

Australian Indigenous  
HealthInfoNet

# *Summary of Australian Indigenous health, 2014*



Core funding is  
provided by the  
Australian Department  
of Health





# Australian Indigenous HealthInfoNet

The Australian Indigenous HealthInfoNet aims to help improve Aboriginal and Torres Strait Islander health by making relevant, high quality information easily available to policy makers, health professionals (including Aboriginal and Torres Strait Islander Health Workers), program managers, clinicians, researchers, students and the general community. Information is provided mainly via the website at [www.healthinfonet.ecu.edu.au](http://www.healthinfonet.ecu.edu.au).

The HealthInfoNet analyses and compiles information from academic, professional, government and other sources for a range of health topics. This translational research facilitates the transfer of research results into policy and practice. The HealthInfoNet provides a range of products including easy-to-read material such as this summary.

## Recognition statement

The Australian Indigenous HealthInfoNet recognises and acknowledges the sovereignty of Aboriginal and Torres Strait Islander peoples as the original custodians of the country. Aboriginal and Torres Strait Islander cultures are persistent and enduring, continuing unbroken from the past to the present, characterised by resilience and a strong sense of purpose and identity despite the undeniably negative impacts of colonisation and dispossession. Aboriginal and Torres Strait Islander people throughout the country represent a diverse range of people, communities and groups each with unique identity, cultural practices and spiritualities. We recognise that the current health status of Aboriginal and Torres Strait Islander people(s) has been significantly impacted by past and present practices and policies. It is not our intention to homogenise in summary health data and where possible we endeavour to disaggregate analyses to recognise geographical, social and cultural diversity.

We acknowledge and pay our deepest respects to Elders past and present throughout the country. In particular we pay our respects to the Whadjuk Noongar people(s) of Western Australia on whose country our offices are located.

**Director:** Professor Neil Drew  
**Address:** Australian Indigenous HealthInfoNet  
Edith Cowan University  
2 Bradford Street  
Mount Lawley, WA 6050  
**Telephone:** (08) 9370 6336  
**Facsimile:** (08) 9370 6022  
**Email:** [healthinfonet@ecu.edu.au](mailto:healthinfonet@ecu.edu.au)  
**Web address:** <http://www.healthinfonet.ecu.edu.au>


This summary – or an updated version – can be viewed at: <http://www.healthinfonet.ecu.edu.au/summary>

For a more comprehensive review of Indigenous health, please see the HealthInfoNet's 'Overview of Australian Indigenous health status' at: <http://www.healthinfonet.ecu.edu.au/overview>

### Suggested citation:

Australian Indigenous HealthInfoNet (2015) *Summary of Australian Indigenous health, 2014*. Perth, WA: Australian Indigenous HealthInfoNet

© Australian Indigenous HealthInfoNet 2015

This product, excluding the Australian Indigenous HealthInfoNet logo, artwork, and any material owned by a third party or protected by a trademark, has been released under a Creative Commons BY-NC-ND 3.0 (CC BY-NC-ND 3.0) licence. Excluded  material owned by third parties may include, for example, design and layout, images obtained under licence from third parties and signatures.

ISBN 978-0-7298-0723-4



# Contents

Introduction .....	1
What is known about the Aboriginal and Torres Strait Islander population? .....	2
What is known about Aboriginal and Torres Strait Islander births? .....	3
What is known about Aboriginal and Torres Strait Islander deaths? .....	3
Specific health conditions .....	4
<i>What is known about heart health in the Aboriginal and Torres Strait Islander population?</i> .....	4
<i>What is known about cancer in the Aboriginal and Torres Strait Islander population?</i> .....	4
<i>What is known about diabetes in the Aboriginal and Torres Strait Islander population?</i> .....	5
<i>What is known about the social and emotional wellbeing of Aboriginal and Torres Strait Islander people?</i> .....	6
<i>What is known about kidney health in the Aboriginal and Torres Strait Islander population?</i> .....	7
<i>What is known about injury in the Aboriginal and Torres Strait Islander population?</i> .....	8
<i>What is known about respiratory health in the Aboriginal and Torres Strait Islander population?</i> .....	8
<i>What is known about eye health in the Aboriginal and Torres Strait Islander population?</i> .....	9
<i>What is known about ear health in the Aboriginal and Torres Strait Islander population?</i> .....	10
<i>What is known about oral health in the Aboriginal and Torres Strait Islander population?</i> .....	10
<i>What is known about disability in the Aboriginal and Torres Strait Islander population?</i> .....	11
<i>What is known about communicable diseases in the Aboriginal and Torres Strait Islander population?</i> .....	11
<i>What is known about factors contributing to health in the Aboriginal and Torres Strait Islander population?</i> .....	12
Nutrition .....	12
Physical activity .....	13
Tobacco use .....	14
Alcohol use .....	14
Concluding comments .....	15
Abbreviations .....	16
References .....	17

# Introduction

This summary includes the following information about Aboriginal and Torres Strait Islander peoples:

- population
- births
- deaths
- common health problems
- health risk and protective factors.

This summary uses information from up-to-date sources to help create a picture of the health of Aboriginal and Torres Strait Islander people in Australia (including information for the states and territories: New South Wales (NSW), Victoria (Vic), Queensland (Qld), Western Australia (WA), South Australia (SA), Tasmania (Tas), the Australian Capital Territory (ACT) and the Northern Territory (NT)).

This report uses three main sources of information:

- reports on key indicators of Aboriginal and Torres Strait Islander disadvantage produced by the Steering Committee for the Review of Government Service Provision (SCRGSP)
- reports in the *Aboriginal and Torres Strait Islander health performance framework* series produced by the *Australian Health Ministers' Advisory Council* for the Department of Health.
- the Indigenous compendium to the *Report on government services* produced by the SCRGSP.

Data for these reports are collected through health surveys, by hospitals, and by doctors across Australia.

An important issue when collecting health information or data is to make sure the information is accurate and reliable. If some details are missing, the information may not be accurate. For example, to understand health data about Aboriginal and Torres Strait Islander peoples, states and territories need to collect information about their patients, including whether a person is Aboriginal or Torres Strait Islander. Some states and territories (like SA, WA and the NT) reliably collect this information, but others (for example the ACT and Tas) do not. This means that most information about the health of Aboriginal and Torres Strait Islander peoples is only accurate for certain states and territories, but not for Australia as a whole. The information about Aboriginal and Torres Strait Islander populations is getting better, but there are still limitations. To get a more detailed picture of Aboriginal and Torres Strait Islander health (which includes details of the coverage of each health topic by state/territory), please refer to the *Overview of Indigenous health status* ([www.healthinonet.ecu.edu.au/overviews](http://www.healthinonet.ecu.edu.au/overviews)).

To create a complete picture, all the information in this report should be looked at in the context of the 'social determinants of health', the term used to talk about factors that affect people's lives, including their health [1-3].

The social determinants of health include if a person:

- is working
- feels safe in their community (no discrimination)
- has a good education
- has enough money
- feels connected to friends and family.

Social determinants that are particularly important to many Aboriginal and Torres Strait Islander people are:

- their connection to land
- the historical past that took people from their traditional lands and away from their families.

If a person feels safe, has a job that earns enough money, and feels connected to their family and friends, they will generally be healthier. Aboriginal and Torres Strait Islander people are generally worse off than non-Indigenous people when it comes to the social determinants of health [1].

A lot of health services are not as accessible and user-friendly for Aboriginal and Torres Strait Islander people as they are for non-Indigenous people, adding to higher levels of disadvantage. Sometimes this is because more Aboriginal and Torres Strait Islander people than non-Indigenous live in remote locations and not all health services are offered outside of cities. Sometimes health services are not culturally appropriate (which means they do not consider Aboriginal and Torres Strait Islander cultures and the specific needs of Aboriginal and Torres Strait Islander peoples). Also, some Aboriginal and Torres Strait Islander people may not be able to use some services because they are too expensive.

Factors that make health services more accessible for Aboriginal and Torres Strait Islander people are:

- having Aboriginal and Torres Strait Islander Health Workers on staff
- increasing the number of Aboriginal and Torres Strait Islander people working in the health sector (doctors, dentists, nurses, etc)
- designing health promotion campaigns especially for Aboriginal and Torres Strait Islander people
- having culturally competent non-Indigenous staff
- making important health services available in rural and remote locations (so Aboriginal and Torres Strait Islander people living in rural and remote areas do not have to travel to cities, away from the support of their friends and families)
- funding health services so they are affordable for Aboriginal and Torres Strait Islander people who might otherwise not be able to afford them.

More detailed information about the health of Aboriginal and Torres Strait Islander peoples, associated social and economic circumstances, and risk and protective factors, is available from the HealthInfoNet's web resource ([www.healthinonet.ecu.edu.au](http://www.healthinonet.ecu.edu.au)).

## What is known about the Aboriginal and Torres Strait Islander population?

Based on information from the 2011 Census, the Australian Bureau of Statistics (ABS) estimates that there were 713,600 Indigenous people living in Australia in 2014 [4, 5]. NSW had the largest number of Indigenous people, and the NT had the highest percentage of Indigenous people. Indigenous people made up 3% of the total Australian population. For more details on the Indigenous population in each state and territory see Table 1.

Table 1. Estimated Indigenous population, by state/territory and Australia, 30 June 2014

State/territory	Number of Indigenous people	Proportion (%) of Indigenous population living in that state/territory	Proportion (%) of state/territory population that are Indigenous
NSW	220,902	31.0	2.9
Vic	50,983	7.1	0.9
Qld	203,045	28.5	4.3
WA	93,778	13.1	3.6
SA	39,800	5.6	2.4
Tas	25,845	3.6	5.0
ACT	6,707	0.9	1.7
NT	72,251	10.1	29.7
Australia	713,589	100.0	3.0

Source: ABS, 2014 [5]

In 2011, around one-third of Indigenous people lived in major cities [6].

The number of Indigenous people counted in the 2011 Census was much higher than the number counted in the 2006 Census [7, 8]. This could be because:

- the number of Indigenous people has increased
- more Indigenous people were counted because of improvements in how the Census was conducted
- more Indigenous people identified as 'Indigenous' in their response.

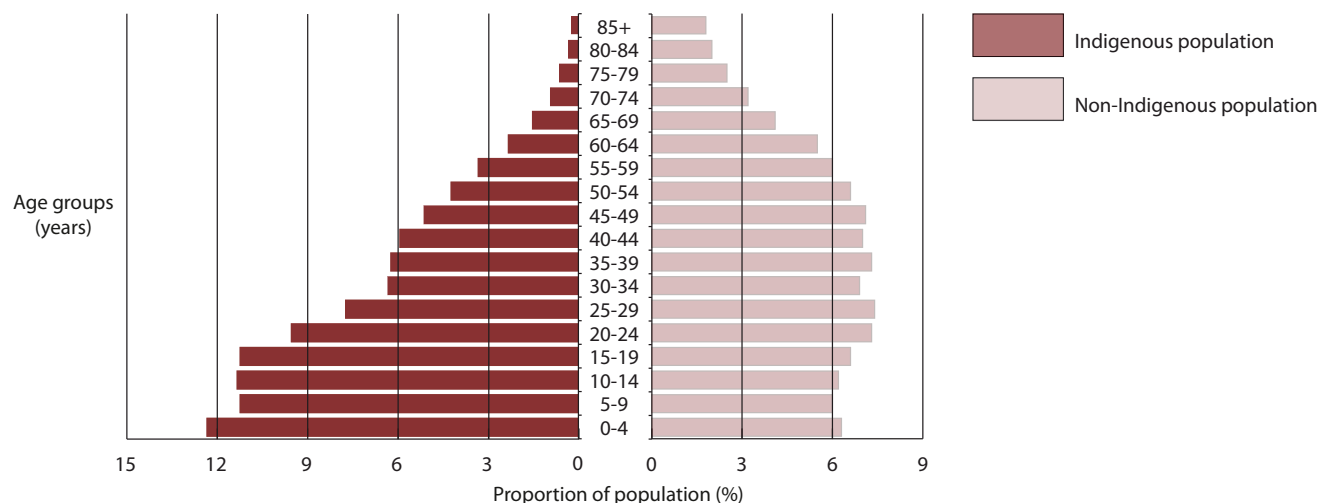
In 2011, 90% of Indigenous people identified as Aboriginal, 6% identified as Torres Strait Islanders, and 4% identified as both Aboriginal and Torres Strait Islander [6].

The Indigenous population is much younger overall than the non-Indigenous population. In 2011, more than one-third of Indigenous people younger than 15 year of age (compared with one-fifth of non-Indigenous people) [9]. Almost 4% of Indigenous people were 65 years or older, compared with 14% of non-Indigenous people.

### Box 1

Figure 1 is a population pyramid; it shows a comparison of the age profiles of the Indigenous and non-Indigenous populations [9]. The bars show the percentage of the total population that falls within each age group. The general shapes of the Indigenous and the non-Indigenous pyramids are different. The Indigenous pyramid is wide at the bottom (younger age-groups) and narrow at the top (older age-groups); this shape shows that the Indigenous population is a young population. The non-Indigenous pyramid has a more even spread of ages through the population.

Figure 1. Population pyramid of Indigenous and non-Indigenous populations, 2011



Source: ABS, 2012 [9]

## What is known about Aboriginal and Torres Strait Islander births?

In 2013, there were 18,368 births registered in Australia where one or both parents were Indigenous (six in every 100 births) [10]. Overall, Indigenous women had more children and had them at younger ages than non-Indigenous women.

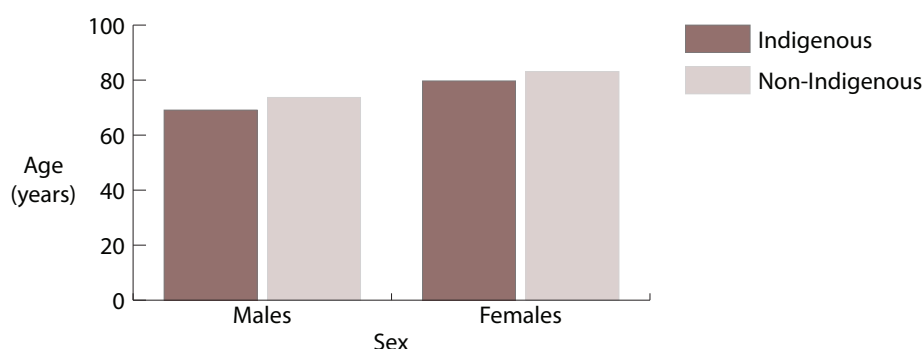
Indigenous women had, on average, 2.3 births in their lifetime (compared with 1.9 births for all Australian women) [10]. Nearly three-quarters of Indigenous mothers were 30 years or younger when they had their babies, compared with less than one-half of non-Indigenous mothers [Derived from 10]. Around 18 in 100 Indigenous mothers were teenagers, compared with 3 in 100 for non-Indigenous mothers.

In 2012, babies born to Indigenous mothers weighed an average of 3,211 grams, 162 grams less than those born to non-Indigenous mothers [11]. Babies born to Indigenous mothers were almost twice as likely to be of low birthweight (less than 2,500 grams) than babies born to non-Indigenous mothers. Low birthweight can increase the risk of a child developing health problems.

## What is known about Aboriginal and Torres Strait Islander deaths?

Aboriginal and Torres Strait Islander people are much more likely than non-Indigenous people to die before they are old [12, 13]. The most recent estimates from the ABS show that an Indigenous boy born in 2010-2012 was likely to live to 69.1 years, about 10 years less than a non-Indigenous boy (who could expect to live to 79.7 years) (Figure 2) [12]. An Indigenous girl born in 2010-2012 was likely to live to 73.7 years, which is almost 10 years less than a non-Indigenous girl (83.1 years). (There have been a number of changes to how figures are calculated throughout time, so recent estimates cannot be compared to older estimates.)

Figure 2. Expectations of life at birth for Indigenous and non-Indigenous males and females, 2010-2012



Source: ABS, 2013 [12]

In 2013, there were 2,811 deaths registered for Indigenous people [13]. Many Indigenous deaths are incorrectly counted as non-Indigenous because the person or family are not identified as Indigenous – the actual number of Indigenous deaths is not known, but would be higher than the number registered as such.

The leading causes of death for Indigenous people in 2012 were:

- cardiovascular disease (including heart attacks and strokes)
- cancer
- injury (including transport accidents and self-harm) [14].

Babies born to Indigenous women are twice as likely to die in their first year than those born to non-Indigenous women [13]. In 2011-2013, the Indigenous infant mortality rate for NSW, Qld, WA, SA and the NT was highest in the NT and lowest in NSW.

### What is a 'rate'?

One way of looking at how common a disease is in a population is by calculating a 'rate'. A rate is the number of cases of a disease divided by the population, for a specific amount of time. By calculating rates, you can compare how common a disease is in different populations (like Indigenous and non-Indigenous people) or between sexes (men and women). You can also calculate rates for deaths and compare the number of deaths in two different populations.

There is a special calculation for 'infant mortality rates'. To calculate this rate, the number of infants (children under one year of age) who died in one calendar year is divided by the number of live births in the same year.

## Specific health conditions

### What is known about heart health in the Aboriginal and Torres Strait Islander population?

Cardiovascular disease (CVD) is a group of diseases affecting the heart and circulatory system [15]. The most common types of CVD are coronary heart disease (including heart attack), stroke, heart failure, and high blood pressure. Risk factors (a behaviour or characteristic that makes it more likely for a person to get a disease) for CVD include: smoking (both smoking tobacco and being exposed to second-hand smoke), high blood cholesterol, being overweight, not eating well, being physically inactive and having diabetes.

Many Aboriginal and Torres Strait Islander people are affected by CVD. One-in-eight (13%) Indigenous people reported in the 2012-2013 *Australian Aboriginal and Torres Strait Islander health survey* (AATSIHS) that they had some form of CVD [16]. One-in-twenty-five (4%) Indigenous people reported having had heart, stroke and/or vascular diseases [16, 17]. One-in-twenty (6%) Indigenous people reported having had high blood pressure (hypertensive heart disease) [18].

More Indigenous women (14%) reported having CVD than Indigenous men (11%) in 2012-2013 [18]. Indigenous people living in remote areas were more likely to report having heart disease than those living in non-remote areas [19]. Heart and related conditions were 1.2 times more common for Indigenous people than for non-Indigenous people [18].

CVD was the leading cause of death of Indigenous people in 2012. It was responsible for 25% of the deaths of Indigenous people living in NSW, Qld, WA, SA and the NT [14]. After age-adjustment, the death rate for Indigenous people was almost twice as high than for non-Indigenous people [4]. There were more deaths from ischaemic heart disease among Indigenous males than among Indigenous females but more Indigenous females died from cerebrovascular diseases than Indigenous males [20].

Indigenous people are more likely to die from CVD when they're young or in middle age than non-Indigenous people. In 2009-2010 in NSW, Qld, WA, SA and the NT, the death rates for all coronary heart disease (the leading cause of CVD-related deaths) were 7 to 13 times higher for Indigenous people in the 25-39 and 40-54 years age-groups than the rates for their non-Indigenous counterparts [21].

### What is known about cancer in the Aboriginal and Torres Strait Islander population?

Cancer is a term used for a variety of diseases that cause damage to the body's cells (the basic building blocks of the body) [22, 23]. Normally cells grow and multiply in a controlled way but cancer causes cells to grow and multiply in an uncontrolled way. If these damaged cells spread into surrounding areas or to different parts of the body, they are known as malignant [23]. Cancer can occur almost anywhere in the body.

In 2005-2009, the overall rate of new cases (incidence rate) of cancer was slightly lower for Indigenous people than for non-Indigenous people [24]. Incidence rates varied depending on the type of cancer. Indigenous people had higher incidence rates than non-Indigenous people for:

- liver cancer
- cervical cancer (for women)
- cancers of 'unknown primary site' (the part of the body where the cancer started)
- lung cancer
- cancer of the uterus (for women)
- cancer of the pancreas.

Indigenous people had lower incidence rates than non-Indigenous people in 2005-2009 for:

- bowel cancer
- breast cancer (for women)
- non-Hodgkin lymphoma (the lymphoid system is part of the body's immune system, the system that helps the body ward off diseases)
- prostate cancer (for men).

The types of cancer that caused the most deaths among Indigenous people in 2008-2012 were lung cancer, liver cancer, breast cancer (for women) and cancer of 'unknown primary site' [24].

The fact that Indigenous people are more likely than non-Indigenous people to die from cancer could be because:

- the types of cancers they develop (such as cancers of the lung and liver) are more likely to be fatal
- their cancer may be more advanced by the time it is found (which is partly because Indigenous people may visit their doctor later and/or may not participate in screening programs)
- they are less likely to receive adequate treatment [25].

## What is known about diabetes in the Aboriginal and Torres Strait Islander population?

Diabetes is a group of disorders due to high levels of glucose (a type of sugar) in the blood [26] and caused by either or both of the following:

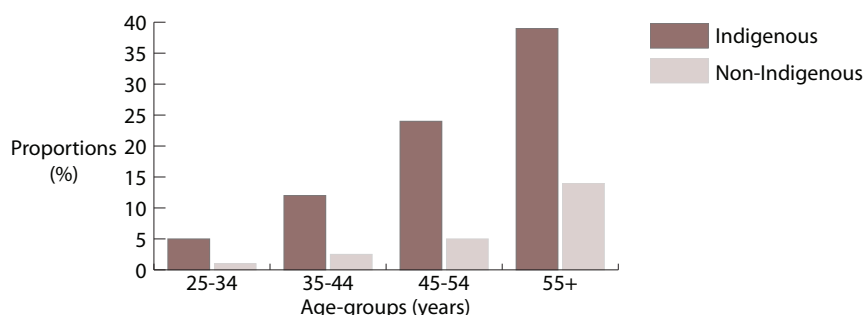
- insulin (a hormone) not being produced by the pancreas or not produced in sufficient amounts to convert glucose from food into energy
- the body not being able to use insulin effectively [26, 27].

Without enough insulin, the body cannot turn glucose into energy, and it stays in the blood. The treatment of diabetes depends on the type of diabetes that a person has – if someone has type 1 diabetes they will need insulin injections; if someone has type 2 diabetes they may be able to manage it by living a healthy lifestyle or taking some medicines. It is possible for a person to have type 2 diabetes without knowing it. Type 1 diabetes is not common in the Indigenous population [28]. Type 2 diabetes is a serious health problem for many Indigenous people, who tend to develop it at earlier ages than other Australians, and often die from it at younger ages. Gestational diabetes mellitus (GDM) develops in some women during pregnancy [29] and is more common among Indigenous women than among non-Indigenous women [30]. Diabetes can lead to life-threatening health complications, some of which may develop within months of diagnosis while others may take years to develop [31]. For many Indigenous people diabetes is not diagnosed until after complications have developed [32].

Diabetes was reported by 9% of Indigenous people in the 2012-2013 AATSIHS [16, 17]. After adjusting for age, the level of diabetes and/or high sugar levels for Indigenous people was three times higher than for non-Indigenous people [33]. More Indigenous women reported having diabetes and/or high sugar levels than Indigenous men [18].

According to the 2012-2013 AATSIHS, diabetes was more common for Indigenous people living in remote areas than for those living in non-remote areas [19]. Diabetes affected Indigenous people at a younger age than non-Indigenous people – 5% of Indigenous people aged 25-34 years had diabetes, and up to 39% of those aged over 55 years had the disease (Figure 3) [33]. Overall, diabetes was around three times more common among Indigenous people than among other Australians.

**Figure 3. Proportion (%) of people reporting diabetes/high sugar levels as a long-term health condition, by Indigenous status, and age-group, Australia, 2012-2013**



Source: ABS 2014 [33]



Diabetes was responsible for one-in-twelve deaths (201 deaths) of Indigenous people living in NSW, Qld, SA, WA and the NT in 2012 [14, 20]. Diabetes was the second leading cause of death for Indigenous people. The overall death rate was seven times higher for Indigenous people than for non-Indigenous people.

## What is known about the social and emotional wellbeing of Aboriginal and Torres Strait Islander people?

Social and emotional wellbeing is a term used to talk about a person's overall social, emotional, psychological (mental), spiritual, and cultural wellbeing. Factors that are important to social and emotional wellbeing include a person's:

- connection to land
- ancestry (family history)
- relationships with family members and friends
- connection to community [34].

Social and emotional wellbeing is often confused with mental health, but it is much broader and is concerned with the overall wellbeing of the person. On the other hand, mental health describes how a person thinks and feels, and how they cope with and take part in everyday life. It is often seen, incorrectly, as simply the absence of a mental illness.

Many things can influence a person's social and emotional wellbeing, including:

- historical/past events
- serious illness or disability
- death of family members or friends
- substance and/or alcohol use
- social and economic factors (education, employment, income, housing) [34, 35].

Measuring social and emotional wellbeing is difficult, but it usually relies on self-reported feelings (like happiness or calmness) or 'stressors' (stressful events in a person's life).

The 2012-13 AATSIHS collected information on positive wellbeing and asked people to report on feelings of happiness, calmness and peacefulness, fullness of life, and energy levels [4]. The survey found that most (nine-in-ten) Indigenous people felt happy some, most, or all of the time. Around four-in-five Indigenous people reported feeling calm and peaceful, full of life, and that they had a lot of energy some, most, or all of the time.

However, the survey found that Indigenous adults were almost three times more likely to feel high or very high levels of psychological distress than non-Indigenous adults [36]. Indigenous people may have higher levels of psychological distress because they experience more stressful events than non-Indigenous people. There were differences between men and women with more women reporting high levels of distress than males. People living in non-remote areas reported higher levels of distress than those in remote areas.

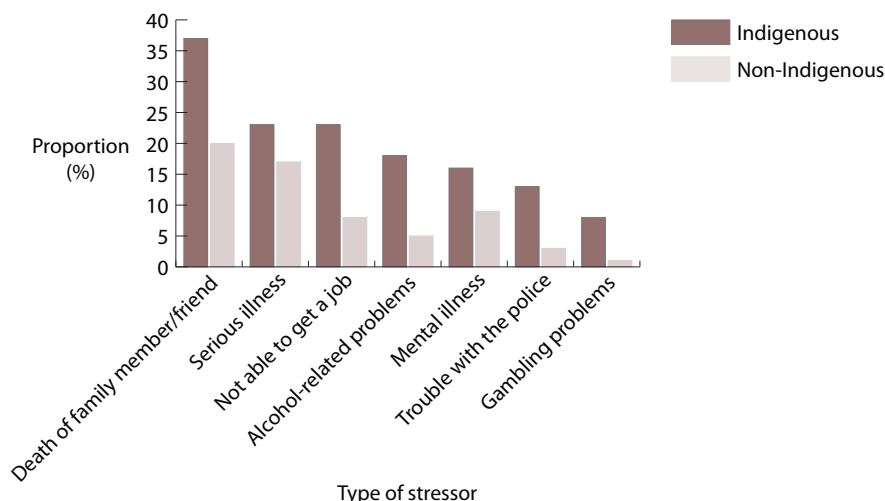
The higher levels of distress are reflected in the number of stressful events experienced. Almost seven-in-ten Indigenous people experienced one or more significant stressors in the year before the survey, which was almost one-and-a-half-times higher than experienced by the total Australian population [37]. Indigenous people most often reported stressors like:

- the death of a family member or friend
- serious illness
- unable to get a job
- alcohol or drug related problems
- mental illness.

These same stressors were also experienced by non-Indigenous people but at lower levels (Figure 4). Stressors like 'trouble with the police' and 'gambling problems' were five and six times more likely to be reported by Indigenous people than by the general population.

Once again more females than males reported experiencing one or more stressful events, though the type of stressful events were quite similar.

Figure 4. Proportion (%) of Indigenous and non-Indigenous people who experienced stressor(s), by type of stressor, 2012-2013



Source: ABS, 2013 [37]

The most detailed information on the social and emotional wellbeing of Indigenous children comes from the *Western Australian Aboriginal child health survey* (WAACHS) [38]. This survey found that almost one-quarter of Indigenous children and young people were rated by their carer (parent or guardian) as being at high risk of 'clinically significant emotional or behavioural difficulties' (emotional or behavioural problems that affect a person's day-to-day life); this compares with one-in-seven children for the general WA population. Indigenous children whose carers had been forcibly separated (taken away) from their families were at high risk of having 'clinically significant emotional or behavioural difficulties', more than twice the risk of children whose carer had not been forcibly separated [38]. These children also had twice the rates of alcohol and other drug use.

The WAACHS also found that seven-in-ten Indigenous children were living in families that had experienced three or more major life stress events (like a death in the family, serious illness, family breakdown, financial problems, or arrest) in the year before the survey, and one-in-five had experienced seven or more major stress events [38].

In 2012-13, there were 16,393 hospitalisations with a main diagnosis of 'mental and behavioural disorders' that were identified as Indigenous ('mental and behavioural disorders' occur when a person becomes unwell in the mind and experiences changes in their thinking, feelings, and/or behaviour that affects their day-to-day life) [39].

The latest information available from 2006-2010, indicates that there were 312 Indigenous deaths from 'mental and behavioural disorders' [35]. Compared with the non-Indigenous population, Indigenous people were one-and-a-half times more likely to die from these disorders.

Deaths from 'mental and behavioural disorders' do not include deaths from 'intentional self-harm' (suicide). In 2012, Indigenous people were twice as likely to die from 'intentional self-harm' than were non-Indigenous people [20]. It was the fifth highest cause of death among Aboriginal and Torres Strait Islander people. Deaths from intentional self-harm were especially high for Indigenous people younger than 35 years of age, with Indigenous men at a very high risk of death from 'intentional self-harm'.

## What is known about kidney health in the Aboriginal and Torres Strait Islander population?

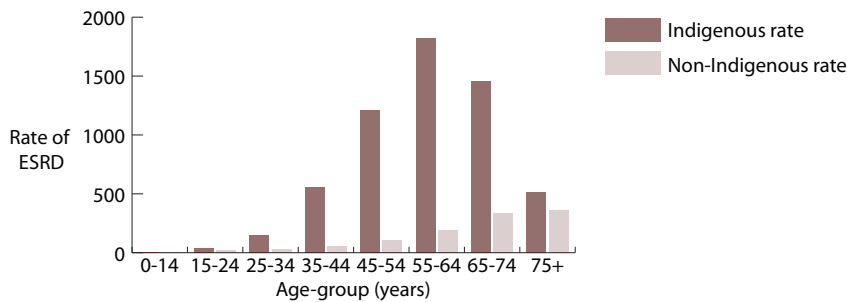
Healthy kidneys help the body by removing waste and extra water, and keeping the blood clean and chemically balanced [40]. When the kidneys stop working properly – as is the case when someone has kidney disease – 'waste' can build up in the blood and damage the body. Chronic kidney disease (CKD) is when the kidneys gradually stop working [41]. End-stage renal disease (ESRD) is when the kidneys have totally or almost totally stopped working. People with ESRD must either have regular dialysis (be hooked up to a machine that filters the blood) or have a kidney transplant to stay alive.

Kidney disease is a serious health problem for many Indigenous people. In 2009-2013, ESRD was six times more common for Indigenous people than for non-Indigenous people [Derived from 5, 42-44].

ESRD affects Indigenous people when they are much younger compared with non-Indigenous people. In 2009-2015, almost three-in-five Indigenous people who were diagnosed with kidney disease were younger than 55 years (less than one-third of non-Indigenous people were younger than 55 years) (Figure 5) [Derived from 5, 42-44].

The rates of ESRD were highest for Indigenous people living in the NT (17 times higher for Indigenous people than non-Indigenous people) and WA (10 times higher) [Derived from 5, 42-44].

**Figure 5. Rates (per million) of end-stage renal disease for Indigenous and non-Indigenous people, by age-group (years) 2009-2013**



**Note:** These rates show how many Indigenous and non-Indigenous people had ESKD per million. This means, for example, that for every 1 million Indigenous people aged 55-64 years, over 1,800 had ESKD in 2009-2013.

**Source:** Derived from ANZDATA, 2014 [42], ABS, 2014 [5], ABS, 2011 [43], ABS, 2003 [44]

Dialysis was the most common reason for Indigenous people to be admitted to hospital in 2012-13 [39]. Almost one-half of all Indigenous hospital admissions were for dialysis. Indigenous people were admitted to hospital for dialysis around 10 times more often than other Australians [45].

Some people need to have dialysis every day. Dialysis can be undertaken at hospitals, special out-of-hospital satellite units, or in the home (which requires special equipment and training for the patient and their carers, and is very costly) [46]. Accessing dialysis can sometimes be very difficult for Indigenous people who live in rural or remote locations and they may have to travel to receive treatment.

In 2008-2012, Indigenous people were almost three times more likely to die from kidney disease than non-Indigenous people [4].

## What is known about injury in the Aboriginal and Torres Strait Islander population?

Injury can include both physical harm and non-physical harm, [47] but in public health terms, injury generally refers to physical harm to a person's body [48] including:

- assault
- self-harm
- environmental injuries (e.g. being bitten by a dog or being poisoned by inhaling poisonous fumes)
- transport accidents [47].

Culture and everyday life situations for Indigenous people can affect the types of injuries and the frequency of injuries experienced. Some factors that can increase the risk of injury include:

- disruption to culture
- socioeconomic disadvantage [47]
- living in rural and remote locations (including increased use of roads)
- risky behaviour
- limited access to health services and support services [49].

Indigenous people were more likely than other Australians to be admitted to hospital for injuries in 2012-2013 [4]. Injury was the most common reason for Indigenous hospital admissions (after dialysis). The main causes of Indigenous injury-related hospital admissions were medical complications, assault, and falls.

In 2012, injury was the third most common cause of death for Indigenous people [14]. The most common causes of injury-related death for Indigenous people were suicide and transport accidents. Indigenous people were more than twice as likely as non-Indigenous people to die from suicide and almost three times as likely to die from traffic accidents.

## What is known about respiratory health in the Aboriginal and Torres Strait Islander population?

The respiratory system includes all the parts of the body involved with breathing, including the nose, throat, larynx (voice box), trachea (windpipe), and lungs [50]. Respiratory disease occurs if any of these parts of the body are damaged or diseased and breathing is affected. Common types of respiratory disease include colds and similar viral infections, asthma, and pneumonia.

Risk factors for respiratory disease include: infections, smoking (including passive smoking, which is particularly bad for children), poor environmental conditions (especially areas that are dusty or have lots of pollen or pollution), poor living conditions, and other diseases (like diabetes, heart and kidney disease) [50].

Respiratory disease was reported by around one-third of Indigenous people in the 2012-2013 AATSIHS [51]. Respiratory problems were reported more often by Indigenous women than Indigenous men. Asthma (the respiratory condition most often reported by Indigenous people) was nearly twice as common for Indigenous people than for non-Indigenous people.

In 2012-13, Indigenous people were four times more likely than non-Indigenous people to be admitted into hospital for chronic obstructive pulmonary disease, three times higher for influenza and pneumonia, and nearly twice as high for asthma [4].

In 2012, respiratory disease was the cause of 8% of Indigenous deaths in NSW, Qld, SA, WA and the NT. Indigenous people were more than twice as likely as non-Indigenous people to die from a respiratory disease [14].

## What is known about eye health in the Aboriginal and Torres Strait Islander population?

Healthy eyes are important for everyday life; they are needed to read and study, play sports, drive, and work [52]. A number of problems can affect the health of the eye [53]. The most common conditions are [54]:

- refractive error (problems focussing the eyes)
- cataract (clouding of the eye's lens)
- diabetic retinopathy (caused by diabetes and can lead to blindness)
- infectious diseases like trachoma.

Eye health is affected by getting older, smoking, injuries, exposure to ultra-violet (UV) light from the sun, and not eating enough healthy food [53]. Eye problems can result in low vision (not being able to see properly) which can be improved with glasses, contact lenses or eye surgery [55]. Eye problems can also result in impaired eyesight and blindness.

In the 2012-2013 AATSIHS, eye and sight problems were reported by [56-58]:

- one-third of Aboriginal and Torres Strait Islander adults
- one-in-eleven Aboriginal and Torres Strait Islander children
- more often by Indigenous women than Indigenous men.

The 2008 *National Indigenous eye health survey* (NIEHS) found [59]:

- Aboriginal and Torres Strait Islander children had better vision than other children in Australia, especially in remote areas
- low vision was nearly three times more common for Aboriginal and Torres Strait Islander adults than for other Australian adults
- blindness was six times more common for Aboriginal and Torres Strait Islander adults than for those in the total population.

Refractive error was the most common cause of low vision and caused one-half of vision loss in both Aboriginal and Torres Strait Islander adults and children [59]. Cataract was the leading cause of blindness for Aboriginal and Torres Strait Islander adults in 2008.

Diabetes, a major problem for Aboriginal and Torres Strait Islander people, can cause eye disease (diabetic retinopathy) and loss of vision [60, 61]. Blinding diabetic retinopathy (damage to the small blood vessels in the back of the eye) was 30 times more common among Indigenous adults than non-Indigenous adults in the 2008 NIEHS. Only one-in-five Aboriginal and Torres Strait Islander people with diabetes had had an eye examination within the previous year [59].

Trachoma still occurs in some remote areas of NT, WA and SA. The overall levels of trachoma in these communities have reduced from 14% in 2009 to 4% in 2014. It has been suggested that targeted screening, treatment and health promotion programs have contributed to the decrease of trachoma.

Most eye problems are preventable and treatable [62], however, many Aboriginal and Torres Strait Islander people do not have access to specialised eye health services from providers such as optometrists and ophthalmologists (specialist eye doctors) [63, 64]. As a result, Aboriginal and Torres Strait Islander people are more likely than non-Indigenous people to have poor eye health that is preventable.



## What is known about ear health in the Aboriginal and Torres Strait Islander population?

Ear health is very important for hearing, learning, and balance [65]. If ears get damaged, people might:

- not be able to hear properly, either for a short, a long time, or for the rest of their lives
- have problems learning (because they cannot hear)
- have problems learning to speak properly.

There are a number of ear diseases, but the most common is otitis media (OM). OM occurs when the middle ear is affected by infection from bacteria or viruses. OM can be very painful and sometimes damages the ear drum; fluid can also leak from the ear (known as 'runny ear'). In another type of OM, fluid builds up in the middle ear without damaging the ear drum ('glue ear'). Both types of OM can cause hearing loss. Risk factors for ear disease include overcrowded homes, exposure to smoking, living in poor conditions, and poor hygiene. Children who go to day-care centres are more likely than others to get ear infections.

Indigenous people, especially children and young adults, have more ear disease and hearing loss than other Australians [65, 66].

Diseases of the ear and mastoid (portion of the temporal bone of the skull behind the ear) and/or hearing problems were reported as a long-term health condition by one-in-eight Indigenous people in the 2012-2013 AATSIHS [61]. Ear/hearing problems were reported by 13% of Indigenous males and by 12% of Indigenous females. Ear/hearing problems were reported by the same proportion of Indigenous people in non-remote areas and remote areas (both 12%). Hearing loss was more common in older people.

The 2008 *National Aboriginal and Torres Strait Islander social survey* (NATSISS) found that one-in-ten Indigenous children had ear or hearing problems [67].

The WAACHS found that almost one-in-five Indigenous children had recurring ear infections [68]. Young children (0-11 years) were more likely to have recurring ear infections than older children (12-17 years). Hearing that wasn't normal was reported by their carers for 7% of Indigenous children. There is a strong link between recurring ear infections and abnormal hearing: 28% of children who had recurring ear infections with discharge (runny ears) also had abnormal hearing, compared with 1% of those without ear infections.

Hearing health services in the NT in 2012-13 found that for Indigenous children who received audiology services, the most common condition was OM with effusion (OME) and half of the children had some form of hearing loss [69].

In the NT in 2007-2012, two-in-three Indigenous children who had child health checks with an ear, nose, and throat examination had at least one middle ear condition [70]. For Indigenous children who had a follow-up hearing test, more than one-half had hearing loss in at least one ear.

In 2012-13, the hospitalisation rate for diseases of the ear and mastoid process for Indigenous children aged 0-3 years was slightly lower than for non-Indigenous children and the rate for those aged 4-14 years was 1.6 times higher than for non-Indigenous children [4].

## What is known about oral health in the Aboriginal and Torres Strait Islander population?

Oral health is a term used for the health of a person's teeth and gums [71]. If people have unhealthy teeth and gums they will probably have some pain. Also, they may not be able to eat a variety of healthy foods or talk to other people comfortably.

Two common oral health problems are caries and gum diseases [71, 72]. Caries is caused by bacteria that decay (break down) the enamel (hard outer part of the tooth); if caries is not treated the tooth will continue to decay and will eventually have to be removed [72]. Caries is caused by eating a lot of sticky and sweet foods that allow bacteria grow and multiply. Gum disease (also known as periodontal disease) is caused by bacteria that attack the gums causing them to swell and bleed. If gum disease is not treated, the gums start to break down and the teeth will become loose because the gums won't be strong enough to hold them in place. Gum disease is caused by poor oral hygiene (poor care of the teeth and gums).

Around one-in-three Indigenous children reported oral health problems in the 2008 NATSISS, and almost one-half of older Indigenous children (those aged 10-14 years) reported these problems [35]. Oral health problems were reported more often in non-remote areas than in remote areas.

The oral health of Indigenous Australians is not as good as that of non-Indigenous people [73]. The oral health of young non-Indigenous children has improved in recent years, but the oral health of young Indigenous children has generally become worse.

Indigenous children have more caries in their deciduous (baby) and permanent (adult) teeth than non-Indigenous children, and their caries often more severe. Indigenous children have more decayed, missing and filled teeth than non-Indigenous children. In 2000-2003, Indigenous children also had more gingivitis (a mild form of periodontal disease) than non-Indigenous children.

Indigenous adults had more than twice as much caries as non-Indigenous adults, and had three times the number of decayed tooth surfaces, which is often because there is not enough access to dental services [74]. Indigenous adults also suffered from more periodontal disease than non-Indigenous adults. More Indigenous adults than non-Indigenous adults suffered from edentulism (losing all of their teeth), especially at younger ages.

## What is known about disability in the Aboriginal and Torres Strait Islander population?

Disability may affect how a person moves around and looks after themselves, how they learn, or how they communicate [75, 76]. There are a lot of different kinds of disability, for example:

- some affect the body, others affect how the brain works
- some are temporary, others last for a person's whole life
- some people are born with a disability, other people become disabled as the result of an event (such as a car crash).

A disability that is severe and affects how a person is able to live their life is classified as a 'profound/severe core activity restriction' [75].

In 2012, about a quarter of Aboriginal and Torres Strait Islander people had a disability [77]. Indigenous people had higher rates of disabilities than non-Indigenous people across all age groups and for both males and females. Indigenous children aged 0-14 years were more than twice as likely as non-Indigenous children to have a disability.

In 2011 about one-in-twenty (5%) of Indigenous people needed assistance with looking after themselves, getting around or communicating [78]. These needs for assistance generally increased with age among both Indigenous and non-Indigenous people; the proportions requiring assistance were higher among Indigenous people than among their non-Indigenous counterparts for all age-groups.

## What is known about communicable diseases in the Aboriginal and Torres Strait Islander population?

Communicable diseases are diseases that are passed from person to person either by direct contact with an infected person or indirectly, such as through contaminated (dirty/unclean) food or water. Another example of indirect transmission is when the disease is spread through the air, such as when an infected person coughs or sneezes and another person breathes in the air that contains the germs. Communicable diseases can be caused by:

- bacteria (e.g. tuberculosis)
- viruses (e.g. HIV)
- fungi (e.g. tinea)
- parasites (e.g. malaria) [79].

Improvements to personal and environmental cleanliness, and the introduction of new immunisations (vaccines), have greatly reduced the number of people who catch some communicable diseases [29].

If a person develops certain communicable diseases (like tuberculosis), the disease must be 'notified'; this means that the information is collected by health authorities. Data from state and territory collections are collected and published by the National Notifiable Disease Surveillance System (NNDSS), but Indigenous status is often not reported for large proportions of notifications.

Recent information about communicable diseases includes:

**Tuberculosis:** a lung infection caused by a bacterium that can trigger a range of symptoms, such as coughing, weight loss, and fever [80].

- Tuberculosis notifications were 12.5 times higher for Indigenous people than for non-Indigenous people in 2006-2010 [Derived from 81, 82-86].

**Hepatitis:** an inflammation of the liver caused by viral infections, alcohol or other drugs, toxins, or an attack by the body's immune system on itself [87]. The most common types of hepatitis are hepatitis A, B, and C.

- In 2011-2013:
  - hepatitis A notifications have decreased significantly among Indigenous people since 2000 with none identified during this period [Derived from 88, 89, 90]
  - hepatitis B notifications were five times higher for Indigenous people than for non-Indigenous people [Derived from 90]
  - hepatitis C notifications were almost four times higher for Indigenous people than for non-Indigenous people [Derived from 90].

**Haemophilus influenzae type b (Hib):** a bacterium that can cause a range of illnesses, such as meningitis, septicaemia, and pneumonia [91-94].

- Notification rates for Hib were 13 times higher for Indigenous people than for non-Indigenous people in 2007-2010 [92].

**Invasive pneumococcal disease (IPD):** caused by a bacterium and can lead to several major health conditions, such as pneumonia and meningitis [92].

- Notification rates for IPD were almost eight times higher for Indigenous people than for other Australians in 2011 [92].

**Meningococcal disease:** caused by a bacterium and can lead to meningitis, meningococcaemia without meningitis, and septic arthritis [92].

- Notification rates for Indigenous children aged 0-4 years were nearly four times higher than for non-Indigenous children in 2007-2010 [92].

**Sexually transmissible infections:** caused by bacteria and viruses and can lead, if left untreated, to a range of health conditions, such as pelvic inflammatory disease in women [95].

- Notification rates for gonorrhoea, syphilis, and chlamydia were higher for Indigenous people than for non-Indigenous people in 2013 [Derived from 96].

**Human immunodeficiency virus (HIV):** an infection that destroys cells in the body's immune system [97].

- In 2013, the rate of HIV diagnosis was higher for Indigenous than non-Indigenous people [90].

## What is known about factors contributing to health in the Aboriginal and Torres Strait Islander population?

### Nutrition

If a person eats healthy food they are more likely to be healthy [98]. A healthy diet includes:

- fresh vegetables and fruits
- whole grains
- low-fat dairy products
- lean meats
- foods low in fat and salt.

Having access to healthy foods can be a challenge for some Indigenous people who live in remote locations. Food may have to be sent over long distances and is not always available and fresh foods may be expensive [98].

Poor nutrition is an important factor contributing to overweight and obesity, malnutrition, CVD, type 2 diabetes, and tooth decay [98, 99]. The National Health and Medical Research Council (NHMRC) guidelines recommend that adults eat fruit and plenty of vegetables every day, selected from a wide variety of types and colours [100]. The guidelines also recommend including reduced fat varieties of milk, yoghurts and cheeses, and to limit the intake of foods and drinks containing added salt.

The 2012-13 AATSIHS found that less than one-half of Indigenous people reported eating the recommended amount of fruit every day (42%) and only one-in-twenty people (5%) ate the recommended amount of vegetables every day [101, 102]. Women were more likely than men to have eaten an adequate amount of fruit (44% and 40% respectively) and vegetables (7% and 3% respectively) each day.

Levels of fruit and vegetable consumption were slightly different for Indigenous people living in remote and non-remote areas; less than half of Indigenous people living in remote areas (46%) consumed the recommended number of servings of fruit each day compared with two-in-five (41%) of people in non-remote areas. Conversely, Indigenous people living in non-remote areas were more likely than those in remote areas to consume adequate amounts of vegetables (5% compared with 3%) each day.

The AATSIHS 2012-2013 collected information on the fruit and vegetable consumption of children and found that three quarters (78%) of Aboriginal and Torres Strait Islander children aged 2-14 years were eating adequate amounts of fruit eat day, but only 16% were eating enough vegetables [98]. Similar proportions of girls and boys were meeting the guidelines for fruit intake (81% compared with 76%) and vegetable intake (14% compared with 17% respectively). The rates of fruit and vegetable intake were similar for children in remote and non-remote areas.

The *National Aboriginal and Torres Strait Islander health measures survey* (NATSIHMS) 2012-2013 collected information on three biomarkers (measurable indicators for biological state) of nutrition – vitamin D, anaemia and iodine [103]. It was found that:

- More than a quarter of Aboriginal and Torres Strait Islander adults (27%) had a vitamin D deficiency. Vitamin D deficiency was more common among Indigenous people living in remote areas (39%) than those in non-remote areas (23%).
- 7.6% of Aboriginal and Torres Strait Islander adults were at risk of anaemia. The risk of anaemia was higher for those living in remote areas compared with those living in non-remote areas (10% compared with 6.9%).
- The Aboriginal and Torres Strait Islander adult population was found to be iodine-sufficient.

## Physical activity

Physical activity is important for maintaining good health [104]. *Australia's physical activity and sedentary behaviour guidelines* recommend moderate physical activity on most, preferably all, days of the week to improve health and reduce the risk of chronic disease and other conditions [105]. Not doing enough physical activity, and leading a sedentary lifestyle, are risk factors for a variety of health conditions including CVD, type 2 diabetes, certain cancers, depression and other social and emotional wellbeing conditions, overweight and obesity, a weakened musculoskeletal system and osteoporosis [104, 105].

In the 2012-2013 AATSIHS, 46% of Indigenous people aged 18 years and over living in non-remote areas reported that they had done enough moderate intensity physical activity to meet the target of 30 minutes per day (or a total of 150 minutes per week); this level was 0.9 times that of non-Indigenous people of the same age [61]. Two-fifths (40%) of Indigenous adults had exercised for at least 150 minutes over five sessions in the previous week; this level was 0.9 times that of non-Indigenous adults. Over 28% of Indigenous adults had exercised at a moderate level and 10% at a high level; these levels of physical activity were 0.9 and 0.6 times that of non-Indigenous adults. Indigenous adults spent around 39 minutes per day including 21 minutes on walking for transport compared with children aged 5-17 years [104]. The participants in a pedometer study recorded an average of 6,963 steps per day; 17% met the recommended 10,000 steps or more a day.

Among Indigenous adults living in non-remote areas, more males (50%) than females (41%) met the target of 150 minutes of moderate intensity exercise per week and had exercised for at least 150 minutes over five sessions in the previous week (44% compared with 36%) [61]. Indigenous males (31%) were more likely than Indigenous females (25%) to have exercised at moderate intensity and were twice as likely to have exercised at high intensity (14% compared with 7%) in the previous week. In remote areas, Indigenous adults exceeded the recommended 30 minutes of physical activity (55%) and 21% did not participate in any physical activity on the day prior to the interview [104]. The most common type of physical activity for adults was 'walking to places' (71%). One-in-ten (11%) participated in cultural activities, including hunting and gathering bush foods or going fishing.

Among Indigenous adults living in non-remote areas, 62% reported that they were physically inactive (sedentary or had done little exercise) in the week prior to the survey; this level of physical inactivity was 1.1 times more than their non-Indigenous counterparts [105]. A higher proportion of Indigenous women (68%) than Indigenous men (55%) were physically inactive; this was evident for all age-groups [61]. Indigenous adults spent an average of 5.3 hours per day on sedentary activities, including 2.3 hours of watching television, DVDs and videos [104].

Indigenous children aged 2-4 years living in non-remote areas spent an average of 6.6 hours per day doing physical activity and spent more time outdoors (3.5 hours) compared with non-Indigenous children of the same age who spent 2.8 hours outdoors. [104]. Indigenous children aged 2-4 years spent an average of 1.5 hours on sedentary screen-based activities such as watching TV, DVDs or playing electronic games.

Indigenous children aged 5-17 years living in non-remote areas spent an average of two hours per day participating in physical activity (exceeding the recommendation of one hour per day); this was 25 minutes more than non-Indigenous children of the same age [104]. Around half (48%) of Indigenous children met the recommended amount of physical activity, compared with 35% of non-Indigenous children. The most common physical activities among Indigenous children were 'active play and children's games' (57%) and swimming (18%). Those who participated in the pedometer study recorded an average of 9,593 steps per day, with an average of one-in-four children (25%) meeting the recommended 12,000 steps per day.



Indigenous children aged 5-17 years living in non-remote areas spent an average of 2.6 hours per day on sedentary screen-based activities (exceeding the recommended limit of two hours). Indigenous children aged 12-14 years spent half the time that non-Indigenous children spent using the internet or computer for homework (4 minutes compared with 8 minutes per day) and those aged 15-17 years spent nearly one third of the time spent by non-Indigenous children of the same age (8 minutes compared with 20 minutes per day). Indigenous children aged 15-17 years spent more time on screen-based activities than those aged 5-8 years (3.3 hours compared with 1.9 hours).

In remote areas, 82% of Indigenous children aged 5-17 years did more than 60 minutes of physical activity on the day prior to the interview [104]. The most common activities were walking (82%), running (53%), and playing football or soccer (33%).

## Tobacco use

Smoking tobacco is a major cause of:

- heart disease
- stroke
- some cancers
- lung disease
- a variety of other health conditions [106].

Passive smoking (breathing in another person's tobacco smoke) also contributes to poor health, particularly for children.

The proportion of Indigenous adults who smoke declined significantly between 2002 and 2012-2013 (from 51% to 43%), but smoking was still more than twice as common among Indigenous adults than among non-Indigenous adults in 2012-2013 [107, 108]. According to the 2008 NATSISS, two-out-of-three Indigenous current daily smokers had tried to quit in the previous year [108].

In 2008, around one-in-six Indigenous children 0-3 years and one-quarter of Indigenous children 4-14 years lived with someone who usually smoked inside the house [109, 110].

Around one-quarter of Indigenous adults were living with someone who usually smoked inside the house [111].

Tobacco use was responsible for one-in-five deaths among Indigenous people in 2003 [112].

## Alcohol use

Drinking too much alcohol is associated with:

- health conditions like liver disease, diabetes, cardiovascular disease, and some cancers
- brain damage
- injury and violence
- self-harm [113].

If a woman drinks alcohol when she is pregnant, the unborn child may be affected by fetal alcohol spectrum disorder (FASD), the term used to describe the physical, behavioural, and learning problems caused by alcohol damage to the brain and other parts of the body of the unborn baby [114]. The 2008 NATSISS found that 80% of mothers of Indigenous children aged 0-3 years did not drink during pregnancy, 16% drank less alcohol and only 3% drank the same amount or more alcohol during pregnancy [115].

Indigenous people are more likely to not drink alcohol (abstain) than non-Indigenous people but those who drink are more likely to drink at harmful levels [116, 117]. The 2012-2013 AATSIHS found 23% of Indigenous people had never consumed alcohol or had not done so for more than 12 months [117]. Abstinence was 1.6 times more common among Indigenous peoples than non-Indigenous people; however the difference in abstinence is mostly due to those Indigenous people who used to drink and have given up.

Levels of short term/single occasion drinking risk (more than four standard drinks on a single occasion) were similar for Indigenous and non-Indigenous people; around half of drinkers in 2012-2013, drank at levels exceeding the guidelines (52% compared with 45%) [117]. However Indigenous people were 1.4 times more likely to drink at levels of 'high risk' of short-term harm as non-Indigenous people (37% compared with 27%).

Levels of long-term/lifetime drinking risk (more than two standard drinks per day) were similar for Indigenous and non-Indigenous people. One-in-five drinkers aged 18 years and over in 2012-2013, drank at levels exceeding the 2009 guidelines for long-term/lifetime drinking risk [117]. However, Indigenous people were 1.4 times more likely to drink at levels of 'high risk' of lifetime harm than non-Indigenous people.

For the five year period 2006-2010 in NSW, Qld, WA, SA and the NT, approximately 3.4% of total Indigenous deaths were related to alcohol use, with the majority of these due to alcoholic liver disease [35].

## Concluding comments

Australia's Aboriginal and Torres Strait Islander people's health continues to improve slowly although they are still not as healthy as non-Indigenous people overall. The reasons why the health of Indigenous people is worse than for non-Indigenous people are complex, but represent a combination of general factors (like education, employment, income, and socioeconomic status) and health sector factors (like not having access to culturally appropriate services or support).

Within the health sector, there is a need for:

- more health advancement programs
- better identification of health conditions before they become serious
- more primary health care services that are accessible to Aboriginal and Torres Strait Islander people
- greater cultural competence of service providers.

Making and combining these changes are important to the long term future for Aboriginal and Torres Strait Islander peoples and for strengthening and empowering strategies to improve health outcomes.

Health improvements for the Aboriginal and Torres Strait Islander population will require the ongoing commitment by all Australian governments through the Council of Australian Governments (COAG) to 'closing the gap' in health and other disadvantages between Aboriginal and Torres Strait Islander peoples and other Australians. The COAG commitments to date are encouraging, but 'closing the gaps' in health and other disadvantages will take time. Strategies are needed that improve health services and the social and other factors that affect the health disadvantages faced by Aboriginal and Torres Strait Islander people.

There are good signs of contributing to continued efforts to close the gap. There is increased acknowledgement of the importance of strong cultural foundations to sustainable improvements in health and well-being [118, 119]. The recognition of the importance of the Aboriginal and Torres Strait Islander community controlled health sector will be crucial [120].

A change to strengths based approaches to Aboriginal and Torres Strait Islander health is a powerful and empowering development [4]. An increased focus on 'what works' provides signposts for positive pathways forward.

## Abbreviations

**AATSIHS** - Australian Aboriginal and Torres Strait Islander Health Survey

**ABS** - Australian Bureau of Statistics

**ACT** - Australian Capital Territory

**AIHW** - Australian Institute of Health and Welfare

**ANZDATA** - Australia and New Zealand Dialysis and Transplant Registry

**CKD** - Chronic kidney disease

**COAG** - Council of Australian Governments

**CVD** - Cardiovascular disease

**ESRD** - End-stage renal disease

**FASD** - Fetal alcohol spectrum disorder

**Hib** - *Haemophilus influenzae* type b

**HIV** - Human immunodeficiency virus

**IPD** - Invasive pneumococcal disease

**NATSIHMS** – National Aboriginal and Torres Strait Islander Health Measures Survey

**NATSISS** - National Aboriginal and Torres Strait Islander Social Survey

**NHMRC** – National Health and Medical Research Council

**NIEHS** - National Indigenous Eye Health Survey

**NNDSS** - National Notifiable Diseases Surveillance System

**NSW** - New South Wales

**NT** - Northern Territory

**OM** - Otitis media

**OME** - Otitis media with effusion

**Qld** - Queensland

**SA** - South Australia

**SCRGSP** – Steering Committee for the Review of Government Service Provision

**Tas** - Tasmania

**TB** - Tuberculosis

**UV** - Ultraviolet

**Vic** - Victoria

**WA** - Western Australia

**WAACHS** - Western Australian Aboriginal child health survey

## References

1. Carson B, Dunbar T, Chenhall RD, Bailie R, eds. (2007) *Social determinants of Indigenous health*. Crows Nest, NSW: Allen and Unwin
2. Wilkinson R, Marmot M (2003) *Social determinants of health: the solid facts*. (2nd ed) Denmark: World Health Organization
3. Marmot M (2004) *The status syndrome: how social standing affects our health and longevity*. New York: Holt Paperbacks
4. Steering Committee for the Review of Government Service Provision (2014) *Overcoming Indigenous disadvantage: key indicators 2014*. Canberra: Productivity Commission
5. Australian Bureau of Statistics (2014) *Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001 to 2026*. (ABS Catalogue no.3238.0) Canberra: Australian Bureau of Statistics
6. Australian Bureau of Statistics (2012) *Census of population and housing - counts of Aboriginal and Torres Strait Islander Australians, 2011*. (ABS Catalogue no. 2075.0) Canberra: Australian Bureau of Statistics
7. Biddle N (2012) *CAEPR Indigenous population project 2011 census papers: population and age structure*. (2011 Census Papers No 5) Canberra: Centre for Aboriginal Economic Policy Research
8. Biddle N (2013) *CAEPR Indigenous population project 2011 census papers: population projections*. (2011 Census Papers No. 14/2013) Canberra: Centre for Aboriginal Economic Policy Research
9. Australian Bureau of Statistics (2012) *Australian demographic statistics, March quarter 2012*. (ABS Catalogue no 3101.0) Canberra: Australian Bureau of Statistics
10. Australian Bureau of Statistics (2014) *Births, Australia, 2013: Aboriginal and Torres Strait Islander births and fertility*. (ABS Catalogue no 3301.0) Canberra: Australian Bureau of Statistics
11. Li Z, Zeki R, Hilder L, Sullivan EA (2013) *Australia's mothers and babies 2011*. (AIHW Catalogue no PER 59, perinatal statistics series no 28) Canberra: Australian Institute of Health and Welfare
12. Australian Bureau of Statistics (2013) *Life tables for Aboriginal and Torres Strait Islander Australians, 2010-2012*. (ABS Cat. no. 3302.0.55.003) Canberra: Australian Bureau of Statistics
13. Australian Bureau of Statistics (2014) *Deaths, Australia, 2013*. (ABS Catalogue no 3302.0) Canberra: Australian Bureau of Statistics
14. Australian Bureau of Statistics (2014) *Causes of death, Australia, 2012*. (ABS Catalogue no 3303.0) Canberra: Australian Bureau of Statistics
15. Baker IDI (2012) *Cardiovascular disease*. Retrieved 2012 from [http://www.bakeridi.edu.au/health\\_fact\\_sheets/cardiovascular\\_disease/](http://www.bakeridi.edu.au/health_fact_sheets/cardiovascular_disease/)
16. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13*. (ABS Catalogue no. 4727.0.55.006) Canberra: Australian Bureau of Statistics
17. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13 - Australia: table 21.3 [data cube]*. Retrieved 6 June 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&472705500621.xls&4727.0.55.006&Data%20Cubes&166861F2585F8D85CA257CEE0010DAE7&0&2012%9613&06.06.2014&Latest>
18. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13 - Australia: table 5.3 [data cube]*. Retrieved 6 June 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&472705500605.xls&4727.0.55.006&Data%20Cubes&A95A701E3429A625CA257CEE0010D780&0&2012%9613&06.06.2014&Latest>
19. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13 - Australia: table 2.3 [data cube]*. Retrieved 6 June 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&472705500602.xls&4727.0.55.006&Data%20Cubes&A0A5C6AE5F15C5DECA257CEE0010D6DC&0&2012%9613&06.06.2014&Latest>
20. Australian Bureau of Statistics (2014) *Causes of death, Australia, 2012: Deaths of Aboriginal and Torres Strait Islander Australians [data cube]*. Retrieved 25 March 2014 from [http://www.abs.gov.au/ausstats/subscriber.nsf/log?openagent&3303\\_12%20deaths%20of%20aboriginal%20and%20torres%20strait%20islander%20australians.xls&3303.0&Data%20Cubes&0585A7BA09CCB81DCA257CA5000C9072&0&2012&25.03.2014&Latest](http://www.abs.gov.au/ausstats/subscriber.nsf/log?openagent&3303_12%20deaths%20of%20aboriginal%20and%20torres%20strait%20islander%20australians.xls&3303.0&Data%20Cubes&0585A7BA09CCB81DCA257CA5000C9072&0&2012&25.03.2014&Latest)
21. Australian Institute of Health and Welfare (2014) *Trends in coronary heart disease mortality: age groups and populations*. (AIHW Catalogue no CVD 79) Canberra: Australian Institute of Health and Welfare
22. Australian Cancer Research Foundation (2014) *What is cancer?* Retrieved 1 December 2014 from <http://www.acrf.com.au/on-cancer/>
23. Cancer Council Australia (2014) *What is cancer?* Retrieved 1 December 2014 from <http://www.cancer.org.au/about-cancer/what-is-cancer/>
24. Australian Institute of Health and Welfare (2014) *Cancer in Australia: an overview 2014*. (AIHW Catalogue no CAN 88, cancer series no 90) Canberra: Australian Institute of Health and Welfare
25. Cunningham J, Rumbold AR, Zhang X, Condon JR (2008) Incidence, aetiology, and outcomes of cancer in Indigenous peoples in Australia. *Lancet Oncology*;9(6):585-595



26. Lalor E, Cass A, Chew D, Craig M, Davis W, Grenfell R, Hoy W, McGlynn L, Mathew T, Parker D, Shaw J, Tonkin A, Towler B (2014) *Cardiovascular disease, diabetes and chronic kidney disease: Australian facts - mortality*. (AIHW Catalogue no CDK 1, cardiovascular, diabetes and chronic kidney disease series no 1) Canberra: Australian Institute of Health and Welfare
27. Diabetes Australia (2011) *What is diabetes?* Retrieved September 2011 from <http://www.diabetesaustralia.com.au/Understanding-Diabetes/What-is-Diabetes/>
28. Australian Institute of Health and Welfare (2010) *Australia's health 2010: the twelfth biennial report of the Australian Institute of Health and Welfare*. (AIHW Catalogue no AUS 122, Australia's health no. 12) Canberra: Australian Institute of Health and Welfare
29. Australian Institute of Health and Welfare (2014) *Australia's health 2014: the 14th biennial health report of the Australian Institute of Health and Welfare*. (AIHW Catalogue no AUS 181) Canberra: Australian Institute of Health and Welfare
30. Australian Institute of Health and Welfare (2010) *Diabetes in pregnancy: its impact on Australian women and their babies*. (AIHW Catalogue no CVD 52, diabetes series no. 14) Canberra: Australian Institute of Health and Welfare
31. Australian Institute of Health and Welfare (2011) *Prevalence of Type 1 diabetes in Australian children, 2008*. (AIHW Catalogue no CVD 54, Diabetes series no.15) Canberra: Australian Institute of Health and Welfare
32. National Aboriginal Community Controlled Health Organisation (2005) *Evidence base to a preventive health assessment in Aboriginal and Torres Strait Islander peoples*. Melbourne: The Royal Australian College of General Practitioners
33. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13 - Australia: table 6.3 [data cube]*. Retrieved 6 June 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&472705500606.xls&4727.0.55.006&Data%20Cubes&7F2DBD07A515E7A2CA257CEE0010D7BF&0&2012%9613&06.06.2014&Latest>
34. Garvey D (2008) *Review of the social and emotional wellbeing of Indigenous Australian peoples*. Retrieved 2008 from <http://www.healthinonet.ecu.edu.au/other-health-conditions/mental-health/reviews/our-review>
35. Australian Institute of Health and Welfare (2013) *Aboriginal and Torres Strait Islander health performance framework 2012: detailed analyses*. (AIHW Cat. no. IHW 94) Canberra: Australian Institute of Health and Welfare
36. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 7 [data cube]*. Canberra: Australian Bureau of Statistics
37. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: table 19 [data cube]*. Canberra: Australian Bureau of Statistics
38. Zubrick SR, Silburn SR, Lawrence DM, Mitrou FG, Dalby RB, Blair EM, Griffin J, Milroy H, De Maio JA, Cox A, Li J (2005) *The social and emotional wellbeing of Aboriginal children and young people: vol 2*. (The Western Australian Aboriginal Child Health Survey, v. 2) Perth: Telethon Institute for Child Health Research and Curtin University of Technology
39. Australian Institute of Health and Welfare (2014) *Australian hospital statistics 2012-13*. (AIHW Catalogue no HSE 145) Canberra: Australian Institute of Health and Welfare
40. National Kidney and Urologic Diseases Information Clearinghouse (2014) *The kidneys and how they work*. Retrieved 2014 from <http://kidney.niddk.nih.gov/kudiseases/pubs/yourkidneys/>
41. Kidney Health Australia (2012) *Chronic kidney disease (CKD) management in general practice*. 2nd ed. Melbourne: Kidney Health Australia
42. Australian and New Zealand Dialysis and Transplant Registry (2014) *End stage renal disease notifications, by Indigenous status, age, jurisdiction and year [2009 to 2013, unpublished]*. Adelaide: Australian and New Zealand Dialysis and Transplant Registry
43. Australian Bureau of Statistics (2011) *Australian demographic statistics, June quarter 2011*. (ABS Catalogue no 3101.0) Canberra: Australian Bureau of Statistics
44. Australian Bureau of Statistics (2003) *Australian demographic statistics quarterly: September quarter 2002*. (ABS catalogue no. 3101.0) Canberra: Australian Bureau of Statistics
45. Australian Institute of Health and Welfare (2014) *Cardiovascular disease, diabetes and chronic kidney disease: Australian facts: morbidity - hospital care*. (AIHW Catalogue no CDK 003, cardiovascular, diabetes and chronic kidney disease series no 3) Canberra: Australian Institute of Health and Welfare
46. Australian Institute of Health and Welfare (2011) *Chronic kidney disease in Aboriginal and Torres Strait Islander people 2011*. (AIHW Catalogue no PHE 151) Canberra: Australian Institute of Health and Welfare
47. National Public Health Partnership (2005) *The national Aboriginal and Torres Strait Islander safety promotion strategy*. Canberra: National Public Health Partnership
48. National Public Health Partnership (2005) *The national injury prevention and safety promotion plan: 2004-2014*. Canberra: National Public Health Partnership
49. Clapham K, O'Dea K, Chenhall R (2007) Interventions and sustainable programs. In: Carson B, Dunbar T, Chenhall RD, Bailie R, eds. *Social determinants of Indigenous health*. Crows Nest, NSW: Allen and Unwin:271-295

50. Australian Institute of Health and Welfare (2010) *Asthma, chronic obstructive pulmonary disease and other respiratory diseases in Australia*. (AIHW Catalogue no ACM 20) Canberra: Australian Institute of Health and Welfare
51. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 5 [data cube]*. Retrieved 27 November 2013 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%205%20long-term%20conditions%20by%20sex%20by%20indigenous%20status,%202012-13%20-%20australia.xls&4727.0.55.001&Data%20Cubes&5C97CE7DA7059C06CA257C2F00145D5A&0&2012-13&27.11.2013&Latest>
52. International Centre for Eyecare Education (2009) *Eye health education resource kit: I see for culture*. Sydney: Brien Holden Vision Institute, Public Health Division
53. Burns J, Thomson N (2003) Eye health. In: Thomson N, ed. *The health of Indigenous Australians*. South Melbourne: Oxford University Press:273-289
54. Taylor HR, Boudville A, Anjou M, McNeil R (2011) *The roadmap to close the gap for vision: summary report*. Melbourne: Indigenous Eye Health Unit, the University of Melbourne
55. Australian Department of Health and Ageing, Victorian Department of Human Services (2005) *Eye health in Australia: a background paper to the national framework for action to promote eye health and prevent avoidable blindness and vision loss*. Canberra: Australian Government Department of Health and Ageing
56. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 3 [data cube]*. Retrieved 27 November 2013 from [http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%203%20selected%20health%20characteristics,%20by%20state\\_territory%202012-13-australia.xls&4727.0.55.001&Data%20Cubes&D43DB1D697BED77ECA257C2F00145D04&0&2012-13&27.11.2013&Latest](http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%203%20selected%20health%20characteristics,%20by%20state_territory%202012-13-australia.xls&4727.0.55.001&Data%20Cubes&D43DB1D697BED77ECA257C2F00145D04&0&2012-13&27.11.2013&Latest)
57. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 6 [data cube]*. Retrieved 26 March 2014
58. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 4 [data cube]*. Retrieved 27 November 2013 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%204%20selected%20health%20characteristics,%20by%20sex%202012-13-australia.xls&4727.0.55.001&Data%20Cubes&497BBEB2AFC1B23DCA257C2F00145D2E&0&2012-13&27.11.2013&Latest>
59. Taylor HR, National Indigenous Eye Health Survey Team (2009) *National Indigenous eye health survey: minum barreng (tracking eyes): full report*. Melbourne: Indigenous Eye Health Unit, The University of Melbourne
60. Office for Aboriginal and Torres Strait Islander Health (2001) *Specialist eye health guidelines for use in Aboriginal and Torres Strait Islander populations*. Canberra: Commonwealth Department of Health and Aged Care
61. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13*. (ABS Catalogue no. 4727.0.55.001) Canberra: Australian Bureau of Statistics
62. Taylor HR, National Indigenous Eye Health Survey Team (2009) *National Indigenous eye health survey: minum barreng (tracking eyes): summary report*. Melbourne: Indigenous Eye Health Unit, The University of Melbourne
63. Kelaher M, Ferdinand A, Ngo S, Tambuwla N, Taylor HR (2010) *Access to eye health services among Indigenous Australians: an area level analysis*. Melbourne: Indigenous Eye Health Unit, Melbourne School of Population Health
64. Commonwealth of Australia (2005) *National framework for action to promote eye health and prevent avoidable blindness and vision loss*. Canberra: Commonwealth of Australia
65. Burrow S, Thomson N (2003) Ear disease and hearing loss. In: Thomson N, ed. *The health of Indigenous Australians*. South Melbourne: Oxford University Press:247-272
66. Couzos S, Metcalf S, Murray R (2008) Ear health. In: Couzos S, Murray R, eds. *Aboriginal primary health care: an evidence-based approach*. 3rd ed. South Melbourne: Oxford University Press:308-354
67. Australian Bureau of Statistics (2009) *National Aboriginal and Torres Strait Islander social survey, 2008*. Retrieved 11 April 2011 from <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4714.0?OpenDocument>
68. Zubrick SR, Lawrence DM, Silburn SR, Blair E, Milroy H, Wilkes T, Eades S, D'Antoine H, Read AW, Ishiguchi P, Doyle S (2004) *The health of Aboriginal children and young people [volumes 1-4]*. Perth: Telethon Institute for Child Health Research
69. Australian Institute of Health and Welfare (2014) *Stronger futures in the Northern Territory: hearing health services 2012 - 2013*. (AIHW Catalogue no IHW 117) Canberra: Australian Institute of Health and Welfare
70. Australian Institute of Health and Welfare (2012) *Northern Territory emergency response child health check initiative - follow-up services for oral and ear health: final report 2007-2012*. (AIHW Catalogue no DEN 223) Canberra: Australian Institute of Health and Welfare
71. Chrisopoulos S, Harford JE (2013) *Oral health and dental care in Australia: key facts and figures 2012*. (AIHW Cat. no. DEN 224) Canberra: Australian Institute of Health and Welfare
72. Northern Territory Department of Health (2011) *Healthy smiles: oral health and fluoride varnish information for health professionals*. Darwin: Northern Territory Department of Health

73. Jamieson LM, Armfield JM, Roberts-Thomson KF (2007) *Oral health of Aboriginal and Torres Strait Islander children*. (AIHW Catalogue no. DEN 167) Canberra: Australian Research Centre for Population Oral Health (ARCPHO)
74. Slade GD, Spencer AJ, Roberts-Thomson KF (2007) *Australia's dental generations: the national survey of adult oral health 2004-06*. (AIHW Catalogue no. DEN 165) Canberra: Australian Institute of Health and Welfare
75. Australian Bureau of Statistics (2013) *Disability, ageing and carers, Australia: summary of findings, 2012*. (ABS Catalogue no 4430.0) Canberra: Australian Bureau of Statistics
76. Australian Institute of Health and Welfare (2012) *Australia's health 2012*. (AIHW Catalogue no AUS 156) Canberra: Australian Institute of Health and Welfare
77. Australian Bureau of Statistics (2014) *Aboriginal and Torres Strait Islander people with a disability, 2012*. Retrieved 1 December 2014 from <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4433.0.55.005?OpenDocument>
78. Australian Bureau of Statistics (2013) *Community profiles*. Retrieved 2013 from <http://www.abs.gov.au/websitedbs/censushome.nsf/home/communityprofiles?opendocument&navpos=230>
79. Australian Institute of Health and Welfare (2004) *Australia's health 2004: the ninth biennial health report of the Australian Institute of Health and Welfare*. (AIHW catalogue no. 8903.0) Canberra: Australian Institute of Health and Welfare
80. National Institute of Allergy and Infectious Diseases (2009) *Tuberculosis (TB): detailed explanation of TB*. Retrieved 6 March 2009 from <http://www.niaid.nih.gov/topics/tuberculosis/Understanding/WhatIsTB/Pages/detailed.aspx>
81. Australian Bureau of Statistics (2009) *Experimental estimates and projections, Aboriginal and Torres Strait Islander Australians: Projected population, Aboriginal and Torres Strait Islander Australians, Australia, states and territories, 2006-2021 series [data cube]*. Retrieved 8 September 2009 from [http://www.abs.gov.au/ausstats/subscriber.nsf/log?openagent&32380ds002\\_2006.srd&3238.0&Data%20Cubes&E79A5308D989173FCA25762A001CE1C3&0&1991%20to%202021&08.09.2009&Latest](http://www.abs.gov.au/ausstats/subscriber.nsf/log?openagent&32380ds002_2006.srd&3238.0&Data%20Cubes&E79A5308D989173FCA25762A001CE1C3&0&1991%20to%202021&08.09.2009&Latest)
82. Roche PW, Krause V, Konstantinos A, Bastian I, Antic R, Brown L, Christensen A, Gebbie S, Hurwitz M, Misrachi A, Waring J (2008) Tuberculosis notifications in Australia, 2006. *Communicable Diseases Intelligence*;32(1):1-11
83. Barry C, Konstantinos A, National Tuberculosis Advisory Committee (2009) Tuberculosis notifications in Australia, 2007. *Communicable Diseases Intelligence*;33(3):1-12
84. Barry C, Waring J, Stapledon R, Konstantinos A (2012) Tuberculosis notifications in Australia, 2008 and 2009. *Communicable Diseases Intelligence*;36(1):82-94
85. Christina Bareja C, Justin Waring J, Richard Stapledon R, National Tuberculosis Advisory Committee (2014) Tuberculosis notifications in Australia 2010. *Communicable Diseases Intelligence*;38(1):E36-E48
86. Australian Bureau of Statistics (2008) *Australian Demographic Statistics: June quarter 2008*. (ABS Catalogue no. 3101.0) Canberra: Australian Bureau of Statistics
87. Hepatitis Australia (2010) *About hepatitis*. Retrieved 18 November 2011 from <http://www.hepatitisaustralia.com/about-hepatitis>
88. The Kirby Institute (2012) *HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2012*. Sydney: University of New South Wales
89. The Kirby Institute (2013) *HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2013*. Sydney: University of New South Wales
90. The Kirby Institute (2014) *HIV, viral hepatitis and sexually transmissible infections in Australia annual surveillance report 2014*. Sydney: University of New South Wales
91. Australian Government Department of Health and Ageing (2014) *The Australian immunisation handbook: 10th edition 2013 (updated January 2014)*. 10th ed. Canberra: Australian Government Department of Health and Ageing
92. Naidu L, Chiu C, Habig A, Lowbridge C, Jayasinghe S, Wang H, McIntyre P, Menzies R (2013) Vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander people, Australia 2006–2010. *Communicable Diseases Intelligence*;37(December 2013 supplement):S1-S92
93. Wang H, Deeks S, Glasswell A, McIntyre P (2008) Trends in invasive *Haemophilus influenzae* type b disease in Australia, 1995-2005. *Communicable Diseases Intelligence*;32(3):316-325
94. Horby P, Gilmour R, Wang H, McIntyre P (2003) Progress towards eliminating Hib in Australia: an evaluation of *Haemophilus influenzae* type b prevention in Australia, 1 July 1993 to 30 June 2000. *Communicable Diseases Intelligence*;27(3):324-341
95. Family Planning Association of WA (2010) *Sexually transmissible infections (STI) and blood-borne viruses (BBV): a guide for health professionals, educators, and general practitioners*. Northbridge, WA: Family Planning Association of WA
96. The Kirby Institute (2014) *Bloodborne viral and sexually transmitted infections in Aboriginal and Torres Strait Islander people: surveillance and evaluation report 2014*. Sydney: University of New South Wales
97. Western Australia Communicable Disease Control (2012) *HIV & AIDS*. Perth, WA: Western Australia Department of Health

98. National Health and Medical Research Council (2000) *Nutrition in Aboriginal and Torres Strait Islander peoples: an information paper*. Canberra: National Health and Medical Research Council
99. National Public Health Partnership (2001) *National Aboriginal and Torres Strait Islander Nutrition Strategy and Action Plan 2000-2010 and first phase activities 2000-2003*. Canberra: National Public Health Partnership
100. National Health and Medical Research Council (2013) *Australian Dietary Guidelines: providing the scientific evidence for healthier Australian diets*. Canberra: National Health and Medical Research Council
101. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 2 [data cube]*. Retrieved 26 March 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%20%20selected%20health%20characteristics,%20by%20remoteness%20area%202012-13%20-%20australia.xls&4727.0.55.001&Data%20Cubes&9F3D9B7052520B1BCA257CA6000E31B5&0&2012-13&26.03.2014&Latest>
102. Australian Bureau of Statistics (2006) *National Aboriginal and Torres Strait Islander Health Survey: Australia, 2004-05*. (ABS Catalogue no. 4715.0) Canberra: Australian Bureau of Statistics
103. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: biomedical results, 2012-13*. (ABS Catalogue no 4727.0.55.003) Canberra: Australian Bureau of Statistics
104. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: physical activity, 2012-13*. (ABS cat. no. 4727.0.55.004) Canberra: Australian Bureau of Statistics
105. Australian Government Department of Health (2014) *Australia's physical activity and sedentary behaviour guidelines*. Canberra: Australian Government Department of Health
106. Australian Health Ministers' Advisory Council (2012) *Aboriginal and Torres Strait Islander health performance framework: 2012 report*. Canberra: Office for Aboriginal and Torres Strait Islander Health, Department of Health and Ageing
107. Australian Bureau of Statistics (2004) *National Aboriginal and Torres Strait Islander Social Survey, 2002*. (ABS Catalogue no. 4714.0) Canberra: Australian Bureau of Statistics
108. Australian Bureau of Statistics (2014) *Australian Aboriginal and Torres Strait Islander health survey: updated results, 2012-13: table 10 smoker status by age, Indigenous status and sex [data cube]*. Retrieved 6 June 2014 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&472705500610.xls&4727.0.55.006&Data%20Cubes&848805EF76A00F55CA257CEE0010D8F0&0&2012%9613&0.6.06.2014&Latest>
109. Australian Bureau of Statistics (2009) *National Aboriginal and Torres Strait Islander social survey, 2008; Table 09. Indigenous children aged 0-3 years, by state or territory of usual residence [data cube]*. Retrieved from [http://abs.gov.au/AUSSTATS/SUBSCRIBER.NSF/log?openagent&47140do009\\_2008.xls&4714.0&Data%20Cubes&CAA9C3AC720772ACA25765E001541A1&0&2008&30.10.2009&Previous](http://abs.gov.au/AUSSTATS/SUBSCRIBER.NSF/log?openagent&47140do009_2008.xls&4714.0&Data%20Cubes&CAA9C3AC720772ACA25765E001541A1&0&2008&30.10.2009&Previous)
110. Australian Bureau of Statistics (2010) *National Aboriginal and Torres Strait Islander social survey, 2008: Table 11. Indigenous children aged 4-14 years, by sex [data cube]*. Retrieved 21 April 2010 from [http://www.abs.gov.au/AUSSTATS/SUBSCRIBER.NSF/log?openagent&4714.0\\_aust\\_011\\_2008.xls&4714.0&Data%20Cubes&F3D13C41FD47C376CA25770B0016F79E&0&2008&21.04.2010&Previous](http://www.abs.gov.au/AUSSTATS/SUBSCRIBER.NSF/log?openagent&4714.0_aust_011_2008.xls&4714.0&Data%20Cubes&F3D13C41FD47C376CA25770B0016F79E&0&2008&21.04.2010&Previous)
111. Australian Bureau of Statistics (2010) *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples, Oct 2010*. (ABS Catalogue no 4704.0) Canberra: Australian Bureau of Statistics
112. Vos T, Barker B, Stanley L, Lopez A (2007) *The burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003*. Brisbane: Centre for Burden of Disease and Cost-Effectiveness, University of Queensland
113. National Health and Medical Research Council (2009) *Australian guidelines to reduce health risks from drinking alcohol*. Canberra: National Health and Medical Research Council
114. Mattson SN, Vaurio L (2009) Fetal alcohol spectrum disorders. In: Yeates KO, Ris MD, Taylor HG, Pennington BF, eds. *Pediatric neuropsychology: research, theory and practice*. 2nd ed. New York: Guilford Press:265-296
115. Australian Institute of Health and Welfare (2011) *Aboriginal and Torres Strait Islander health performance framework 2010: detailed analyses*. (AIHW Catalogue no IHW 53) Canberra: Australian Institute of Health and Welfare
116. Australian Institute of Health and Welfare (2011) *2010 National Drug Strategy Household Survey report*. (Drug statistics series no. 25. Cat. no. PHE 145) Canberra: Australian Institute of Health and Welfare
117. Australian Bureau of Statistics (2013) *Australian Aboriginal and Torres Strait Islander health survey: first results, Australia, 2012-13: Table 14 Alcohol consumption - Short-term or Single occasion risk by age, Indigenous status and sex [data cube]*. Retrieved 27 November 2013 from <http://www.abs.gov.au/AUSSTATS/subscriber.nsf/log?openagent&table%2014%20alcohol%20consumption%20-%20sh-term%20or%20single%20occ%20risk%20-age,%20indigenous%20status,%20sex,%202012-13%20-%20australia.xls&4727.0.55.001&Data%20Cubes&0E985E680C399BF7CA257C2F>
118. Department of the Prime Minister and Cabinet (2015) *Closing the gap: Prime Minister's report 2015*. Canberra: Department of the Prime Minister and Cabinet, Australia
119. Australian Department of Health and Ageing (2013) *National Aboriginal and Torres Strait Islander Health Plan 2013-2023*. Canberra: Australian Department of Health and Ageing





### Bibdjool

Donna Lei Rioli - a Western Australian Indigenous artist - was commissioned by the HealthInfoNet in 2008 to create a new logo incorporating a gecko for the redevelopment of its website. The gecko was chosen because it is one of a few animals that are found across the great diversity of Australia.

Donna is a Tiwi/Nyoongar woman who is dedicated to the heritage and culture of the Tiwi people on her father's side, Maurice Rioli, and the Nyoongar people on her mother's side, Robyn Collard. Donna enjoys painting because it enables her to express her Tiwi and Nyoongar heritage and she combines the two in a unique way.

Donna interpreted the brief with great awareness and conveyed an integrated work that focuses symbolically on the pathway through life. This is very relevant to the work and focus of Australian Indigenous HealthInfoNet in contributing to improving the health and wellbeing of Indigenous Australians.

Core funding is  
provided by the  
Australian Department  
of Health

[www.healthinfonet.ecu.edu.au](http://www.healthinfonet.ecu.edu.au)

