies				
Low birth-weight babies	Numerator: Number of low birth-weight babies (less than 2500 grams). Denominator: Total number of births (live births and stillbirths).		NSW Perinatal Data Collection (SAPHaRI)	Health Statistics NSW; Centre for Epidemiology and Evidence, NSW Ministry of Health.

5.5 Reporting of Aboriginal people in NSW Health Data	Definition	Notes	Data sources	For more information
Estimated level of identification in the Admitted Patient Data Collection	Numerator: The number of hospitalisation records on the Admitted Patient Data Collection that were identified as Aboriginal people. Denominator: Estimated number of Aboriginal records according to the algorithm.	The algorithm used with the linked datasets for the NSW Admitted Patient Data Collection was: 1. where a person is always reported as Aboriginal or Torres Strait Islander on the Emergency Department Data Collection this is accepted as reported; 2. otherwise: a) if the person has three or more units of information, at least two indicating that the person is Aboriginal or Torres Strait Islander are required to report the person as Aboriginal or Torres Strait Islander; or b) if the person has one or two units of information, one is sufficient to report the person as Aboriginal or Torres Strait Islander.	NSW Admitted Patient Data, NSW Emergency Department Data Collection, NSW Perinatal Data Collection, ABS death registration data and Registry of Births, Deaths and Marriages birth registration data.	Centre for Epidemiology and Evidence, NSW Ministry of Health.

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5.5 Reporting of Aboriginal people in NSW Health Data	Definition	Notes	Data sources	For more information
Estimated level of identification in the Emergency Department Data Collection	Numerator: The number of admission records on the Emergency Department Data Collection that were identified as Aboriginal people. Denominator: Estimated number of Aboriginal records according to the algorithm.	The algorithm used with the linked datasets for the NSW Emergency Department Data Collection was: 1. where a person is always reported as Aboriginal or Torres Strait Islander on the Emergency Department Data Collection this is accepted as reported; 2. otherwise: a) if the person has three or more units of information, at least two indicating that the person is Aboriginal or Torres Strait Islander are required to report the person as Aboriginal or Torres Strait Islander; or b) if the person has one or two units of information, one is sufficient to report the person as Aboriginal or Torres Strait Islander.	NSW Admitted Patient Data, NSW Emergency Department Data Collection, NSW Perinatal Data Collection, ABS death registration data and Registry of Births, Deaths and Marriages birth registration data.	Centre for Epidemiology and Evidence, NSW Ministry of Health.
Estimated level of identification in the Perinatal Data Collection	Numerator: The number of Aboriginal and Torres Strait Islander babies born that were reported on the Perinatal Data Collection. Denominator: Estimated number of births according to the algorithm.	The algorithm used with the linked datasets for the NSW Emergency Department Data Collection was: 1. where a baby is reported as Aboriginal or Torres Strait Islander on the Perinatal Data Collection data this is accepted as reported; 2. otherwise: a) if the baby has three or more units of information, at least two indicating that the baby is Aboriginal or Torres Strait Islander are required to report the baby as Aboriginal or Torres Strait Islander; or b) if the baby has one or two units of information, one is sufficient to report the baby as Aboriginal or Torres Strait Islander.	NSW Admitted Patient Data, NSW Emergency Department Data Collection, NSW Perinatal Data Collection, ABS death registration data and Registry of Births, Deaths and Marriages birth registration data.	Centre for Epidemiology and Evidence, NSW Ministry of Health.
5.6 Workforce	**Definition**	**Notes**	**Data sources**	**For more information**
NSW Health staff who identify as Aboriginal	Numerator: Number of NSW Health staff who have identified as Aboriginal. Denominator: Total number of NSW Health staff.	Aboriginal workforce data are collected through the NSW Ministry of Health's Health Information Exchange (HIE) and by Local Health Districts, networks and other public health organisations.	Health Information Exchange (HIE), NSW Health.	Workforce Planning and Development, NSW Ministry of Health.

Appendix 3. Links to state and national plans

In March 2011 the NSW Government made a commitment to improve the health of Aboriginal people in NSW through the following:

- working with Aboriginal organisations, communities and advocates to produce a 10-year Aboriginal Health Plan
- convening a NSW Aboriginal Health and Wellbeing Forum co-hosted by the Aboriginal Health and Medical Research Council of NSW (AH&MRC) and the Aboriginal Health College
- holding annual progress meetings with all funded Aboriginal community-based organisations and NSW Health to monitor progress against key indicators
- reporting on actual health outcomes for Aboriginal people through the Bureau of Health Information.

This report is the first of a series of annual publications that will contribute towards reporting on indicators in the NSW Government's **NSW 2021: A plan to make NSW number one** (NSW Government 2011) that relate to Aboriginal health. The NSW Ministry of Health has also developed policies on specific health issues including the **Aboriginal Family Health Strategy; Otitis Media Strategy; Respecting the Difference – An Aboriginal Cultural Training Framework for NSW Health**.

NSW 10-year Aboriginal Health Plan

The NSW Government has committed to the development of a 10-year Aboriginal Health Plan, which is being developed in partnership with the AH&MRC. The development of a 10-year Aboriginal Health Plan has provided an opportunity to re-examine the best ways to achieve Aboriginal health equity, find new ways of working together, and to design the services Aboriginal people need. Delivering the Plan will require real reforms to the way health services are planned, monitored and delivered in NSW.

The Plan is also being developed in the context of other reforms across the health system including the implementation of the **National Health Reform Agreement** and a number of Indigenous National Partnership Agreements. Furthermore, the AH&MRC recently released the **Aboriginal Health and Medical Research Council of NSW (AH&MRC) Strategic Plan: 2011–2014**.

The NSW Government, through the Minister for Health, has had a long standing Partnership Agreement with the AH&MRC since 1995. This agreement ensures that the expertise of the Aboriginal community controlled health sector is at the heart of decisions made about Aboriginal health in NSW.

The NSW Aboriginal Health Plan is also being developed in parallel with a new National Aboriginal and Torres Strait Islander Health Plan. These two developments provide a unique opportunity to coordinate NSW and Commonwealth priorities and programs, harmonise efforts, reduce duplication and reporting burden, and also address areas where there is under servicing.

More broadly, the recently established NSW Ministerial Taskforce on Aboriginal Affairs is considering social determinants of health, particularly education and economic participation, and reforms to improve service delivery and accountability in Aboriginal Affairs across NSW. As such, the Aboriginal Health Plan will focus on health system reform, rather than addressing the social determinants being considered through the Ministerial Taskforce on Aboriginal Affairs. Further details about the Taskforce can be found at: **http://www.daa.nsw.gov.au/taskforce/**

National policy context

In 1996 the National Aboriginal Health Strategy outlined the importance of monitoring and evaluation of health services by the community for providing a means by which progress in improving the health of Aboriginal people could be measured, and indicated what new goals, strategies, and policies might be identified. The National Aboriginal and Torres Strait Islander Health Plan is currently being developed. A discussion paper on the development of the plan is available at http://www.health.gov.au/internet/publications/publishing.nsf/Content/BBD9AB3F4B741A9BCA257A750003DCDC/$File/Discussion_paper_final0912.pdf

In 2007 the Council of Australian Governments (COAG) agreed to a partnership between all levels of government to work with Aboriginal and Torres Strait Islander communities to achieve the target of closing the gap in Aboriginal and Torres Strait Islander disadvantage under the **National Indigenous Reform Agreement**. The Agreement sets out indicators that are reported annually to monitor progress towards closing the gap. Under the Agreement a set of National Partnership Agreements state specific actions to be taken by government including: **Closing the Gap in Indigenous Health Outcomes National Partnership Agreement**, the **National Partnership Agreement in Indigenous Early Childhood**, the **Preventative Health National Partnership Agreement**, and the **National Partnerships for Indigenous Economic Reform**. Each National Partnership Agreement has benchmarks and indicators for monitoring progress.

This Report is aligned to a national reporting framework for closing the gap which was established by COAG and agreed to by all Australian governments. It aims to contribute towards this framework by reporting on indicators included in the **COAG National Indigenous Reform Agreement**, as well as the **National Aboriginal and Torres Strait Islander Health Performance Framework** which is the reporting mechanism for the **National Strategic Framework for Aboriginal and Torres Strait Islander Health**.

Glossary

Aboriginal Community Controlled Health Services (ACCHS)
Community control is a process which allows the local Aboriginal community to be involved in its affairs in accordance with whatever protocols or procedures are determined by their community.

Aboriginal community control has its origins in Aboriginal peoples' right to self-determination. This is the right to be involved in health service delivery and decision making according to protocols or procedures determined by Aboriginal communities based on the Aboriginal definition of health.

An Aboriginal Community Controlled Health Service is:

- an incorporated Aboriginal organisation
- initiated by a local Aboriginal community
- based in a local Aboriginal community
- governed by an Aboriginal body which is elected by the local Aboriginal community
- delivering a holistic and culturally appropriate health service to the community which controls it.

(Source: National Aboriginal Community Controlled Health Organisation)

Aboriginal Health and Medical Research Council of NSW (AH&MRC)
The peak representative body and voice of Aboriginal communities on health in NSW. The AH&MRC represents its members, the Aboriginal Community Controlled Health Services that deliver culturally appropriate comprehensive primary health care to their communities. The AH&MRC represents, supports and advocates on Aboriginal health on behalf of its members and their communities at state and national levels.

Admission
The formal process, using registration procedures, under which a person is accepted by a hospital or an area or district health service facility as an inpatient.

Age-adjusted rate
Rate adjusted to take account of differences in age composition when rates for different populations are compared. Also called age-standardised rate.

Age-specific rate
Rate for a specified age group. Both numerator and denominator refer to the same age group.

Ambulance attendance
A response by the ambulance staff to a particular request for provision of care. Attendances are classified in several categories such as: cardiac, medical, surgical, trauma and routine attendance. Ambulance services mean services relating to the work of rendering first aid to, and the transport of, sick and injured persons.

Antenatal care
Includes recording medical history, assessment of individual needs, advice and guidance on pregnancy and delivery, screening tests, education on self-care during pregnancy, identification of conditions detrimental to health during pregnancy, first-line management and referral if necessary (WHO definition).

Body Mass Index (BMI)
Used to assess overweight and obesity levels.

BMI is calculated as follows:
BMI = weight (kg) / height(m)^2
The normal range of BMI is between 18.5 and 25
Underweight: BMI below 18.5
Overweight: BMI from 25.0 to 29.9
Obese: BMI of 30.0 and over

The BMI cut-off points are derived from mainly European populations and can vary for other groups.
For Aboriginal Australians, lower ranges of BMI are used. The normal range of BMI is between 17 and 22.

Cerebrovascular disease
Disease of the blood vessels, especially the arteries that supply the brain. It is usually caused by atherosclerosis and can lead to a stroke.

Closing the Gap
A commitment by Australian governments to improve the lives of Aboriginal Australians, in particular to provide a better future for Aboriginal children.

The Council of Australian Governments (COAG) has agreed to six specific targets and timelines to reduce disadvantage among Aboriginal Australians. These targets acknowledge the importance of reducing the gap in health levels and of improving the social determinants of health. They include:

- closing the life expectancy gap within a generation (by 2030)
- halving the gap in mortality rates for Aboriginal children within a decade (by 2018)
- ensuring that all Aboriginal 4-year olds in remote communities have access to early childhood education within 5 years (by 2013)
- halving the gap for Indigenous students in reading, writing and numeracy within a decade (by 2018)
- halving the gap for Indigenous students in Year 12 attainment by 2020
- halving the gap in employment levels within a decade (by 2018).

The National Indigenous Reform Agreement was established to outline the task of closing the gap in Aboriginal disadvantage.

Co-morbidity
The presence of one or more disorders (or diseases) in addition to a primary disease or disorder in a patient.

Crude death rate
An estimate of the proportion of a population that dies in a specified period. It is calculated by dividing the number of deaths in a specified period by the number at risk during that period (typically per year).

Crude rate
An estimate of the proportion of a population that experiences an outcome during a specified period. It is calculated by dividing the number of people with an outcome in a specified period by the number at risk during that period (typically per year).

Decayed, missing, or filled teeth scores
Oral health outcomes are usually measured in terms of the number of decayed, missing or filled baby or deciduous (dmft) and adult or permanent (DMFT) teeth. The dmft score measures decay experience in deciduous teeth, and the DMFT score measures decay experience in permanent teeth.

Design effect factor (deff)
A measure of how much the sampling variability in a sample differs from the sampling variability in a simple random sample. A deff of 2, for example, would mean that the sample would have to be twice as large to yield the same sampling variability (standard errors) that would have been found with a simple random sample.

Diabetes mellitus
A chronic condition marked by high levels of glucose in the blood. This condition is caused by the inability to produce insulin (a hormone produced by the pancreas to control blood glucose levels), the insulin that is produced becoming less effective, or both. The three main types are Type 1, Type 2 and gestational diabetes.

Type 1 diabetes, an auto-immune condition, is marked by the inability to produce any insulin and those affected need insulin replacement for survival. It is rare in Aboriginal people.

Type 2 diabetes (non-insulin dependent), the most common form, occurs mostly in people aged 50 years and over. Those with Type 2 diabetes produce insulin but may not produce enough or cannot use it effectively. There is a high prevalence of Type 2 diabetes in Aboriginal people who tend to develop it earlier than other Australians and often die from it at younger ages.

Diabetic nephropathy
Disease of the kidneys seen in later stages of diabetes mellitus.

Dialysis
A medical procedure for the filtering and removal of waste products from the bloodstream. Dialysis is used to remove urea, uric acid and creatinine in cases of chronic end-stage renal disease. Two main types are:

- haemodialysis – blood flows out of the body into a machine that filters out the waste products and returns the cleansed blood back into the body.
- peritoneal dialysis – fluid is injected into the peritoneal cavity and wastes are filtered through the peritoneum, the thin membrane that surrounds the abdominal organs.

End-stage renal disease
Chronic irreversible renal failure. The most severe form of chronic kidney disease where kidney function deteriorates so much that dialysis or kidney transplantation is required to survive.

Equivalised income
The amount of income available per person after adjusting for household size.

Excess mortality
A premature death, or one that occurs before the average life expectancy for a person of a particular demographic category.

Fetal alcohol spectrum disorders
Conditions that may result from fetal exposure to alcohol during pregnancy. Disorders include fetal alcohol syndrome, alcohol-related neurodevelopmental disorder and alcohol-related birth defects. These disorders are characterised by antenatal and postnatal growth retardation, specific facial dysmorphology and functional abnormalities of the central nervous system.

Hospital separation or hospitalisation
See Separation.

Hyperglycaemia
High blood glucose levels. Persistently high blood glucose levels (above 15 mmol/L) for more than 12–24 hours can result in the symptoms of hyperglycaemia.

Hypertension
High blood pressure, defined as a repeatedly elevated blood pressure exceeding 140 over 90 mmHg – a systolic pressure above 140 with a diastolic pressure above 90.

Illicit drugs
The following drugs used for non-medicinal purposes: speed, cocaine, sleeping pills or tranquilisers, marijuana, analgesics, heroin, petrol sniffing, other inhalants, hallucinogens, designer drugs and injecting of any illegal drug.

Incidence
The rate with which new events or cases occur during a certain period of time. Compare with Prevalence.

Infant death
The death of a child before its first birthday.

Infective endocarditis
An infection of the endocardium which may involve the valves and extend to the myocardium, often occurring in patients with underlying heart disease.

Invasive meningococcal disease
Meningococcal disease describes infections caused by the bacterium *Neisseria meningitidis* (meningococci bacteria). These bacteria can cause meningitis (an infection of the membranes covering the brain and spinal cord) and septicaemia (an infection in the bloodstream).

Invasive pneumococcal disease
A more serious form of pneumococcal disease, an infection caused by the *Streptococcus pneumoniae* bacterium. It occurs inside a major organ or in the blood and can result in pneumonia, infection of the blood (bacteraemia/sepsis), middle-ear infection (otitis media) or bacterial meningitis.

Ischaemic heart disease
Ischaemic heart disease, or myocardial ischaemia, is a disease characterised by reduced blood supply (ischaemia) of the heart muscle, usually due to coronary artery disease.

Kessler Psychological Distress Scale (K10)
A measure of psychological distress in people aged 16 years and over. K10 is a 10–item questionnaire that measures the level of psychological distress in the most recent 4-week period. At both the population and individual level, the K10 measure is a brief and accurate screening scale for mental health in adults.

Life expectancy
The average number of years of life remaining to a person at a particular age.

Life expectancy at birth is an estimate of the average length of time (in years) a person can expect to live, assuming that the currently prevailing rates of death for each age group will remain the same for the lifetime of that person.

Live birth
The birth of a child who after delivery, breathes or shows any other evidence of life, such as heartbeat. For calculation of perinatal death rates: only infants weighing at least 400 grams at birth or, where birth-weight is unknown, of at least 20 weeks' gestation.

Local Health District
There are 15 Local Health Districts in NSW that are responsible for providing health services in a wide range of settings.

Low birth-weight babies
Infants born weighing less than 2500 grams.

Medicare Locals
Primary health-care organisations established to coordinate primary health care delivery and address local health needs and service gaps. Their purpose is to drive improvements in primary health care and ensure that services are better tailored to meet the needs of local communities.

Neonatal death
Death within 28 days of birth of any child who, after delivery, breathed or showed any other evidence of life, such as a heartbeat.

Notification
Certification in an approved form of a condition listed in the Schedule 3 of Notifiable Diseases of the *Public Health Act 1991* (NSW). In this Report, notifications concern cases of communicable diseases reported by general practitioners, hospitals and pathology laboratories to the Director-General of the NSW Ministry of Health.

Otitis media
Middle ear infection.

Perinatal death
A fetal or neonatal death.

Placenta praevia
Placenta praevia is a complication of pregnancy in which the placenta grows in the lowest part of the womb (uterus) and covers all or part of the opening to the cervix.

Prevalence
The rate at which existing events or cases are found at a given point or period of time.

Scheduled medical condition
Medical conditions to be notified under the provisions of the *Public Health Act 1991* (NSW).

Separation
The formal process whereby an inpatient leaves a hospital or other Local Health District facility after completing an episode of care. For example, a discharge to home, discharge to another hospital or nursing home, or death. The hospital separation rate is the average number of hospital separations per 1000 population.

Smoothing
A general term for statistical methods used to reduce the random variability of data, e.g. rounding, moving averages, extending the period of time in which cases are counted or increasing the size of the areas.

Standardised rate
See Age-adjusted rate.

Sudden infant death syndrome
The sudden and unexpected death of a baby with no known illness, typically affecting sleeping infants between the ages of 2 weeks to 6 months.

Tympanoplasty
A surgical intervention for a perforated eardrum.

Unemployment rate
The number of unemployed people expressed as a percentage of the labour force (i.e. employed and unemployed).

Acronyms and abbreviations

ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Service
ACIR	Australian Childhood Immunisation Register
AH&MRC	Aboriginal Health and Medical Research Council
AIDS	Acquired immune deficiency syndrome
AIHW	Australian Institute of Health and Welfare
AMIHS	Aboriginal Maternal and Infant Health Services
AMS	Aboriginal Medical Services
ANZDATA	Australia and New Zealand Dialysis and Transplant Registry
APDC	NSW Admitted Patient Data Collection, previously called the Inpatients Statistics Collection
ARIA	Accessibility/Remoteness Index for Australia
ASGC	Australian Standard Geographical Classification
BBV	Bloodborne virus
BMI	Body Mass Index
CATI	Computer-assisted telephone interviewing
CHeReL	Centre for Health Record Linkage
COAG	Council of Australian Governments
COPD	Chronic obstructive pulmonary disease
CVD	Cardiovascular disease
deff	Design effect factor
dmft	Decayed, missing or filled teeth (deciduous or baby teeth)
DMFT	Decayed, missing or filled teeth (permanent or adult teeth)
EDDC	NSW Emergency Department Data Collection
FASD	Fetal Alcohol Spectrum Disorders
GP	General Practitioner
HASI	NSW Health Aboriginal Housing and Accommodation Support Initiative
HIE	Health Information Exchange
Hib	*Haemophilus influenza* type b
HIV	Human immunodeficiency virus
HLP	healthy living practices
HOIST	Health Outcomes Information Statistical Toolkit

K10	Kessler Psychological Distress Scale
LHD	Local Health District
MMR	Measles–mumps–rubella combined vaccine
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NCIMS	Notifiable Conditions Information Management System, formerly called the NSW Notifiable Diseases Database
NCIS	National Coroners Information System
NDSHS	National Drug Strategy Household Survey
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NIPII	National Indigenous Pneumococcal and Influenza Immunisation
NIRA	National Indigenous Reform Agreement
NPA	National Partnership Agreements
NRT	Nicotine replacement therapy
NSW	New South Wales
NT	Northern Territory
PDC	NSW Perinatal Data Collection, formerly called the Midwives Data Collection
Qld	Queensland
RBDM	Registry of Births, Deaths and Marriages
SA	South Australia
SAPHaRI	Secure Analytics for Population Health Research and Intelligence
SEIFA	Australian Bureau of Statistics Socioeconomic Indices for Areas
SIDS	Sudden infant death syndrome
SIH	Survey of Income and Housing
STI	Sexually transmissible infection
TB	Tuberculosis
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

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"Aboriginal health in NSW not only remains a priority for the NSW Government but also for a range of peak bodies and organisations. This artwork and the design throughout the report reflects the collaboration and partnership required to improve health outcomes for our people and the strength of which is evident here in NSW. Together we are lessening the gap between Aboriginal and non-Aboriginal peoples' life expectancy and lifting the benchmark for Aboriginal health."

- Jasmine Sarin, the artist

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