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Summary of Indigenous women's health

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Aboriginal and Torres Strait Islander women experience poorer health than other Australian women [1, 2]. Many Indigenous women suffer health problems due to the context of their lives, with significant impacts being related to dispossession, forced removals from family, racism, marginalisation and exposure to violence [1]. Women have many responsibilities as mothers, grandmothers, sisters, daughters, wives and partners, and most commonly it is the women in households who have the main responsibility for looking after the health of other family members. There is the potential for significant health gains for Indigenous women through improved prevention, early detection and treatment to address the higher levels of risk factors and the burden of disease with earlier onset and lower survival rates. To ensure better health outcomes, strategies need to include knowledge and awareness of the history, experience, culture and rights of Indigenous women.

Contents

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The understanding of 'health' by many health professionals, the western biomedical model, may differ significantly from the more holistic models of many Aboriginal and Torres Strait Islander women [1]. It is important to understand how Indigenous people conceptualise health. There was no term in Indigenous languages for health as it is understood in western society [3]. The traditional Indigenous perspective of health is holistic. It encompasses everything important in a person's life, including land, environment, physical body, community, relationships, and law. Health is the social, emotional, and cultural wellbeing of the whole community and the concept is therefore linked to the sense of being Indigenous. This conceptualisation of health has much in common with the social determinants model of health and has crucial implications for the simple application of biomedically-derived concepts as a means of improving Indigenous health. The reductionist, biomedical approach is undoubtedly useful in identifying and reducing disease in individuals, but its limitations in addressing population-wide health disadvantages, such as those experienced by Indigenous women, must be recognised. These two approaches need to be combined in a culturally sensitive manner to deal adequately with Indigenous female health issues in both the immediate and long term.

Limitations of the sources of Indigenous health information

This *Summary of Indigenous women's health* draws largely on previously published information, some of which has been re-analysed to provide clearer comparisons between Indigenous and non-Indigenous people (for more details of statistics and methods, readers should refer to the original sources). Very little information is available separately for Australian Aboriginal and Torres Strait Islander peoples, but, wherever possible, separate information has been provided. There is also a scarcity of information specifically about Australian Aboriginal and Torres Strait Islander females, but this *Summary* provides details where possible. The *Summary* draws on content included in the *Overview of Australian Indigenous health status 2012* (http://www.healthinfonet.ecu.edu.au/health-facts/overviews).

The context of Indigenous health

The health disadvantages experienced by Indigenous people can be considered historical in origin [4], but perpetuation of the disadvantages owes much to contemporary structural and social factors, embodied in what have been termed the 'social determinants' of health [5-7]. In broad terms, economic opportunity, physical infrastructure, and social conditions influence the health of individuals, communities, and societies as a whole. These factors are specifically manifest in measures such as education, employment, income, housing, access to services, social networks, connection with land, racism, and incarceration. On all these measures, Indigenous people suffer substantial disadvantage. For many Indigenous people, the ongoing effects of 'protection' and the forced separation of children from their families compound other social disadvantages.

Educational attainment, together with degree of workforce participation can significantly influence a woman's level of income. It is therefore anticipated that the dominant experience of Indigenous women is that of relative economic hardship, given their generally lower level of educational attainment and reduced participation in the mainstream workforce.

Indicators of Indigenous social disadvantage

The key measures in some of these areas are summarised in the following sections.

Education

According to 2011 Australian Census [8]:

- 92% of 5 year-old Indigenous children were attending an educational institution
- 1.6% of the Indigenous population had not attended school compared with 0.9% of the non-Indigenous population
- 29% of Indigenous people reported year 10 as their highest year of school completion; 25% had completed year 12, compared with 52% of non-Indigenous people
- 26% of Indigenous people reported having a post-school qualification, compared with 49% of non-Indigenous people
    - 22% of Indigenous females aged over 15 years had a post-school qualification
    - 16% of Indigenous females had attained a diploma or certificate level qualification
- 4.6% of Indigenous people had attained a bachelor degree or higher, compared with 20% of non-Indigenous people.
- 5.8% of Indigenous females had attained a Bachelor degree or above

An ABS school report [9] revealed, between 2011 and 2012:

- the apparent retention rate for female Indigenous students from year 7/8 to year 10 was 100%, and from year 7/8 to year 12 it was 53%

The 2012 national report on schooling in Australia [10] showed:

- 74% of Indigenous students in year 3 and 65% in year 5 were at or above the national minimum standard for reading, compared with 95% and 93% respectively of non-Indigenous students
- 78% of year 3 Indigenous students and 66% of year 5 Indigenous students were at or above the national minimum standard for persuasive writing, compared with 96% and 94% respectively of non-Indigenous students
- 77% of year 3 Indigenous students and 71% of year 5 Indigenous students were at or above the national minimum standard for spelling, compared with 95% and 94% respectively of non-Indigenous students

- 69% of year 3 Indigenous students and 61% of year 5 Indigenous students were at or above the national minimum standard for grammar and punctuation, compared with 94% of all year 3 students and 92% respectively of non-Indigenous students
- 73% of Indigenous students in year 3 and 69% in year 5 were at or above the national minimum standard for numeracy, compared with 95% and 95% respectively of non-Indigenous students

Employment

According to the 2011 Australian Census [8]:

- 39% of Indigenous females aged 15 years or older were employed and 16% were unemployed. In comparison, 55% of non-Indigenous females aged 15 years or older were employed and 5.4% were unemployed
- the most common occupation classification of employed Indigenous females was 'community and personal service workers' (24%) followed by 'clerical and administrative workers' (21%). The most common occupation classification of employed non-Indigenous females was 'professional' (25%)
- 14% of Indigenous females were undertaking volunteer work
- The proportions of Indigenous females employed as 'managers' (5.9%) or 'professionals' (17%) were less than that of those of non-Indigenous females (9.8% and 25% respectively).

Income

According to the 2011 Australian Census [8]:

- the mean equivalised gross household income for Indigenous persons was around $475 per week – approximately 59% of that for non-Indigenous persons (around $800).
- The median income per week for Indigenous females aged 15 years and over was $654 for those employed and $241 for those unemployed.

Population

The Australian Bureau of Statistics (ABS), based on information collected as a part of the 2011 Census of Population and Housing, estimated that at June 2011 there were 335,788 Indigenous females living in Australia, accounting for 3% of the Australian female population [11]. NSW and Qld are the jurisdictions with the highest numbers of Indigenous female residents, followed by WA and the NT (Figure 1).

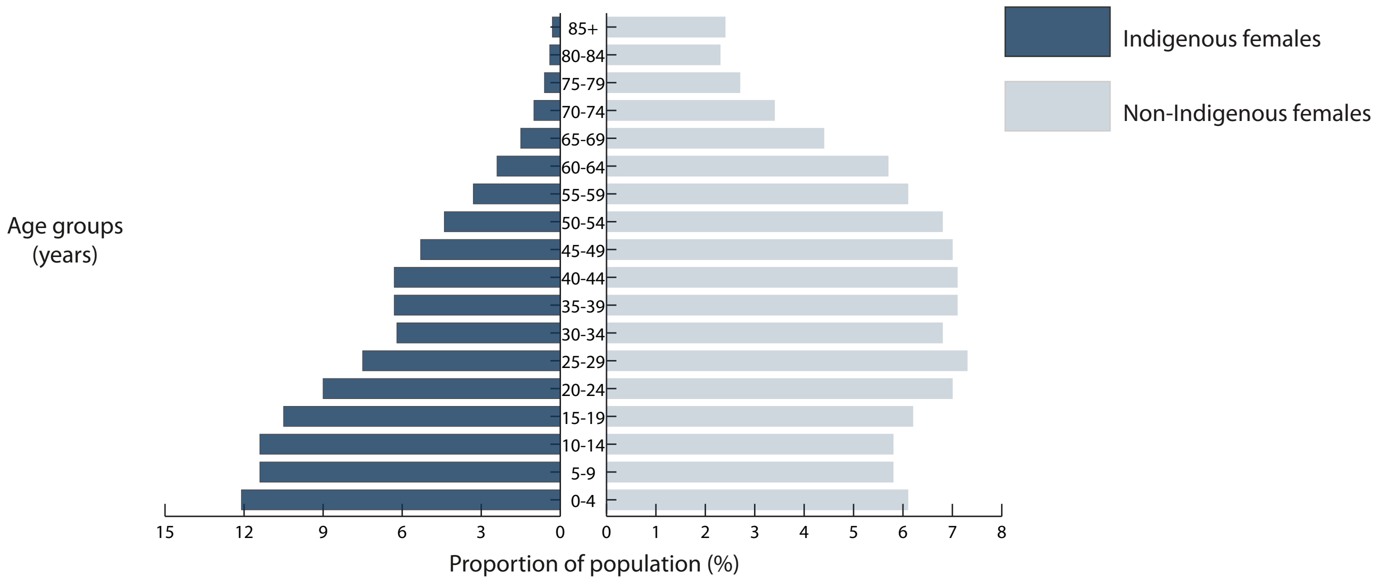
Figure 1. Estimated Indigenous female population, by jurisdiction, June 2011

Source: ABS, 2013 [11]

Based on the 2011 Census, over one third of Indigenous people lived in a capital city [12]. Detailed information from the 2011 Census is not yet available, but figures from the 2006 Census indicated that the majority of Indigenous people lived in cities and towns [13]. Slightly more than one-half of the Indigenous population lived in areas classified as 'major cities' or 'inner regional' areas. Almost one-quarter of Indigenous people lived in areas classified as 'remote' or 'very remote' [14].

The Indigenous female population is much younger overall than the non-Indigenous female population (Figure 2) [11]. The ABS estimates that at the end of June 2011 almost half (45%) of Indigenous females were aged less than 20 years, compared with 24% of the total female population. At June 2011 it is estimated that only 3.8% of the total Indigenous female population will be aged 65 years or older, compared with 15.2% of non-Indigenous females.

Figure 2. Population pyramid of Indigenous and non-Indigenous female populations, 20 June 2011



Source: Derived from ABS, 2013 [11]

Births and pregnancy outcome

In 2011, there were 17,621 births registered in Australia with one or both parents identified as Indigenous (6% of all births registered); 8,673 of these births were of female infants [15]. These figures probably underestimate the true number slightly as Indigenous status is not always identified, and there may be a lag in birth registrations. The ABS estimates that 96% of Indigenous births in 2002-2006 were correctly identified as such [16]. Completeness of identification varied across the country, with only Vic, Qld, WA, SA and the NT having levels above 90%.

In 2011, both parents identified as Indigenous in 31% of Indigenous registered births [15]. Only the mother identified as Indigenous in 42% of Indigenous registered births (including births where paternity was not acknowledged and those where the father's Indigenous status was unknown), and only the father identified as Indigenous in 27% (including births where the mother's Indigenous status was unknown).

Age of mothers

In 2011, Indigenous women had more babies and had them at younger ages than did non-Indigenous women – teenagers had one-fifth (19%) of the babies born to Indigenous women, compared with only 3.8% of those born to all mothers [15]. The median age of Indigenous mothers was 24.8 years, compared with 30.6 years for all mothers. The highest birth rates (known technically as fertility rates) were for the 20-24 years age-group for Indigenous women and in the 30-34 years age-group for all women (Table 1). The fertility rate of teenage Indigenous women (78 babies per 1,000 women) was almost five times that of all teenage women (16 babies per 1,000).

Table 1. Age-specific fertility rates, by Indigenous status of mother, selected jurisdiction, Australia, 2011

Status of mother/ age-group (years)	Jurisdiction						
	NSW	Vic	Qld	WA	SA	NT	Australia
Indigenous mothers							
15-19	71	54	85	106	72	80	78
20-24	157	117	163	180	153	145	155
25-29	162	128	155	154	147	115	147
30-34	117	111	112	101	103	79	105
35-39	54	64	58	52	38	36	52
40-44	11	n.p.	13	n.p.	10	10	11
All mothers							
15-19	14	9	22	19	15	44	16
20-24	51	37	66	58	51	98	52
25-29	101	90	111	107	105	105	101
30-34	125	123	117	125	121	104	122
35-39	73	74	64	66	62	58	70
40-44	16	16	13	15	13	n.p.	15

Notes:

1. Rates per 1,000 women in each age-group
2. n.p. refers to numbers not available for publication, but included in totals where applicable
3. Figures are not provided for Tas and the ACT because of the small numbers involved and doubts about the level of identification of Indigenous births, but numbers for those jurisdictions are included in figures for Australia

Source: ABS, 2012 [15]

Total fertility rates

In 2011, total fertility rates were 2,740 births per 1,000 for Indigenous women and 1,884 per 1,000 for all women (Table 2) [15]. The highest total fertility rate for Indigenous women was for

WA (3,011 babies per 1,000 women), followed by Qld (2,932 per 1,000) and NSW (2,863 per 1,000).

Table 2. ***Total fertility rates, by Indigenous status of mother, selected jurisdictions, Australia, 2011***

Status of mother	Jurisdiction						
	NSW	Vic	Qld	WA	SA	NT	Australia
Indigenous	2,863	2,486	2,932	3,011	2,611	2,323	2,740
All mothers	1,908	1,748	1,964	1,953	1,847	2,131	1,884

Source: ABS, 2011 [15]

Notes:

1. Total fertility rate is the number of children born to 1,000 women at the current level and age pattern of fertility
2. Figures are not provided for Tas and the ACT because of the small numbers involved and doubts about the level of identification of Indigenous births. Numbers for those jurisdictions are included in figures for Australia

Birthweights

The average birthweight of babies born to Indigenous mothers in 2010 was 3,190 grams, almost 190 grams less than the average for babies born to non-Indigenous mothers (3,376 grams) [17]. Babies born to Indigenous women in 2010 were twice as likely to be of low birthweight (LBW) (12.0%) than were those born non-Indigenous women (6.0%). (LBW, defined as a birthweight of less than 2,500 grams, increases the risk of death in infancy and other health problems.)

The LBW proportions for babies born to Indigenous women were highest in SA (16.0%), the NT (13.8%), and WA (13.6%). LBW proportions were higher for Indigenous mothers than for all mothers in all jurisdictions (Table 3) [17].

Table 3. ***Mean birthweights and percentage of low birthweight for babies born to Indigenous and all mothers, selected jurisdictions, Australia, 2010***

	NSW	Vic	Qld	WA	SA	NT	Australia
Indigenous mothers							
Mean birthweight	3,233	3,234	3,199	3,139	3,130	3,119	3,190
% low birthweight	10.7	10.3	11.5	13.6	16.0	13.8	12.0
All mothers							
Mean birthweight	3,376	3,366	3,382	3,353	3,344	3,292	3,369
% low birthweight	5.8	6.3	6.4	6.1	6.8	8.8	6.2

Note:

1. LBW is defined as less than 2,500 grams

Source: Li, Zeki, Hilder, and Sullivan, 2012 [17]

Risk factors for LBW include socioeconomic disadvantage, the size and age of the mother, the number of babies previously born, the mother's nutritional status, illness during pregnancy, and duration of the pregnancy [18]. A mother's alcohol consumption and use of tobacco and other drugs during pregnancy also impact on the size of her baby.

Tobacco, in particular, has a major impact on birthweight. The mean birthweight of live babies born in 2001-2004 to Indigenous women who smoked was 3,037 grams, more than 250 grams lighter than those born to Indigenous women who did not smoke (3,290 grams) [19]. The comparable figures for live babies born to non-Indigenous women were 3,210 for women who smoked and 3,416 grams, for women who did not smoke. The impact of tobacco smoking during pregnancy can also be seen also in the proportions of LBW liveborn babies; in 2007 the proportion of LBW babies was twice as high among Indigenous mothers who smoked during pregnancy (16%) as among Indigenous mothers who did not smoke during pregnancy (8.2%) [20]. Similarly, 10% of babies born to non-Indigenous mothers who smoked were of LBW, compared with 5.0% of those whose non-Indigenous mothers did not smoke. In 2009, half (50%) of Indigenous mothers and 13% of non-Indigenous mothers reported smoking during pregnancy [21].

The 2000-2001 Western Australian Aboriginal Child Health Survey (WAACHS) reported slightly higher average birthweights than the weights documented above – 3,110 grams for babies born to Indigenous mothers who used tobacco in pregnancy and 3,310 grams for those whose Indigenous mothers did not [22]. The lowest average birthweights reported in the WAACHS were for babies whose Indigenous mothers used marijuana with tobacco (3,000 grams) or marijuana with both tobacco and alcohol (2,940 grams).

Indigenous women generally access antenatal care later in pregnancy and less frequently than non-Indigenous women [23]. Access to antenatal care is high for both Indigenous and non-Indigenous women; in 2009 in NSW, Qld, SA and the NT, 97% of Indigenous women accessed antenatal care at least once during their pregnancy compared with 99% of non- Indigenous mothers. Only 56% of Indigenous mothers had their first antenatal session in the first trimester of the pregnancy, compared with 75% of non-Indigenous mothers. Indigenous women who attended at least one antenatal session were less likely to have low birthweight babies (11%) than those who did not attend (40%). The likelihood of having a low birthweight baby decreased with an increase in the number of antenatal visits. Later commencement of antenatal care is also associated with low birthweight babies, pre-term births, and perinatal mortality.

Mortality

Major impediments to producing a complete picture of Indigenous mortality in Australia are the incomplete identification of Indigenous status in death records and the experimental nature of the recently adopted population estimates [24]. As a result of the incomplete identification of Indigenous status in death records, the 2,558 deaths registered in 2011 where the deceased person was identified as Indigenous is certainly an underestimate of the actual number of Indigenous deaths.

Age-standardised death rates

After age-adjustment, the death rate for Indigenous people living in NSW, Qld, WA, SA and the NT – the jurisdictions with adequate levels of Indigenous identification – was 1.9 times the rate for non-Indigenous people in 2006-2010 (Table 4) [23].[1] The rates for Indigenous people were highest in the NT (1,541 per 100,000) and WA (1,431 per 100,000).

Adjusting for age-structures of populations

Comparison of Indigenous and non-Indigenous mortality needs to take account of differences in the age structures of the Indigenous and non-Indigenous populations using a process known as standardisation. Age-standardised death rates can be calculated when detailed information about Indigenous deaths, including sex and age, is available [25]. By direct age-standardisation, Indigenous rates can be more accurately compared with non-Indigenous rates. This method also allows for time-series comparisons.

When detailed information is not available, it is still possible to use indirect standardisation to estimate standardised mortality ratios (SMRs). SMRs allow for the comparison of numbers of registered Indigenous deaths with the numbers expected from the corresponding age-sex-specific death rates for the total populations. An SMR is the ratio of the numbers registered and expected.

Table 4. Age-standardised death rates, by Indigenous status, and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA and the NT, 2006-2010

Jurisdiction	Indigenous rate	Non-Indigenous rate	Rate ratio
NSW	962	598	1.6
Qld	1,089	597	1.8
WA	1,431	574	2.5
SA	1,060	615	1.7
NT	1,541	645	2.4
NSW, Qld, WA, SA and the NT	1,151	597	1.9

Notes:

1 Rates per 100,000 are directly age-standardised using the 2001 Australia standard population
2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3 Due to the incomplete identification of Indigenous status, these figures probably under-estimate the true difference between Indigenous and non-Indigenous rates

Source: Australian Health Ministers' Advisory Council, 2012 [23]

Expectation of life

In 2009, the ABS revised its estimates for expectation of life at birth for Indigenous people [26].[2] After adjustment for the underestimate of the number of deaths identified as Indigenous, the ABS estimated that Indigenous females born in 2005-2007 could expect to live to 72.9 years, almost 10 years less than the expectation of 82.6 years for non-Indigenous females. Life expectancy of Indigenous females was highest in NSW (75.0 years) and lowest in the NT (69.2 years) (Figure 3).

Figure 3. Female life expectancy, by Indigenous status and jurisdiction, 2005 -2007

Source: ABS, 2009, [26]

Age at death

For those jurisdictions with reasonable information about Indigenous deaths, the median age at death[3] for Indigenous females in 2011 ranged from 50.3 years for those living in SA to 66.2 years for those living in NSW. These levels were also around 20 years less than those for non-Indigenous females, which ranged between 73.5 years (NT) and 85.3 years (SA).

In 2007-2011, age-specific death rates were higher for Indigenous females than for non-Indigenous females across all age-groups, but the rate ratios were highest in the young and middle adult years (Table 5) [24]. (The rate ratios, based on the numbers of deaths registered, vary according to the levels of Indigenous identification (see above).) Rates and rate ratios were higher for Indigenous females living in WA, SA and the NT than for those living in NSW and Qld.

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1 The levels of identification of Indigenous people in health-related collections are such that only data from some state and territories are of sufficient quality to be used in information statistics compiled by Australia's two main statistical agencies, the ABS and the Australian Institute of Health and Welfare (AIHW).

2 These revised estimates are significantly higher than previous estimates. Importantly, comparisons between the original and the revised estimates should not be interpreted as a change in Indigenous life expectancy. [26]

3 The median age at death is the age below which 50% of people die. Because the measure partly reflects the age structures of the respective populations, it is a less precise measure than age-specific death rates, which are summarised below.

Table 5. Age-specific death rates for females, by Indigenous status and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA and the NT, 2007-2011

Age-group (years)	Indigenous females	Non-Indigenous females	Rate ratio
NSW			
0	6	4	1.6
1-4	34	17	2.0
5–14	11	7	1.5
15-24	29	20	1.5
25-34	102	30	3.4
35-44	228	67	3.4
45-54	415	169	2.5
55-64	1022	391	2.6
65+	4431	3732	1.2
Qld			
0	7	4	1.7
1-4	56	17	3.4
5–14	18	10	1.9
15-24	71	25	2.9
25-34	123	34	3.7
35-44	304	68	4.5
45-54	562	159	3.5
55-64	1384	372	3.7
65+	4921	3531	1.4
WA			
0	5	3	1.8
1-4	48	12	4.0
5–14	29	9.3	3.1
15-24	106	26	4.1
25-34	219	36	6.1
35-44	510	66	7.7
45-54	1,021	153	6.7
55-64	1,671	343	4.9
65+	5,296	3,423	1.5
SA			
0	7	3	2.4
1-4	90	14	6.5
5–14	17	7.4	2.4
15-24	96	20	4.8
25-34	188	36	5.3
35-44	517	79	6.5
45-54	873	189	4.6
55-64	1,496	398	3.8
65+	3,872	3911	1.0
NT			
0	11	3	3.3
1-4	60	15	4.1
5–14	38	8.6	4.4
15-24	112	39	2.8
25-34	243	35	7.0
35-44	638	50	12.8
45-54	1,211	160	7.6
55-64	2,004	300	6.7
65+	5,531	2563	2.2

Notes:

1. Rates are per 1,000
2. Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3. Due to the small number of deaths registered in Vic, Tas and the ACT, information for these jurisdictions have been excluded

Source: ABS, 2012 [24]

Infant mortality

The infant mortality rate (IMR) is the number of deaths of children under one year of age in a calendar year per 1,000 live births in the same calendar year. For those jurisdictions with reasonable information about Indigenous deaths in 2009-2011, the highest Indigenous IMRs for female infants occurred in the NT (11.6); the lowest rate for Indigenous females was in WA (3.7) (Table 6) [24].

Table 6. Female infant mortality rates, by Indigenous status and Indigenous:non-Indigenous rate ratios, NSW, Qld, SA, WA and the NT, 2009-2011

Jurisdiction	Indigenous females	Non-Indigenous females	Rate ratio
NSW	3.9	3.4	1.1
Qld	6.8	4.1	1.7
SA	6.6	2.9	2.3
WA	3.7	2.6	1.4
NT	11.6	4.2	2.8

Notes:

1 Infant mortality rate is the number of infant deaths per 1,000 live births

2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate

3 The Indigenous rates are likely to be under-estimated, due to the incomplete identification of Indigenous status on births and deaths records

4 Due to the small number of deaths registered in Vic, Tas and the ACT, these jurisdictions have been excluded

Source: Derived from ABS, 2012 [24]

Hospitalisation

Statistics on hospitalisation provide some insights into ill-health in the population [27]. They are, however, a fairly poor reflection of the extent and patterns of treatable illness in the community because they only represent illness that is serious enough to require hospitalisation and are influenced to some degree by the geographic accessibility of hospitals and variations in admission policies. Another limitation is that they relate to episodes of hospitalisation rather than to individual patients [27]. Thus, multiple admissions by a relatively small number of patients – as occurs for renal dialysis, for example – limit the inferences that can be drawn about overall health patterns from aggregated statistics. These statistics are, of course, useful in assessing the need for health services, but of far less use in assessing health.

As is the case with other major health-related data collections (such as births and deaths), the identification of Indigenous status in hospital data collections is incomplete. The AIHW report, *Indigenous identification in hospital separations data-2013 quality report*[4], found that the 'true' number of Indigenous persons should be about 9% higher than indicated in the hospital record [28].[5]

Separation rates[6]

Of the almost 9.3 million hospital separations[7],[8] during 2011-12, 208,314 (2.3%) were identified as Indigenous females [28]. Around 57% of Indigenous separations were for Indigenous females; 52% of separations of other Australians were for females.

In 2011-12, the overall age-standardised separation rate of 973 per 1,000 for Indigenous people was 2.5 times that for other people (Table 7) [28]. About 80% of the difference between these rates was due to higher separations for Indigenous people admitted for renal dialysis. The age-standardised separation rate for Indigenous people living in the NT was particularly high, 1,779 per 1,000, 5.7 times the rate for non-Indigenous people.

Table 7. Numbers of hospital separations and age-standardised separation rates, by Indigenous status and jurisdiction, and Indigenous:non-Indigenous rate ratios, NSW, Vic, Qld, WA, SA and the NT, 2011-12

Jurisdiction	Indigenous		Non-Indigenous		Rate ratio
	Number	Rate	Number	Rate	
NSW	72,489	614	2,658,253	350	1.8
Vic	20,459	807	2,441,124	419	1.9
Qld	88,667	839	1,813,736	404	2.1
WA	75,306	1,563	949,156	408	3.8
SA	23,366	1,162	673,929	375	3.1
NT	76,649	1,779	33,707	314	5.7
All jurisdictions	366,118	973	8,890,051	385	2.5

Notes:

1 Rates per 1,000 population

2 Non-Indigenous rates and numbers include separations for which Indigenous status was not stated

3 Rate ratio is the Indigenous rate divided by the non-Indigenous rate

4 Numbers and rates for the NT are for public hospitals only

5 The incomplete identification of Indigenous status means that these figures probably under-estimate the true difference between Indigenous and non-Indigenous rates

Source: AIHW, 2013 [28]

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[4] Mentioned in the *Australian hospital statistics 2011-12* report

[5] This report used a correction factor of 1.09 for the calculations; this correction factor was calculated based on a number of possible variables including the over- and under-representation of Indigenous people in the hospital record.

[6] 'Separation' refers to an episode of admitted patient care, which can be either a patient's total stay in hospital, or part of a patient's stay in hospital that results in a change to the type of care (e.g. from acute care to rehabilitation) [29]. Hospital separations are more widely known as 'admissions', but can also be referred to as 'hospitalisations' [20, 29]

[7] Around 38% of separations for Indigenous patients were for overnight stays.

[8] All hospitalisation data for the NT include only public hospitals.

Age-specific separation rates

Hospital separation rates were higher for Indigenous females living in NSW, Vic, Qld, WA, SA and the NT in 2011-12 than for their non-Indigenous counterparts for all age-groups, with the highest ratios in the middle adult years (Table 8) [28].

Table 8. Age-specific hospital separation rates for females by Indigenous status, and Indigenous:non-Indigenous rate ratios, 2011-12

Age-group (years)	Indigenous females	Non-Indigenous females	Rate ratio
0-4	264	212	1.2
5-9	95	88	1.1
10-14	86	77	1.1
15-19	285	194	1.5
20-24	484	275	1.8
25-29	532	344	1.5
30-34	568	421	1.4
35-39	741	381	1.9
40-44	825	335	2.5
45-49	1,143	336	3.4
50-54	1,325	399	3.3
55-59	1,971	471	4.2
60-64	2,265	580	3.0
65+	2,125	1027	2.1

Notes:

1 Non-Indigenous rate includes separations for which Indigenous status was not stated
2 Rates are expressed as separations per 1,000 population
3 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
4 The rates have not been adjusted for likely under-identification of Indigenous separations, so it is likely that the Indigenous rates, and hence the rate ratios, could be 25-30% higher

Source: Derived from AIHW, 2013 [28], ABS 2013 [11]

Causes of hospitalisation

In 2011-12, 'Care involving dialysis' accounted for a large proportion of same-day separations among both Indigenous and other Australians [28]. Many of these separations involved repeat admissions for the same people, some on an almost daily basis. Indigenous Australians were admitted for dialysis at 12 times the rate for other Australians. Excluding separations for dialysis, Indigenous Australians had lower same-day acute separation rates than other Australians in NSW, Vic, Qld, WA and SA.

In 2011-12, ICD 'Injury, poisoning and certain other consequences of external causes' (including motor vehicle accidents, assaults, self-inflicted harm, and falls) was the second most common cause of hospitalisation for Indigenous people, being responsible for 26,426 separations (7.2% of all separations, and 13.9% of separations excluding those for dialysis) [28]. The third leading cause of hospitalisation for Indigenous people was for pregnancy-related conditions (most of which involved normal deliveries), responsible for 21,989 separations – 5.8% of all separations and 11.6% of separations excluding those for dialysis. The next leading causes were for respiratory conditions (responsible for 21,265 separations – 5.8 % of all separations, and 11.2% of separations excluding those for dialysis) and digestive diseases (18,297 separations – 5.0% of all separations and 9.6% of separations excluding those for dialysis) (Table 9).

In 2011-12, Indigenous people were hospitalised at higher rates than non-Indigenous Australians for all major causes [28].

Table 9. Numbers and proportions for leading causes of Indigenous hospital separations (excluding dialysis), 2011-12

Principal diagnosis	Number of separations	Proportion of separations (excluding dialysis) (%)
Injury	26,426	13.9
Pregnancy-related	21,989	11.6
Respiratory diseases	21,265	11.2
Digestive diseases	18,297	9.6
Symptoms, signs and abnormal clinical and laboratory findings	17,438	9.2
Mental and behavioural disorders	15,009	7.9
Circulatory diseases	10,992	5.8
Genitourinary diseases	9,387	4.9
Diseases of the skin and subcutaneous tissue	7,994	4.2
Musculoskeletal system and connective tissue diseases	6,880	3.6
Infectious/parasitic diseases	5,990	3.2
Neoplasms	5,240	2.8
All causes, excluding dialysis	189,689	100

Notes:

1 Excludes hospitalisation for dialysis
2 Numbers and rates for the NT are for public hospitals only

Source: AIHW, 2013 [28]

Selected health conditions

Cardiovascular disease (CVD)

Cardiovascular disease (CVD; ICD 'Diseases of the circulatory system') includes all diseases and conditions that affect the heart and blood vessels [30]. CVD presents a significant burden for Indigenous people in terms of prevalence, hospitalisation, and mortality [31]. Coronary heart disease (or ischaemic heart disease), cerebrovascular disease, hypertension and rheumatic heart disease are of particular importance to Indigenous people.

Risk factors for CVD are categorised as either modifiable, which can be behavioural and biomedical, or non-modifiable (risk factors that cannot be altered) [32]. Modifiable behavioural factors include tobacco use, physical inactivity, dietary behaviour, and excessive alcohol consumption [32, 33]. Modifiable biomedical factors include hypertension, high blood cholesterol, overweight and obesity, and depression. Certain related health conditions, particularly diabetes and chronic kidney disease, can also increase the risk of developing CVD. Non-modifiable risk factors, such as age, sex, family history, and ethnicity, can influence the risk of CVD.

As important as these factors may be, they should be considered within a broad social determinants of health framework, with the following aspects being important contributors to the development of CVD disease among Indigenous people:

- cultural and historical factors, such as loss of land, and disruptions to culture, language and identity [34, 35]
- environmental and socioeconomic factors, such as poor housing, low education and income [34-36]
- psychosocial stressors, such as death of a family member or close friend, serious injury or disability [35, 37]
- limited access to health care, both preventive and clinical [34, 35, 38].

Extent of cardiovascular disease

Prevalence

The most recent source of population-level information about the prevelance of CVD among Indigenous females is the 2004-2005 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS) [39]. The NATSIHS found that 14% of Indigenous females reported having a long-term heart or related condition, a level 1.4 times that of non-Indigenous females [40]. Hypertension (high blood pressure) was the most commonly reported condition among Indigenous females (7.7%), with a prevalence 1.7 times higher among Indigenous females than among non-Indigenous females (Table 10).

Table 10. Numbers and percentages of cardiovascular conditions, Indigenous females, and Indigenous: non-Indigenous ratios, by condition, Australia, 2004-2005

Cardiovascular condition	Number	Per cent	Ratio
Coronary/ischaemic heart disease	3,000	1.2	2.7
Cerebrovascular disease (including stroke)	700	0.3	1.9
Heart failure	3,100	1.3	1.6
Hypertension	18,700	7.7	1.7
Rheumatic heart disease	2,600	1.1	n/a
Other conditions	5,800	2.4	n/a
All CVD	33,900	14.0	1.4

Notes:

1. Percent is the percentage of all Indigenous females
2. Ratios are standardised prevalence ratios - the reported Indigenous numbers divided by the numbers expected from the age-cause specific prevalences for non-Indigenous females
3. In view of the relatively small numbers involved, the estimates for cerebrovascular disease, heart failure and rheumatic heart disease should be interpreted with caution
4. n/a refers to data not available for publication, but included in totals where applicable

Source: AIHW, 2008, [40]

Indigenous people, particularly females, are more susceptible to acute rheumatic fever (ARF) and consequently rheumatic heart disease (RHD) than non-Indigenous people. In the NT in 2007-2010, there were 139 cases of ARF among Indigenous females comprising 63% of all cases [23]. In December 2010, females comprised 66% of RHD cases among Indigenous people in the NT.

Hospitalisation

There were 10,992 hospital separations for ICD 'Diseases of the circulatory system' in 2011-12 among Indigenous people [28]. Detailed data are available for Indigenous females living in NSW, Vic, Qld, WA, SA and the NT for the two-year period July 2006 to June 2008 [20]. For these jurisdictions, 1.8% of all CVD-related hospitalisations were among Indigenous people. CVD accounted for 3% of Indigenous hospitalisations; 48% of Indigenous CVD-related hospitalisations people were for females. Separation rates for diseases of the circulatory system were 1.8 times higher for Indigenous females than for other females. The highest ratios were for the 35-44, 45-54, and 55-64 years age-groups where Indigenous rates were around three times higher than those for other females.

There were 3,143 hospital separations for coronary heart disease among Indigenous females living in NSW, Vic, Qld, WA, SA and the NT in 2006-08 [20]. Hospitalisation rates for coronary heart disease were 2.8 times higher for Indigenous females than for other Australian females (Table 11). Of these separations, 1,129 were for acute myocardial infarction (heart attack), with a rate 3.1 times higher for Indigenous females than for other females.

For cerebrovascular disease (including stroke), there were 683 hospital separations among Indigenous females living in NSW, Vic, Qld, WA, SA and the NT in 2006-08 [20]. Separation rates for Indigenous females were 1.9 times higher than those for other females.

There were 269 hospitalisation separations for hypertension among Indigenous females living in NSW, Vic, Qld, WA, SA and the NT in 2006-08, with the rate 2.5 times higher for Indigenous females than for other females [20].

There were 428 hospital separations for ARF and RHD among Indigenous females living in NSW, Vic, Qld, WA, SA and the NT in 2006-08. The disparity in hospitalisation rates was particularly high, with a rate 8.2 times higher for Indigenous females than for other females.

Table 11. ***Numbers of hospital separations and separation rates for cardiovascular conditions for Indigenous females, by type of cardiovascular condition, and Indigenous:non-Indigenous rate ratios, NSW, Vic, Qld, WA, SA, 2006-08***

Cardiovascular condition	Number	Rate	Ratio
Coronary (ischaemic) heart disease	3,143	12.4	2.8
Acute myocardial infarction	1,129	4.6	3.1
Pulmonary & other forms of heart disease	2,496	10.2	1.9
Cerebrovascular disease	683	3.0	1.9
Stroke	603	2.8	2.1
Acute rheumatic fever & rheumatic heart disease	428	0.9	8.2
Hypertension	269	1.0	2.5
Other circulatory conditions	908	3.1	0.6
All CVD	7,900	30.5	1.8

Notes:

1 Categories are based on the ICD-10-AM. Figures in italics (acute myocardial infarction and stroke) are sub-categories of the categories immediately above

2 Rates are per 1,000

3 Rates are directly age-standardised rates using the 2001 Australian standard population

4 Ratios are Indigenous rate divided by the non-Indigenous rate

5 Non-Indigenous rates include those separations where Indigenous status was not stated

Source: AIHW, 2011 [20]

Mortality

CVD was the leading cause of death among Indigenous females living in NSW, Qld, WA, SA and the NT in 2011, being responsible for 11% of all deaths of Indigenous females [41]. After age-adjustment, the death rate for Indigenous females from CVD was 1.6 times that for non-Indigenous females.

Coronary heart disease was responsible for 45% of the CVD-related deaths among Indigenous females living in NSW, Qld, WA, SA and the NT in 2006-2010 [23]. Cerebrovascular disease was responsible for 22% of deaths from CVD among Indigenous females.

RHD was responsible for the deaths of 61 Indigenous females living in NSW, Qld, WA, SA and the NT in 2006-2010 [23]. In 2004-2008, the most recent period for which details are available, the age-adjusted death rate from RHD for Indigenous females was 6.8 times that of their non-Indigenous counterparts living in NSW, Qld, WA, SA and the NT [20].

The striking difference between Indigenous and non-Indigenous females in overall CVD mortality is the much greater impact among young and middle-aged Indigenous adults. In 2002-2005 in Qld, WA, SA and the NT, the death rates for all CVD were 12 to 14 times higher for Indigenous females in the 35-44 and 45-54 years age-groups than the rates for their non-Indigenous counterparts [31].

Cancer

Cancer is a disease which affects the body's cells [42, 43]. Cells normally grow and multiply in a controlled manner, but when damage occurs in the genetic blueprint (DNA) of a cell, uncontrolled growth can occur; this is cancer. Cancer cells are benign if they 'do not spread into surrounding areas, or to different parts of the body' [42], and are not considered dangerous; however, if these cells 'spread into surrounding areas, or to different parts of the body [metastasise], they are known as malignant' [42]. Cancerous cells can arise from almost any cell, so cancer can occur almost anywhere in the body.

The impact of cancer on Indigenous people has attracted much less attention than it deserves for two main reasons. First, the level of identification of Indigenous people in cancer notifications is known to be poor [44, 45]. Indigenous identification in the registries has been improving [46, 47], but, due to poor data quality in several jurisdictions, there are currently no national data on cancer incidence among Indigenous people [48]. For those Indigenous patients who are registered with cancer, there is concern that not all are correctly identified as Indigenous [45]. Provision for the identification of Indigenous people is not yet included on all pathology forms and the extent to which Indigenous cancer patients are identified in hospital inpatient statistics varies across Australia [47]. Second, the fact that cancer has often been reported in terms of the proportions of deaths it causes (19% of Indigenous deaths compared with around 30% of non-Indigenous deaths in Australia in 2010 [49], an apparent ratio of 0.6) rather than by rates has tended to give the erroneous impression that cancer does not have a great impact among Indigenous people. An analysis of rates, rather than comparisons of proportions, reveals that during 2006-2010 the ratio of cancer-related deaths was 1.4 for Indigenous and non-Indigenous people living in NSW, Qld, WA, SA and the NT [48].

Extent of cancer among Indigenous people

Incidence

In the five-year period 2004-2008, an average of 775 Indigenous people living in NSW, Qld, WA and the NT were diagnosed with cancer each year [48].[9] After age-adjustment, the cancer incidence rate was 1.1 times higher for Indigenous people than for non-Indigenous people during this period (461 and 434 cases per 100,000 people, respectively).[10]

The most common cancer diagnosed among Indigenous people living in NSW, Qld, WA and the NT in 2004-2008 for people was lung cancer (average of 121 cases per year); rates were 1.9 times higher than those for non-Indigenous people. The next most common cancers were breast cancer (among Indigenous females) (average of 88 cases per year), and bowel cancer (average of 70 cases per year) [48].

Cancers that affect women exclusively or almost exclusively,

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[9] The overall level of missing data on Indigenous status for cancers diagnosed between 2004 and 2008 in NSW, Qld, WA and the NT was 12%.

[10] Cancer incidence rates have been reported previously as lower for Indigenous people than for non-Indigenous people. The current report notes that the changed relativity could be due to differences in the jurisdictions contributing to the various reports, but it may also reflect real changes in the incidence of cancer among Indigenous people.

include breast, cervical and ovarian cancers. For breast cancer, the age-standardised incidence rate was 0.8 times lower for Indigenous females living in NSW, Qld, WA and the NT in 2004-2008 than for non-Indigenous females (82 per 100,000 and 104 per 100,000 respectively) (Table 12) [50]. The rate for cervical cancer was 2.8 times higher for Indigenous females than for non-Indigenous females (18 per 100,000 and 7 per 100,000 respectively). The age standardised incidence rate of ovarian cancer was similar to that for non-Indigenous females (10.4 per 100,000 for both groups) [51].

Table 12. Age-standardised incidence rates for selected cancers, by Indigenous status, and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA and the NT, 2004-2008

Site of primary cancer	Indigenous people	Non-Indigenous people	Rate ratio
Lung	80	43	1.9
Breast (females)	82	104	0.8
Bowel	48	59	0.8
Cervix (females)	18	7	2.8
Pancreas	15	10	1.5
Non-Hodgkin lymphoma	14	16	0.9
Skin (melanoma)	9	32	0.3
Unknown primary site	24	12	1.9

Notes:

1 Rates per 100,000 population
2 Ratio is the Indigenous rate divided by the non-Indigenous rate
3 Rates are age-standardised to the Australian population at 20 June 2001
4 Due to the incomplete identification of Indigenous status, these figures probably under-estimate the true difference between Indigenous and non-Indigenous rates
5 Levels of missing data on Indigenous identification for melanoma of the skin (41%) was particularly high

Source: AIHW and Australasian Association of Cancer Registries, 2012 [50]

For all types of cancer, the mean age of diagnosis was lower for Indigenous females living in NSW, Qld, WA and the NT in 2004-2008 than for their non-Indigenous counterparts [23].

Hospitalisation

There were 5,240 cancer-related national hospital separations identified as in 2011-12 [28]. More details are available for 2010-11, when there were 4,689 cancer-related hospital separations identified as Indigenous in NSW, Vic, Qld, WA, SA and the NT [52]; age-standardised hospitalisation rates for cancer were lower for Indigenous people than for other people (16 and 25 per 1,000, respectively) [53].

In terms of specific cancers, the age-standardised hospitalisation rate for lung cancer for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in 2008-09 was 1.5 times higher than for other people [54]. The hospitalisation rate for Indigenous females living in NSW, Vic, Qld, WA, SA and the NT for the period 2005-06 to 2009-10 for cervical cancer was 3.1 times higher than that for other females; for uterine cancer it was 1.5 times higher; and for ovarian cancer it was 0.5 times lower than that for other females [51].

Mortality

In the five-year period 2006-2010, there was an average of 424 deaths from cancer per year among Indigenous people living in NSW, Qld, WA, SA and the NT, the second most common cause of death in this period [48]. The age-standardised death rate for cancer for Indigenous people (249 per 100,000) was 1.4 times higher than the rate for their non-Indigenous counterparts.

In terms of specific cancers, an annual average of 104 cancer-related deaths among Indigenous people living in NSW, Qld, WA, SA and the NT in 2006-2010 was from lung cancer, 27 from cancer of an unknown primary site, 27 from breast cancer (among females), and 22 from bowel cancer [50]. Death rate ratios were higher for Indigenous people than for their non-Indigenous counterparts for cervical cancer (4.4), lung cancer (1.8), cancer of an unknown primary site (1.7), female breast cancer (1.3), and pancreatic cancer (1.3) (Table 13).

Table 13. Age-standardised death rates for selected cancers, by Indigenous status, and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA and the NT, 2006-2010

Site of primary cancer	Indigenous people	Non-Indigenous people	Rate ratio
Lung	61	34	1.8
Breast (female)	27	22	1.3
Bowel	15	17	0.9
Pancreas	13	10	1.3
Cervix (females)	8	2	4.4
Non-Hodgkin lymphoma	5	6	0.9
Skin (melanoma)	2	6	0.4
Unknown primary site	17	10	1.7

Notes:

1 Rates per 100,000 population
2 Ratio is the Indigenous rate divided by the non-Indigenous rate
3 Rates age-standardised to the Australian population at 20 June 2001
4 Due to the incomplete identification of Indigenous status, these figures probably under-estimate the true difference between Indigenous and non-Indigenous rates
5 Levels of missing data on Indigenous identification for melanoma of the skin (41%) were particularly high

Source: AIHW and Australasian Association of Cancer Registries, 2012 [50]

The most common specific causes of death from cancer among Indigenous females were lung cancer and breast cancer, with death rate ratios higher for Indigenous females than for non-Indigenous females (rate ratios 2.4 and 1.1 respectively) in NSW, Qld, WA, SA and the NT in 2011 [41].

For the period 2003-2007 in NSW, Qld, WA, SA and the NT, there were 97 deaths among Indigenous females from gynaecological cancers; 25 deaths were due to ovarian cancer, 23 to uterine cancer, and 43 due to cervical cancer [51]. After age-adjustment, Indigenous females were 2.4 times more likely to die from uterine cancer than non-Indigenous females (6.6 and 2.8 per 100,000 respectively) and 4.7 times more likely to die from cervical cancer than non-Indigenous females (9.0 and 1.9 per 100,000 respectively). There were similar death rates for ovarian cancer for Indigenous and non-Indigenous females (7.0 and 6.7 per 100,000 respectively).

For the period 2000-2010, the national five-year crude survival for ovarian and uterine cancer, and for all gynaecological cancers combined, did not differ significantly for Indigenous and non-Indigenous females: however, for cervical cancer, Indigenous females had significantly lower five-year crude survival (51%) than did their non-Indigenous counterparts (66%) [51].

The patterns of Indigenous cancer incidence and mortality are partly explained by the higher level of risk factors, most notably tobacco use [55-57]. For example, high rates of smoking are the likely cause of a high incidence of cancers of the lung, mouth and throat [58].

The slightly higher Indigenous:non-Indigenous ratio for cancer incidence (1.1) than for deaths from cancer (1.4) could be due to a number of factors [45]:

- Indigenous people are significantly more likely to have cancers that have a poor prognosis
- Indigenous people are usually diagnosed with cancer at a later stage (probably due to a combination of later presentation for health care and lower participation in screening programs)
- Indigenous people are less likely to receive optimal treatment.

The participation of Indigenous females in breast screening programs in Australia is lower than that of non-Indigenous females [59]. In 2009-2010 the participation level for Indigenous women was 36%. Among Indigenous women aged 50-69 years, participation was 36% compared with 55% for non-Indigenous women. For cervical cancer screening, studies in the NT and Qld identified that participation of Indigenous females was well below that for all women in these jurisdictions [60, 61].

Diabetes

There are three main types of diabetes: type 1, type 2 and gestational diabetes mellitus (GDM) [62]. Type 1 diabetes is relatively uncommon in the Indigenous population. Type 2 diabetes represents a serious health problem for many Indigenous people, who tend to develop it at earlier ages than do other Australians, and often die from it at younger ages [47]. GDM, which can occur during pregnancy, is more common among Indigenous women than among non-Indigenous women [63].

Statistics on diabetes incidence, prevalence, hospitalisation, and mortality among Indigenous people are often underestimated for several reasons, including under-identification of Indigenous status, and information only being collected routinely for types of diabetes that require insulin treatment [62]; self-reported diabetes data may underestimate the prevalence of diabetes by up to 50% [64]. It is difficult to reach an estimate of the overall prevalence due to limitations in data collection [65] and it is likely that for every diagnosed case of diabetes there is an undiagnosed case [66].

Diabetes can lead to life-threatening health complications, some of which may develop within months of diagnosis, while others may take years to develop [67]. Complications of diabetes include disease of the large blood vessels (macrovascular disease), which can cause heart disease and stroke, and disease of the small blood vessels (microvascular disease), which can cause eye disease and peripheral nerve disease. For many Indigenous people, diabetes is not diagnosed until after complications have developed; when diagnosis occurs in the presence of end-stage disease it results in higher death rates, a greater dependency on tertiary level care, and higher health care costs [68].

Extent of diabetes

Incidence and prevalence

The most recent analysis of diabetes incidence in Australia was undertaken by the AIHW in 2009 using data from Australia's National Diabetes Register (NDR), which applies to all Australians who have commenced using insulin for diabetes [62].[11] Only a small proportion of people with type 2 diabetes and GDM require insulin treatment, however, so the information presented in the AIHW report can only provide accurate measure of the incidence of type 1 diabetes.

In 2005-2007, Indigenous people 15 years or older accounted for 1.9% of new cases of type 1 diabetes, 2.6% of new cases of insulin-treated type 2 diabetes, and 2.2% of new cases of insulin-treated GDM (among Indigenous females) [62]. Overall, 2.9% of people on the NDR in 2005-2007 were recorded as Indigenous, which is slightly higher than the estimated proportion of Indigenous people in the total population in 2006 (2.5%).

The self-reported prevalence of diabetes/high sugar levels was 6% for Indigenous people who participated in the 2004-2005 NATSIHS [39]. These problems were reported more frequently by Indigenous people living in remote areas (9%) than by those living in non-remote areas (5%). Having diabetes/high sugar levels as a long-term health condition was reported by 13% of Indigenous females who participated in the survey. After age-adjustment, the overall diabetes/high sugar level among Indigenous females was 4.1 times that among non-Indigenous females.

The prevalence of diabetes increased with age in 2004-2005 [39]. The increase occurred at much younger ages among Indigenous people: the prevalence reported by Indigenous people aged 25-34 years was almost seven times that of non-Indigenous people, and the prevalences reported by Indigenous people aged 35-44 and 45-54 years were more than five times those reported by non-Indigenous people in those age-groups (Table 14).

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[11] Recording of Indigenous status was poor prior to 2005.

Table 14. Proportions of people reporting diabetes/high sugar levels as a long-term health condition, by Indigenous status, and Indigenous:non-Indigenous ratios, Australia, 2004-2005

Age-group (years)	Indigenous (%)	Non-Indigenous (%)	Ratio
15-24	1.0	0.5	1.9
25-34	4.3	0.6	6.8
35-44	10.0	2.0	5.1
45-54	20.7	4.0	5.2
55+	32.1	11.6	2.8

Notes:

1 Proportions are expressed as percentages

2 Ratio is the Indigenous proportion divided by the non-Indigenous proportion

Source: ABS, 2006 [39]

Diabetes is known to have adverse effects on pregnant women and their babies [63]. Maternal outcomes that may be adversely affected include: duration of pregnancy; type of labour; caesarean section; hypertension; and length of stay in hospital. Infant outcomes that may be adversely affected include: gestational age; birthweight; Apgar score; level of resuscitation; admission to special care; and length of stay in hospital.

In 2005-06 to 2007-08, almost 7% of Indigenous mothers in NSW, Vic, Qld, WA, SA and the NT had diabetes in pregnancy: 0.1% had pre-existing type 1 diabetes; 1.5% had pre-existing type 2 diabetes; and 5.0% had GDM [63]. Compared with non-Indigenous women who gave birth, Indigenous women were 3.2 times more likely to have pre-existing diabetes and 1.6 times more likely to have GDM. Indigenous mothers with pre-existing diabetes had higher rates of pre-term birth, delivery with no labour, caesarean section, hypertension, and longer stay in hospital than did Indigenous mothers with GDM or without diabetes. Indigenous mothers with GDM were more likely to have an induced labour, a pre-term birth, caesarean section, hypertension, and longer stay in hospital than were mothers without diabetes in pregnancy.

Adverse outcomes for babies, including pre-term birth, high level resuscitation, admission to special care nursery or neonatal intensive care unit, low Apgar score, and longer hospital stays, were more common for those born to Indigenous mothers with pre-existing diabetes than for those born to Indigenous mothers with GDM or those without diabetes [63].

General practice attendances and hospitalisation

Hospitalisation rates are not necessarily an accurate reflection of the burden of diabetes in the community because, as with most chronic health conditions, the treatment of diabetes is well supported by primary health care from doctors, nurses, and allied health professionals.

The BEACH (Bettering the evaluation and Care of Health) survey data collected between 2006 and 2011, suggests that 5% of all problems managed by GPs among Indigenous patients were for diabetes, 96% of these diabetes problems were for type 2 diabetes [23]. After age-adjustment, Indigenous diabetes problems were managed at 2.6 times the rate of those for non-Indigenous patients.

Hospitalisations with a principal diagnosis of diabetes were four times higher for Indigenous people than for other people in 2008-10 [23]. Approximately 84% of hospitalisations for diabetes among Indigenous people were for type 2 diabetes, 15% for type 1 diabetes and 13% for diabetes during pregnancy. The rates for hospitalisations were higher for Indigenous people living in remote areas (22 per 1,000) and very remote areas (19 per 1,000) than for those living in major cities (9 per 1,000).

Diabetes was recorded as the principal diagnosis in 1.4% of hospital separations for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT from July 2006 to June 2008, representing 4.8% of all hospitalisations for diabetes [20]. Approximately 54% of Indigenous people hospitalised for diabetes were females. After age-adjustment, the hospitalisation rate for diabetes for Indigenous females was 5.0 times the rate for other females (15 per 100,000 and 3.0 per 100,000 respectively). For separations for diabetes in pregnancy, Indigenous females were hospitalised at 3.6 times the rate of other females. The highest rate ratio for females occurred in the 45-54 years age-group, with a rate for Indigenous females 13 times higher than that for non-Indigenous females. Hospitalisation rates for diabetes were highest among Indigenous females aged 65 years and over.

Complications from diabetes, particularly renal complications, but also circulatory and ophthalmic conditions, were the cause of high rates of hospitalisations. Hospitalisation rates for renal complications of diabetes were 11.2 times higher for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in 2008-09 than they were for their non-Indigenous counterparts [69]. Hospitalisation rates for multiple complications of type 2 diabetes were 6.5 times higher for Indigenous people than for other Australians in 2004-09 (3.1 compared with 0.5 per 1,000).

Mortality

Diabetes causes a higher proportion of deaths among Indigenous people than it does among non-Indigenous people [20]. In the period from 2004 to 2008, diabetes was responsible for 7.2% of Indigenous deaths compared with 2.5% of non-Indigenous deaths in NSW, Qld, WA, SA and the NT. After age-adjustment, the Indigenous rate (103.4 per 100,000) was 6.9 times the rate of non-Indigenous people. (It should be noted that death data on diabetes are probably an underestimate as the condition tends to be under-reported on death certificates or is not recorded as the underlying cause of death [70].

Kidney health

Kidney disease, renal disease and renal disorders are terms that refer to a variety of different disease processes involving damage to the working units of the kidneys[12] [71, 72]. Of particular importance to Indigenous people is chronic kidney disease (CKD), which is defined as kidney damage or reduced kidney function that lasts for three months or more [73, 74]. CKD is inclusive of different conditions, including diabetic nephropathy, hypertensive renal disease, glomerular disease, chronic renal failure, and end-stage renal disease (ESRD) [58]. If left untreated, kidney function can decrease to the point where kidney replacement therapy is necessary to avoid death. CKD is expensive to treat and has a marked impact on the quality of life of those who suffer from the disease as well as those who care for them [73, 75].

A number of risk factors are associated with kidney disease, including diabetes, high blood pressure, infections, LBW, and obesity [74]. These conditions are particularly common among Indigenous people and contribute to high rates of CKD [58, 76].

Extent of kidney disease

Prevalence

The prevalence of CKD is higher among Indigenous people than among other Australians [20, 58, 77]. After age-adjustment, the Indigenous:non-Indigenous ratio of CKD was 10.0 in 2004-2005 [58].

After age-adjustment, the reporting by Indigenous females of kidney disease as a long-term health condition in the 2004-2005 NATSIHS was 8.3 times than the prevalence among non-Indigenous females [39]. (The NATSIHS only collected data from private homes, so this is likely to underestimate the true prevalence of kidney disease among Indigenous females as kidney disease is a frequent cause of hospitalisation, and patients within health-care facilities were not sampled.)

With most information on CKD limited to self-reported data, the primary focus in the literature has been on ESRD [74, 77]. The overall incidence rate of ESRD for Indigenous people is consistently reported as being significantly higher than that for non-Indigenous people [72, 77].

A total of 378 Indigenous females were newly identified with ESRD in the three-year period 2006-2008 [20]. The age-adjusted notification rate for Indigenous females was over 11.5 times the rate for their non-Indigenous counterparts, with the rate ratio being particularly high for females living in the NT. Over one-half (60%) of the Indigenous females newly registered with the ANZDATA in 2006-2008 were aged less than 55 years, with ratio of Indigenous to non-Indigenous notifications being particularly high for females aged between 45 and 64 years.

Data from the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA) reveal that the age-standardised notification rate of 702 per 1,000,000 population for Indigenous people in 2006 to 2010 was 7.2 times the rate for non-Indigenous people (Table 15) [Derived from 78, 79-81]. Notification rates of ESRD were higher for Indigenous people than for non-Indigenous people in all states and territories, with the highest rates recorded for Indigenous people living in the NT (1,579 per 1,000,000), WA (1,014 per 1,000,000), and SA (924 per 1,000,000).

Table 15. Numbers of notifications and age-standardised notification rates for end-stage renal disease, by Indigenous status, and Indigenous:non-Indigenous rate ratios, selected jurisdictions, Australia, 2006-2010

Jurisdiction	Indigenous		Non-Indigenous		Rate ratio
	Number	Rate	Number	Rate	
NSW	129	284	3,647	98	2.9
Vic	41	464	2,716	103	4.5
Qld	299	730	2,129	103	7.1
WA	222	1,014	1,012	97	10.5
SA	76	924	840	107	8.6
NT	324	1,579	54	79	20.0
Australia	1,104	702	10,914	97	7.2

Notes:

1 Rates per 1,000,000 population have been standardised using the ERP from 30 June 2001
2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3 Notification rates for Tas and the ACT have not been shown separately because of the small numbers of notifications, but are included in the figures for Australia

Source: Derived from ANZDATA, 2010 [81], ABS, 2008 [78], ABS, 2001 [79], ABS, 2009 [80]

Of people newly registered with the ANZDATA in 2006-2010, almost two-thirds (62%) of Indigenous people were aged less than 55 years, compared with less than one-third (30%) of non-Indigenous people [Derived from 78, 79-81] (Table 16). Notification rates were higher for Indigenous people than for non-Indigenous people across all ages (except for the 0-14 years age-group). Rate ratios were particularly high for people aged 35-44 years (12.2) and 45-54 years (13.5).

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[12] Renal (and urologic) disease includes conditions affecting the function of the body's urinary system, which involves the kidneys, ureters, bladder and urethra.

Table 16. Numbers of notifications and notification rates of end-stage renal disease, by Indigenous status and age-group, and Indigenous:non-Indigenous rate ratios, Australia, 2006-2010

Age-group (years)	Indigenous		Non-Indigenous		Rate ratio
	Number	Rate	Number	Rate	
0-14	5	5	134	7	0.7
15-24	19	35	240	17	2.1
25-34	77	206	497	34	6.0
35-44	240	708	880	58	12.2
45-54	348	1,437	1,547	106	13.5
55-64	287	2,106	2,282	191	11.0
65-74	109	1,851	2,775	374	4.9
75+	19	713	2,559	384	1.9
All ages	1,104	702	10,914	97	7.2

Notes:

1 Rates per 1,000,000 population
2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3 Rates for 'All ages' are age-standardised

Source: Derived from ANZDATA, 2010 [81], ABS, 2008 [78], ABS, 2001 [79], ABS, 2009 [80]

Management of ESRD involves dialysis or kidney replacement therapy (KRT), also known as renal replacement therapy (RRT), where transplantation of the kidney is required [82]. In the three-year period 2008 to 2010, 644 Indigenous people commenced treatment for ESRD, accounting for 9% of new registrations [23]. After age-adjustment, the incidence rate of treatment for ESRD was 7.2 times higher for Indigenous people than for non-Indigenous people.

Detailed information from ANZDATA is available for 2010 when a total of 193 Indigenous people commenced dialysis [83]. In 2010, 28 new transplant operations were performed for Indigenous recipients compared with 804 operations performed for non-Indigenous recipients. Of the 977 patients aged less than 65 years who were on the transplant waiting list in Australia at 31 December 2009, 39 (4%) were Indigenous, with the highest number (14) residing in WA (36% of all Indigenous patients on the waiting list).

Haemodialysis (HD), conducted in urban or regional clinics and hospitals, is the most common form of dialysis treatment for Indigenous people with ESRD [77, 84-86]. In 2009, HD accounted for the majority of treatment (81%); the number of Indigenous people commencing peritoneal dialysis (PD) (35 patients) was less than in the previous two years [77]. For the same period, there were 1,174 prevalent dialysis patients in Australia (including both PD and HD) identified as Indigenous, with a level nearly five times higher for Indigenous people (2,220 per 1,000,000) than for the total population.

Hospitalisation

In 2010-11, care involving dialysis was the most common reason for the hospitalisation of Indigenous people living in NSW, Vic, Qld, WA, SA and the NT [53]. Care involving dialysis was responsible for 143,306 hospital separations among Indigenous people, accounting for 44% of hospital separations. The Indigenous hospitalisation rate of 503 per 1,000 was 11.4 times the rate for other Australians.

Detailed information about dialysis for Indigenous females is available for the period 2008-09 for people living in NSW, Vic, Qld, WA, SA and the NT. During this time period, Indigenous females had the highest rates of regular dialysis hospitalisations, almost 15 times those of other females [74]. Hospitalisation rates of Indigenous females for CKD as both principal diagnosis and as an additional diagnosis were between five and seven times the rates for other females[13]. Contributing factors to these higher rates for Indigenous females include the higher prevalence of type 2 diabetes among Indigenous women and the large proportion of Indigenous women carrying high levels of body fat around their abdomen; both factors place them at higher risk for CKD [87].

In 2007-08, Indigenous people were five times more likely to be hospitalised for other principal or additional CKD diagnoses than other Australians. For the procedure of HD, the admission rate was more than 12 times that of other people [88].

Mortality

During the five-year period 2006 to 2010, there were 323 Indigenous deaths from kidney disease, accounting for 3% of all Indigenous deaths [23]. After age-adjustment, the death rate for Indigenous people was four times higher than the rate for non-Indigenous people.

Detailed information is available for the five-year period from 2003 to 2007 for NSW, Qld, WA, SA and the NT. During this period, there were 1,443 Indigenous deaths from CKD (405 deaths had no record of Indigenous status) [74]. After age-adjustment, the death rate for all CKD-related deaths for Indigenous people (188 per 100,000) was 3.5 times higher than the rate for non-Indigenous people. The Indigenous/non-Indigenous rate ratio was 4.3 for females.

In 2003-2007, death rates where CKD was the underlying cause was 4.7 times higher for Indigenous females than for non-Indigenous females [74]. These figures probably underestimate the contribution of CKD to death rates, however, as deaths involving CKD can occur in the context of other chronic conditions. For example, deaths where kidney failure was reported in 2003-2007 as an associated cause of death (e.g. with diabetes) occurred at three times the rate for Indigenous people than for non-Indigenous people.

Respiratory disease

The term '*respiratory disease*' refers to a number of conditions that affect the lungs or their components; each of these conditions is characterised by some level of impairment of the lungs in

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[13] Data presented in this report refer to episodes of admitted care, meaning the same patient can potentially have multiple hospitalisations within the same period. Consequently, data represent health service usage by those with CKD rather than representing the number or proportion of people in Australia with CKD admitted to hospital.

performing the essential function of gas exchange [89]. Respiratory disease, which includes asthma, chronic obstructive pulmonary disease (COPD), pneumonia and invasive pneumococcal disease, represents a significant burden of ill-health and hospitalisation among Indigenous people, particularly among the very young and older people [23, 90].

Respiratory disease is associated with a number of contributing factors, including poor environmental conditions, socioeconomic disadvantage, risky behaviour (particularly tobacco use, alcohol use, and substance use), and previous medical conditions [91, 92]. Infants and children under the age of 5 years are particularly susceptible to developing respiratory conditions, due to factors like low levels of childhood immunisation, parental smoking, poor nutrition (including aspects related to infant-feeding and weaning practices), and poor environmental conditions [91, 93-95]. Among Indigenous adults, factors contributing to respiratory disease include tobacco use, use of alcohol and other substances, diabetes mellitus, and chronic renal disease [91].

The risk of developing asthma is affected by environmental, lifestyle (e.g. diet and tobacco use), and genetic factors (e.g. allergies) [47]. Asthma attacks can be triggered by exercise, viral infections, irritants (e.g. tobacco use and air pollutants), and specific allergens. These attacks cause a narrowing of the airways, resulting in symptoms including wheezing and breathlessness. The symptoms of asthma are generally reversible.

COPD is a term for long-term lung diseases for which the symptoms are not fully reversible, and include chronic bronchitis, emphysema, and some cases of asthma [89]. These diseases are characterised by shortness of breath. A major risk factor for COPD is tobacco use, but exposure to irritants like dust and fumes can also increase the risk of developing COPD [96].

Extent of respiratory disease

Prevalence

Disease of the respiratory system was reported by 27% of Indigenous people who participated in the 2004-2005 NATSIHS [39]. Respiratory conditions were reported more frequently by Indigenous people living in non-remote areas (30%) than by those living in remote areas (17%). Asthma was the most commonly reported respiratory condition among Indigenous people, and the second most commonly reported health condition. After age-adjustment, the level of asthma among Indigenous people was 1.6 times that among non-Indigenous people [39, 97]. Asthma was reported more frequently by Indigenous people living in non-remote areas (17%) than by those living in remote areas (9%).

After age-adjustment, 35% of Indigenous females reported having had a long-term respiratory condition in the 2004-2005 NATSIHS, which was slightly higher than the prevalence among non-Indigenous females [39]. The reported prevalence of asthma was much higher among Indigenous females than for non-Indigenous females (20% compared with 11%), and the prevalence of bronchitis among Indigenous females was slightly higher than that of non-Indigenous females (5% and 3%, respectively). The self-reported prevalence of chronic sinusitis (11%) and other diseases of the respiratory system (15%) were equal to or less than those for non-Indigenous females (11% and 18% respectively).

Hospitalisation

There were 21,265 hospital separations for Indigenous people for respiratory disease in Australia in 2011-12 [28]. More detailed information is available for 2010-11, when there were 19,471 hospital separations among Indigenous people in NSW, Vic, Qld, WA, SA, and the NT, representing11% of separations identified as Indigenous (excluding dialysis) [52]. During this period, the age-standardised hospitalisation rate for respiratory disease was 2.8 times higher for Indigenous people than for other Australians [53].[14]

In the two-year period from July 2008 to June 2010, the most common cause of hospitalisation for respiratory disease among Indigenous people was pneumonia (23%), followed by COPD (13%), and asthma (11%) [23].

For Indigenous people living in remote areas, the hospitalisation rate for respiratory disease was three times the rate of Indigenous people living in major cities (80 and 27 per 1,000 people respectively) in 2008-10 [23].

In 2008-10, Indigenous children aged 0-4 years were hospitalised for respiratory disease at twice the rate of other children [23]. Hospitalisation rates were substantially higher for Indigenous adults than non-Indigenous adults, with rates almost six times higher for Indigenous people aged 45-54 years and more than four times higher for Indigenous people aged 35-44 years and 55-64 years.

In 2008-10, Indigenous females in WA and the NT were between four and five times as likely to be hospitalised for respiratory diseases as non-Indigenous females [23].

In the period 2006-08 in NSW, Vic, Qld, WA, SA and the NT, approximately 49% of Indigenous people hospitalised for pneumonia were females (3,754) [20]. Indigenous females had hospitalisation rates for pneumonia around four times higher than rates for other females across all age-groups. Rates were highest among Indigenous females aged 0-4 years, 55-64 years and 65 years and over. The greatest disparity in rates between Indigenous and other females occurred in the 34-44 and 45-54 year age groups where Indigenous females were hospitalised around nine times the rate of other females. In WA and the NT, Indigenous females were almost nine times as likely as other females to be hospitalised for pneumonia.

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[14] Based on the under-identification of Indigenous people in the hospital inpatient collections, this ratio is probably higher.

Mortality

In 2011 in NSW, Qld, WA, SA, and the NT, chronic lower respiratory disease was responsible for the deaths of 66 Indigenous females accounting for 6.1% of all female Indigenous deaths; influenza and pneumonia were responsible for 16 deaths of Indigenous females, accounting for 1.5% of deaths of Indigenous females [41].

In 2010, respiratory disease was responsible for the deaths of 194 Indigenous people living in NSW, Qld, WA, SA, and the NT, accounting for 7.5% of Indigenous deaths [49]. After age-adjustment, the death rate for Indigenous people was 2.6 times that for non-Indigenous people. Chronic lower respiratory diseases (COPD and asthma) were responsible for 115 Indigenous deaths; the age-adjusted death rate for Indigenous people was 3.0 times higher than that for non-Indigenous people. Influenza and pneumonia were responsible for 44 Indigenous deaths, with a rate 2.8 times higher for non-Indigenous people than for non-Indigenous people [98].

The most recent detailed information on specific causes of respiratory-related deaths for Indigenous females is available for the period from 2004 to 2008 [20]. During this period, the leading specific cause of death from respiratory disease among Indigenous females living in NSW, Qld, WA, SA and the NT was chronic lower respiratory disease. Age-standardised death rates were around three times higher for Indigenous females than those for their non-Indigenous counterparts. Deaths from pneumonia and influenza, the next common cause of death from respiratory disease, were 1.8 times higher for Indigenous females than non-Indigenous females.

More recent detailed information is not available, but the death rate from chronic lower respiratory disease for Indigenous people aged 55-64 years living in NSW, Qld, SA, WA and the NT in 2006-2010 (57 per 1,000) was 5.5 times higher than the rate for their non-Indigenous counterparts [98]. Among people aged 65-74 years, the rate of 79 per 1,000 for Indigenous people was 4.4 times higher than that for their non-Indigenous counterparts. Indigenous infants were 3.3 times more likely than their non-Indigenous counterparts to die from respiratory disease.

Sexually transmitted infections

Sexual health remains a significant public health issue for Aboriginal and Torres Strait Islander females. Forming a major component of sexual health is the presence or absence of sexually transmissible infections (STIs). Sexually transmissible infections (STIs) are infections that are spread primarily by heterosexual or homosexual contact with an infected person [99]. STIs are caused by microorganisms that are transmitted from one person to another through semen, fluid from the vagina, anal or throat secretions, and blood [100]. Some STIs can also be transmitted under some circumstances via skin to skin contact, or from mother to baby during pregnancy and/or birth. Most STI cases are found among sexually active adolescents and young adults, and access to and use of condoms is regarded as fundamental in preventing STI transmission [101, 102].

The majority of STIs are asymptomatic or produce only mild symptoms [103, 104]. Many people affected find out they have an infection through screening and contact tracing. STIs can usually be effectively treated if diagnosed early, but, if left untreated, they may lead to complications [99].

Many factors have been identified as contributing to the development of STIs. Factors that are particularly relevant to the Indigenous population include: a younger more mobile population; socio-economic disadvantage; poor access to health services; and lack of clinical staff who have the competence and sensitivity to deal with sexual health issues among Indigenous people [105, 106].

The National Notifiable Diseases Surveillance System collects data on some STIs, including chlamydia, gonorrhoea, syphilis, donovanosis, and HIV/AIDS [47, 107]. Human papilloma virus (HPV) and genital herpes are believed to be the most common STIs in Australia, but they are not notifiable diseases so it is difficult to monitor incidence [107]. Variations in notification rates over time may reflect real changes in incidence, but can also be due to the introduction of easier and more sensitive testing procedures, greater targeted screening, and public awareness campaigns [108]. The high level of screening in some Indigenous communities probably contributes to the higher STI rates reported for Indigenous people than for non-Indigenous people.

Regrettably, current surveillance data pertaining to the rate of notified STIs fail to discern between Indigenous females and males so rate comparisons between the genders are not possible. Research has identified gender as a risk factor for many STIs with Indigenous females showing a higher prevalence for some STIs than Indigenous males [109-111]. The most recent surveillance data reporting on the number of notified STI diagnoses also show Indigenous females have a higher number of chlamydia and gonorrhoea diagnoses than Indigenous males [112].

Gonorrhoea

Gonorrhoea is caused by the bacterium *Neisseria gonorrhoeae* [113]. In women, it can affect the urethra, cervix, rectum and throat. Gonorrhoea is highly contagious and, if left untreated, the infection can cause pelvic inflammatory disease. Untreated gonorrhoea can also lead to infertility.

For the period 2009-2011, Indigenous people accounted for 72% of gonorrhoea notifications in Qld, WA, SA, and the NT (excluding 14% of notifications for which Indigenous status was not stated) [Derived from 80, 114-117]. The crude notification rate was substantially higher for Indigenous people in these jurisdictions than for their non-Indigenous counterparts, 1,093 and 17 per 100,000 respectively. The jurisdictions with the highest rates among Indigenous people were the NT (2,402 per 100,000) and WA (1,271 per 100,000).

In 2011, the majority of gonorrhoea notifications in the Indigenous population occurred in the 15-29 years age-group (78% of notifications in Vic, Qld, WA, SA, Tas, and the NT) [117]. In the non-Indigenous population, gonorrhoea was more common among slightly older people, with those aged 20-39 years accounting for 65% of gonorrhoea notifications. In the same year, Indigenous females were only marginally more likely to be diagnosed with gonorrhoea than were Indigenous males (1.2 times more likely); in the non-Indigenous population, the number of diagnoses for males was four times the number reported for females. This suggests the transmission of gonorrhoea occurs largely through heterosexual contact in the Indigenous population, whereas sex between males is an important mode of transmission among non-Indigenous people [118].

In 2007-2011, crude notification rates for gonorrhoea were highest for remote and very remote areas of residence for both Indigenous and non-Indigenous people [117]. The rate of diagnosis for Indigenous people in these areas was 61 and 33 times higher than the rate for non-Indigenous people.

Syphilis

Syphilis, caused by the organism *Treponema pallidum*, is a complex infection that has four identified stages: primary, secondary, latent, and tertiary [119]. In the initial stage of the infection, syphilis causes painless ulcers or sores around the mouth or genital area. If detected early, syphilis can be easily treated but, if left untreated, the infection can be very serious causing damage to the brain, heart, blood vessels, skin, intestinal tract, and bones [118]. For pregnant women, untreated syphilis poses further serious health threats as the infection can be passed on to the child, possibly resulting in physical deformities and brain damage [120].

In 2009-2011, 449 (13%) of the 3,479 people newly diagnosed with syphilis were identified as Indigenous (excludes notifications from the ACT and the 4.9% of notifications for which Indigenous status was not stated) [Derived from 80, 114-117]. The crude notification rate for Indigenous people was 5.7 times the rate for non-Indigenous people (27 and 4.7 per 100,000 respectively). In the Indigenous population, the jurisdictions with the highest notification rates were the NT (51 per 100,000) and Qld (43 per 100,000).

Syphilis is more common among adolescents and young adults in the Indigenous population, with those aged 15-29 years accounting for 65% of syphilis diagnoses in all health jurisdictions in 2011 [117]. Among non-Indigenous people, over 80% of syphilis cases occurred in people aged 20-49 years. This pattern of diagnosis has remained relatively consistent from 2007-2011 for both populations, but the number of diagnoses among Indigenous people aged 15-19 years in 2011 was more than 3.5 times the number reported in 2009 (67 and 18 respectively).

In 2011, the number of syphilis diagnoses in the Indigenous population was similar for both females and males (101 and 95 respectively) [117]. A different pattern was observed in the non-Indigenous population with males accounting for 93% of diagnoses (male to female ratio 16:1). This suggests differences in modes of transmission for syphilis in the Indigenous and non-Indigenous populations [118].

The rates of syphilis notifications were highest among Indigenous people living in remote and very remote areas in 2007-2011 [117]. In 2011, notification rates for Indigenous people living in remote and very remote areas were 119 and 19 times the rates for their non-Indigenous counterparts. Notification rates for non-Indigenous people were highest in major cities and in very remote areas.

Chlamydia

Chlamydia is caused by the bacterium *Chlamydia trachomatis* [103]. In women it can cause cervicitis, endometritis, and pelvic inflammatory disease, which can lead to tubal factor infertility and ectopic pregnancy. Due to the lack of obvious symptoms for many cases of the disease, the incidence of chlamydia is underestimated in notification data. Chlamydia is the most common STI among Indigenous people in Australia [105], but when considering only the jurisdictions with reasonable Indigenous identification[15] it is second to gonorrhoea [117].

Indigenous people accounted for 20% of the notifications of chlamydia during 2009-2011 (based on 49,380 cases notified in WA, SA, Tas, and the NT, and excluding 13% of notifications for which Indigenous status was not stated) [Derived from 80, 114-117]. The crude notification rate for chlamydia was considerably higher for Indigenous people than for non-Indigenous people in 2009-2011: 1,643 per 100,000 compared with 296 per 100,000. The highest rate of chlamydia notifications was for Indigenous people living in the NT (2,089 per 100,000).

Chlamydia is typically diagnosed among adolescents and young adults in both the Indigenous and non-Indigenous populations [117]. In 2011, persons aged 15-29 years accounted for 82% of chlamydia notifications in both populations (notifications in Vic, WA, SA, Tas, and the NT). There were notable increases between 2007 and 2011 in the number of chlamydia notifications among Indigenous people aged 15-19 and 20-29 years, with increases of 29% and 41% respectively.

For both the Indigenous and non-Indigenous populations, females accounted for a greater proportion of chlamydia diagnoses than did males in 2011 (62% and 58% of the diagnoses respectively) [117]. The female to male ratio was 1.7:1 for Indigenous people, and 1.4:1 for non-Indigenous people.

As is the case for other STIs, Indigenous people living in remote and very remote areas had the highest rates of chlamydia diagnoses in 2011 (3,345 and 3,053 per 100,000, respectively) [117]. For the Indigenous population, inner regional, outer regional, and major cities reported the largest increases in chlamydia notification rates over the five-year period 2007-2011, with the greatest increase

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[15] Jurisdictions where Indigenous status is reported for more than 50% of diagnoses.

observed in inner regional areas (182%). For non-Indigenous people, notification rates were highest in very remote areas and in major cities in 2011.

HIV/AIDS

The human immunodeficiency virus (HIV) is a retrovirus that destroys cells in the body's immune system [121]. Untreated, the virus weakens immune system functioning to the point where minor infections may become fatal [122]. This late stage of HIV is referred to as acquired immune deficiency syndrome (AIDS). At present there is no vaccine to prevent HIV, nor is there a cure, but anti-retroviral therapy has dramatically reduced the number of HIV cases progressing to AIDS [121, 123].

The transmission of HIV occurs in one of three ways: unprotected sexual contact with an infected person; infected blood passing into another person's bloodstream; and an infected mother can pass HIV on to her child either during birth or through breast-feeding [124]. Unprotected anal sex presents the greatest risk of exposure to HIV. Other behaviours that can put people at high risk of HIV include: unprotected vaginal sex; unprotected oral sex; and sharing injecting equipment (such as syringes and needles).

To date, Australia has successfully prevented an uncontrolled spread of HIV, and the overall rates of HIV are low in comparison with other countries [47, 118]. However, great concerns have been expressed about the possible impact of HIV/AIDS among Indigenous people, for whom AIDS has been seen as having the potential 'to further erode the social and economic fabric of Indigenous communities' [121, p.6]. Indigenous people are regarded as being at particular risk of HIV infection due to their higher rates of STIs, limited access to health care, and over-representation in prisons and juvenile detention [125].

Extent of HIV/AIDS

National surveillance data show that in 2011 there were 1,137 cases of newly diagnosed HIV infection of which 22 (1.9%) were among Indigenous people [117]. Age-standardised rates of HIV diagnosis were similar for Indigenous and non-Indigenous people at 4.4 and 5.0 per 100,000 respectively [118]. In 2011, females accounted for 23% of new HIV cases among Indigenous people [117]. Overall in Australia, the cumulative number of HIV diagnoses by the end of 2011 was 31,645, of which 219 were among Indigenous people [117].

More than 80% of new HIV infections among the Indigenous population in 2011 were reported in Qld (36%), NSW (23%), and WA (23%) [117]. Indigenous people living in major cities and in very remote areas had the highest rates of new HIV diagnoses, 8 and 6 per 100,000 respectively. In terms of exposure to HIV, men who have sex with men accounted for two-thirds (67%) of new HIV cases among Indigenous people in 2011 [117]. Heterosexual contact was also identified as a common form of exposure to HIV among Indigenous people (24%). The percentage of new HIV cases attributed to injecting drug use decreased substantially from 2010 to 2011, with just 4.8% of new HIV cases coming from injecting drug use in 2011 compared with 20% in 2010.

The patterns of new HIV infections are slightly different for Indigenous and non-Indigenous people [Derived from 117]. Most new cases of HIV infections among non-Indigenous people in 2011 were reported in NSW (34%), Vic (29%) and Qld (19%). Among the non-Indigenous population, those residing in major cities had the highest rate of HIV infection (7 per 100,000) [117]. The rates of diagnosis were much lower for the remaining areas of residence, ranging from 1 to 3 per 100,000.

Among non-Indigenous people, 94% of all new HIV cases in 2011 were attributed to the categories 'men who have sex with men' (71%) and 'heterosexual contact' (23%) [Derived from 117]. Injecting drug use was responsible for 1.8% of new cases among non-Indigenous people.

Information about the occurrence of AIDS in the Indigenous population in 2011 is not available, but the number of new AIDS cases for the total population in 2009 was only 90 [115]. In 2009, there were nine deaths following AIDS in Australia. The number of new AIDS cases in the Indigenous population in the ten-year period 1997-2006 was low, but Indigenous people had a slightly higher rate of AIDS diagnoses than did non-Indigenous people in 2006 (1.2 compared with 1.0 per 100,000) [126]. The absence of reporting by Indigenous status in the most recent AIDS data [115] may be due to the marked decrease in new AIDS diagnoses and deaths in Australia over the past decade.

Social and emotional wellbeing (including mental health)

Good mental health is essential to the health and wellbeing of individuals, families, and communities [127]. Mental health remains, however, a complex domain due to the multiplicity of contributing internal and external factors, and the diverse views and subsequent varying terminology that exists within the field [128].

National policies provide some clarity by defining terms such as mental health, mental health problems, and mental illness. These policies accept the World Health Organization (WHO) definition for mental health, describing it as a state of social and emotional wellbeing in which individuals can cope with the normal stresses of life and realise their potential [128, 129]. It is influenced by a complex interplay of biological, psychological, social, environmental, and economic factors [127, 128, 130]. People with good mental health are able to contribute to community life, participate in the workforce, and foster meaningful and positive relationships with others [128, 129, 131].

Some individuals experience compromised mental health due to mental health problems or mental illness. The distinction between mental health problems and mental illness is not well defined [128], but it is important to delineate the meaning of these concepts to ensure all aspects of mental health/illness are adequately addressed within the Indigenous and wider populations. Mental health problems are characterised by reduced cognitive, emotional, or social functioning, but not to the extent that the criteria for a mental illness are met [127, 128]. Conversely, a mental illness is a clinically diagnosable disorder that significantly interferes with an individual's cognitive, emotional, or social abilities, and is generally determined according to the classification system of the Diagnostic and Statistical Manual of Mental Disorders (DSM) or the ICD.

Mental health, mental health problems, and mental illness are not discrete entities, rather they occur on a continuum, and it is expected that people will fluctuate between periods of good mental health, and periods of not-so-good mental health during their lifetime [127, 128, 131]. This broader conceptualisation of mental health has been recognised in Australia and is fundamental to the aims of current mental health policy. This conceptualisation also closely aligns with the Indigenous view of mental health and wellbeing, which is termed social and emotional wellbeing.

Social and emotional wellbeing refers to the social, emotional, spiritual, and cultural wellbeing of an individual [131]. It goes beyond traditional mental health discourse to encapsulate the importance of connection to land, culture, spirituality, ancestry, family and community, and how these impact on an individual while also recognising the influence of political and historical factors on mental health and wellbeing [131, 132]. It is the preferred terminology by many Indigenous people because of its more positive and holistic connotations.

Extent of mental illness and mental health problems

Prevalence

The extent of mental illness and mental health problems has been recognised as 'a major difficulty for most [Indigenous] communities' [133, p.7], but the precise details have been poorly documented up until the 2004-2005 NATSIHS [39], and, particularly, the 2008 National Aboriginal and Torres Strait Islander Social Survey (NATSISS). The NATSISS sought to provide a broad understanding of Indigenous social and emotional wellbeing by collecting information on psychological distress, stressors, positive wellbeing, social networks and social support, and removal from family [134].

After age-adjustment, the 2008 NATSISS found that Indigenous people aged 18 years or older were 2.6 times as likely as their non-Indigenous counterparts to feel high or very high levels of psychological distress [69]. A significantly greater proportion of Indigenous people reported feeling sad and without hope than did their non-Indigenous counterparts. Indigenous females were more inclined to report high/very high levels of distress when compared with Indigenous males (35% and 28% respectively) [20].

The higher overall levels of psychological distress reported by Indigenous people than by non-Indigenous people are consistent with the relative frequencies with which the two populations experienced specific stressors in the previous 12 months. According to the 2008 NATSISS, 79% of Indigenous people aged 18 years and over experienced at least one significant stressor in the previous 12 months (Table 17) [20]. During this time, Indigenous people reported experiencing an average of 4.5 stressors, the most commonly reported stressor being death of a family member or close friend. An association was observed between psychological distress levels and stressors: high or very high levels of distress were associated with high numbers of reported stressors among Indigenous people.

In comparison, 62% of the total population reported in the 2010 General Social Survey (GSS) that they experienced at least one or more significant stressors in the previous 12 months [135]. The proportions reporting specific stressors were generally higher for Indigenous people than for the total population, particularly for 'death of a family member or close friend' and 'trouble with the police' [20, 135]. Several stressors, including 'pregnancy', 'time in jail', 'overcrowding at home', and 'treated badly/discrimination', were reported only for the Indigenous population.

Table 17. Proportions of stressors reported in the previous 12 months, by Indigenous status, year and stressor type, Australia, 2008 and 2010

Type of stressor	Indigenous status / year	
	Proportion of Indigenous people (%)	Proportion of total population (%)
	2008	2010
Death of a family member or close friend	40	23
Serious illness or disability	33	30
Not able to get a job	23	15
Alcohol-related problems	21	8
Mental illness	17	13
Pregnancy	17	--
Drug-related problems	15	--
Trouble with the police	15	4
You, a family member or friend spent time in jail	13	--
Overcrowding at home	13	--
Treated badly/discrimination	10	--
Total reporting stressor(s)	79	62

Notes:

1. Proportions are expressed as percentages
2. The content of this table is restricted to the more frequently reported stressors
3. Data have not been age-standardised
4. The total population proportion for 'serious illness or disability' data has been estimated by adding proportions for the two sub-components together, so may slightly overstate the true proportion
5. The 2010 GSS combined alcohol and drug related problems within the one sub-category

Source: AIHW, 2011 [20], ABS, 2011 [136]

The 2008 NATSISS sought to broaden the scope of social and emotional wellbeing information captured by going beyond the deficit focus of the 2002 survey through the inclusion of measures of positive wellbeing [134]. Indigenous people reported on feelings of calmness and peacefulness, happiness, fullness of life, and energy. Nine-tenths (90%) of Indigenous people reported feeling happy either some, most, or all of the time, approximately 21% reported feeling energetic a little or none of the time, and around 16% reported feeling full of life, and calm and peaceful, a little or none of the time [69]. The lack of comparable data precludes definitive statements about the positive wellbeing of Indigenous people compared with that of non-Indigenous people, but the greater frequency of psychological distress in the Indigenous population, together with the type and number of stressors reported, suggests Indigenous people experience lower levels of social and emotional wellbeing than do non-Indigenous people.

Social and emotional wellbeing are influenced by the support a person receives from their social networks [136]. Information collected in the 2008 NATSISS show that 89% of Indigenous people aged 15 years and over were able to obtain emotional, physical, or financial help from someone else during a time of crisis. Non-Indigenous people experience similar levels of social support: the 2010 GSS found that 94% of non-Indigenous people were able to access support at a time of crisis [137].

Removal from one's natural family also has significant implications for a person's social and emotional wellbeing [138]. The 2008 NATSISS revealed that Indigenous people who had been removed, or had a relative removed, from their natural family were more inclined to experience high or very high levels of psychological distress compared with those who had not been removed from their natural family. Almost two-fifths (39%) of Indigenous people experiencing high or very high levels of psychological distress reported having been removed, or having had a relative removed, from their natural family. Three-tenths (30%) of Indigenous people with high or very high levels of distress hadn't been removed from their natural family.

In terms of the social and emotional wellbeing of Indigenous children, the WAACHS, undertaken in 2001 and 2002, remains the most recent and detailed source of information. The WAACHS reported that 24% of Indigenous children and young people aged 4-17 years were rated by their carers (parent or guardian) as being at high risk of clinically significant emotional or behavioural difficulties (compared with 15% of their counterparts in the general WA population) [139]. Children of Indigenous carers who had been forcibly separated from their families were more than twice as likely to be at high risk of incurring clinically significant emotional and behavioural difficulties, and had twice the rates of alcohol and other drug use. Around 72% of Indigenous children were living in families that had experienced three or more major life stress events (such as death in the family, serious illness, family breakdown, financial problems or arrest) in the 12 months prior to the survey, and 22% had experienced seven or more such events.

Hospitalisation

Reflecting the high levels of distress experienced by many Indigenous people, 15,009 of the hospital separations with a principal diagnosis of ICD 'Mental and behavioural disorders' were identified as Indigenous in Australia in 2011-12 [28]. In 2010-11, there were 13,824 hospital separations with a principal diagnosis of ICD 'Mental and behavioural disorders' were identified as Indigenous in NSW, Vic, Qld, WA, SA and the NT (7.5% of Indigenous separations, excluding those for dialysis) [53]. After age-adjustment, the hospitalisation rate for Indigenous people was 2.1 times the rate for non-Indigenous people.[16]

Information about hospitalisation for the specific sub-categories within the ICD chapter 'Mental and behavioural disorders' are not available for 2010-11, but data from 2008-09 show hospitalisation rates for each sub-category were generally higher for Indigenous people than for other Australians [69]. For this period, the age-adjusted separation rates for mental and behavioural disorders due to ICD 'Substance use disorder' were 3.8 times higher for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT than for their non-Indigenous counterparts. Similarly, the rate for Indigenous people for ICD 'Schizophrenia, schizotypal, and delusional disorders' was 2.9 times higher than the rate for non-Indigenous people.

Intentional self-harm, categorised separately to the 'Mental and behavioural disorders' principal diagnosis chapter within the ICD, was responsible for 1.1% of all hospital admissions for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in 2010-11 [53]. The most recent information available for hospital admission rates for intentional self-harm shows Indigenous people living in NSW, Vic, Qld, WA, SA and the NT were more likely to be admitted for intentional self-harm than were non-Indigenous people in 2008-09 [69]. After age-adjustment, separation rates were 2.7 times higher for Indigenous males and 2.2 times higher for Indigenous females than for their non-Indigenous counterparts. Indigenous people living in remote areas had a particularly high separation rate for intentional self-harm – more than three times the rate reported for non-Indigenous people.

Mortality

In 2005-2009, 268 Indigenous people living in NSW, Qld, WA, SA, and the NT died as a result of ICD 'Mental and behavioural disorders'[17], accounting for 2% of all deaths among Indigenous people [69]. After age-adjustment, the death rate for Indigenous males for 'Mental and behavioural disorders' in 2005-2009 was 2.5 times the rate for non-Indigenous males. For the same period, the

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[16] The ICD chapter 'Mental and behavioural disorders', used for the classification of both hospitalisation and mortality, is very broad. As well as mental illness and mental health problems, it includes mental retardation and a broad sub-category for disorders relating to the use of psychoactive substances (including alcohol, tobacco, other drugs and volatile substances). The chapter doesn't include, however, the results of intentional self-harm, which are classified within the ICD chapter 'External causes of morbidity and mortality'.

[17] Mental and behavioural disorders include ICD-10 codes F00-F99.

death rate for Indigenous females due to 'Mental and behavioural disorders' was 1.6 times the rate for non-Indigenous females.

More recent data are available for deaths due to ICD 'Intentional self-harm'[18] (suicide), which is not included among the deaths for ICD 'Mental and behavioural disorders'. In 2011, the death rate for 'Intentional self-harm' for Indigenous females in NSW, Qld, WA, SA, and the NT was 3 times the rate reported for non-Indigenous females [41].

In 2010, the death rate for 'Intentional self-harm' for Indigenous people living in NSW, Qld, WA, SA, and the NT was 2.4 times the rate reported for non-Indigenous people [98]. For the period 2006-2010, deaths from intentional self-harm were much higher for Indigenous people living in NSW, Qld, WA, SA, and the NT than for non-Indigenous people, particularly for males. Rates were highest for Indigenous people living in WA (36 per 100,000) and the NT (28 per 100,000) (Table 18).

Table 18. Age-standardised death rates for intentional self-harm, by Indigenous status and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA and the NT, 2006-2010

Jurisdiction	Indigenous	Non-Indigenous	Rate ratio
NSW	10	8	1.2
Qld	22	12	1.9
WA	36	11	3.2
SA	22	11	2.0
NT	28	14	1.9

Notes:

1 Rate per 100,000 population
2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3 Due to the incomplete identification of Indigenous status, these figures probably under-estimate the true differences between Indigenous and non-Indigenous people

Source: ABS, 2012 [98]

These overall death rates conceal the very high rates of suicide among young Indigenous people: Indigenous people die from suicide at much younger ages than do non-Indigenous people. Data for NSW, Qld, WA, SA and the NT in 2006-2010 show the highest death rates for intentional self-harm were among Indigenous people aged 15-24 and 25-34 years (40 and 44 per 100,000 respectively) [98]. The burden of suicide is very high among young Indigenous females (Table 19). The suicide rates for Indigenous females aged 15-24, 25-34, and 35-44 years were more than six times higher than the rates for their non-Indigenous female counterparts. The suicide rate for Indigenous females aged 15-24 years was higher than the rates for non-Indigenous males in this age-group.

Table 19. Age-specific death rates for intentional self-harm for females, Indigenous status and selected age-groups, and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA and the NT, 2006-2010

Age-group (years)	Indigenous	Non-Indigenous	Rate ratio
	Female	Female	Female
15-24	24	4	6.5
25-34	20	3	6.3
35-44	21	3	8.4

Notes:

1 Age-specific rates per 100,000 population
2 Rate ratio is the Indigenous rate divided by the non-Indigenous rate
3 Due to the incomplete identification of Indigenous status, these figures under-estimate the true differences between Indigenous and non-Indigenous people

Source: ABS, 2012 [98]

Research in NSW, Qld, the ACT, and the NT has highlighted the increasing impact of suicide among young Indigenous people [140-142]. It has been suggested that suicide and attempted suicide among Indigenous youth (at least in NSW and the ACT) are not the result of mental illness 'in the strict pathological sense' [143, p.88], but it is certainly a manifestation of mental health problems. The level of intentional self-harm has certainly been recognised as a key indicator of Indigenous disadvantage [69].

Injury

Injury includes both physical harm to a person's body and non-physical harm, including grief, loss and suffering [144], but in public health practice attention is almost entirely confined to physical harm [145]. Even restricted to physical harm, assessing the total impact of injury is difficult because the vast majority of injuries do not result in hospitalisation or death and there are few systematic data other than those collected as part of population surveys, such as the ABS national health surveys [146]. As a result, many injuries are not brought to the attention of health policy-makers and program managers.

The classification of injury has generally followed the WHO's ICD, which includes particular attention to the external cause and intention of the injury [147]. This system is followed in this section, but it has its limitations (for more details, see [148]).

Understanding injury within an Indigenous context needs to take a diverse range of issues into consideration, including: disruption to culture, and environmental, and lifestyle variables; socioeconomic disadvantage; geographical isolation; increased road usage; exposure to hazardous environments; substance use; violence; social and familial dysfunction; risky behaviour; risky home environments; and limited access to health and social support services [144, 146].

Extent of injury

Prevalence

According to the 2004-2005 NATSIHS, health conditions 'as a

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[18] Under the ICD, intentional self-harm is classified under 'External causes of morbidity and mortality' (codes X60-X84, Y87.0).

result of an injury or accident' were reported more frequently by Indigenous people than by non-Indigenous people across all age-groups (except for the 0-14 years age-group) [39]. Reporting of injury-caused health conditions increased substantially among Indigenous adults over the age of 25 years, and was highest in the 35-44 and 45-54 years age-groups. Within these age-groups, 24% of Indigenous people reported a health condition as a result of an injury or accident. After age-adjustment, a long-term condition as a result of an injury or accident was 1.3 times more common for Indigenous females than for non-Indigenous females.

In view of the higher levels of health conditions reported as a result of an injury or accident among Indigenous people than among non-Indigenous people, it is somewhat surprising that the proportion of Indigenous people who reported having had an injury in the four weeks prior to the 2004-2005 NATSIHS was slightly less than that for non-Indigenous people (15% compared with 19%) [149]. Indigenous people were 2.8 times as likely as non-Indigenous people to report a recent injury that was the result of an attack by another person and 4.5 times as likely to report being under the influence of alcohol or other substances at the time of injury.

According to the 2008 NATSISS, almost one-quarter (23%) of Indigenous people reported that they had been a victim of physical or threatened violence in the previous 12 months, a level similar to that reported for the 2002 NATSISS (24%) [136]. Victimisation was higher among younger Indigenous people, with females aged 15-24 years having the highest proportion (31%) [150].

According to the 2008 NATSISS, 74% of Indigenous people aged 15 years or over reported problems in their neighbourhood or community, with around one-quarter reporting family violence (25%) or assault (23%) [20]. WA had the highest proportion of Indigenous people reporting family violence as a problem (34%), followed by the NT (32%). For assault, the NT had the highest proportion (31%), followed by WA (30%). Indigenous people living in remote areas reported family violence (38%) and assault (37%) more frequently than those living in non-remote areas (22% and 19%, respectively).

Hospitalisation

In 2011-12, injuries were responsible for 26,426 hospital separations for Indigenous people in Australia [28]. More detailed information is available for 2010-11, when injuries were responsible for 24,365 hospital separations for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT, accounting for 13% of all Indigenous separations (excluding those for dialysis) [52]; the age-standardised separation rate of 51 per 1,000 for Indigenous people was 2.0 times that for other Australians [53].

The leading causes of injury-related hospitalisations in NSW, Vic, Qld, WA, SA and the NT in 2010-11 were ICD 'Complications of medical and surgical care' (24%), assault (19%), falls (17%), and exposure to mechanical forces (14%) [52].

Detailed information on Indigenous injury-related hospitalisation is available for the two-year period from July 2008 to June 2010 when the age-standardised hospitalisation rates for injury for females (42 per 1,000) living in NSW, Vic, Qld, WA, SA and the NT were twice the rate for non-Indigenous females [23].

In terms of remoteness, hospitalisation rates for injury for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT increased with remoteness in 2008-09 [69]. The rate increased from 32 per 1,000 in major cities to 71 per 1,000 in remote areas. Hospitalisation rates were higher in remote areas than major cities for a number of principal diagnoses:

- for assaults, the rate was 4.5 times higher in remote areas than in major cities
- for falls, the rate was 1.8 times higher in remote areas than in major cities
- for complications of medical and surgery care, the rate was 1.9 times higher in remote areas than in major cities
- for transport accidents, the rate was 1.7 times higher in remote areas than in major cities.

Hospitalisation rates for injury increased by 14% for Indigenous people and by 9% for non-Indigenous people between 2004-05 and 2009-10 [23].

Assaults account for a higher proportion of injury-related hospitalisations among Indigenous people than they do among non-Indigenous people; in NSW, Vic, Qld, WA, SA and the NT in 2010-11, 19% of injury-related hospitalisations among Indigenous people were for assaults compared with 2% among other people [52]. The most recent detailed information is available for the two-year period from July 2006 to June 2008, when assault was responsible for around 2% of all hospitalisations for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT [20]. The hospitalisation rate for assault for Indigenous people was 11.6 times higher than the rate for other Australians. The highest rates for Indigenous people were among those aged 25-34 years (23 per 1,000, rate ratio of 13.0) and 35-44 years (22 per 1,000, rate ratio of 18.4). The hospitalisation rate for assault was 36 times higher for Indigenous women than for other women; Indigenous females aged 25-34, 35-44, and 45-54 years were hospitalised at over 40 times the rate of other females.

There were more hospitalisations from family violence-related assaults among Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in 2008-09 than among their non-Indigenous counterparts [69]. After age-adjustment, Indigenous people were hospitalised for assaults relating to family violence at 23 times the rate of non-Indigenous people. The hospitalisation rates from family violence-related assaults were highest for Indigenous females aged 25-34 years (15.1 per 1,000).

Mortality

Injury was the third most common cause of death among

Indigenous people living in NSW, Qld, WA, SA and the NT in 2010, after CVD (26% of all deaths) and cancer (19%) [49]. Injury accounted for 14% of all Indigenous deaths in this period.

Intentional self-harm was the leading cause of death from injury for Indigenous people living in NSW, Qld, WA, SA and the NT in 2010, responsible for 31% of Indigenous deaths from injury [49]. After age-adjustment, the Indigenous death rate was 2.4 times higher than that for non-Indigenous people. Transport accidents were responsible for 23% of Indigenous deaths from injury; the standardised death rate was 2.9 times higher for Indigenous people than for non-Indigenous people.

In the five-year period 2004-2008, there were 139 Indigenous deaths from assault in NSW, Qld, WA, SA and the NT, representing about 1.3% of all Indigenous deaths [20]. Indigenous people in these jurisdictions died from assault at 8.6 times the rate of non-Indigenous people. Rates were highest for Indigenous females aged 25-34 years (14 per 100,000, rate ratio of 17.4).

Disability

At some point in their lives, most people in a population will experience a disability, defined by the ABS as a limitation, restriction or impairment which has lasted, or is likely to last, for at least six months and restricts everyday activities [151]. A disability can be considered in terms of the nature of the impairment (such as sight and hearing impairments, difficulties with mobility, or brain damage) or the interaction between the individual's health condition and their environment [47, 152].

The main source of information about the level of disability at a population level is the ABS's periodic Survey of Disability, Ageing and Carers (SDAC), which also collects information about a person's need for assistance with core activities. Information about disability among Indigenous people has also been collected in the 2002 and 2008 NATSISSs [136, 153]. Some information about disability at a population level is also collected in Australia's five-yearly censuses. Being based on self-reported information, each of these sources has limitations in capturing precise estimates of disability. This is particularly true for Indigenous people, whose level of participation in surveys and censuses is lower than that of non-Indigenous people [154]. Also, some Indigenous people 'find the concept of disability hard to understand or irrelevant' [154, p.532].[19]

Despite these limitations, it is clear that disability is a serious issue for Indigenous people: about 50% of Indigenous adults reported a disability in 2008 [155]. The greater burden of disability experienced by Indigenous people is due to higher levels of morbidity in a range of areas (including mental health, diabetes, CVD, injuries, and respiratory diseases), as well as higher levels of socio-economic disadvantage [47, 154].

Extent of disability

According to information collected by the ABS in the 2006 Census[20], around 19,600 Indigenous people (4.3%) needed assistance with core activities some or all of the time [20].

The need for assistance with core activities generally increased with age for both Indigenous and non-Indigenous people in 2006 (Table 20) [58]. The proportion of Indigenous males needing assistance with core activities was higher than that of Indigenous females up to 70 years of age, but the reverse was true beyond that age [20].

The need for assistance with core activities among Indigenous people varied with the remoteness of residence in 2006 [20]. The highest proportions of Indigenous people requiring assistance with core activities were in major cities and inner regional areas (both around 5%), with proportions decreasing slightly with increasing remoteness (around 4% in both outer regional and remote areas, and 3% in very remote areas).

Table 20. Proportions of people aged 18 years or older needing assistance with core activities, by Indigenous status and age-group, Australia, 2006

Age-group (years)	Proportions of Indigenous people (%)	Proportions of non-Indigenous people (%)	Ratio
18-24	2.5	1.3	2.0
25-34	2.8	1.2	2.3
35-44	4.9	1.7	2.8
45-54	8.2	2.7	3.1
55-64	13.2	4.8	2.8
65+	20.2	13.4	1.5
All ages	8.4	4.1	2.1

Notes:

1 Proportions are expressed as percentages; proportions for 'All ages' have been standardised using the 2001 Australian standard population
2 Ratio is Indigenous proportion divided by the non-Indigenous proportion
3 ABS notes that 'needing assistance with core activities' is conceptually related to the 'presence of a profound/core activity restriction'

Source: ABS, AIHW 2008 [58]

More recent information – from the 2008 NATSISS – found overall levels of profound/core activity restriction were similar to those reported in the 2006 Census, but the levels for the younger age-groups were higher for both Indigenous and non-Indigenous people (Table 21) [69]. After age-adjustment, Indigenous people were more than twice as likely as their non-Indigenous counterparts to have a need for assistance with core activities some or all of the time (that is, have a profound/core activity restriction). The proportions of Indigenous people needing assistance with core activities were higher than those of non-Indigenous people for all age-groups. Higher proportions of Indigenous people required assistance with a core activity from a younger age (45 years and older) than did non-Indigenous people (55 years and older).

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[19] In attempting to address these conceptual difficulties, there have been some methodological differences in collecting information about disability, particularly related to core activity restriction.

[20] Information on disability collected as part of the 2011 Census is not yet available.

Table 21. Proportions of persons 18 years or older with profound/core activity restriction, persons, by Indigenous status and age-group, and Indigenous:non-Indigenous ratios, non-remote areas of Australia, 2008

Age-group (years)	Proportions of Indigenous people (%)	Proportions of non-Indigenous people (%)	Ratio
18-24	6.3	3.0	2.1
25-34	6.2	2.4	2.6
35-44	6.2	3.0	2.1
45-54	10.2	4.1	2.5
55+	17.7	8.5	2.1
All ages	10.3	4.7	2.2

Notes:

1. Ratio is the Indigenous percentage divided by the non-Indigenous percentage
2. Proportions for 'All ages' is age-standardised
3. ABS notes that 'needing assistance with core activities' is conceptually related to the presence of a 'profound/core activity restriction'

Source: Steering Committee for the Review of Government Service Provision, 2011 [69]

The proportions of profound or severe core activity restrictions among Indigenous people were similar in 2008 for remote and non-remote areas (8.1% and 7.9% respectively) [69].[21] The proportions of Indigenous people with a profound or severe core activity restriction living in non-remote areas varied slightly across the states and territories, ranging from 8.0% in Qld to 13.0% in SA.

Services

Increasing the access to disability services for the Indigenous population is one of the priority areas identified by the National Disability Agreement (NDA), developed by the Council of Australian Governments (COAG) to improve the outcomes for Indigenous people with disability [156, 157]. The *National Indigenous access framework* forms part of the NDA and aims to ensure that the needs of Indigenous people with disability are addressed through accessible and appropriate service delivery [158]. Services include accommodation support, community support, community access, respite and employment services [159, 160].

In 2009-10, around 28% of the Indigenous potential population[22] used disability support services provided by the states and territories [159, 161] (Table 22). The highest proportions of use of disability services by the Indigenous potential population was in Vic (62%), followed by SA (46%) [161] . The proportion of the Indigenous potential population requiring support services has increased steadily since 2007-08.

Table 22. Proportion (%) of Indigenous potential population aged 0-64 years accessing state/territory-delivered disability support services, by years and jurisdiction

Years	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
2007-08	14	48	15	26	43	7.3	18	23	20
2008-09	19	63	18	32	49	8.1	27	24	25
2009-10	25	62	19	36	46	12	43	16	28

Source: Steering Committee for the Review of Government Service Provision, 2012 [158]

Factors contributing to Indigenous health

Selected health risk and protective factors

The factors contributing to the poor health status of Indigenous people should be seen within the broad context of the 'social determinants of health' [5, 7]. These 'determinants', which are complex and interrelated, include income, education, employment, stress, social networks and support, working and living conditions, gender, and behavioural aspects, all of which are 'integrated' in terms of autonomy and the capacity to participate fully in society [6]. Related to these are cultural factors, such as traditions, attitudes, beliefs, and customs. Together, these social and cultural factors also have a major influence on a person's behaviour [5, 7].

Information about some of these determinants is available (see 'The context of Indigenous health'), but attention tends to be focused on the so-called 'health risk and protective factors', including those summarised in the following sections. These risk and protective factors are more proximal to adverse health outcomes, but the interpretation of the following information needs to recognise the potential roles of the underlying determinants of health.

Nutrition

The nutritional status of Indigenous people is influenced by socio-economic disadvantage, and geographical, environmental, and social factors [162, 163]. Poor nutrition is a common risk factor for overweight and obesity, malnutrition, CVD, type 2 diabetes, and tooth decay [163, 164]. The National Health and Medical Research Council (NHMRC) has endorsed a number of dietary guidelines for children, adolescents, adults, older Australians, women of childbearing age, and pregnant women [163]. The NHMRC guidelines recommend that adults consume a minimum of two serves of fruit and five serves of vegetables per day, selected from a wide variety of types and colours [165]. The guidelines also recommend including reduced-fat varieties of milk, yoghurts and cheeses, and choosing foods low in salt.

According to the 2004-2005 NATSIHS, the majority of Indigenous people aged 12 years and over reported eating fruit (86%) and vegetables (95%) on a daily basis [39]; however, 13% of Indigenous respondents reported no usual daily fruit intake (compared with 7% of non-Indigenous respondents) and 5% reported no usual

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[21] The proportions quoted here are based on a more limited set of criteria used to identify people with a disability, so are not comparable with the following estimates for the proportions of profound or severe core activity restriction in non-remote areas at a jurisdictional level.

[22] The potential population refers to 'the number of people with the potential to require disability support services, including individuals who meet the service eligibility criteria but who do not demand these services' [156, p.322].

daily vegetable intake (compared with 1% of non-Indigenous respondents).

Levels of fruit and vegetable consumption were different for Indigenous people living in remote and non-remote areas, at least partly due to the poor accessibility and availability of fruit and vegetables in remote areas [39]. The 2004-2005 NATSIHS found that 42% of Indigenous people aged 12 years or older living in non-remote areas consumed the recommended number of servings of fruit and 10% consumed the recommended number of servings of vegetables per day (Indigenous people living in remote areas were not asked how many serves of fruit and vegetables they consumed; the questions were amended to whether they usually ate fruit and/or vegetables each day.) The proportions of Indigenous people aged 12 years and older living in remote areas who did not consume these dietary items daily was substantially higher than for their counterparts living in non-remote areas – 15% and 2% respectively for vegetable consumption, and 20% and 12% respectively for fruit consumption.

The *Footprints in time: longitudinal study of Indigenous children* reported that levels of relative isolation affected the diet of study children aged between 2-7 years in 2010 [166]. Cereals, protein, and fruit and vegetables were the types of food eaten by most children across all locations, but children in areas of high isolation were more likely to have eaten protein and bush tucker, and less likely to have eaten snacks and dairy food. Around 78% of all the children drank water and 7.1% ate bush tucker.

More than three-quarters (76%) of Indigenous people aged 12 years or older living in non-remote areas reported in the 2004-2005 NATSIHS that they usually drank whole milk (including full-cream powdered milk), with only 19% drinking reduced fat and/or skim milk [39]. The consumption of reduced fat and/or skim milk was very low (6%) among Indigenous people living in remote areas, with 87% reporting that they drank whole milk.

Around 83% of Indigenous people aged 12 years or older living in remote areas reported 'sometimes' or 'usually' adding salt after cooking, compared with two-thirds (66%) of those living in non-remote areas in the 2004-2005 NATSIHS [39].

The 2004-2005 NATSIHS also addressed the question of food security by asking respondents aged 15 years and older whether they had run out of food in the previous 12 months [167]. 'Running out of food but able to get food by other means' was reported by 28% of Indigenous people living in remote areas (seven times more common than among non-Indigenous people) and by 12% of Indigenous people living in non-remote areas (four times more common than among non-Indigenous people) [105]. 'Going without food when they could not afford to buy more' was reported by approximately 8% of Indigenous people living in non-remote areas (four times more common than among non-Indigenous people), and by approximately 7% of those living in remote areas (seven times more common than among non-Indigenous people).

The 2004-2005 NATSIHS examined associations between dietary behaviour and income, educational attainment, and self-reported health [105]. Indigenous people who reported no usual daily intake of fruit or vegetables were more likely to be in the lowest quintile of income. Low fruit and vegetable intake was also associated with tobacco use and risky/high risk alcohol consumption.

In attempting to address the issue of food security in the NT, the Australian Government established a licensing regime for community stores as part of the NTER in 2007 [168]. An evaluation of the *Community stores licensing program* concluded that licensing had positively impacted food security, particularly with regard to the quality, quantity, and range of healthy foods available in the remote stores involved in the project. The licensing program was extended in 2012 to operate throughout the NT, except in major centres [169].

Physical activity

The *National physical activity guidelines for Australians* recommends moderate physical activity on most, preferably all, days of the week to improve health and reduce the risk of chronic disease and other conditions [170, 171]. At least 60 minutes of activity is recommended for children, and at least 30 minutes for adults; these amounts can be in blocks of activity or accumulated throughout the day in short bursts [171]. Low levels of physical activity have been shown to be a risk factor for CVD, type 2 diabetes, certain cancers, depression and other social and emotional wellbeing conditions, overweight and obesity, and a weakened musculoskeletal system [136, 170, 171].

The 2008 NATSISS and the 2004-2005 NATSIHS are the two most recent sources of information on the physical activity levels of Indigenous people [39, 136]. Data from the 2008 NATSISS reveal that almost two-thirds (64%) of Indigenous children aged 4-14 years had taken part in some form of physical activity or sport in the 12 months prior to the survey [Derived from 172]. Almost three-quarters (74%) of Indigenous children in this age-group had been physically active for at least 60 minutes on every day in the week before the survey, and only 3% had not had any activity [136].

Among Indigenous children, the highest level of participation in physical activity was for children living in inner/outer regional areas (45%), followed by those living in major cities (34%), and remote/very remote areas (22%) [Derived from 172]. Of children participating in physical activity, the highest proportions were in NSW and Vic (both 30%), and the lowest in ACT (0.9%). Of female Indigenous children aged 4-14 years, 48% participated in some form of physical activity or sport.

For adults, self-reported data from the 2008 NATSISS show that almost one-third (30%) of Indigenous people aged 15 years and over had taken part in some type of physical activity or sport in the previous 12 months [Derived from 172]. Participation levels were highest for people living in inner/outer regional areas (42%), followed by major cities (36%), and remote/very remote areas

(23%). The states/territories with the highest participation levels were NSW (30%) followed closely by Qld (27%), and the lowest levels were found in the ACT (1.3%). Participation levels were 23% among Indigenous females; levels decreased with age from around 47% for the 15-24 years age-group to around 4% for the 55 years and over age-group.

In the 2004-2005 NATSIHS, after age-adjustment, just over half (51%) of Indigenous people surveyed in non-remote areas reported their physical activity level as sedentary (very low or no physical activity) compared with around one-third (33%) of non-Indigenous people [20]. Around one-quarter (27%) of Indigenous people reported low levels of activity compared with over one-third of non-Indigenous people (36%). Only one-fifth (21%) of Indigenous people reported moderate or high levels compared with one-third (31%) of non-Indigenous people.

The highest levels of sedentary or low levels of activity were reported among the older age-groups, including 45-54 years (83%) and 55 years and over (85%) [20]. The highest levels of moderate to high physical activity levels were reported for age-groups 15-24 years (32%) and 25-34 years (27%). Indigenous people reported higher proportions of sedentary activity levels than did non-Indigenous people across all states and territories, with levels highest for Indigenous people in NSW (78%) and Tas (70%). Indigenous females had a greater proportion of sedentary activity levels than did Indigenous males (51% compared with 42%).

Bodyweight

The standard measure for classifying a person's weight for height is body mass index (BMI – weight in kilograms divided by height in metres squared) [47]. Being overweight (BMI 25.0 to 29.9) or obese (BMI of 30.0 or more) increases a person's risk for CVD, type 2 diabetes, certain cancers, and some musculoskeletal conditions. A high BMI can be a result of many factors, either alone or in combination, such as poor nutrition, physical inactivity, socioeconomic disadvantage, genetic predisposition, increased age, and alcohol and tobacco use [173]. Being underweight (BMI less than 18.5) can also have adverse health consequences, including decreased immunity (leading to increased susceptibility to some infectious diseases) and osteoporosis (bone loss) [47]. The 2003 NHMRC dietary guidelines for adults recommend that adults prevent weight gain by being physically active and eating according to their energy needs [173].

Overweight and obesity contributed 11% to the total burden of disease among Indigenous people in 2003, second only to tobacco [174]. It is possible, however, that this may be an under-estimate because optimal BMI cut-offs are still uncertain for the Indigenous population (due to differences in body shape and other physiological factors) [175]. It has been suggested that a BMI of 22 might be a more appropriate than 25 as a measure of acceptable weight for Indigenous people. There is also evidence that measuring the waist to hip ratio (WHR) in Indigenous people is more sensitive and easier to measure than BMI [176, 177].

Based on BMI information collected as a part of the 2004-2005 NATSIHS, 57% of Indigenous people aged 15 years or older were classified as overweight or obese, with slight differences according to remoteness of residence (the lowest proportion was 55% in major cities and the highest was 62% in remote areas) [39]. After age-adjustment, the level of being overweight or obese was 1.2 times higher for Indigenous people than for their non-Indigenous counterparts. Among Indigenous females 24% were overweight and 34% were obese [20].

In 2004-2005, Indigenous people aged 18 years or more were more likely to be overweight or obese if [20]:

- their self-reported health status was fair/poor (68%) compared with those whose health was excellent/very good (55%)
- they had three or more long-term health conditions (65% compared with 56% of those with no long-term health conditions)
- they had circulatory problems (72% compared with 57% of those without circulatory problems)
- they had diabetes (83% compared with 57% of those without diabetes).

The prevalence of overweight and obesity among Indigenous adults living in non-remote areas increased steadily from 51% in 1995, to 56% in 2001, and to 60% in 2004-2005 [20].

Overweight and obesity were slightly more common overall among Torres Strait Islander people aged 15 years or older (61%) than among Aboriginal people in that age-range (56%) (the difference is not statistically significant) [39]. The level of overweight and obesity was particularly high among Torres Strait Islanders living in the Torres Strait area, with 86% having a BMI of 25.0 or greater. A 2012 study of Indigenous youths in the Torres Strait (aged 5 to17 years) found that 46% were overweight or obese and 35% had central obesity[23] [178]. Females had higher levels of central obesity (50%) than did males (18%). The study also found a consistent association between overweight/obesity and low levels of physical activity.

A study in central Australia found that 21% of Indigenous youths (aged 3 to 17 years) were overweight and 5.4% were obese (there was no difference between males and females) [179]. In comparison, the NHS 2007-2008 reported 17% of all Australian children aged 5 to 17 years were overweight and 8% obese [180].

In 2004-2005, around 4.4% of Indigenous people aged 15 years or older were underweight, with about 6.0% of Indigenous women having a BMI of less than 18.5 [20]. Indigenous adults were also more likely to be underweight if:

- they were current smokers (6.0%), compared with those who were ex-smokers (1.9%) or who had never smoked (3.2%)

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[23] Central obesity (a high waist circumference) indicates an accumulation of fat around body organs such as the heart, liver, kidney and pancreas. Individuals with central obesity are at high risk of developing chronic diseases such as heart disease and diabetes.

- they did not have a non-school qualification (5.7% compared with 2.1% who had achieved a non-school qualification)
- they engaged in low to moderate levels of physical activity (6.6% compared with 0.7% who engaged in high levels of physical activity)
- they reported not eating fruit daily (6.2% compared with 4.1% who reported eating fruit daily)
- they reported not eating vegetables daily (8.3% compared with 4.1% who ate vegetables daily).

Breastfeeding

Breast milk, which is the natural and optimum food for babies, contains proteins, fats and carbohydrates at levels that are appropriate for an infant's metabolic capacities and growth requirements [163]. It also has anti-infective properties and contains immunoglobulins, which provide some immunity against early childhood diseases [181]. The NHMRC recommends that as many infants as possible are exclusively breastfed until 6 months-of-age and that mothers then continue breastfeeding until 12 months-of-age [182].

According to the 2010 Australian National Infant Feeding Survey, breastfeeding initiation levels were similar among Indigenous and non-Indigenous mothers (87% and 90%, respectively), but levels of exclusive breastfeeding declined more rapidly among Indigenous mothers [183]. At 6 months-of-age, only 11% of Indigenous babies were exclusively breastfed, compared with 27% of non-Indigenous babies. Around 60% of Indigenous children aged 0-6 months were being breastfed at the time of the survey compared with 68% of non-Indigenous babies.

The more comprehensive 2004-2005 NATSIHS found that more than four-fifths (84%) of Indigenous mothers aged 18-64 years reported having breastfed their children, which is similar to the level in 2001 (86%) [39]. The proportion of women who breastfed their children was higher in remote areas (92%) than in non-remote areas (80%).

According to the 2004-2005 NATSIHS, two-thirds (66%) of Indigenous children aged 0-3 years living in non-remote areas were reported to have been breastfed for some period of time [39]. This level is slightly lower than the 72% found among non-Indigenous children. A similar proportion of Indigenous and non-Indigenous infants had been breastfed for 6-12 months (19% and 22% respectively) and for 12 months or more (11% and 14% respectively). Around 13% of Indigenous children aged 0-3 years were being breastfed at the time of the survey.

The findings of the 2000-2002 WAACHS suggest that mothers of Indigenous children were more likely to initiate breastfeeding and breastfeed for longer than mothers in the general population, particularly those living in more isolated areas [22].

The *Footprints in time – the longitudinal study of Aboriginal children* collected data from eleven sites (rural, remote and urban) around Australia in 2008-2009 [184]. Data on breastfeeding from this study showed that 80% of Indigenous children in the study had been breastfed at some time during their early years, and 22% of Indigenous infants had been breastfed for at least 12 months. This study found that children living in more remote areas had been breastfed for a slightly longer period of time than those living in other areas.

Tobacco use

Tobacco use increases the risk of chronic disease, including CVD, certain cancers, and lung diseases, as well as a variety of other health conditions [23]. Tobacco use is also a risk factor for complications during pregnancy and is associated with preterm birth, LBW, and perinatal death. Environmental tobacco smoke (passive smoking) is of notable concern to health, with children particularly susceptible to problems that include middle ear infections, asthma, and SIDS.

In 2003, tobacco use was the leading cause of burden of disease and injury among Indigenous people, responsible for 12% of the total burden of disease [174]. Tobacco use accounted for one-in-five deaths in the Indigenous population.

According to the 2008 NATSISS, almost one-half (47%) of Indigenous people aged 15 years or older reported that they were current smokers [185]. Almost two-thirds (62%) of Indigenous current daily smokers reported trying to quit or reduce their smoking in the 12 months prior to interview [155]. More than one-third (34%) of Indigenous people reported that they had never smoked [185]. The proportion of Indigenous women who were current smokers was 45%. A higher proportion of Indigenous people living in remote/very remote areas (53%) reported being current smokers than those living in inner/outer regional areas (47%) or major cities (42%) [186]. After age-adjustment, the proportion of current smokers among Indigenous people was 2.3 times higher than the proportion among non-Indigenous people [136]. This ratio is similar to that reported for the 2010 National Drug Strategy Household survey (NDSHS) [187].

The overall proportion of Indigenous smokers in 2008 (47%) represents a slight decline from the levels in 1994 (52%) and 2002 (51%) [153, 185]. Importantly, this overall decline has been accompanied by a decline in smoking intensity [188]. Heavy tobacco use, defined as smoking more than 20 cigarettes per day, declined among Indigenous people from 17% in 1994 to 9.4% in 2008; light tobacco use (smoking one to 10 cigarettes per day) increased from 17% to 22% over the same period; there was no significant difference in the smoking of 11 to 20 cigarettes per day.

High rates of smoking have been reported for Indigenous mothers [21]. In 2009, almost 50% of Indigenous mothers reported smoking during pregnancy; this level is 3.8 times that of their non-Indigenous counterparts.

In 2008, 16% of Indigenous children aged 0-3 years and 23% of Indigenous children 4-14 years lived with someone who usually smoked inside the house [189, 190]. For Indigenous people aged 15 years and older the proportion was 26% [155].

Alcohol use

Alcohol-related harm, which includes chronic diseases, accidents and injury, is not limited to the user, but extends to families and the broader community [191]. Consumption of alcohol in pregnancy can affect the unborn child leading to foetal alcohol spectrum disorder (FASD), an umbrella term that describes a range of conditions (comprising abnormalities such as growth retardation, characteristic facial features, and central nervous system anomalies (including intellectual impairment)) [192]. These disorders are incurable, but wholly preventable.

In 2003, the burden of disease attributable to alcohol among Indigenous people was more than twice that among other Australians (5.4% compared with 2.3%) [193, 194]. Of 11 selected risk factors, alcohol was the fifth leading cause of the burden of disease among Indigenous people [193]. The highest levels of disease burden attributable to alcohol among Indigenous people were for injury (22%), mental disorders (16%), and cancers (6.3%).

Assessing risks from use of alcohol

The information presented here relates to alcohol risk based on the NHMRC 2001 guidelines. In 2009, the NHMRC introduced revised guidelines that depart from specifying 'risky' and 'high risk' levels of drinking. The revised guidelines seek to estimate the overall risk of alcohol-related harm over a lifetime and to reduce the level of risk to one death for every 100 people [191]. For women, guideline one states that to reduce the risk of alcohol-related harm over a lifetime no more than two standard drinks should be consumed on any day, and guideline two states that to reduce the risk of injury on a single occasion of drinking no more than four standard drinks should be consumed. Guideline three recommends avoiding alcohol for those aged under 15 years and delaying alcohol for those aged 15 to 17 years. Guideline four recommends pregnant and breast feeding women avoid alcohol.

Extent of alcohol use

Surveys have shown consistently that Indigenous people are less likely to drink alcohol than non-Indigenous people, but those who do drink are more likely to consume it at harmful levels [39, 187]:

- The 2008 NATSISS found that 35% of Indigenous people aged 15 years or older were abstainers; this level of abstinence is more than 2.5 times that of the Australian population aged 15 years or older reported in the 2007-2008 NHS (13%) [180, 195].
- The 2004-2005 NATSIHS found that 24% of Indigenous people aged 18 years or older had never consumed alcohol or had not done so for more than 12 months; after age-adjustment, abstinence was 1.9 times more common among Indigenous people than among non-Indigenous people [20].
- The 2004-2005 NATSIHS found that 30% of Indigenous females and 20% of non-Indigenous females aged 18 years or older had never consumed alcohol or had not done so in the previous 12 months [20].
- The 2008 NATSISS found that 37% of Indigenous people aged 15 years and over reported binge drinking at risky/high risk levels (based on the largest quantity of alcohol used in a single day in the two weeks prior to interview), similar to the level reported in the 2002 NATSISS (35%) [155].
- The level of long-term risky/high risk drinking among Indigenous people in 2008 (17%) (based on daily consumption of alcohol and the frequency of consumption in the previous 12 months) was similar to that reported in 2002 (15%) [155]. Long-term risky/high risk drinking was reported by 16% of Indigenous young people aged 15-24 years in 2008, an increase from 11% in 2002, which was due to a significant rise in the level of risky/high risk drinking among young males (from 11% in 2002 to 19% in 2008) [196]. Comparable estimates are not available for non-Indigenous people, due to differences in the questions asked in the 2007-08 NHS.)

The most recent comparable Indigenous/non-Indigenous information for risky/high risk alcohol consumption is available from the 2004-2005 NHS and the 2004-2005 NATSIHS, which found that 55% of Indigenous people were binge drinking (drinking at short-term risky/high risk levels based on the amount of drinks consumed in any one day) and 17% were drinking at long-term risky/high risk levels (based on the amount of drinks consumed per day and the total for the week) [20]. After age-adjustment, Indigenous people were twice as likely as non-Indigenous people to have consumed alcohol at short-term risky/high risk levels at least once a week in the previous 12 months. This is likely to be an underestimate of the ratio of short-term risky/high risk drinkers, however, as it does not take into account the higher level of abstinence in the Indigenous population. Overall, Indigenous and non-Indigenous people were equally as likely to drink at long-term risky/high risk levels (15% and 14% respectively). But, when the greater level of abstinence in the Indigenous population is accounted for, Indigenous people were around 1.5 times as likely as non-Indigenous people to drink at long-term risky/high risk levels.

Analysis of information collected by the 2008 NATSISS on alcohol consumption during pregnancy found that 80% of mothers of Indigenous children aged 0-3 years did not drink during pregnancy, 16% drank less alcohol than usual, and 3.3% drank the same or more alcohol during pregnancy [20]. The proportion of mothers who drank the same or more alcohol during pregnancy was greatest in Tas/ACT (6.0%), followed by Vic (5.4%), and WA (5.0%).

Hospitalisation

For Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in the two-year period July 2008 to June 2010, 2% of all hospitalisations were for a principal diagnosis related to alcohol use (excluding dialysis) [23]. Almost nine-tenths (86%) of hospitalisations related to alcohol use were for ICD 'Mental and behavioural disorders due to alcohol use', including acute intoxication, dependence syndrome, and withdrawal state. The hospitalisation rate for alcoholic liver disease among Indigenous people was six times the rate for non-Indigenous people. After age-adjustment, Indigenous females were hospitalised at four times the rates of their non-Indigenous counterparts.

Hospitalisation rates with a principal diagnosis related to alcohol use for Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in 2008-10 varied by level of remoteness. Rates were highest for Indigenous people living in remote areas (14 per 1,000) and lowest for those living in very remote areas (7 per 1,000) [23].

Mortality

There were 382 Indigenous deaths related to alcohol use in NSW, Qld, WA, SA and the NT in the five-year period 2006-2010 [23]. Almost seven-tenths of deaths (68%; 261 deaths) were attributed to alcoholic liver disease, with a death rate six times higher for Indigenous people than for non-Indigenous people. The death rate for alcohol-related deaths attributed to mental and behavioural disorders was seven times higher and the rate for alcohol-related deaths attributed to alcohol poisoning five times higher than those of non-Indigenous people. After age-adjustment, death rates for Indigenous females were eight times higher than those for their non-Indigenous counterparts.

Illicit drug use

Illicit drug use describes the use of those drugs that are illegal (e.g. cannabis, heroin, ecstasy, and cocaine), the use of volatile substances (e.g. petrol, glue, and solvents), and the non-medical use of prescribed drugs (e.g. pain killers (analgesics)) [47]. Illicit drug use is a risk factor for ill-health, including conditions such as HIV/AIDS, hepatitis, poisoning and self-inflicted injury, and can cause death.

Illicit drug use accounted for 2.0% of the overall burden of disease in Australia in 2003; it accounted for 8.0% of the mental health burden of disease, and 3.6% of the injury burden of disease [194]. For the same year, illicit drug use was responsible for 3.4% of the burden of disease among the Indigenous population; the highest level of disease burden attributable to illicit drugs was for mental health (13%) and injury (3.6%) [193].

Extent of illicit drug use

Almost one-quarter (23%) of Indigenous people aged 15 years or over reported in the 2008 NATSISS that they had used an illicit substance in the 12 months prior to interview [20]. This level was 1.6 times that reported in the 2010 NDSHS for the non-Indigenous population aged 14 years or over (14%) [187], but less than that reported by Indigenous people aged 18 years or over (28%) in the 2004-2005 NATSIHS [39].

According to the 2008 NATSISS, the illicit substances used most commonly by Indigenous people aged 15 years or over were cannabis (17% used in the previous 12 months and 36% ever used), pain killers (4.5% and 7.4%), amphetamines (4.0% and 11%), ecstasy (3.3% and 7.7%), and petrol and other inhalants (0.4% and 5.8%) [20]. The three illicit drugs most commonly used in the previous 12 months were the same in 2008 as those reported in the 2004-2005 NATSIHS, but reported use had declined: cannabis (from 23% in 2004-2005 to 17% in 2008), amphetamines (from 7% to 4.0%), and pain killers (from 6% to 4.5%) [20, 39].

Use of illicit drugs in the previous 12 months was reported more by Indigenous people aged 15 years or over living in non-remote areas than by those living in remote areas (24% compared with 17%) in the 2008 NATSISS [20]. Similarly, the proportion of Indigenous people who had ever used illicit substances was higher for those living in non-remote areas (47%) than in remote areas (31%). There were higher proportions of use for all types of drug among Indigenous people living in non-remote areas compared with those living in remote areas, both for 'use in the last 12 months' and 'for having ever used an illicit substance'.

According to the 2008 NATSISS, illicit drug use in the previous 12 months was highest among Indigenous people aged 18-24 years (32%), 25-34 years (26%), and 35-44 years (20%) [20]. The proportions of people who had used drugs in the previous 12 months were at least 1.5 times higher for males than for females within each age-group except the 15-17 years age-group where proportions were similar (16% and 14% respectively).

In non-remote areas, around twice as many males as females had used cannabis (23% compared with 12%), amphetamines (5.4% compared with 2.7%), and ecstasy (4.3% compared with 2.3%) in the previous 12 months [20]. Between 2002 and 2008, use of cannabis decreased slightly from 19% to 17% (due to a decrease in use by females from 16% to 12%); use of amphetamines in the previous 12 months decreased slightly from 4.7% to 4.0% (due to a decrease in use by females from 4.5% to 2.7%, despite a slight rise in use by males from 4.9% to 5.4%); and use of ecstasy in the previous 12 months increased from 1.9% to 3.3% (due to a doubling in use by males from 2.2% to 4.3% and an increase in use by females from 1.6% to 2.3%).

The 2008 NATSISS found that among Indigenous people aged 15 years or over, a higher proportion of 'recent illicit substance users' were current daily smokers (68%) and risky/high-risk drinkers (8.1%) compared with those who had 'never used an illicit substance' (35% and 3.2% respectively) [20]. Similarly, higher proportions of Indigenous people who had experienced stressors in the last 12 months were more likely to be 'recent substance users' than 'never used illicit substances'; of those who had experienced violence, around 12% were 'recent substance users' compared with 4.6% who 'never used illicit substances'.

Hospitalisation

Between July 2008 and June 2010, there were 4,537 hospital separations related to substance use among Indigenous people in NSW, Vic, Qld, WA, SA and the NT, accounting for around 1% of all Indigenous hospitalisations (excluding those for dialysis) [23]. Detailed information is not available for 2008-10, but in the two-year period July 2006 to June 2008, the leading cause of substance use-related hospitalisations was ICD 'Mental/behavioural disorders related to cannabinoids', which was responsible for 15% of drug related hospitalisations [20]. Poisoning resulting from 'use of antiepileptic, sedative-hypnotic and anti-Parkinson's drugs', and 'psychotropic drugs (including antidepressants)' were the second equal most common cause of drug-related hospitalisation, each accounting for 14% of all these hospitalisations.

Hospitalisations related to substance use among Indigenous people occurred at more than twice the rate of the non-Indigenous population in 2008-10 and 2006-08 [20, 23]. Detailed information is not available for 2008-10, but in 2006-08 hospitalisations of Indigenous people for 'mental/behavioural disorders related to substance use' occurred at almost five times the rate of the non-Indigenous population from the 'use of cannabinoids', and at around three times the rate from the 'use of multiple drug and psychoactive substances', and the 'use of other stimulants'. Hospitalisations of Indigenous people from 'use of opioids' occurred at around twice the rate of non-Indigenous people, and at 39 times the rate from the 'use of volatile solvents'.

In relation to remoteness of residence, Indigenous people living in NSW, Vic, Qld, WA, SA and the NT in the period June 2007 to June 2009 were hospitalised with a principal diagnosis related to drug use at 2.9 times the rate of non-Indigenous people in major cities, 2.6 times the rate in inner regional areas, 2.1 times the rate in outer regional areas, 2.4 times the rate in remote areas, and 1.3 times the rate in very remote areas [20].

According to the 2008 NATSISS, 95% of mothers of Indigenous children aged 0-3 years did not use illicit drugs during pregnancy [20]. Around 4% of mothers of Indigenous children in NSW, Qld, Tas/ACT and the NT used illicit drugs during pregnancy. The proportion of mothers of Indigenous children who did use drugs during pregnancy was highest in Vic (9.3%), followed by WA (8.5%), and SA (6.1%).

Mortality

The rate of drug-induced deaths was around 1.5 times higher for Indigenous people living in NSW, Qld, WA, SA and the NT in 2005-2009 than for their non-Indigenous counterparts (7.8 compared with 5.3 per 100,000) (Table 23) [69]. Rates were higher for Indigenous people than for non-Indigenous people in NSW, WA and SA, but similar in Qld. Rates for Indigenous were females were 6.1 per 100,000.

Table 23. Rates of drug induced deaths, by Indigenous status, and Indigenous:non-Indigenous rate ratios, NSW, Qld, WA, SA, and the NT, 2005-2009

Jurisdiction	Indigenous rate	Non-Indigenous rate	Rate ratio
NSW	11.5	5.5	2.1
Qld	4.0	4.3	0.9
WA	9.3	5.4	1.7
SA	17.8	6.3	2.8
NSW, Qld, WA, SA and the NT	7.8	5.3	1.5

Notes:

1 Rates are per 100,000 (indirect standardisation)

2 Non-Indigenous does not include deaths where Indigenous status is not stated

3 Separate rates for the NT were not provided due to low numbers of deaths

Source: Steering Committee for the Review of Government Service Provision, 2011 [69]

Sixty-three of the deaths of Indigenous people living in NSW, Qld, WA, SA and the NT in 2003-2007 were attributed to drug use [197]. More than one-half (52%) of these deaths were due to accidental poisoning from narcotics, and 17% from accidental poisoning from organic solvents. In comparison, there were 993 drug-related deaths among their non-Indigenous counterparts, 53% of which were due to accidental poisoning from narcotics and 28% from accidental poisoning from antidepressants.

Concluding comments

It is clear from this *Summary* that Indigenous people remain the least healthy sub-population in Australia and there are many health concerns for Indigenous females. Being a 'snapshot' of the most recent indicators of health status – with limited attention to trends – the *Summary* doesn't, however, fully reflect the evidence that the health status of Australia's Indigenous people continues to improve slowly.

For a start, there is evidence of reductions in mortality in recent years in a number of jurisdictions.[24] Age-standardised death rates for Indigenous people living in WA, SA and the NT, the only jurisdictions with adequate data quality for long-term analysis, declined by around 33% over the 20-year period 1991-2010 [23]. The gap in death rates between Indigenous and non-Indigenous people declined significantly both absolutely and relatively over that period. Much of the decline appears to have been in the first half of the 20-year period, however, as the pattern in WA, SA and the NT in 2001-2010 has been very similar to that documented for NSW, Qld, WA, SA and the NT combined, for which jurisdictions the rates declined by only 5%.

An earlier analysis of Indigenous mortality in the NT, the jurisdiction with by far the best quality data about Indigenous deaths, provides evidence of declines in death rates for some causes of death and a slowing in the increase in rates for others [198]. In the twelve-year period 1990-2001, the death rate for COPD declined significantly. The death rates for stroke and renal failure for people aged less than 50 years also declined, but not significantly. On the other hand, death rates for coronary heart disease and diabetes mellitus increased significantly in the period 1990-2001, but at lesser annual rates of change than documented for the period 1977-1989. A later analysis of deaths from acute myocardial infarction in the NT in the 13-year period 1992-2004 revealed that the increase in death rates for Indigenous people was due to a marked increase in the incidence of coronary heart disease, which had been partly moderated by an increase in survival [199].

The most recent estimate of life expectancy at birth for Indigenous females is 72.9 years (67.2 years for males) in 2005-2007 – is higher than previous estimates, but, as the ABS warns, the apparent improvements are likely to be due largely to revised statistical methods [26].[25]

Indigenous infant mortality rates for WA, SA and the NT declined significantly over the 20-year period 1991-2010 [23]. The Indigenous rate declined by 62% over that period, slightly more than the 43% decline of the rate for non-Indigenous people. The gap between Indigenous and other Australians closed significantly, both absolutely (67%) and relatively (35%).

The long-term declines in infant mortality rates have occurred despite the lack of parallel changes in the birthweights of babies born to Indigenous mothers – the mean weight of babies born in 2010 to Indigenous mothers was still around 200 grams less than the weights of babies born to non-Indigenous mothers [17]. Importantly, the proportions of LBW babies born to Indigenous mothers increased by 11% over the 19-year period 1991-2009 and the gap in proportions between babies born to Indigenous and non-Indigenous mothers widened. These long-term estimates may conceal some recent improvements, however, as analysis of births in the 10-year period 2000-2009 suggests a significant decline in the proportion of LBW babies born to Indigenous mothers [23].

There is no doubt other evidence of improvement in some measures health status, and of deterioration in others. But, clearly, the gap between the health status of Indigenous females and that of other Australian females is still very, very wide.

There have also been substantial improvements in the availability of information about the health of Aboriginal and Torres Strait Islander people. Such information is crucial for both policy and strategy development and for monitoring progress towards the various targets set recently as a part of the COAG commitments to 'closing the gap' in health between Indigenous and other Australians (see below) [200].

The preparation of this *Summary* has benefited greatly from some of these improvements, particularly the introduction of regular reporting about various aspects of Indigenous health. The first of these substantial reports was the 1997 *The health and welfare of Australia's Aboriginal and Torres Strait Islander peoples* [201], produced jointly by the ABS and the AIHW. The second was the Indigenous compendium to the annual *Reports on government services* produced by the Steering Committee for the Review of Government Service Provision (SCRGSP), first published by the Productivity Commission in 2003 [202]. This report was complemented by a biennial report on key indicators of Indigenous disadvantage, also produced by the SCRGSP and published by the Productivity Commission (the first report was published in November 2003) [203]. These reports were followed in 2006 with the first report in the *Aboriginal and Torres Strait Islander health performance framework* series [204]. These reports, prepared by the Australian Health Ministers Advisory Council (AHMAC) in 2006, 2008, 2011 and 2012, are accompanied by substantial detailed analyses.

Along with these substantial reports on Indigenous health and related areas, continuing attention has been directed at improving the various data collections that feed into these and other reports. This work, overseen by the National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data (NAGATSIHID), has achieved considerable progress, but the

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[24] Reflecting the uncertainty and probable variation in the levels of under-identification of Indigenous status, some caution should be exercised in assessing trends in death rates.

[25] A variety of techniques has been developed by demographers to estimate life expectancy in instances where registration of deaths is incomplete. This is effectively the case with Indigenous deaths: even though very few Indigenous deaths will not be registered, many Indigenous deaths are not correctly identified as such.

current NAGATSIHID strategic plan acknowledges the need for 'new data collections or enhancing existing collections' … 'so that a comprehensive information base is available to inform policy, practice and service delivery' [200, p.13].

Despite the important advances that have been made in recent years in both the extent and quality of information about the health of Indigenous people, it will be very obvious to readers of this *Summary* that there is substantial scope for further improvement.

For a start, the identification of Indigenous people in most of the various health and related data collections is still far from complete. Few of the collections have good national coverage of Indigenous people, and, for many health issues, good information is only available for a minority of jurisdictions and/or is quite dated. Probably the best example is cancer, the second most common cause of death among Indigenous people. The AIHW's recent *Cancer in Australia: an overview 2012* is a welcome addition, but, as that report acknowledges, national data on cancer incidence and mortality among Indigenous people are not available and Indigenous-specific information about screening is only collected for breast cancer and not for cervical and bowel cancer [48]. Readers of this *Summary* will recognise many other areas where there is a need for substantial enhancements.

In view of the commitments made in December 2007 by all Australian governments, through the COAG,[26] to 'closing the gap' in disadvantage between Indigenous and other Australians [205], the need for reliable, up-to-date, comprehensive information about the health of Indigenous people is more important than ever. The 'closing the gap' commitments were stimulated by the *Social justice report 2005*, which highlighted the vast gap between the health of Indigenous and other Australians and called on Australian governments to commit to achieving Indigenous health equality within 25 years [206].[27]

Following the release of the report, 40 of Australia's leading Indigenous and non-Indigenous health peak bodies and human rights organisations joined forces to launch a campaign to 'close the gap' on health inequality [207]. In December 2006, the coalition published an open letter to the Prime Minister, the State Premiers and Territory Chief Ministers, parliamentarians and the Australian public calling for an end to Indigenous health inequality. The 'close the gap' campaign was launched in April 2007.

The Indigenous Health Summit, held in March 2008, concluded with the Prime Minister issuing, on behalf of the Australian Government and the Indigenous peoples of Australia, a statement of intent 'to work together to achieve equality in health status and life expectancy between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians by the year 2030' [208, p.1].

In March 2008, the Prime Minister also announced establishment of the National Indigenous Health Equality Council,[28] which 'advises the [Australian Government's] Minister for Health and Ageing… on the achievement of equitable and sustainable health outcomes for Aboriginal and Torres Strait Islander peoples' [209, p.546].

Reflecting the increased attention directed to Indigenous reform, it is now a standing item on all COAG meetings. As a part of its deliberations about 'closing the gap', COAG has agreed on a number of specific targets for reducing Indigenous disadvantage in the areas of education, early childhood development, health and employment. The targets are to [210]:

- close the life expectancy gap within a generation
- halve the gap in mortality rates for Indigenous children under 5 years within a decade
- ensure access to early childhood education for all Indigenous 4 year-olds in remote communities within five years
- halve the gap in reading, writing and numeracy achievements for children within a decade
- halve the gap for Indigenous students in year 12 attainment rates by 2020
- halve the gap in employment outcomes between Indigenous and non-Indigenous Australians within a decade.

In addressing these targets, COAG, through the Australian and state and territory governments, allocated $4.6 billion over four years across early childhood development, health, housing, economic participation, and remote service delivery. COAG also achieved a number of supportive commitments by the corporate and community sectors [210].

This is the first time that such a high level of commitments has been made by the Australian, state and territory governments and others, raising the possibility of substantial reductions in the health and other disadvantages experienced by Indigenous people.

As encouraging as these commitments are, achievement of substantial improvements in the health and wellbeing of Indigenous people will depend largely on the effective implementation of comprehensive strategies and policies that address the complexity of the factors underlying the disadvantages experienced by Indigenous people.

Importantly, effective, integrated comprehensive strategies and policies will need to be sustained for a long period of time, as improvements to the extent set in the various targets will not occur in the short-term. The timeframes for the 'closing the gap' targets suggest there is some awareness by governments of the enormity of the challenge, but the real test will be to sustain the commitments through changing political and economic cycles.

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[26] COAG is 'the peak intergovernmental forum in Australia, comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association (ALGA)'.

[27] The *Social justice report* is an annual report of the Australian Human Rights Commission's Aboriginal and Torres Strait Islander Social Justice Commissioner.

[28] The Council was re-named National Aboriginal and Torres Strait Islander Health Equality Council in August 2011.

Glossary

age-adjustment
see **age-standardisation**

age-specific death rate
the number of deaths of persons of a specific age-group in one year per 1,000 persons of the same age-group

age-specific fertility rate
the number of live births to women in a specified age-group in one year per 1,000 women in the same age-group

age-standardisation
a procedure for adjusting rates (such as death rates) to minimise the effects of differences in age composition and facilitate valid comparison of rates for populations with different age compositions. See **direct standardisation** and **indirect standardisation**

body mass index (BMI)
a measure calculated by dividing weight in kilograms by height in metres squared, and which categorises a person as ranging from underweight to obese: underweight (BMI: <18.5); normal (BMI: 18.5–24.9); overweight (BMI: 25.0–29.9); obese (BMI: 30.0+)

crude rate
the number of new cases (crude incidence rate) or deaths (crude death rate) due to a disease over the total population that could be affected, without considering age or other factors

direct standardisation
the procedure for adjusting rates in which the specific rates for a study population are averaged using as weights the distribution of a standard population

excess deaths
the difference between the actual number of deaths occurring and the number expected from rates for the comparable population (the population used for comparison is most often the total Australian population or the total for the specific jurisdictions being considered)

expectation of life
predicted number of years of life remaining to a person if the present pattern of mortality does not change. It is a statistical abstraction based on current age-specific death rates

fertility rate
see **age-specific fertility rate** and **total fertility rate**

hospitalisation
an episode of admitted patient care, which can be either a patient's total stay in hospital, or part of a patient's stay in hospital that results in a change to the type of care. Hospital separations are more commonly known as 'admissions', but can also be referred to as 'hospitalisations'

incidence
the number of instances of illness commencing, or of persons falling ill, during a given period in a specified population (see **incidence rate**)

incidence rate
the number of instances of illness commencing, or of persons falling ill, during a given period in a specified population divided by the population at risk

Indigenous Australians
term used to refer collectively to the two Indigenous sub-populations within Australia – Australian Aborigines and Torres Strait Islanders

indirect standardisation
the procedure for adjusting rates in which the specific rates in a standard population are averaged using as weights the distribution of the study population

infant mortality rate (IMR)
number of infant deaths per 1,000 live births

International Classification of Disease (ICD)
World Health Organization's internationally accepted classification of death and disease

life expectancy
see **expectation of life**

maternal mortality ratio
number of maternal deaths divided by the number of confinements (in 100,000s)

median age at death
the age above and below which 50% of deaths occurred

morbidity
state of being diseased or otherwise unwell

mortality
death

non-Indigenous Australians
a person who is not Aboriginal and/or Torres Strait Islander; also referred to as 'other Australians'

prevalence
the number of instances of a given disease or other condition in a given population at a designated time

risk factor
an attribute or exposure that is associated with an increased probability of a specified outcome, such as the occurrence of a disease. Not necessarily a causal factor

standardisation
the process by which adjustments are made to take account of differences in the age structures of populations

standardised mortality ratio (SMR)
the ratio of the observed number of deaths in a study population to the number expected if the study population had the same age-specific rates as a standard population. (The SMR is expressed sometimes as the ratio multiplied by 100.); see **age-standardisation** and **indirect standardisation**

standardised rate
the number of new cases (standardised incidence rate) or deaths (standardised death rate) due to a disease for a particular population after adjustment has been made for differences in the age structures of this population and a reference population; see **standardisation**

total fertility rate
the number of live births a woman would have if, throughout her reproductive years, she had children at the rates prevailing in the reference calendar year. It is the sum of the age-specific fertility rates for that calendar year

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Abbreviations

ABS	Australian Bureau of Statistics
ACIR	Australian Childhood Immunisation Register
ACT	Australian Capital Territory
AIDS	Acquired immune deficiency syndrome
AIHW	Australian Institute of Health and Welfare
ANZDATA	Australia and New Zealand Dialysis and Transplant Registry
ASGC	Australian Standard Geographical Classification
ARF	Acute rheumatic fever
BEACH	Bettering the Evaluation and Care of Health
BMI	Body mass index
CKD	Chronic kidney disease
COAG	Council of Australian Governments
CVD	Cardiovascular disease
DSM	Diagnostic and Statistical Manual of Mental Disorders
ESRD	End-stage renal disease
FASD	Foetal alcohol spectrum disorder
GDM	Gestational diabetes mellitus
GP	General practitioner
GSS	General Social Survey
HD	Haemodialysis
HIV	Human immunodeficiency virus
HPV	Human papilloma virus
ICD	International Classification of Diseases
IMR	Infant mortality rate
KRT	Kidney replacement therapy
LBW	Low birthweight
NACCHO	National Aboriginal Community Controlled Health Organisation
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NDR	National Diabetes register
NDSHS	National Drug Strategy Household Survey
NHMRC	National Health and Medical Research Council
NHS	National Health Survey
NNDSS	National Notifiable Diseases Surveillance System
NSW	New South Wales
NT	Northern Territory
NTER	Northern Territory Emergency Response
OATSIH	Office for Aboriginal and Torres Strait Islander Health
PD	Peritoneal dialysis
Qld	Queensland
RHD	Rheumatic heart disease
SA	South Australia
SDAC	Survey of Disibility, Ageing and Carers
SIDS	Sudden infant death syndrome
SMR	Standardised mortality ratio
STD	Sexually transmitted disease; see STI
STI	Sexually transmitted infection
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WAACHS	Western Australian Aboriginal Child Health Survey
WHO	World Health Organization
WHR	Waist to hip ratio

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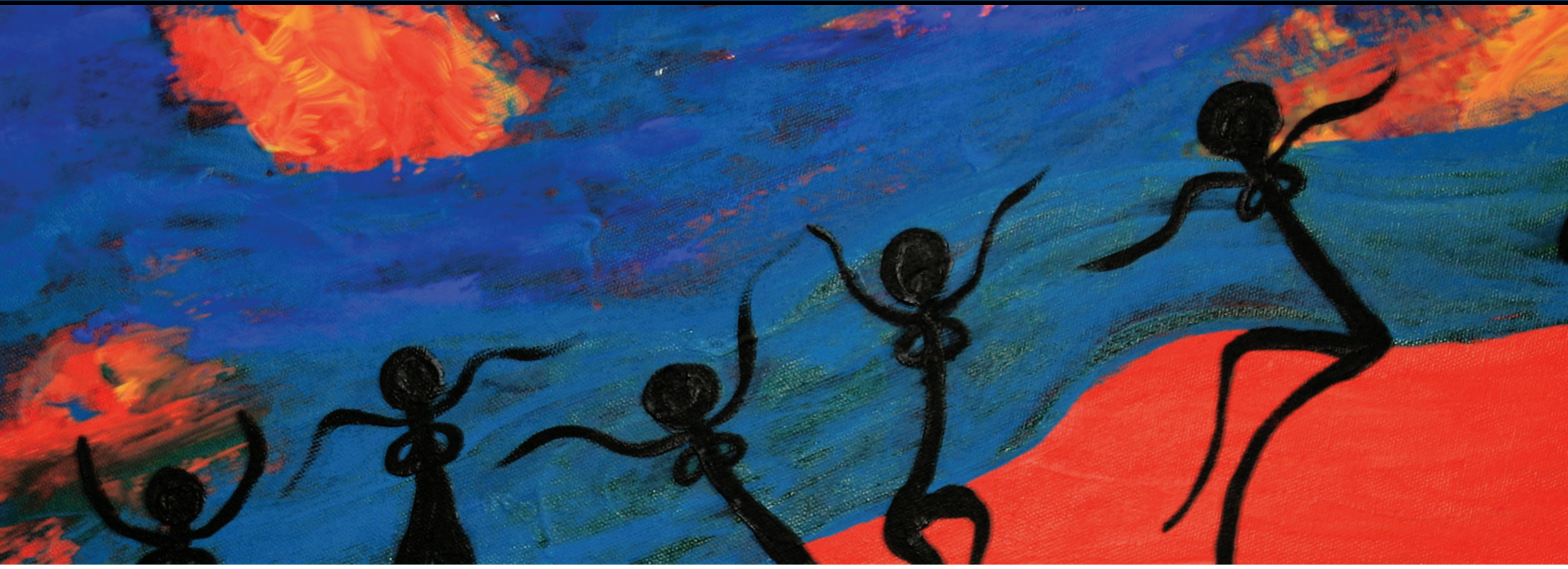

Australian Indigenous
Health*InfoNet*

The Australian Indigenous Health*InfoNet* is an innovative Internet resource that contributes to 'closing the gap' in health between Indigenous and other Australians by informing practice and policy in Indigenous health.

Two concepts underpin the Health*InfoNet*'s work. The first is evidence-informed decision-making, whereby practitioners and policy-makers have access to the best available research and other information. This concept is linked with that of translational research (TR), which involves making research and other information available in a form that has immediate, practical utility. Implementation of these two concepts involves synthesis, exchange and ethical application of knowledge through ongoing interaction with key stakeholders.

The Health*InfoNet*'s work in TR at a population-health level, in which it is at the forefront internationally, addresses the knowledge needs of a wide range of potential users, including policy-makers, health service providers, program managers, clinicians, Indigenous health workers, and other health professionals. The Health*InfoNet* also provides easy-to-read and summarised material for students and the general community.

The Health*InfoNet* encourages and supports information-sharing among practitioners, policy-makers and others working to improve Indigenous health – its free on line yarning places enable people across the country to share information, knowledge and experience. The Health*InfoNet* is funded mainly by the Australian Department of Health and Ageing. Its award-winning web resource (www.healthinfonet.ecu.edu.au) is free and available to everyone.

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Seven sisters

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