Australian Indigenous HealthInfoNet

Overview of Aboriginal and Torres Strait Islander health status 2021

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ECU EDITH COWAN UNIVERSITY AUSTRALIA

Australian Indigenous Health*InfoNet*

The Australian Indigenous Health*InfoNet*'s (Health*InfoNet*) mandate is to contribute to improvements in Aboriginal and Torres Strait Islander health by making relevant, high quality knowledge and information easily accessible to policy makers, health service providers, program managers, clinicians and other health professionals (including Aboriginal and Torres Strait Islander Health Workers and Practitioners) and researchers. The Health*InfoNet* also provides easy-to-read and summarised material for students and the general community.

The Health*InfoNet* achieves its mission by undertaking research into various aspects of Aboriginal and Torres Strait Islander health and disseminating the results (and other relevant knowledge and information) mainly via the Health*InfoNet*, the Alcohol and Other Drugs Knowledge Centre, Tackling Indigenous Smoking and WellMob websites. The research involves analysis and synthesis of data and information obtained from academic, professional, government and other sources. The Health*InfoNet*'s work in knowledge exchange aims to facilitate the transfer of pure and applied research into policy and practice to address the needs of a wide range of users.

Recognition statement

The Health*InfoNet* recognises and acknowledges the sovereignty of Aboriginal and Torres Strait Islander people as the original custodians of the country. Aboriginal and Torres Strait Islander cultures, customs and beliefs are persistent and enduring, continuing unbroken from the past to the present and will continue well into the future. They are characterised by resilience and a strong sense of purpose and identity despite the undeniably negative impacts of colonisation and dispossession. Aboriginal and Torres Strait Islander people throughout the country represent a diverse range of people, communities and groups each with unique identities, cultural practices and spiritualties. We recognise that the current health status of Aboriginal and Torres Strait Islander people has been significantly impacted by past and present practices and policies.

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

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Cover artwork

Bibdjool *by Donna Lei Rioli*

Donna Lei Rioli, a Western Australian Indigenous artist - was commissioned by the Health*InfoNet* to create a logo incorporating a gecko, chosen as it is one of a few animals that are found across the great diversity of Australia.

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

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

Preface

The main purpose of the *Overview of Aboriginal and Torres Strait Islander health status* (*Overview*) is to provide a comprehensive summary of the most recent indicators of the health and current health status of Australia's Aboriginal and Torres Strait Islander people. The *Overview* has been prepared by Health*InfoNet* staff as part of our contribution to supporting those who work in the Aboriginal and Torres Strait Islander health sector. The *Overview* is a key indicator of the Health*InfoNet's* commitment to authentic and engaged knowledge development and exchange.

The initial sections of this *Overview* provide information about the context of Aboriginal and Torres Strait Islander health, population, and various measures of population health status. Most of the subsequent sections about specific health conditions comprise an introduction about the condition and evidence of the current status of the condition among Aboriginal and Torres Strait Islander people. Information is provided for states and territories, Indigenous Regions and remoteness, and for demographics such as sex and age when it is available and appropriate.

While it provides a comprehensive review of key indicators across a range of health topics, it is beyond the scope of this *Overview* to provide detailed information on other aspects, such as the availability and use of services (including barriers to their use) and strategies and policies related to specific health topics. Interested readers should refer to the topic-specific reviews that are available on the Health*InfoNet's* website. Additional, more in depth information about the topics summarised in this *Overview* is included in the corresponding sections of the Health*InfoNet's* website.

The key to successful knowledge exchange and transfer is authentic partnership in the development of materials so we welcome your comments and feedback about the *Overview of Aboriginal and Torres Strait Islander health status 2021.*

Neil Drew, Director, on behalf of the Health*InfoNet* team

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- staff of the Health*InfoNet* for their assistance, support and encouragement in the preparation of this *Overview.*
- previous staff members of the Health*InfoNet* who have contributed to earlier versions of the *Overview*.
- the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) for the provision of the notification data on end-stage renal disease (ESRD).
- the Department of Health and other funding partners for their ongoing support of the work of the Health*InfoNet*.
- members of the Health*InfoNet* Advisory Board and Health*InfoNet* Consultants.
- users of the Health*InfoNet* resource for their ongoing support and feedback.
- readers of the *Overview* who provide feedback during the post-publication peer review period.

Tell us what you think

We value your opinion, please let us know if you have any suggestions for improving this *Overview* or future editions. (See healthinfonet.ecu.edu.au/contact-us)

Contents

Introduction

This *Overview* provides a comprehensive summary of the most recent indicators of the health of Aboriginal and Torres Strait Islander people in Australia. Where possible, information is detailed for individual states and territories: New South Wales (NSW), Victoria (Vic), Queensland (Qld), Western Australia (WA), South Australia (SA), Tasmania (Tas), the Australian Capital Territory (ACT) and the Northern Territory (NT). The *Overview* draws largely on previously published information.

Since the publication of our *Overview* in 2020, we have actively participated in discussions and sought advice on the emerging understandings of data sovereignty and governance in Aboriginal and Torres Strait Islander health. In this issue, we continue to strive to develop our capacity to accurately and authentically represent the data and statistics that impact Aboriginal and Torres Strait Islander people and communities. It is a learning journey that we share with other data-driven organisations such as the Australian Bureau of Statistics (ABS) and the Australian Institute of Health and Welfare (AIHW). Following on from previous editions of the *Overview,* we have relied less on comparisons between Indigenous and non-Indigenous data. Of course, as with the previous *Overview* this depends on the availability of data. We reiterate our public commitment to working with Aboriginal and Torres Strait Islander leaders to advance our understanding of data sovereignty and governance consistent with the principles and aspirations of the Maiam nayri Wingara Data Sovereignty Collective.

In 2021, the Health*InfoNet* undertook a nation-wide consultation, led by Dr Uncle Mick Adams, Senior Research Fellow at the Health*InfoNet,* to develop policy and practice guidelines for the work of the *HealthInfoNet.* The focus of the consultation review is on best practice in data sovereignty and governance, including the co-design of knowledge exchange products. Implementation of the outcomes of the review will be commenced in 2022.

In this edition, we have included a featured section on the Coronavirus disease (COVID-19) and its impact on Aboriginal and Torres Strait Islander people and their communities. It is evident from previous pandemics (e.g., 2009 H1N1 influenza) that the health outcomes for Aboriginal and Torres Strait Islander people have been poorer compared with non-Indigenous people [1]. During the COVID-19 pandemic, health authorities have reinforced that Aboriginal and Torres Strait Islander people are at greater risk, but have praised the response of Aboriginal Community Controlled Health Organisations (ACCHOs), delivering strong evidence based and culturally responsive prevention initiatives [2]. It has been recommended that Aboriginal and Torres Strait Islander self-determination is key to the development of COVID-19 related legislation, services and workforce development [3].

With the release of the key findings from the Australian Burden of Disease Study 2018 [4] for Aboriginal and Torres Strait Islander people, information has been provided for the relevant health conditions and risk/protective factors in this edition of the *Overview.*

Sources of information

The *Overview* aims to provide the latest up-to-date data on the health status of Aboriginal and Torres Strait Islander people. When no new data are available (see the limitations section – Appendix 1), data and information are carried forward from previous issues of the *Overview* so that readers have access to the latest data, all in one issue.

Research for the *Overview* involves the collection, collation and analysis of a wide range of relevant information, including both published and unpublished material. Sources include government reports, particularly those produced by the ABS, the AIHW, the Australian Health Ministers' Advisory Council (AHMAC), and the Steering Committee for the Review of Government Service Provision (SCRGSP). Important additions to the regular ABS and AIHW publications are a series of special reports that bring together key information about Aboriginal and Torres Strait Islander health and related areas:

- The *Overcoming Indigenous disadvantage* reports, produced by the SCRGSP, and published by the Productivity Commission; the report has been published biennially since 2003.
- Reports in the *Aboriginal and Torres Strait Islander health performance framework* series with substantial detailed analyses, prepared by AHMAC since 2006.

- *Reports on government services*, produced by the SCRGSP and published annually by the Productivity Commission since 2003.

This *Overview* also draws on information from the main administrative data collections (such as the birth and death registration systems and the hospital inpatient collections) and national surveys, for example, the Australian Aboriginal and Torres Strait Islander health surveys. Information from these sources has been published mainly in government reports, particularly those produced by the ABS, the AIHW and the SCRGSP. It also relies on a wide variety of other information sources including: registers for specific diseases and other conditions; regional and local surveys and epidemiological and other studies examining particular diseases, conditions and health determinants. Information from these sources is disseminated mainly through journals and similar periodicals, or in special reports (such as the annual reports of the Kirby Institute and ANZDATA).

As noted above, we are pleased that many of these data sources are actively engaged in the national debate on data sovereignty and governance and the extent to which their efforts are reflected in publications and data sets; we have attempted to represent them in this edition of the *Overview*.

A number of sections include the results of our own analyses of data obtained from a variety of sources. For example, estimates of the age-adjusted incidence of ESRD were made using notification data provided by ANZDATA.

Key facts

Population

- In 2021, the estimated Australian Aboriginal and Torres Strait Islander population was 881,593.
- In 2021, NSW had the highest number of Aboriginal and Torres Strait Islander people (the estimated population was 292,147 people, 33% of the total Aboriginal and Torres Strait Islander population).
- In 2021, the NT had the highest proportion of Aboriginal and Torres Strait Islander people in its population, with 32% of the NT population identifying as Aboriginal and/or Torres Strait Islander.

Births and pregnancy outcomes

- In 2020, there were 22,016 births registered in Australia with one or both parents identified as Aboriginal and/or Torres Strait Islander (7.5% of all births registered).
- In 2020, the median age for Aboriginal and Torres Strait Islander mothers who gave birth was 26.3 years.
- In 2020, the total fertility rate was 2.3 babies per 1,000 Aboriginal and Torres Strait Islander women.
- In 2019, the average birthweight of babies born to Aboriginal and Torres Strait Islander mothers was 3,211 grams.

Mortality

- In 2020, the age-standardised death rate for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT was 9.4 per 1,000.
- For Aboriginal and Torres Strait Islander people born in 2015-2017, life expectancy was estimated to be 71.6 years for males and 75.6 years for females, around 8-9 years less than the estimates for non-Indigenous males and females.
- In 2020, the median age at death for Aboriginal and Torres Strait Islander people in NSW, Qld, WA, SA and the NT was 61.0 years.

- For 2014-2018, among Aboriginal and Torres Strait Islander children aged 0-4 years, living in NSW, Qld, WA, SA and the NT, there were 603 deaths; 514 in children aged 0-1 years (85% of deaths) and 89 in children aged 1-4 years.
- In 2020, the leading causes of death among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT were ischaemic heart disease (IHD), diabetes, chronic lower respiratory diseases and lung and related cancers.
- In 2020, there were no deaths of identified Aboriginal and/or Torres Strait Islander people from COVID-19.
- For June to December 2021, 20 deaths from COVID-19 were reported among Aboriginal and Torres Strait Islander people.
- For 2012-2019, the maternal mortality ratio for Aboriginal and Torres Strait Islander women was 18 deaths per 100,000 women who gave birth.
- In 2014-2018, there were 7,072 deaths (males: 4,148; females: 2,924) from avoidable causes among Aboriginal and Torres Strait Islander people aged 0-74 years living in NSW, Qld, WA, SA and the NT, representing 61% of all deaths for this period.

Hospitalisation

- In 2019-20, 5.2% of all hospital separations were for Aboriginal and/or Torres Strait Islander people.
- In 2019-20, the age-adjusted separation rate for Aboriginal and Torres Strait Islander people was 970 per 1,000, with the highest rate in the NT of 2,207 per 1,000.
- In 2015-17, age-specific hospital separation rates (excluding dialysis) for Aboriginal and Torres Strait Islander people increased with age (except for 0-4 year olds), with the highest rate in the 65 years and over age-group.
- In 2019-20, the main cause of hospitalisation for Aboriginal and Torres Strait Islander people was for ‘factors influencing health status and contact with health services’ (mostly for care involving dialysis), responsible for 48% of all Aboriginal and Torres Strait Islander separations.
- In 2019-20, 1.2% of hospitalisations involving a COVID-19 diagnosis (32 of 2,628 total COVID-19 hospitalisations) were for Aboriginal and Torres Strait Islander people.
- In 2019-20, the age-standardised rate of overall potentially preventable hospitalisations for Aboriginal and Torres Strait Islander people was 72 per 1,000.

Selected health conditions

Cardiovascular health

- In 2018-19, around 15% of Aboriginal and Torres Strait Islander people reported having cardiovascular disease (CVD).
- In 2018-19, 23% of Aboriginal and Torres Strait Islander adults were found to have high blood pressure.
- In 2015-2019, in Qld, WA, SA and the NT combined, there were 1,325 new diagnoses of rheumatic heart disease (RHD) among Aboriginal and Torres Strait Islander people, a crude rate of 60 per 100,000.
- In 2019-20, there were 16,360 hospital separations for CVD among Aboriginal and Torres Strait Islander people, representing 5.4% of all Aboriginal and Torres Strait Islander hospital separations (excluding dialysis).
- In 2020, IHD was the leading specific cause of deaths of Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT.

Cancer

- For 2012-2016, there were 8,326 new cases of cancer diagnosed among Aboriginal and Torres Strait Islander people living in NSW, Vic, Qld, WA and the NT, at an average of 1,665 new cases per year.
- For 2012-2016, the most common cancers diagnosed among Aboriginal and Torres Strait Islander people living in NSW, Vic, Qld, WA and the NT were lung cancer, breast cancer, bowel and prostate cancer (in males).
- Survival rates indicated that of the Aboriginal and Torres Strait Islander people living in NSW, Vic, Qld, WA, and the NT who were diagnosed with cancer between 2007 and 2016, nearly half (47%) had survived for five years after their diagnosis.
- In 2019-20, there were 10,073 hospital separations for neoplasms[1] among Aboriginal and Torres Strait Islander people.
- For 2015-2019, the age-standardised mortality rate in NSW, Qld, WA, SA and the NT due to cancer of any type was 230 per 100,000; 276 per 100,000 for males and 194 per 100,000 for females.
- In 2018, cancer was the 10th leading specific cause of total disease burden among Aboriginal and Torres Strait Islander people.

Diabetes

- In 2018-19, 7.9% of Aboriginal and Torres Strait Islander people reported having diabetes.
- In 2018-19, 13% of Aboriginal and Torres Strait Islander adults aged 18 years and over self-reported having diabetes and/or high glucose levels.
- In 2018-19, there were 4,786 potentially preventable hospitalisations of Aboriginal and Torres Strait Islander people for a principal diagnosis of diabetes.
- In 2020, diabetes was the second leading cause of death for Aboriginal and Torres Strait Islander people in NSW, Qld, SA, WA and the NT.
- In 2018, type 2 diabetes was the fourth leading specific cause of total disease burden among Aboriginal and Torres Strait Islander people.

Social and emotional wellbeing

- In 2018-19, 80% of Aboriginal and Torres Strait Islander males over 18 years of age reported feeling calm and peaceful all/most of the time, 87% felt happy all/most of the time and 79% felt full of life all/most of the time.
- In 2018-19, 78% of Aboriginal and Torres Strait Islander females over 18 years of age reported feeling calm and peaceful all/most of the time, 88% felt happy all/most of the time and 76% felt full of life all/most of the time.
- In 2018-19, 31% of Aboriginal people and 23% of Torres Strait Islander people aged 18 years and over reported high or very high levels of psychological distress.
- In 2018-19, 25% of Aboriginal people and 17% of Torres Strait Islander people, aged two years and over, reported having a mental and/or behavioural condition.
- In 2018-19, anxiety was the most common mental or behavioural condition reported by Aboriginal and Torres Strait Islander people aged two years and over (17%), followed by depression (13%).
- In 2019-20, there were 26,228 hospital separations with a principal diagnosis of International Classification of Diseases (ICD) ‘mental and behavioural disorders’ identified as Aboriginal and/or Torres Strait Islander.
- In 2014-2018, mental health conditions accounted for 523 deaths among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT.

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1 Data sources may use the term ‘neoplasm’ to describe conditions associated with abnormal growth of new tissue, commonly referred to as a tumour. Neoplasms can be benign (not cancerous) or malignant (cancerous) [5].

- In 2020, 197 Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA, and the NT died from intentional self-harm (suicide).
- In 2018, mental and substance use disorders accounted for 23% of total disease burden among Aboriginal and Torres Strait Islander people. Of all disease groups, mental and substance use disorders made the highest contribution to total burden.

Kidney health

- In 2018-19, 1.8% of Aboriginal and Torres Strait Islander people (Aboriginal people: 1.9%; Torres Strait Islander people: 0.4%) reported kidney disease as a long-term health condition.
- In 2012-13, 18% of Aboriginal and Torres Strait Islander adults had biomedical signs of chronic kidney disease (CKD).
- For 2016-2020, after age-adjustment, the notification rate of end-stage renal disease (ESRD) was 616 per 1,000,000.
- In 2020, 314 Aboriginal and Torres Strait Islander people commenced dialysis.
- In 2019, 55 Aboriginal and Torres Strait Islander people received a kidney transplant.
- For 2015-2019, the age-adjusted death rate for kidney disease (as a major cause of death) for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT was 19 per 100,000.
- In 2020, the most common causes of death among the 236 Aboriginal and Torres Strait Islander people who were receiving dialysis was CVD (78 deaths) and withdrawal from treatment (49 deaths).
- In 2018, CKD was the seventh leading specific cause of total disease burden among Aboriginal and Torres Strait Islander people.

Injury, including family violence

- In 2012-13, 2.5% of Aboriginal and Torres Strait Islander people reported having a long-term condition caused by injury.
- In 2018-19, 16% of Aboriginal and Torres Strait Islander people aged 15 years and over had experienced physical harm or threatened physical harm at least once in the last 12 months.
- In 2019-20, injury was the leading cause of hospitalisation (excluding dialysis) for Aboriginal and Torres Strait Islander people.
- In 2019-20, 19% of injury-related hospitalisations among Aboriginal and Torres Strait Islander people were for assault.
- In 2020, intentional self-harm was the leading specific cause of injury deaths for NSW, Qld, SA, WA and the NT (5.5% of all Aboriginal and Torres Strait Islander deaths).
- In 2018, of all disease groups, injury made the second highest contribution to the total disease burden among Aboriginal and Torres Strait Islander people (12%).

Respiratory health

- In 2018-19, 29% of Aboriginal and Torres Strait Islander people reported having a long-term respiratory condition.
- In 2018-19, 16% of Aboriginal and Torres Strait Islander people reported having asthma; chronic obstructive pulmonary disease (COPD) 3.4%; chronic sinusitis 7.4%.
- In 2018-19, the crude hospitalisation rates for Aboriginal and Torres Strait Islander people by respiratory condition were influenza and pneumonia (9.2 per 1,000), COPD (6.7 per 1,000), acute upper respiratory infection (4.6 per 1,000) and asthma (2.7 per 1,000).
- In 2020, chronic lower respiratory disease was the third highest cause of death overall for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT.
- In 2018, COPD was the 2nd leading specific cause of total disease burden among Aboriginal and Torres Strait Islander people, and asthma the 11th.

Eye health

- In 2018-19, eye and sight problems were reported by 38% of Aboriginal people and 40% of Torres Strait Islander people.
- In 2018-19, eye and sight problems were reported by 32% of Aboriginal and Torres Strait Islander males and by 43% of females.
- In 2018-19, the most common eye conditions reported by Aboriginal and Torres Strait Islander people were hyperopia (long sightedness: 22%), myopia (short sightedness: 16%), other diseases of the eye and adnexa (8.7%), cataract (1.4%), blindness (0.9%) and glaucoma (0.5%).
- In 2018-19, 10% of Aboriginal and Torres Strait Islander children, aged 0-14 years, were reported to have eye or sight problems.
- In 2019, 263 cases of trachoma were detected among 3,154 Aboriginal and Torres Strait Islander children living in at-risk communities in Qld, WA, SA and the NT.
- For 2017-2019, 5,826 of the 9,681 hospitalisations for diseases of the eye among Aboriginal and Torres Strait Islander people were for disorders of the lens (mainly cataracts).
- For 2017-19, crude hospitalisation rates for eye disease, by Indigenous Regions, ranged from 12 per 1,000 in the Pilbara, WA to 1.9 per 1,000 in Western Metropolitan Sydney, NSW.

Ear health and hearing

- In 2018-19, 14% of Aboriginal and Torres Strait Islander people reported having a long-term ear and/or hearing problem.
- In 2018-19, 43% of Aboriginal and Torres Strait Islander people aged seven years and over reported having hearing loss in one or both ears.
- In 2018-19, among Aboriginal and Torres Strait Islander children aged 0-14 years, the prevalence of otitis media was 2.6%, and of partial or complete deafness 3.8%.
- In 2019-20, the age-adjusted hospitalisation rate for ear conditions for Aboriginal and Torres Strait Islander people was 3.4 per 1,000 population.
- In 2018, hearing loss was the 13th leading specific cause of total disease burden among Aboriginal and Torres Strait Islander people.

Oral health

- In 2012-2014, 61% of Aboriginal and Torres Strait Islander children aged 5-10 years had experienced tooth decay in their baby teeth, and 36% of Aboriginal and Torres Strait Islander children aged 6-14 years had experienced tooth decay in their permanent teeth.
- In 2017-18, 7.1% of Aboriginal and Torres Strait Islander people aged 15 years and over had complete tooth loss.
- In 2018-19, there were 3,773 potentially preventable hospitalisations for dental conditions for Aboriginal and Torres Strait Islander people. The crude rate of hospitalisation was 4.5 per 1,000.

Disability

- In 2018-19, 38% of Aboriginal people, and 35% of Torres Strait Islander people reported having a disability or restrictive long-term health condition.
- In 2018-19, 8.2% of Aboriginal people, and 8.3% of Torres Strait Islander people reported a profound or severe core activity limitation.
- In 2018-19, Aboriginal and Torres Strait Islander people reported a profound/severe disability more often in non-remote areas (8.6%) than in remote areas (5.7%).
- In 2018-19, the most self-reported disabilities for Aboriginal and Torres Strait Islander people were physical (63%), sensory (47%), psychological (23%) and intellectual (18%).

- In 2018-19, 5.5% of disability service users were Aboriginal and Torres Strait Islander people, with most aged under 60 years (94%).
- In 2018-19, the main disability groups accessing services through the National Disability Agreement (NDA) were Aboriginal and Torres Strait Islander people with a psychiatric condition (37%), physical disability (24%) and intellectual disability (15%).
- On 30 June 2019, 16,417 Aboriginal and Torres Strait Islander people were part of the National Disability Insurance Scheme (NDIS).
- On 30 June 2019, among Aboriginal and Torres Strait Islander people, the main disability groups accessing services through the NDIS were those with an intellectual disability (30%), autism (28%) and a psychosocial disability (9%).

Communicable diseases

- In 2019, there were 7,647 notifications of chlamydia for Aboriginal and Torres Strait Islander people.
- In 2019, there were 4,042 gonorrhoea notifications for Aboriginal and Torres Strait Islander people.
- In 2019, there were 1,021 syphilis notifications for Aboriginal and Torres Strait Islander people.
- In 2019, there were 25 (2.8% of 901 total cases) cases of newly diagnosed human immunodeficiency virus (HIV) infection among Aboriginal and Torres Strait Islander people in Australia.
- In 2020, there were 274 Aboriginal and Torres Strait Islander people diagnosed with newly acquired hepatitis C virus (HCV) in Australia.
- In 2020, there were 22 Aboriginal and Torres Strait Islander people diagnosed with newly acquired hepatitis B virus (HBV) in Australia.
- For 2016-2018, 626 (12%) of the 5,192 cases of invasive pneumococcal disease (IPD) were identified as Aboriginal and Torres Strait Islander.
- For 2014-2016, 63 (11%) of the 602 notified cases of meningococcal disease were identified as Aboriginal and Torres Strait Islander.
- In 2018, of the 1,438 notifications of tuberculosis (TB) in Australia, 29 (2.0%) were identified as Aboriginal and Torres Strait Islander.
- For 2000-2017, there were 76 Aboriginal and Torres Strait Islander people diagnosed with invasive Haemophilus influenzae type b (Hib) in Australia.
- In 2018-19, the proportion of Aboriginal and Torres Strait Islander people reporting a ‘disease of the skin and subcutaneous tissue’ was 3.2% (males 2.4% and females 4.0%).
- In 2018-19, there were 1,230 Aboriginal and Torres Strait Islander children, aged four years and under, who were hospitalised with a principal diagnosis of ‘diseases of the skin and subcutaneous tissue’.

Factors contributing to Aboriginal and Torres Strait Islander health

Nutrition and breastfeeding

- In 2018-19, 39% of Aboriginal and Torres Strait Islander people aged 15 years and over reported eating the recommended amount of two serves of fruit per day and 4.2% reported eating the recommended five serves of vegetables per day.
- In 2018-19, 92% of Aboriginal and Torres Strait Islander children aged 2-3 years old ate an adequate amount of fruit per day and 23% ate an adequate amount of vegetables per day.
- In 2018-19, 24% of Aboriginal and Torres Strait Islander people aged 15 years and over reported that they usually consumed sugar sweetened drinks every day and 5.5% consumed diet drinks; 71% usually consumed sugar sweetened drinks or diet drinks at least once per week.
- In 2018-19, 20% of children aged 2-14 years usually consumed sugar sweetened drinks daily and 1.5% consumed diet drinks daily; 63% usually consumed sugar sweetened drinks or diet drinks at least once a week.

- In 2018-19, 87% of Aboriginal and Torres Strait Islander children aged 0-2 years had been breastfed.
- In 2018, all dietary factors were the fifth leading risk factor contributing to the total burden of disease among Aboriginal and Torres Strait Islander people, responsible for 6.2% of the total burden of disease.

Physical activity

- In 2018-19, 89% of Aboriginal and Torres Strait Islander people surveyed (aged 15 years and over) had not met the physical activity guidelines, and 22% had not participated in any physical activity in the week prior to being surveyed.
- The proportion of Aboriginal and Torres Strait Islander adult males living in non-remote areas who participated in strength or toning activities on two or more days was 24%, while the proportion of adult females was 15%.

Bodyweight

- In 2018-19, 71% of Aboriginal and Torres Strait Islander people aged 15 years and over were either overweight or obese (Aboriginal people: 71%: Torres Strait Islander people: 75%), 25% were in the normal weight range and 3.9% were underweight.
- In 2018-19, Aboriginal and Torres Strait Islander people aged over 18 years, living in major cities, had a higher body mass index (BMI) than those living in very remote areas (77% and 66% respectively).
- In 2018-19, of Aboriginal and Torres Strait Islander children aged 2-17 years, 38% were overweight or obese; 53% were normal weight and 8.8% were underweight.

Tobacco use

- In 2018-19, 37% of Aboriginal and Torres Strait Islander people aged 15 years and over reported they were current daily smokers, a reduction from levels reported in 2012-13 (41%).
- The proportion of Aboriginal and Torres Strait Islander mothers who reported smoking during pregnancy decreased from 50% in 2009 to 43% in 2019.
- In 2018-19, Aboriginal and Torres Strait Islander people living in remote areas reported a higher proportion of current daily smokers (49%) than those living in non-remote areas (35%).
- Between 2012-13 and 2018-19, the highest reductions in daily smoking rates were found in the younger age-groups (15-34 years).
- A study from 2021 found half of deaths among Aboriginal and Torres Strait Islander people in NSW aged 45 years and over, and 37% of deaths among all age-groups were caused by smoking.
- In 2018, tobacco use was the leading risk factor contributing to the burden of disease among Aboriginal and Torres Strait Islander people, responsible for 12% of the total burden of disease.

Alcohol use

- In 2018-19, 26% of Aboriginal and Torres Strait Islander adults reported abstaining from alcohol.
- In 2018-19, 18% of Aboriginal adults and 22% of Torres Strait Islander adults did not exceed the guideline for drinking at risk on a single occasion.
- In 2018-19, 26% of Aboriginal and Torres Strait Islander adults did not exceed the guideline for lifetime risk.
- In 2018-19, Aboriginal and Torres Strait Islander males were more likely to exceed the guideline for lifetime risk (30%) than females (10%).
- For 2010 to 2019, there was a decline (32% to 19%) in the proportion of Aboriginal and Torres Strait Islander people aged 14 years and over who exceeded the 2009 guidelines for lifetime risk (two standard drinks per day).

- In 2018-19, 90% of mothers of Aboriginal and Torres Strait Islander children (aged 0-3 years) reported abstaining from alcohol during pregnancy.
- In 2016-18, the crude alcohol-related hospitalisation rate for Aboriginal and Torres Strait Islander people was 7.6 per 1,000.
- For 2014-2018, the main cause of alcohol-related deaths for Aboriginal and Torres Strait Islander people was from alcoholic liver disease.
- In 2018, alcohol use was the second leading risk factor contributing to the total burden of disease among Aboriginal and Torres Strait Islander people, accounting for 10% of the burden of disease.

Illicit drug use

- In 2018-19, 70% of Aboriginal and Torres Strait Islander people aged 15 years and over reported they had never used illicit substances in the last 12 months.
- In 2018-19, 28% of Aboriginal and Torres Strait Islander people aged 15 years and over reported they had used an illicit substance in the previous 12 months.
- In 2016-18, hospitalisation for mental and behavioural disorders due to drug use was highest for amphetamines (2.1 per 1,000) for Aboriginal and Torres Strait Islander people.
- In 2019, the age-standardised rate of unintentional drug-induced deaths for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT was 20 per 100,000.
- In 2018, illicit drug use contributed to 6.9% of the total burden of disease among Aboriginal and Torres Strait Islander people.

Volatile substance use

- In 2014-15, 0.7% of Aboriginal and Torres Strait Islander people aged 15 years and over reported using petrol or other inhalants.
- In 2016-18, the crude rate of hospital separations for Aboriginal and Torres Strait Islander people from poisoning due to the toxic effect of organic solvents (e.g. petrol) was 0.05 per 1,000.
- In 2016-18, the crude hospitalisation rate among Aboriginal and Torres Strait Islander people for accidental poisoning from organic solvents was 0.03 per 1,000.

Immunisation

- As at 30 September 2021, 97% of Aboriginal and Torres Strait Islander five-year-old children were fully immunised against the recommended vaccine preventable diseases.

Environmental health

- In 2018-19, 80% of Aboriginal and Torres Strait Islander households reported living in houses of an acceptable standard.
- In 2018-19, 18% of Aboriginal and Torres Islander people reported living in overcrowded households.
- In 2018-19, 33% of Aboriginal and Torres Strait Islander households reported major structural issues with their dwelling.
- In 2018-19, Aboriginal and Torres Strait Islander crude hospitalisation rates for selected diseases related to environmental health were 9.2 per 1,000 for influenza and pneumonia, 9.0 per 1,000 for intestinal infectious diseases, 8.0 per 1,000 for bacterial diseases, 4.6 per 1,000 for acute upper respiratory infections, 2.7 per 1,000 for asthma and 1.8 per 1,000 for scabies.
- For 2014-2018, the age-standardised death rate for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT, from conditions associated with poor environmental health was 44 per 100,000 for males and 40 per 100,000 for females.

Social and cultural concepts

In Australia, Aboriginal people have occupied their traditional lands for the past 50,000 to 120,000 years and their continuity, history and cultural traditions are unrivalled in the world [6]. Torres Strait Islander people live permanently in 20 communities on 17 of the 270 islands in the Torres Strait and across mainland Australia including mainland communities in Far North Qld.

Aboriginal people enjoyed a semi-nomadic lifestyle in family and community groups, moving across a defined area following seasonal changes [6]. Torres Strait Islander people had a communal village lifestyle revolving around fishing, trading and gardening. Land was, and still is today a central part of Aboriginal and Torres Strait Islander people's customs, culture and law [7].

There are distinctive ethnic and cultural differences between Aboriginal societies and between Torres Strait Islander societies, each having their own languages and traditions [8]. Despite their differences, Aboriginal and Torres Strait Islander people have had many similar experiences of colonisation that have led to negative outcomes on their quality of life and their health [6, 9].

Aboriginal and Torres Strait Islander people have a 'whole of life' view of health that incorporates the total wellbeing of their community and not just the individual [10]. This view also includes the concept of life-death-life. The National Aboriginal Community Controlled Health Organisation (NACCHO) has adopted the World Health Organization's (WHO) view that people should be at the centre of health care and that comprehensive primary health care is central to achieving real outcomes and health benefits for Aboriginal and Torres Strait Islander people rather than a disease focused approach [11, 12]. These fundamental rights have been reaffirmed by the WHO in the 2018 Declaration of Astana [13].

There is now irrefutable evidence that not only social but also, and importantly, cultural factors can have a profound impact on the health of Aboriginal and Torres Strait Islander people [14]. It is evident that ongoing marginalisation, separation from culture and land, food and resource insecurity, intergenerational trauma, disconnection from culture and family, racism, systemic discrimination and poverty have resulted in poorer physical and mental health for many Aboriginal and Torres Strait Islander people, and an increase in chronic conditions [15, 16]. However, focusing less on the deficit narratives promoted by the way these indicators are framed and more on the positive affirming impacts of cultural determinants, the narrative can shift more towards strengths based understandings of Aboriginal and Torres Strait Islander health [14].

Cultural determinants such as connection to Country are intricately linked to caring for Country, the maintenance of cultural life, identity, individual autonomy and Aboriginal and Torres Strait Islander sovereignty [17].

There have been a number of positive changes enhancing Aboriginal and Torres Strait Islander opportunities for authentic self-determination and sovereignty. With increased representation in Parliament, Aboriginal and/or Torres Strait Islander people now have a stronger political voice [18]. The voice of Aboriginal and Torres Strait Islander people was further amplified in 2017 by the Uluru Statement 'From the Heart' [19]. In addition, as noted, there has been a marked shift away from the deficit narratives that have infused (and confused) much of the debate about the health and wellbeing of Aboriginal and Torres Strait Islander people, towards a strengths based approach [20]. This has come about after decades of leadership from ACCHOs. Megan Davis, Professor of Law, University of NSW, said of ACCHOs, 'It is apparent when we look to the Aboriginal community health services sector, we can see that for decades and decades they have been leading the way already in the realisation of the most fundamental aspect of the right to self-determination: making decisions about one's health. Community control is intuitive to communities' [21, p.12]. This unique network of Aboriginal medical services is a prime example of how organisations that are grounded in community can deliver results that improve health outcomes and reduce the demand on the hospital system [22]. Aboriginal-led services foster self-determination and therefore a sense of confidence and control. Supporting this model means that services are holistic, culturally safe, and more trusted.

Social indicators

Key national measures linked to the social determinants of health for Aboriginal and Torres Strait Islander people include education, employment and income.

Education

The 2016 Australian Census [23] indicated that the number of Aboriginal and Torres Strait Islander people completing year 12 or its equivalent had increased, with 47% of those aged 20 to 24 years reporting the completion of year 12, compared with 32% in 2006.

In addition, for 20-24 year olds in the 2016 Census:

- Aboriginal and Torres Strait Islander females were more likely to have completed year 12 or equivalent than males (51% compared with 43%).
- Aboriginal and Torres Strait Islander people living in urban areas were more likely to have completed year 12 or equivalent compared with those living in rural areas (50% compared with 34%).
- The highest proportions of Aboriginal and Torres Strait Islander people completing year 12 or equivalent were in the ACT (66%) and Qld (55%).

For Aboriginal and Torres Strait Islander people aged 25-64 years, the 2016 Census [23] indicated that:

- 30% reported the completion of year 12 or its equivalent.
- Females were more likely to have completed year 12 or equivalent than males (32% compared with 27%).
- Aboriginal and Torres Strait Islander people living in urban areas were more likely to have completed year 12 or equivalent compared with those living in rural areas (32% compared with 22%).
- The highest proportions of Aboriginal and Torres Strait Islander people completing year 12 or equivalent were in the ACT (52%) and Qld and Vic (both 36%).

In 2016, 37% of Aboriginal and Torres Strait Islander people aged 15 years and over had completed vocational or tertiary studies (a non-school qualification) [23]. The highest proportions of Aboriginal and Torres Strait Islander people with vocational or tertiary qualifications were in the ACT (52%), Vic (45%), NSW and Tas (both 40%).

The number of Aboriginal and Torres Strait Islander people studying at university has increased since the 2006 Census [23]. A total of 15,395 Aboriginal and Torres Strait Islander students were attending university in 2016 compared with approximately 7,000 students in 2006.

ABS school reports show that [24, 25]:

- In 2020, there were 240,180 school students who identified as Aboriginal and/or Torres Strait Islander, an increase of 4.1% from 2019.
- The retention rate for Aboriginal and Torres Strait Islander students who started secondary school in year 7/8[2] and continued through to year 12, increased from 59% in 2019 to 60% in 2020.
- In 2020, the highest proportions of Aboriginal and Torres Strait Islander students who started secondary school in year 7/8 and continued through to year 12 were in the ACT (99%) and SA (75%). The jurisdictions with the lowest retention rates were the NT (36%), NSW and WA (both 56%).

A national report [27] on schooling in Australia showed that in 2021:

- 84% of year 3, 78% of year 5, 75% of year 7 and 66% of year 9 Aboriginal and Torres Strait Islander students were at, or above the national minimum standard for reading.
- 84% of year 3, 73% of year 5, 65% of year 7 and 52% of year 9 Aboriginal and Torres Strait Islander students were at, or above the national minimum standard for writing.

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[2] Commencement year for secondary schooling varies [26].

- 74% of year 3, 77% of year 5, 79% of year 7 and 73% of year 9 Aboriginal and Torres Strait Islander students were at, or above the national minimum standard for spelling.
- 77% of year 3, 73% of year 5, 62% of year 7 and 60% of year 9 Aboriginal and Torres Strait Islander students were at, or above the national minimum standard for grammar and punctuation.
- 81% of year 3, 76% of year 5, 71% of year 7 and 79% of year 9 Aboriginal and Torres Strait Islander students were at, or above the national minimum standard for numeracy.

Employment

According to the 2016 Australian Census [23]:

- Almost half (47%) of Aboriginal and Torres Strait Islander people between the ages of 15 years and 64 years were employed.
- 70% of Aboriginal and Torres Strait Islander people aged 15 to 24 years were either fully or partly engaged in employment, education and training.
- The top three industries in which Aboriginal and Torres Strait Islander people aged 15 to 64 years worked were health care and social assistance (15%), followed by public administration and safety (12%) and education and training (10%).
- Aboriginal and Torres Strait Islander males were most likely to be employed in construction (17%) and females were most likely to be employed in health care and social assistance (24%).

Income

In the 2016 Census [23]:

- 20% of Aboriginal and Torres Strait Islander people reported an equivalised[3] weekly income of $1,000 or more compared with 13% in 2011 [23, 28].
- Over half (53%) of Aboriginal and Torres Strait Islander people reported an equivalised weekly household income of between $150 and $799 [23].

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[3] Equivalised household income adjusts the actual incomes of households to make households of different sizes and compositions comparable [23].

The Aboriginal and Torres Strait Islander population

The ABS estimated[4] the Aboriginal and Torres Strait Islander population at 881,593 people in 2021 (Table 1) [29]. The Aboriginal and Torres Strait Islander population accounted for 3.4% of Australia's total population of just over 25.5 million (Derived from [30]). The Aboriginal and Torres Strait Islander population was highest in NSW (292,147 people), followed by Qld (246,323). The NT had the highest proportion of Aboriginal and Torres Strait Islander people among its population (32%) and Vic the lowest (1.0%).

Table 1. Estimated Aboriginal and Torres Strait Islander (Indigenous) population, by jurisdiction, Australia, 2021

Jurisdiction	Indigenous population (number)	Proportion of Australian Indigenous population (%)	Proportion of total jurisdiction population (%)
NSW	292,147	33	3.6
Vic	65,209	7.4	1.0
Qld	246,323	28	4.7
WA	111,370	13	4.2
SA	46,889	5.3	2.6
Tas	31,148	3.5	5.8
ACT	8,653	1.0	2.0
NT	79,571	9.0	32
Australia	881,593	100	3.4

Note:

The Australian population includes Jervis Bay Territory, the Cocos (Keeling) Islands, Christmas Island and Norfolk Island.

Source: Derived from ABS, 2019 [30], ABS, 2021 [29]

The ABS estimated that of the population of 881,593 Aboriginal and Torres Strait Islander people in 2021, 44% lived in inner/outer regional areas, 38% in major cities and 18% in remote/very remote areas [30]. In terms of specific geographical areas, the top five Indigenous Regions[5] where Aboriginal and Torres Strait Islander people resided in 2021 were Brisbane (97,104 residents); NSW Central and North Coast (95,791); Sydney-Wollongong (88,732); Perth (44,171) and Townsville-Mackay (35,419).

According to estimates from the 2016 Census, 91% of Indigenous people were identified as Aboriginal, 5% as Torres Strait Islander and 4% as of both Aboriginal and Torres Strait Islander descent [32]. Around 64% of Torres Strait Islander people lived in Qld, with NSW having the second largest number of Torres Strait Islander people.

In 2021, according to ABS estimates, about one-third (32%) of Aboriginal and Torres Strait Islander people were aged less than 15 years and 5.4% were aged 65 years or over [30].

Births and pregnancy outcomes

There have been improvements in birth and pregnancy outcomes for Aboriginal and Torres Strait Islander mothers and babies in recent years, with evidence of an increase in the proportion of mothers attending antenatal care in the first trimester, a decrease in the rate of mothers smoking during pregnancy, and a slight decrease in the proportion of babies born small for gestational age [33]. 'Birthing on Country' is an area of maternal and infant health that is gathering momentum [34] due to the positive impact it has on mothers and babies [35]. It is acknowledged that research on 'Birthing on Country' requires more growth and funding to cover the inequities and inequalities currently experienced by Aboriginal and Torres Strait Islander women in the field of maternal and infant health [34].

In Australia, all births are required by law to be registered with the Registrar of Births, Deaths and Marriages in the jurisdiction in which the birth occurred [36]. In 2020, there were 22,016 births (11,390 males and

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[4] Population estimates are released regularly by the ABS and provide a more accurate measure of the actual size of a population. They are assessments of what would happen to the population if components of population change (births, deaths and migration) were to hold in the future [29].

[5] Indigenous Regions are large geographical units loosely based on the former Aboriginal and Torres Strait Islander Commission boundaries [31].

10,626 females) registered in Australia with one or both parents identified as Aboriginal and/or Torres Strait Islander (7.5% of all births registered). This probably underestimates the true number as Indigenous status is not always identified, and there may be a lag in birth registrations (See Appendix 1 for a discussion of data limitations).

In 2020, for births registered as Indigenous: 25% recorded both parents as Aboriginal and/or Torres Strait Islander; 44% recorded only the mother as Aboriginal and/or Torres Strait Islander (including births where paternity was not acknowledged and those where the father's Indigenous status was unknown) and in 31% of registrations only the father was recorded as Aboriginal and/or Torres Strait Islander (including births where the mother's Indigenous status was unknown) [36].

Age of mothers

About births and fertility

There are a number of general measures of births and fertility[6], but detailed analysis involves the use of age-specific rates. The age-specific rate is the annual number of live births per 1,000 women in five-year age-groups from 15 to 49 years (the relatively small numbers of births to women aged less than 15 years are included in the 15-19 years age-group, similarly, births to women aged 50 years and over are included in the 45 to 49 years age-group) [36].

In 2020, for babies born to Aboriginal and Torres Strait Islander women, 58% of babies were born to those aged 20-29 years, and 10% of babies were born to teenagers (15-19 years of age) [36].

In 2020, the median age of Aboriginal and Torres Strait Islander mothers who gave birth was 26.3 years [36]. The highest fertility rates for Aboriginal and Torres Strait Islander women were among those aged 20-24 years (119 per 1,000) and 25-29 years (126 per 1,000). The fertility rate of teenage Aboriginal and Torres Strait Islander women, aged 15-19 years, was 43 babies per 1,000 women.

Total fertility rate

The summary measure of fertility is the total fertility rate, which is the sum of age-specific fertility rates divided by 1,000. It represents the number of children a female would bear if each female experienced current age-specific fertility rates at each age of her reproductive life [36].

In 2020, the total fertility rate was 2.3 babies per 1,000 Aboriginal and Torres Strait Islander women [36].

Antenatal care

Antenatal care from health professionals helps pregnant women by monitoring their health, screening, and providing information and support during pregnancy [37, 38]. It can help with the early identification of potentially preventable risk factors (especially when care is provided during the first trimester of pregnancy) that adversely affect maternal and child health outcomes [39].

In 2019, 88% of pregnant Aboriginal and Torres Strait Islander women attended five or more antenatal visits [33][7]. The Department of Health recommends 10 visits for first-time pregnancy without complications and seven visits for subsequent uncomplicated pregnancies [37]. The proportion of women attending the first antenatal visit during the first trimester of pregnancy (less than 14 weeks) was 67% [33]. The proportions were highest in outer regional areas (71%), with proportions for other areas ranging from 63% in remote areas to 70% for inner regional areas. The proportion of expectant Aboriginal and Torres Strait Islander mothers attending antenatal care in the first trimester has increased from 49% in 2012 to 67% in 2019.

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6 The study of birth information is known as fertility analysis, where 'fertility' refers to the number of babies born alive. This meaning is different to the lay use of the word, which means the capacity to bear children.

7 This excludes very preterm births [33].

Birthweight

In 2019, the average birthweight of babies born to Aboriginal and Torres Strait Islander mothers was 3,211 grams [33]. Low birthweight (LBW), defined as a birthweight of less than 2,500 grams [40], increases the risk of health problems and death in infancy [41]. In 2019, 12% of babies born to Aboriginal and Torres Strait Islander mothers were of LBW [33], of which 1.9% combined were very LBW (less than 1,500 grams) and extremely LBW (less than 1,000 grams [40]).

In 2019, the proportion of LBW babies born to Aboriginal and Torres Strait Islander mothers varied by remoteness, from 11% of babies born to mothers who lived in major cities to 15% of babies born to mothers who lived in very remote areas [33]. Factors impacting on LBW include preterm birth, socioeconomic disadvantage, the age of the mother and antenatal care [41]. A mother's nutritional status and use of tobacco during pregnancy also impact on the birthweight of her baby [42].

Tobacco smoking while pregnant, in particular, has a major impact on birthweight. In 2019, 43% of Aboriginal and Torres Strait Islander mothers reported smoking during pregnancy [33]. Rates of smoking for Aboriginal and Torres Strait Islander mothers were highest in remote and very remote areas (49% and 54% respectively), and lowest in major cities (37%).

The impact of tobacco smoking during pregnancy can be seen in the proportions of LBW babies [43]. For 2015-2017, excluding preterm and multiple births, 47% of LBW births to Aboriginal and Torres Strait Islander mothers were attributable to smoking during pregnancy. It has been estimated that if the smoking rate for Aboriginal and Torres Strait Islander pregnant women (age-standardised) was the same as it was for other mothers (12%), the proportion of LBW babies could be reduced by up to 33%.

Mortality

Mortality measures for Aboriginal and Torres Strait Islander people were a key part of the Closing the Gap initiative led by the Council of Australian Governments (COAG) (replaced in May 2020 with the National Federation Reform Council) in collaboration with the National Coalition of Aboriginal and Torres Strait Islander Peak Organisations [44]. There were a number of targets set by COAG for life expectancy, child mortality, education and employment [43]. In July 2020, a new national agreement on Closing the Gap was endorsed. This is the first time an initiative to improve life outcomes for Aboriginal and Torres Strait Islander people has been created with Aboriginal and Torres Strait Islander people. Specific outcomes, targets and indicators aimed at policy direction and monitoring progress for mortality include life expectancy, all-cause mortality, leading causes of death and potentially avoidable mortality [43]. The difference in health outcomes (health gap) between Aboriginal and Torres Strait Islander people and non-Indigenous Australians (including life expectancy and infant/child mortality) can be attributed to a number of factors including:

- differences in the social determinants of health
- differences in health risk factors
- differences in access to appropriate health services - not covered in this report [43, 45].

There were 4,063 deaths in Australia in 2020 where the deceased person was identified as Aboriginal and/or Torres Strait Islander (Table 2) [46]. See Appendix 1 for discussion of data limitations.

Table 2. Numbers and proportions (%) of Aboriginal and Torres Strait Islander deaths, Australia, 2020

Jurisdiction	Number of deaths	Proportion of deaths in jurisdiction (%)
NSW	1,155	2.2
Vic	341	0.8
Qld	1,097	3.5
WA	626	4.2
SA	226	1.7
Tas	88	2.0
ACT	21	1.0
NT	507	44
Australia	4,063	2.5

Notes:

1 Australian total includes other territories.

2 Proportion (%) of deaths in jurisdictions includes 1,195 deaths with Indigenous status not reported.

Source: ABS, 2021 [46]

In 2020, there were 1,195 deaths for which no Indigenous status was reported, representing 0.7% of registered deaths; it is very likely that some of these deaths were among Aboriginal and Torres Strait Islander people [46].

Death rates

Crude and age-standardised death rates, median age at death, age-specific death rates and infant/child mortality rates (see the Glossary for further information) for Aboriginal and Torres Strait Islander people are only available for NSW, Qld, WA, SA and the NT as they are the jurisdictions with adequate levels of identification and sufficient numbers of deaths for mortality analysis to be undertaken [47]. The Aboriginal and Torres Strait Islander data for these measures are based on three-year averages, calculated for each calendar year, and then averaged. The reported rate for 2020 is based on the three-year averages for the 2018-2020 period.

In 2020, the age-standardised death rate for Aboriginal and Torres Strait Islander people was 9.4 per 1,000 population (Table 3) [46]. Rates for Aboriginal and Torres Strait Islander people varied by jurisdiction, with the highest rate occurring in the NT (13 per 1,000) and the lowest in NSW (7.6 per 1,000).

Table 3. Age-standardised death rates, Aboriginal and Torres Strait Islander people, NSW, Qld, WA, SA and the NT, 2020

Jurisdiction	Numbers	Aboriginal and Torres Strait Islander people
NSW	1,155	7.6
Qld	1,097	9.5
WA	626	12
SA	226	10
NT	507	13
Total for the selected jurisdictions	3,611	9.4

Notes:

1 Rates are per 1,000 population.

2 Rates are based on three-year averages; for Aboriginal and Torres Strait Islander data, rates are calculated for each calendar year and then averaged to reduce variability in annual rates.

Source: ABS, 2021 (Derived from [46])

In 2020, the crude death rate in NSW, Qld, WA, SA and the NT for Aboriginal and Torres Strait Islander males was higher than that for females (5.0 per 1,000 and 4.1 per 1,000 respectively) [46].

For 2014-2018, in NSW, Qld, WA, SA and the NT, 14,734 deaths (males: 8,046, females: 6,688) were identified as Aboriginal and/or Torres Strait Islander [43]. These data exclude 3,623 deaths where Indigenous status was not stated, which may lead to under-identification of Indigenous people in the mortality data. The crude death rate for all Aboriginal and Torres Strait Islander people was 418 per 100,000, with the rate for males (458 per 100,000) higher compared with females (379 per 100,000). After age-adjustment, the death rate for Aboriginal and Torres Strait Islander people was 917 per 100,000, with NSW recording the lowest rate (690 per 100,000), followed by Qld (932 per 100,000); SA (973 per 100,000); WA (1,152 per 100,000) and the NT the highest rate (1,465 per 100,000).

Expectation of life

In 2018, the ABS published revised estimates for expectation of life at birth for Aboriginal and Torres Strait Islander people [48]. According to these estimates, Aboriginal and Torres Strait Islander males born in Australia in 2015-2017 could expect to live to 71.6 years, 8.6 years less than the 80.2 years expected for non-Indigenous males. The expectation of life at birth of 75.6 years for Aboriginal and Torres Strait Islander females was 7.8 years less than the expectation of 83.4 years for non-Indigenous females. Revised estimates were also published for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA and the NT (Table 4).

Table 4. Expectation of life at birth in years, by Indigenous status and sex, selected jurisdictions, Australia, 2015-2017

Jurisdiction	Aboriginal and Torres Strait Islander people	Non-Indigenous	Difference
Males			
NSW	70.9	80.2	9.4
Qld	72.0	79.8	7.8
WA	66.9	80.3	13.4
NT	66.6	78.1	11.5
Australia (headline)	71.6	80.2	8.6
Australia (unadjusted)	70.0	80.2	10.3
Females			
NSW	75.9	83.5	7.6
Qld	76.4	83.2	6.7
WA	71.8	83.8	12.0
NT	69.9	82.7	12.8
Australia (headline)	75.6	83.4	7.8
Australia (unadjusted)	74.4	83.5	9.0

Notes:

1 These estimates are based on the average number of Aboriginal and Torres Strait Islander deaths registered in 2015-2017 adjusted for under-identification and over-identification of Indigenous status in registrations. Final Aboriginal and Torres Strait Islander population estimates are based on the 2016 Census.

2 Australian estimates are based on deaths in all states and territories.

3 Differences are based on unrounded estimates.

4 Headline estimates for Australia are calculated taking age-specific identification rates into account.

5 Unadjusted estimates are not the headline estimates for Australia, because they are calculated without an age-adjustment, but are provided to enable effective comparisons with the state and territory estimates.

Source: ABS, 2018 [48]

Life expectancy for Aboriginal and Torres Strait Islander people varied considerably by remoteness of residence [48]. Aboriginal and Torres Strait Islander males living in major cities had a life expectancy of 72.1 years in 2015-2017, compared with 65.9 years for those living in remote and very remote areas. For females, the figures were 76.5 years for major cities and 69.6 years for remote and very remote areas (Table 5).

Table 5. Expectation of life at birth in years, by Indigenous status and remoteness, Australia, 2015-2017

Remoteness	Aboriginal and Torres Strait Islander people		Non-Indigenous		Difference	
	Males	Females	Males	Females	Males	Females
Major cities	72.1	76.5	80.7	83.7	8.6	7.2
Inner and outer regional	70.0	74.8	79.1	82.8	9.1	8.0
Remote and very remote	65.9	69.6	79.7	83.6	13.8	14.0

Notes:

1 These estimates are based on the average number of Aboriginal and Torres Strait Islander deaths registered in 2015-2017 adjusted for under-identification and over-identification of Indigenous status in registrations. Aboriginal and Torres Strait Islander population estimates are based on the 2016 Census.

2 Differences are based on unrounded estimates.

Source: ABS, 2018 [48]

The life expectancy data for 2015-2017 are not comparable to previous Census data due to changes in the identification of Indigenous status [43]. Due to this, the *Overview* does not provide trend analysis data for life expectancy.

Age at death

In 2020, the median age at death[8] for Aboriginal and Torres Strait Islander people in NSW, Qld, WA, SA and the NT was 61.0 years [46]. The median age of death varied across the selected jurisdictions, with NSW having the highest median age of death for both males and females (Table 6). The lowest median age of death for males was reported for the NT, and for females, in WA.

Table 6. Median age at death, Aboriginal and Torres Strait Islander people, by sex, NSW, Qld, WA, SA and the NT, 2020

Jurisdiction	Aboriginal and Torres Strait Islander people		
	Males	Females	Persons
NSW	61.9	66.2	63.6
Qld	59.1	65.1	61.6
WA	56.0	60.4	58.1
SA	55.9	63.8	59.0
NT	54.7	60.7	58.0
Total for the selected jurisdictions	58.8	63.8	61.0

Notes:

1 Information is not available for the other jurisdictions because of the relatively small numbers of deaths recorded.

2 Median age of death is the age below which 50% of deaths occur.

Source: ABS, 2021 [46]

Age-specific death rates

In 2020, in NSW, Qld, WA, SA and the NT, the death rate for Aboriginal and Torres Strait Islander people for all ages was 459 per 100,000 [46]. The age-specific death rates increased with age from 5-14 years, with the highest rate reported in the 75 years and over age-group (7,521 per 100,000), followed by the 65-74 years age-group (2,613 per 100,000) and 55-64 years age-group (1,313 per 100,000). The lowest rate of 17 per 100,000 was in the 5-14 years age-group.

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[8] The median age at death is the age below which 50% of people die.

Infant mortality

The infant mortality rate (IMR) is the number of deaths of children aged less than one year in a calendar year per 1,000 live births in the same calendar year [46]. In NSW, Qld, WA, SA and the NT in 2020, the Aboriginal and Torres Strait Islander IMR was 5.4 per 1,000 live births.

In the five-year period 2014-2018, in NSW, Qld, WA, SA and the NT, 514 infant deaths represented 85% of all deaths among 0-4 year old Aboriginal and Torres Strait Islander children (603) (Derived from [43]). The IMR was highest among male infants compared with female infants (6.9 per 1,000 and 5.7 per 1,000 respectively). By selected jurisdiction, the IMR for Aboriginal and Torres Strait Islander infants combined was 6.3 per 1,000, with the highest rate in the NT (14 per 1,000), followed by WA (6.8 per 1,000), Qld (6.4 per 1,000), SA (4.6 per 1,000) and NSW the lowest (4.5 per 1,000).

Aboriginal and Torres Strait Islander infants most commonly died from conditions in the International Classification of Diseases (ICD) 'Certain conditions originating in the perinatal period', including birth trauma, disorders relating to fetal growth, and complications from pregnancy, labour and delivery, and respiratory and cardiovascular disorders specific to the perinatal period [43]. This accounted for over half (57%) of all Aboriginal and Torres Strait Islander infant deaths for 2014-2018. The second major cause was ICD 'Symptoms, signs and ill-defined conditions', which includes sudden infant death syndrome (SIDS) and accounted for 15% of Aboriginal and Torres Strait Islander infant deaths.

Child mortality

For 2014-2018, among Aboriginal and Torres Strait Islander children aged 0-4 years, living in NSW, Qld, WA, SA and the NT, there were 603 deaths; 514 in children aged 0-1 years and 89 in children aged 1-4 years [43]. The child mortality rate was 146 per 100,000 for 0-4 year olds and 27 per 100,000 for 1-4 year olds at rates 2.0 and 1.8 times higher respectively, compared with non-Indigenous children. Aboriginal and Torres Strait Islander males had the highest child mortality rate for both age-groups (0-4 years: 159 per 100,000 and 1-4 years: 30 per 100,000) compared with females (0-4 years: 131 per 100,000 and 1-4 years: 24 per 100,000). For the selected jurisdictions, the NT has the highest child mortality rates for the 0-4 and 1-4 year old age-groups (305 per 100,000 and 58 per 100,000 respectively) and NSW the lowest rates (95 per 100,000 and 16 per 100,000 respectively).

In the five-year period 2014-2018, Aboriginal and Torres Strait Islander children most commonly died from conditions in the ICD 'Certain conditions originating in the perinatal period' in the 0-4 year age-group (49%) and from 'External causes of morbidity and mortality' including transport accidents and injury, in the 1-4 year age-group (49%) [43].

Causes of death

Ischaemic heart disease (IHD) was the leading cause of death of Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT in 2020 [49]. IHD accounted for 401 deaths, representing 11% of all deaths for Aboriginal and Torres Strait Islander people (total 3,611 for selected jurisdictions) (Derived from [49]). The other leading specific causes of death were diabetes: 266 deaths (7.4%); chronic lower respiratory diseases: 245 deaths (6.8%) and cancer of trachea, bronchus and lung: 209 deaths (5.8%). There were no deaths of identified Aboriginal and/or Torres Strait Islander people from COVID-19 in 2020. Twenty deaths from COVID-19 were reported for June to December 2021 [50].

In 2020, for both Aboriginal and Torres Strait Islander males and females living in NSW, Qld, WA, SA and the NT, the leading cause of death was IHD [49]. The next leading causes of death for males were intentional self-harm and chronic lower respiratory diseases, and for females, diabetes and chronic lower respiratory diseases.

Five-year aggregated age-standardised death rates for 2016-2020 for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT show that the leading cause of death was IHD (114 per 100,000) [49]. The next leading causes of death were chronic lower respiratory diseases (78 per 100,000) and diabetes (75 per 100,000). For 2016-2020, the leading cause of death for both Aboriginal and Torres Strait Islander males and females living in NSW, Qld, WA, SA and the NT was IHD (145 per 100,000 and 87 per

100,000 respectively). The next leading causes of death for males were chronic lower respiratory diseases (87 per 100,000) and diabetes (75 per 100,000), and for females, diabetes (76 per 100,000) and chronic lower respiratory diseases (72 per 100,000).

Further information for underlying causes of death is available for 2014-2018 among Aboriginal and Torres Strait Islander people in NSW, Qld, WA, SA and the NT. The leading causes of death were neoplasms (including cancer) 23% of all deaths; circulatory diseases (e.g. heart attacks): 23%; external causes of morbidity and mortality (e.g. injury): 15%; respiratory diseases: 9.4% and diabetes: 7.5% [43]. Among the top leading causes of death for Aboriginal and Torres Strait Islander males were circulatory diseases at 23% of all deaths, neoplasms 22% and external causes of morbidity and mortality 18%. For females, they were neoplasms 24%, circulatory diseases 22% and respiratory diseases 11%.

Age-specific rates, from five years of age and above, for underlying causes of death among Aboriginal and Torres Strait Islander people, indicated that external causes of morbidity and mortality (e.g. injury and self-harm) were the leading cause of death for Aboriginal and Torres Strait Islander people aged 5-14 to 35-44 years in 2014-2018 [43]. Leading causes of deaths for the 45-54 years age-group were circulatory diseases, for the 55-64 to 65-74 years age-group were neoplasms (including cancer) and for 75 years and over were circulatory diseases.

Information for 2014-2018 for NSW, Qld, WA, SA and the NT indicated circulatory diseases and neoplasms (including cancer) as the leading causes of death for Aboriginal and Torres Strait Islander people [43]. This pattern was also evident for data by remoteness, with age-standardised death rates increasing with remoteness. Of note, circulatory diseases were 1.7 times higher in remote areas compared with non-remote areas (326 per 100,000 and 198 per 1000,000 respectively) and neoplasms (including cancer) 1.4 times higher (290 per 100,000 and 202 per 100,000 respectively). The highest rate difference between remote and non-remote areas was for endocrine, nutritional and metabolic diseases (e.g., diabetes) deaths: 183 per 100,000 compared with 60 per 100,000.

Maternal mortality

Maternal deaths refer to deaths of women during pregnancy or up to 42 days after delivery [51, 52]. Direct maternal deaths refer to those resulting from obstetric complications (including in pregnancy, labour, and in the first six weeks after delivery) from interventions, omissions, and incorrect treatment. Indirect maternal deaths refer to those resulting from a previously existing disease, or a disease that developed during pregnancy, that were not a direct result of obstetrics but aggravated by pregnancy. Coincidental deaths refer to deaths from unrelated causes (accidental and/or incidental) that occur during the pregnancy or up until six weeks after delivery.

Maternal mortality ratios (MMRs) are calculated by dividing the number of maternal deaths (direct and indirect) by the number of women who gave birth to babies weighing at least 400 grams or who reached at least 20 weeks gestation; this result is then multiplied by 100,000 [51, 52].

In Australia between 2012-2019[9], 16 of the 143 maternal deaths reported were of Aboriginal and Torres Strait Islander women (Indigenous status was not reported in 13 of the deaths) [51]. Of these 16 Aboriginal and Torres Strait Islander maternal deaths, eight were direct and eight were indirect. The MMR for Aboriginal and Torres Strait Islander women was 18 deaths per 100,000 women who gave birth.

Between 2006-2017[10] there were 24 maternal deaths with the leading causes of Aboriginal and Torres Strait Islander deaths being cardiovascular diseases (CVD) (25% of maternal deaths) and sepsis (21%) [52].

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[9] Data not available from WA for all years.

[10] Data were unavailable for WA and due to the small number of Aboriginal and Torres Strait Islander women in the National Maternal Data Collection, data for 2006-2017 were used [52].

Avoidable deaths

Potentially avoidable deaths refers to deaths that could have been prevented with timely and effective health care, including early detection and effective treatment [53]. They are calculated using the population data for Australians less than 75 years of age. For Aboriginal and Torres Strait Islander people, chronic disease and injury cause the highest proportion of avoidable deaths [43].

In 2014-2018, there were 7,072 deaths (males: 4,148; females: 2,924) from avoidable causes among Aboriginal and Torres Strait Islander people aged 0-74 years living in NSW, Qld, WA, SA and the NT [43]. The 7,072 deaths represented 61% of Aboriginal and Torres Strait Islander people who died during this period. Males were more likely to die from avoidable causes than females (crude rates 238 per 100,000 and 168 per 100,000 respectively). The avoidable age-specific mortality rate was relatively high for children under one year of age (412 per 100,000 live births), falling to the lowest rate for children aged 1-4 years (18 per 100,00 estimated resident population (ERP)) and 5-14 years (12 per 100,000 ERP), before increasing from the 5-14 years age-group through to the 65-74 years age-group (Table 7).

Table 7. Numbers and age-specific rates for avoidable deaths, by Indigenous status, NSW, Qld, WA, SA and the NT, 2014-2018

Age-group (years)	Aboriginal and Torres Strait Islander people	
	Number	Rate per 100,000
Less than 1	335	412
1-4	60	18
5-14	97	12
15-24	471	69
25-34	678	135
35-44	941	241
45-54	1,391	392
55-64	1,647	712
65-74	1,452	1,371
All ages – crude rate	7,072	203
All ages – age-standardised rate	7,072	312

Source: AIHW, 2020 [43]

Age-adjusted rates for avoidable deaths were highest in the NT (548 per 100,000), followed by WA (443 per 100,000), with the lowest in NSW (216 per 100,000) [43]. Aboriginal and Torres Strait Islander people living in remote areas had the highest avoidable mortality rate (479 per 100,000), 2.2 times higher than those living in major cities (217 per 100,000) and 1.7 times higher than those living in regional areas (278 per 100,000).

In 2014-2018, the most common conditions contributing to avoidable deaths among Aboriginal and Torres Strait Islander people aged 0-74 years living in NSW, Qld, WA, SA and the NT were IHD (21%), diabetes (12%), suicide and self-inflicted injuries (11%), and chronic obstructive pulmonary disease (COPD) (8.3%) and cancer (8.1%) [43].

Hospitalisation

Statistics on hospitalisation provide some indication of the burden of disease in the population [54]. They are, however, a poor reflection of the extent and patterns of treatable illness in the community because they only represent the most serious illnesses, those requiring hospitalisation [43]. Hospitalisations are also influenced, to some extent, by the geographic accessibility of hospitals and variations in admission policies and practices for illnesses [45, 55]. 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 [55] (See Appendix 1).

Another limitation of the available hospital statistics as an indicator of the health of the population, is that they relate to episodes of hospitalisation rather than to individual patients [45, 56]. Also, it is difficult to analyse patterns of care for patients hospitalised multiple times (for example for kidney dialysis) from the current national hospitalisation data [45, 57].

Hospitalisation rates will be determined by advancements in the health system [43], improvements in self-identification by Aboriginal and Torres Strait Islander people [58], and reforms that tackle the social determinants of health [43].

Separation rates

Of the 11.1 million hospital separations in Australia[11, 12] during 2019-20, there were 581,163 (5.2%) identified as Aboriginal and/or Torres Strait Islander (Table 8) [59]. Of these hospital separations, 92% were for Aboriginal people, 4.1% were for Torres Strait Islander people and 4.3% were for people who identified as being of both Aboriginal and Torres Strait Islander descent. Of the 581,163 separations, 57% were for females and 43% for males.

In 2019-20, the overall age-standardised separation rate for Aboriginal and Torres Strait Islander people was 970 separations per 1,000 (Table 8) [59]. The highest age-standardised separation rate was for Aboriginal and Torres Strait Islander people living in the NT (2,207 per 1,000) and the lowest in NSW (545 per 1,000).

Table 8. Numbers of hospital separations and age-standardised hospital separation rates for Aboriginal and Torres Strait Islander people, by jurisdiction, 2019-20

Jurisdiction	Number	Rate
NSW	111,807	546
Vic	31,726	696
Qld	165,668	1,016
WA	102,425	1,403
SA	32,400	1,063
NT	124,012	2,207
Australia	581,163	970

Notes:

1 Rates per 1,000 population.

2 Numbers and rates for the NT are for public hospitals only; numbers and rates are not included separately for public hospitals in Tas or the ACT but included in totals where applicable.

Source: AIHW, 2021 [59]

For 2015-17, just over one million Aboriginal and Torres Strait Islander people were hospitalised at an age-standardised rate of 907 per 1,000 population [43]. Dialysis accounted for 461,806 of these separations and when care involving dialysis was excluded, the rate was 435 per 1,000 (crude rate 340 per 1,000).

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[11] All hospitalisation data for Tas, the ACT and the NT includes only public hospitals [59].

[12] 246,722 separations (2.2%) had no Indigenous status reported [59].

Age-specific separation rates

In 2015-17, age-specific hospital separation rates (excluding dialysis) for Aboriginal and Torres Strait Islander people increased with age (except for 0-4 year olds), with the highest rate in the 65 years and over age-group (Table 9) [43]. For Aboriginal and Torres Strait Islander females, the rates, compared with males, were higher across all age-groups from 15 to 54 years of age.

Table 9. Age-specific hospital separation rates (excluding dialysis), by sex, Aboriginal and Torres Strait Islander people, 2015-17

Age-group (years)	Males	Females	Persons
0-4	346	273	311
5-14	112	96	104
15-24	151	371	258
25-34	234	521	377
35-44	368	500	436
45-54	487	527	508
55-64	608	588	597
65+	893	864	877
All ages (age-standardised)	395	477	435
All ages (crude)	290	390	340

Notes:

1 Rates per 1,000 population.

2 Data includes public and private hospitals in all jurisdictions.

3 Age-standardised using the Australian 2001 standard population.

Source: AIHW, 2020 [43].

In 2018-19, Aboriginal and Torres Strait Islander children aged 0-4 years were hospitalised at a crude rate of 323 per 1,000, with diseases of the respiratory system being responsible for the highest rates of hospitalisation (84 per 1,000) [60]. For 2016-18, hospitalisation rates for Aboriginal and Torres Strait children aged 0-4 years increased with remoteness: major cities (285 per 1,000); regional areas (294 per 1,000) and remote/very remote areas (475 per 1,000). Hospitalisation rates in remote/very remote areas were 1.7 times higher than those in the city.

Causes of hospitalisation

In 2019-20, the most common reason for the hospitalisation of Aboriginal and Torres Strait Islander people in Australia was for conditions in the ICD ‘Factors influencing health status and contact with health services’, mostly for care involving dialysis, responsible for 48% of Aboriginal and Torres Strait Islander separations (277,240 separations) [59]. Many of these separations involved repeat admissions for the same people. 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 Aboriginal and Torres Strait Islander people, responsible for 38,737 separations (6.7% of all separations). After ICD ‘Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified’, the next leading cause of hospitalisation for Aboriginal and Torres Strait Islander people was ‘pregnancy, childbirth and the puerperium’, responsible for 30,032 separations (5.2% of all separations) (Table 10). In 2020, 1.2% hospitalisations involving a COVID-19 diagnosis (32 of 2,628) were for people of Aboriginal and Torres Strait Islander origin.

Table 10. Numbers, proportions (%), and age-standardised hospitalisation rates for leading causes of hospital separations among Aboriginal and Torres Strait Islander people, Australia, 2019-20

Principal diagnosis (ICD)	Number of separations	Proportion of separations (%)	Age-standardised separation rate
Injury, poisoning and certain other consequences of external causes	38,737	6.7	53
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	34,818	6.0	54
Pregnancy, childbirth and the puerperium	30,032	5.2	33
Diseases of the digestive system	28,549	4.9	43
Diseases of the respiratory system	28,213	4.9	41
Mental and behavioural disorders	26,228	4.5	37
Diseases of the circulatory system	16,360	2.8	32
Diseases of the genitourinary system	15,832	2.7	25
Diseases of the musculoskeletal system and connective tissue	14,003	2.4	24
Diseases of the skin and subcutaneous tissue	11,992	2.1	17
Endocrine, nutritional and metabolic diseases	11,280	1.9	19
Neoplasms	10,073	1.7	19
Certain infectious and parasitic diseases	9,550	1.6	13
Diseases of the nervous system	8,740	1.5	13
Factors influencing health status and contact with health services	277,240	48	522
All causes	581,163	100	970

Notes:

1 Separation rates per 1,000 population.

2 Hospitalisation data for Tas, the ACT and the NT include only public hospitals.

3 Some principal diagnoses have been excluded.

Source: AIHW, 2021 [59].

Potentially preventable hospitalisations

Potentially preventable hospitalisations are admissions which ‘could have potentially been prevented through the provision of appropriate individualised preventative health interventions and early disease management usually delivered in primary care and community-based care settings’ [61]. Rates for potentially preventable hospitalisations, including those for chronic conditions, acute conditions and vaccine preventable conditions, may be used as an indirect measure of problems with access to care and effective primary care [62].

In 2019-20, the age-standardised rate of overall potentially preventable hospitalisations for Aboriginal and Torres Strait Islander people was 72 per 1,000 [59]. The highest rates for potentially preventable hospitalisations of Aboriginal and Torres Strait Islander people were for chronic conditions: 35 per 1,000 (including 7.2 per 1,000 for diabetes complications) and acute conditions (29 per 1,000). The rate for vaccine preventable conditions was 9.9 per 1,000. Information by jurisdiction (Table 11) reveals that the NT had the highest rate for potentially preventable hospitalisations of 125 per 1,000.

Table 11. Age-standardised hospital separation rates for selected potentially preventable hospitalisations for Aboriginal and Torres Strait Islander people, by condition type, by jurisdiction, all hospitals, 2019-20

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Vaccine preventable conditions	5.4	6.1	9.3	13	10	2.1	5.6	29	9.9
Acute conditions	19	23	34	38	28	9.7	22	49	29
Chronic conditions	27	37	37	42	35	15	21	53	35
Total	51	65	79	91	71	27	48	125	72

Note: Rates are per 1,000 population.

Source: AIHW, 2021 [59]

For 2019-20, age-standardised potentially preventable hospitalisation rates by remoteness indicated that vaccine preventable conditions, acute conditions and chronic conditions all experienced the highest rates in a remote setting (22, 47 and 49 per 1,000 respectively) [59]. When comparing between condition types and remoteness settings, vaccine preventable conditions were highest, with the rate for remote areas 3.3 times the rate for regional areas (22 per 1,000 and 6.7 per 1,000 respectively).

Further information is available for 2016-18, for age-standardised potentially preventable hospitalisation rates by remoteness [60]. For this period, the rate for all three condition types increased with remoteness, with the highest rates in the remote/very remote setting: vaccine preventable conditions (7.8 per 1,000); chronic conditions (50 per 1,000) and acute conditions (52 per 1,000) (Table 12). When comparing between condition types and remoteness settings, acute conditions were highest, with the rate for remote/very remote areas 2.5[13] times the rate for major cities (52 per 1,000 and 20 per 1,000 respectively).

Table 12. Age-standardised hospital separation rates for potentially preventable hospitalisations for Aboriginal and Torres Strait Islander people, by condition type, by remoteness, 2016-18

	Major cities	Regional	Remote/very remote	Total
Vaccine preventable conditions	3.3	3.7	7.8	4.4
Acute conditions	20	26	52	29
Chronic conditions	26	33	50	34

Notes:

1 Rates are per 1,000 population.

2 Data are from public and private hospitals in all jurisdictions.

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

Source: SCRGSP, 2020 (Derived from [60])

In 2018-19, the national crude rate of hospitalisations for Aboriginal and Torres Strait Islander children aged 0-4 years for potentially preventable diseases and injuries was 171 per 1,000 [60]. For remoteness, available data for 2016-18 show that the rates increased by remoteness: major cites (135 per 1,000); regional (147 per 1,000) and remote/very remote areas (319 per 1,000). The rate of hospitalisations of Aboriginal and Torres Strait Islander children was 2.4 times as high in remote/very remote areas as it was in major cities.

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[13] Rounding may result in inconsistencies in calculated rates.

Selected health conditions

Coronavirus disease

We are now entering the third year of the Coronavirus disease (COVID-19) pandemic globally. The impact of COVID-19 has been profound on all countries of the world [63]. In the early stages of the pandemic, Australia was generally considered to have responded well to reduce the impact COVID-19 [2, 63]. The mortality rates in comparable developed nations around the world have been estimated at 100 times greater than Australia [64]. Indigenous people worldwide were identified, based on previous pandemics, as vulnerable to more severe outcomes [65]. Aboriginal and Torres Strait Islander people and communities were identified as a vulnerable population due to persistent social, economic and health inequalities [66-69] and at greater risk of dying if infected with COVID-19 [2, 68]. Smith and Judd referred to this as the 'power of privilege in a pandemic' [70, p.159].

The response to the pandemic by the Aboriginal Community Controlled Health Sector, with national leadership by NACCHO, has been praised as instrumental to mitigating the impact of COVID-19 [2, 64]. Stanley and her colleagues have gone as far as to declare, 'the outstanding result is a model of how, with First Nations leadership, an expected disastrous pandemic result can be prevented' [67, p.1854]. The infection rate in non-Indigenous populations was 5.9 times higher than for First Nations people, 'a dramatic reversal of the gap!' [67, p.1854]. The resilience of Aboriginal and Torres Strait Islander people and communities has also been highlighted [69]. Nevertheless, as the pandemic persists, many challenges remain. The impact of COVID-19 on mental health and the potential exposure to increased racism are important factors to be aware of [68].

There were millions of deaths worldwide, however in Australia by June 2021 there were 910 deaths, with none reported in Aboriginal and Torres Strait Islander communities due in large part to successful lobbying by the Aboriginal Community Controlled Health Sector for health directives that restricted access to regional and remote Aboriginal communities [63, 71]. In 2019-20, only 1.2% of hospitalisations were for Aboriginal and Torres Strait Islander people [59]. Of these, the highest number of separations were in NSW (13), followed by Qld (10), Vic (5), SA (2), WA and Tas (1). There were no separations in this period for the ACT or the NT. As at December 2021, there had been 8,807 cases of COVID-19 reported for Aboriginal and Torres Strait Islander people, with 42% living in a regional or remote area [50]. Twenty deaths were reported from June to December 2021. In March 2020, the *Australian health sector emergency response plan for Novel Coronavirus (COVID-19)* outlined a coordinated management and operations plan for Aboriginal and Torres Strait Islander populations [72].

The Australian vaccine rollout commenced in February 2021 [73]. The early stages of the vaccine rollout faced enormous challenges and for many the rollout seemed chaotic and disorganised. Since the vaccine rollout, vaccination rates for a large number of Aboriginal and Torres Strait Islander people remain lower than the general Australian population [74]. The Aboriginal and Torres Strait Islander vaccine rollout rates varied from state to state. Rates also varied across Local Government Areas (LGAs) within states and territories (Table 13) [75].

Table 13. COVID-19 vaccine rollout rates for Indigenous people, by state and territory LGAs, 2021

State	Indigenous individuals received dose 1 (%)	Indigenous individuals received dose 2 (%)
ACT	91	87
NSW	68 - 94	63 - 93
NT	66* - 94 *	48* - 85*
Qld	58 - 93*	39* - 90*
SA	62 – 97*	50* – 94*
Tas	80 – 94*	70 – 92*
Vic	84 - 96	79 - 92
WA	48 - > 99*	31* - >99
Other Territories	89*	93*

Notes:

1 *Denotes LGAs with very large 'very remote' and 'remote' areas where geocoding addresses is difficult, often leading to artificially low counts.

2 Ranges indicate the highest to lowest LGA.

Source: Derived from Australian Government Department of Health, 2022 [75]

Several reasons have been proposed to explain the low vaccination rates in Aboriginal and Torres Strait Islander communities. Access to vaccines was an issue for many remote Aboriginal and Torres Strait Islander communities, due in part to persistent problems with healthcare access [67, 76]. Perceived racism in mainstream services has led to high levels of mistrust [67, 71]. Aboriginal communities have also been subjected to unreasonable campaigns of misinformation and conspiracy theories [77].

Vaccine hesitancy in the broader population in Australia was intensified by Australia's initial over reliance on the AstraZeneca vaccine, and concerns about reported cases of blood clots. In relative safety, compared with the rest of the world, some people became vaccine (AstraZeneca) hesitant [76]. For some Aboriginal and Torres Strait Islander people, this hesitancy was amplified by historical mistrust in government and government service provision [71]. Vaccine hesitancy has also become a more important health challenge with the appearance of the Delta strain and then the Omicron variant, coupled with nationwide plans to 'open the borders' in most Australian states and territories in early 2022. It is also evident that there will be a knock-on effect as the requirement for booster shots to further control COVID-19 outbreaks is rolled out. The issue of vaccine hesitancy in Aboriginal and Torres Strait Islander communities risks being intensified by the rollout of the vaccine booster shots. Initially, booster shots were recommended at six months after the second vaccine. Health advice has been changing rapidly with boosters now being recommended at 4-5 months [78]. This was, in large part, due to the spread of the Omicron variant which is reportedly more contagious but when vaccinated against protects against severe disease. Given the low rates of second vaccines in Aboriginal and Torres Strait Islander communities, the booster rollout will be similarly delayed.

To combat low vaccination rates, several programs have been implemented to enhance quality and impact of COVID-19 messaging. For example, media personality Ernie Dingo is returning to his Country as part of the Vax the Outback program [79] and the Victorian Aboriginal Community Controlled Health Organisation have sent Vaccine Vans out into their communities [80]. The Northern Land Council have released a series of short videos using local personalities called *Get the jab!* [81]. NACCHO continue to provide strong leadership and support throughout Australia (see also the Health*InfoNet* COVID-19 Coronavirus Information and Updates portal).

Cardiovascular health

Cardiovascular disease (CVD) is the term for those diseases and conditions that affect the heart and blood vessels [82]. Specific types of CVD include IHD, cerebrovascular disease (including stroke), hypertension (high blood pressure), and rheumatic heart disease (RHD) [40, 82].

Most types of CVD (excluding RHD) share a common set of risk factors. These include: smoking, unhealthy diet, physical inactivity, high alcohol use, high blood pressure, high cholesterol, unhealthy weight, type 2 diabetes, chronic kidney disease (CKD), depression/social isolation, sex, family history of CVD, ethnicity and age [83-85]. Evidence shows that the risk of CVD starts relatively early for Aboriginal and Torres Strait Islander people, and a consensus statement was released in 2020 recommending that Aboriginal and Torres Strait Islander people begin having CVD risk assessments at younger ages because of early disease onset [83].

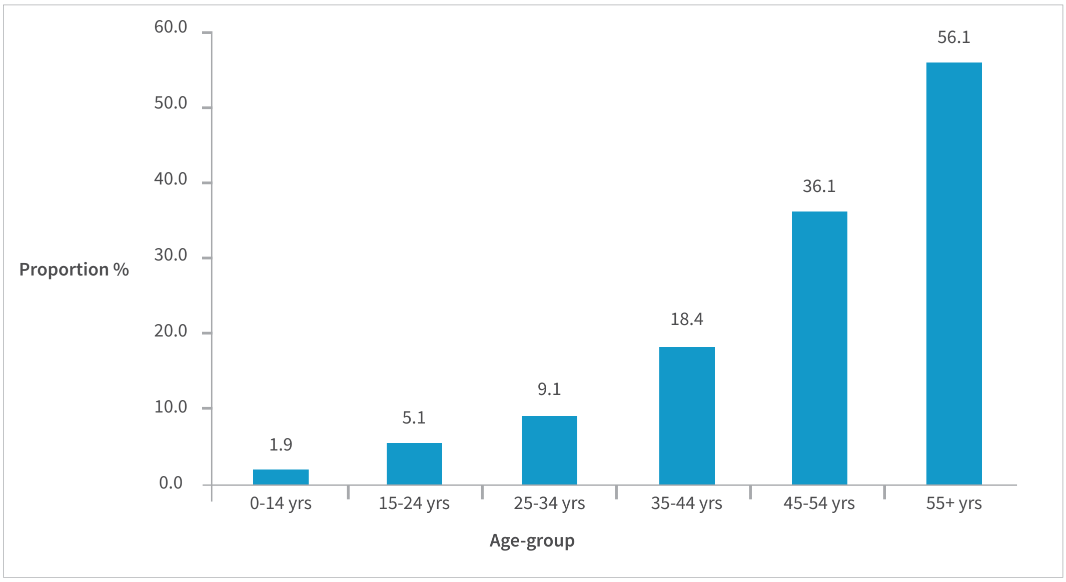
Unlike other types of CVD, RHD occurs when acute rheumatic fever (ARF), an illness that affects the heart, joints, brain and skin, leads to permanent damage to the heart valves [86]. ARF is caused by an untreated bacterial - group A streptococci (GAS) - infection of the throat[14]. Reducing ARF and RHD in Aboriginal and Torres Strait Islander communities requires initiatives that address poverty, overcrowded housing and poor sanitation, all of which contribute to the spread of GAS infection [86, 87]. A comprehensive, long-term strategy was released in 2020 setting out the actions required to eliminate RHD in Australia [86].

Extent of cardiovascular disease among Aboriginal and Torres Strait Islander people

Prevalence of cardiovascular disease

Around 15% of participants in the National Aboriginal and Torres Strait Islander Health Survey, 2018-19 (NATSIHS) reported having CVD[15] [88]. CVD was reported more frequently by females (17%) than by males (14%). The prevalence of CVD increased with age, from 1.9% among those aged 0-14 years to 56% among those aged 55 years and over (Figure 1).

Figure 1. Proportion (%) of Aboriginal and Torres Strait Islander people with self-reported CVD, by age-group (years), Australia, 2018-19



Note: Proportions expressed as percentages.

Source: ABS, 2019 [88]

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[14] and probably, in some settings, of the skin [86, 87].

[15] CVD includes any of the conditions defined by ICD-10 codes I00-I99 [40].

'Heart, stroke and vascular disease'[16] was self-reported as a long-term condition by 5.2% of 2018-19 NATSIHS participants (5.3% of Aboriginal people and 3.0% of Torres Strait Islander people) [88]. The prevalence of 'heart, stroke and vascular disease' was slightly higher among males (5.5%) than females (4.9%). Prevalence increased with age, from 0.3% among those aged 0-14 years to 26% among those aged 55 years and over. Prevalence was slightly higher in non-remote areas (5.4%) than remote areas (4.9%). Of Australia's states and territories, Tas and the ACT had the highest prevalence of self-reported 'heart, stroke and vascular disease' (6.7% and 6.5% respectively), while NSW and Vic had the lowest (both 5.0%).

Hypertension[17] was self-reported by 8.3% of NATSIHS participants (8.3% of Aboriginal people and 6.6% of Torres Strait Islander people) [88]. The prevalence of hypertension was similar for males and females (8.4% and 8.2% respectively). Prevalence increased with age, from none among those aged 0-14 years to 38% among those aged 55 years and over. Prevalence was higher in remote areas (10%) than non-remote areas (7.9%). Of Australia's states and territories, Tas and the NT had the highest prevalence of self-reported hypertension (9.4% and 8.8% respectively), while Vic had the lowest (5.5%).

As well as being asked to self-report whether they had hypertension, participants in the 2018-19 NATSIHS aged 18 years and over were invited to voluntarily provide a blood pressure reading at the time of the interview. When measured[18], 23% of adult participants had high blood pressure[19] [88]. Twenty-three per cent (23%) of Aboriginal adults and 26% of Torres Strait Islander adults had high blood pressure when measured. Prevalence was higher among males than females (25% versus 21%). For males, prevalence was highest in the 45-54 years age-group and for females it was highest at ages 55 years and over (Table 14). Prevalence was 22% in remote areas and 23% in non-remote areas across jurisdictions combined. Prevalence was highest in SA (30%) and lowest in Vic (18%).

Table 14. Proportion (%) of Aboriginal and Torres Strait Islander people with measured high blood pressure, by age-group and sex, persons aged 18 years and over, 2018–19

Age-group (years)	Males	Females	Persons
18–24	9.5	7.3	8.8
25–34	19	12	16
35–44	24	22	23
45–54	40	32	36
55 years and over	39	35	37
Total 18 years and over	25	21	23

Note: Proportion expressed as percentages.

Source: ABS, 2019 [88]

High cholesterol was reported by 4.5% of NATSIHS participants, with the prevalence being identical for males and females [88]. The prevalence of high cholesterol increased with age, from none among those aged 0-14 years to 23% among those aged 55 years and over.

Incidence and prevalence of ARF and RHD

In 2015-2019, in Qld, WA, SA and the NT combined[20], there were 2,128 notifications of ARF for Aboriginal and Torres Strait Islander people [89]. The crude notification rate was 96 per 100,000. There were more notifications for females (56% of total notifications) than males (44%). The highest notification rate was for those aged 5–14 years, who accounted for 48% of all notifications (208 per 100,000 population, or 1,029 notifications). The jurisdictions with the highest proportions of total notifications were the NT (60%, 1,280 notifications) and Qld (21%, 454 notifications).

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[16] A group of long-term health conditions which includes: IHD (including heart attack and angina), cerebrovascular disease (including stroke), heart failure, oedema (fluid retention), and diseases of arteries, arterioles and capillaries [88].

[17] Self-reported hypertension only; excludes clinically measured high blood pressure results [88].

[18] Forty percent (40%) of adult participants in the NATSIHS did not have a blood pressure reading taken; for these participants, imputation (estimation of data) was used to obtain blood pressure [88].

[19] Measured high blood pressure is defined as a blood pressure reading of ≥140/90 mmHg. Measured high blood pressure does not necessarily mean a person has hypertension [88].

[20] The jurisdictions where there are established ARF/RHD registers [89].

In 2015-2019, in Qld, WA, SA and the NT combined, there were 1,325 new diagnoses of RHD among Aboriginal and Torres Strait Islander people [89]. The crude rate of new diagnoses was 60 per 100,000. The rate of new RHD diagnosis for females (76 per 100,000) was nearly two times that for males (44 per 100,000). Over half of the new diagnoses (55%, 723 diagnoses) were in people aged under 25 years. Most new diagnoses were from the NT (42% of total diagnoses) followed by Qld (38%). As at 31 December 2019, there were 4,337 Aboriginal and Torres Strait Islander people living with RHD in Qld, WA, SA and the NT combined.

Several studies have used echocardiographic screening (ultrasound of the heart) to determine RHD prevalence in specific regions of Australia. A study conducted in a West Arnhem Land community in the NT in 2018 found that the total prevalence of ARF and RHD among Aboriginal and Torres Strait Islander people aged 5-20 years[21] in that community was at least 10% [90].

Hospitalisation

There were 16,360 hospital separations for CVD[22] among Aboriginal and Torres Strait Islander people in 2019-20 [59], representing 5.4% of all Aboriginal and Torres Strait Islander hospital separations (excluding dialysis) (Derived from [59]).

In 2018-19, the crude CVD hospitalisation rate was 19 per 1,000 [60]. In 2016-18, the crude CVD hospitalisation rate was 19 per 1,000 for males and 18 per 1,000 for females.

In 2015-17, age-specific hospitalisation rates for CVD rose with age, from 1.9 per 1,000 for those aged 0-4 years to 111 per 1,000 for those aged over 65 years [43]. Although rates were highest for those aged over 65 years, CVD is recognised as having a substantial impact on younger Aboriginal and Torres Strait Islander people, with the age-specific rate for those aged 35-44 years being 22 per 1,000 in 2015-17.

In 2015-17, the crude rate of CVD hospitalisation for Aboriginal and Torres Strait Islander people was highest in the NT (33 per 1,000), WA (22 per 1,000) and Qld (18 per 1,000) and lowest in Tas (9 per 1,000) [43]. Other jurisdictions had rates of around 14 per 1,000. In 2016-18, rates were much higher in remote and very remote areas (29 per 1,000) than in inner and outer regional areas (18 per 1,000) and major cities (13 per 1,000) [60].

In 2015-17, of specific CVDs, IHD was responsible for the highest number of hospitalisations of Aboriginal and Torres Strait Islander people (36% of CVD hospitalisations), followed by pulmonary and other forms of heart disease (33%), cerebrovascular disease (9.3%), ARF (2.6%), RHD (1.9%) and hypertension (2.9%)[23] [43].

Mortality

Of all specific causes of death, IHD was the leading cause of Aboriginal and Torres Strait Islander deaths in NSW, Qld, WA, SA and the NT combined in 2020 (401 deaths) [49]. The age-standardised death rate due to IHD was 112 per 100,000. The age-standardised IHD death rate for males (146 per 100,000) was much higher than the rate for females (84 per 100,000).

Age-specific IHD death rates in 2016-2020 increased with age, with rates being highest for those aged 75 years and over (835 per 100,000) [49]. Although rates were highest among older people, IHD is recognised as having a substantial impact on younger Aboriginal and Torres Strait Islander adults; in 2016-2020, IHD was the second leading cause of death for those aged 35-44 years (44 per 100,000) and the fourth leading cause of death for those aged 25-34 years (9.6 per 100,000). Age-standardised IHD death rates in 2016-2020 were highest in WA (148 per 100,000) and lowest in NSW (83 per 100,000).

In 2020, cerebrovascular diseases were the sixth leading specific cause of deaths of Aboriginal and Torres Strait Islander people in NSW, Qld, WA, SA and the NT combined (137 deaths) [49]. The age-standardised death rate due to cerebrovascular diseases was 45 per 100,000. Age-standardised death rates for cerebrovascular diseases for males and females were 40 per 100,000 and 47 per 100,000 respectively.

In 2014-2018, there were 3,319 deaths of Aboriginal and Torres Strait Islander people in NSW, Qld, WA, SA and the NT combined caused by CVD [43]. CVD was the second leading general cause of death after neoplasms (including cancer), accounting for 23% of all deaths. The crude CVD mortality rate was 94 per 100,000 [60].

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[21] During the data collection period March to November 2018.

[22] ICD-10 codes I00-I99.

[23] 'Other diseases of the circulatory system' accounted for the remainder of CVD hospitalisations (around 14%) [43].

The age-standardised CVD mortality rate for Aboriginal and Torres Strait Islander males (259 per 100,000) was higher than the rate for females (203 per 100,000) [43]. As with IHD, age-specific mortality rates for overall CVD increased with age, with high rates seen among people as young as 25-34 years (23 per 100,000). Age-standardised rates were highest in the NT (348 per 100,000) and lowest in NSW (171 per 100,000). Rates were higher in remote areas (326 per 100,000) than non-remote areas (198 per 100,000). Of specific CVD types, IHD caused the most deaths (56% of CVD deaths), followed by other heart disease[24] (17%), cerebrovascular disease (15%), hypertensive diseases (5.0%), RHD (3.5%) and other diseases of the circulatory system[25] (3.3%).

Burden of disease

In 2018, CVD accounted for 10% of total burden among Aboriginal and Torres Strait Islander people [4]. Of all disease groups, CVD made the third highest contribution to total burden.

In 2018, IHD accounted for 5.8% of total burden among Aboriginal and Torres Strait Islander people [4]. It was the leading specific cause of total burden with an age-standardised rate of 29 disability-adjusted life years (DALY) per 1,000 people. Males experienced almost twice the burden due to IHD compared with females. Stroke was the 16th leading specific cause of total burden with an age-standardised rate of 7.9 DALY per 1,000 people.

Cancer

Cancer is the term used for a number of related diseases that cause damage to healthy body cells causing them to grow abnormally [91]. Cancer is a genetic disease, arising from changes to the genes that control the way cells behave. In all cancers, some of the cells of the body divide in an uncontrolled manner (cells normally grow and divide as the body needs them).

Cancer can start almost anywhere in the body [91] and there are more than 200 types of cancer [92]. The location in the body where the cancer cells begin forming is known as the primary site, and cancer is usually classified by this, for example lung cancer. When cancer cells travel and spread to other parts of the body, it is described as metastasis.

Data sources may use the term ‘neoplasm’ to describe conditions associated with abnormal growth of new tissue, commonly referred to as a tumour. Neoplasms can be benign (not cancerous) or malignant (cancerous) [5].

There is limited evidence available on cancer to inform initiatives to improve outcomes for Aboriginal and Torres Strait Islander people diagnosed with cancer [93]. Inconsistent Indigenous identification in cancer notifications in several jurisdictions has been a problem [94], however, nationally there are indications that accuracy in Indigenous identification is improving [5].

The *National Aboriginal and Torres Strait Islander cancer framework* highlights the need for improved Indigenous identification, including on pathology requests and reports [93]. It also expresses a need for routine national data collection, access and linkage to allow national monitoring and reporting, and inform strategies to improve cancer care and outcomes.

Extent of cancer among Aboriginal and Torres Strait Islander people

Incidence and prevalence

In the 2018-19 NATSIHS, 1.3% of Aboriginal and Torres Strait Islander people reported having neoplasms (including both malignant and benign) as a long-term health condition [88]. For cancer (malignant neoplasms) the proportion was 1.1%. The proportion of males self-reporting cancer was slightly higher than that of females, with percentages of 1.2% and 1.1% respectively. For neoplasms (both malignant and benign) the proportions increased with age; among the 45-54 years age-group the proportion was 2.8% and among the 55 years and over age-group it was 5.3%. When comparing across jurisdictions, the highest proportion of cancer was reported in WA with 1.3%, and when comparing by remoteness, non-remote areas had a higher proportion of cancer (1.3%) reported than remote areas (0.7%).

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[24] ICD-10 codes I26–I52.

[25] ICD-10 codes I70–I99.

For 2012-2016, there were 8,326 new cases of cancer diagnosed in Aboriginal and Torres Strait Islander people living in NSW, Vic, Qld, WA and the NT (an average of 1,665 new cases per year) [95]. The figures were similar across both sexes, with 4,134 new cases of cancer in males and 4,192 new cases in females (Table 15). Lung cancer had the highest incidence (15%) of all cancers among Aboriginal and Torres Strait Islander people, with an average of 244 cases diagnosed each year (Derived from [95]). Prostate cancer accounted for 17% of all cancers diagnosed among males, and among females, breast cancer had the highest incidence (24% of all cancers diagnosed).

Table 15. Incidence of all cancers combined and selected cancers for Aboriginal and Torres Strait Islander people, by sex, NSW, Vic, Qld, WA and the NT, 2012-2016

	Males		Females		Persons	
	Number of new cases	Average number of new cases (per year)	Number of new cases	Average number of new cases (per year)	Number of new cases	Average number of new cases (per year)
Lung	625	125	595	119	1,220	244
Breast	5	1	1,025	205	1,030	206
Colorectal (bowel)	393	79	349	70	742	148
Prostate	703	141	n/a	n/a	n/a	n/a
Head and neck	388	78	135	27	523	105
Melanoma (skin)	152	30	112	22	264	53
Liver	217	43	78	16	295	59
Non-Hodgkin lymphoma	139	28	113	23	252	50
Uterine	n/a	n/a	269	54	n/a	n/a
Unknown primary site	116	23	121	24	237	47
Pancreatic	138	28	122	24	260	52
Cervical	n/a	n/a	169	34	n/a	n/a
Kidney	134	27	97	19	231	46
Bladder	93	19	33	7	126	25
All cancers combined	4,134	827	4,192	838	8,326	1,665

Notes:

1 Number of cases of uterine and cervical cancers are for females only, and prostate cancer is for males only.

2 All cancers combined comprises ICD-10 codes C00–C97, D45–D46, D47.1 and D47.3–D47.5, with the exception of basal and squamous cell skin cancers.

3 All cancers combined include cancer types not listed in the table.

4 n/a – non-applicable.

Source: AIHW, 2021 [95]

For 2012-2016, the age-standardised incidence rate of all cancers combined for Aboriginal and Torres Strait Islander people living in NSW, Vic, Qld, WA and the NT was 523 per 100,000 population [95]. When comparing by remoteness, major cities, outer regional, remote and inner regional locations had higher age-standardised incidence rates (538, 518, 513 and 512 per 100,000 respectively) than very remote locations (424 per 100,000).

Further information by jurisdiction (NSW, Qld, WA and the NT) is available for 2011-2015 [43]. Across jurisdictions, the incidence rate was highest in Qld at 529 per 100,000, followed by NSW at 500 per 100,000. In the NT, the incidence rate was slightly lower at 448 per 100,000 and WA had the lowest rate at 441 per 100,000. Across nearly all jurisdictions, the most common new diagnoses among Aboriginal and Torres Strait Islander people in 2011-2015 were for cancers of the lung, breast (female), bowel, and prostate. However, for the NT the most common diagnoses included cancers of the head and neck and liver instead of bowel and prostate. Prostate cancer accounted for 2.2% of diagnoses in the NT, while in the other states it ranged from 7.1%-9.7% of diagnoses. When comparing by age-groups, the age-specific incidence rates of most cancer types generally increased with age. One anomaly was cervical cancer, which had a higher rate among females aged 45-54 years (24 per 100,000), than among those aged 55-74 years (rates of 18 per 100,000 for the 55-64 years age-group and 23 per 100,000 for the 65-74 years age-group). The cancer type affecting most Aboriginal and Torres Strait Islander people under 54 years of age was breast cancer at an age-specific rate of 10 per 100,000 for females less than 45 years, and 144 per 100,000 for females aged 45-54 years. Over the age of 54 years, it was prostate cancer for males (232 per 100,000 in the 55-64 age-group, 561 per 100,000 in the 65-74 age-group and 724 per 100,000 in 75 years and over age-group).

Incidence rates for Aboriginal and Torres Strait Islander people are available for some cancer types through monitoring mechanisms for some national screening programs. Information about the incidence of bowel cancer among Aboriginal and Torres Strait Islander people in NSW, Vic, Qld, WA and the NT was presented in the *National Bowel Cancer Screening Program monitoring report 2021* [96]. For 2012-2016, the crude incidence rate of bowel cancer among Aboriginal and Torres Strait Islander people, aged 50-74 years, was 96 per 100,000.

Incidence data for cervical cancer in the period 2012-2016 were presented in the *National Cervical Screening Program monitoring report 2021* [97]. The crude incidence rate for cervical cancer among Aboriginal and Torres Strait Islander females, aged 25-74 years, living in NSW, Qld, WA and the NT was 20 per 100,000. It is noted in the report that counts and rates for Aboriginal and Torres Strait Islander females are underestimated due to the relatively large proportion of females whose Indigenous status is not stated.

In the *BreastScreen Australia monitoring report 2021* [98], information was provided about the incidence of breast cancer across five jurisdictions: NSW, Vic, Qld, WA and the NT, for the five-year period 2012-2016. Across these jurisdictions, there were 561 cases of breast cancer diagnosed among Aboriginal and Torres Strait Islander females aged 50-74 years, with a crude incidence rate of 248 per 100,000 females. More detailed information by age and jurisdiction was available for 2011-2015 for NSW, Qld, WA and the NT [99]. For this period, the crude incidence rate for females aged 50-74 years was 233 per 100,000. The highest rate was in NSW (243 per 100,000), followed by Qld (238 per 100,000). WA had an incidence rate of 221 per 100,000 and the lowest rate was reported in the NT (200 per 100,000). The incidence rate across all age-groups was 52 cases per 100,000 females and peaked in the 65-69 years age-group (404 per 100,000).

Survival

Information on survival from cancer for Aboriginal and Torres Strait Islander people is available for the 10 year period 2007-2016 and was provided only for NSW, Vic, Qld, WA and the NT, where data are considered of sufficient completeness for reporting [95]. The observed survival for all cancers combined was 47%; this means that just under half of the people diagnosed with cancer had survived for five years after their diagnosis. The five-year observed survival for some cancer types was higher than others, with breast (in females), melanoma of the skin, prostate and uterine cancers having the greatest chance of survival (Table 16).

Table 16. Five-year observed survival (%) for Aboriginal and Torres Strait Islander people for selected cancers, NSW, Vic, Qld, WA and the NT, 2007-2016

Cancer type/site	Total (%)
Lung	10
Breast (females)	76
Colorectal (bowel)	51
Prostate	75
Head and neck	39
Melanoma (skin)	76
Liver	8.5
Non-Hodgkin lymphoma	62
Uterine	74
Unknown primary site	5.8
Cervical	54
Kidney	69
Bladder	37
All cancers combined	47

Notes:

1 Survival for breast, uterine and cervical cancers are for females only. Survival for prostate cancer is for males only.

2 All cancers combined include cancer types not listed in the table.

Source: AIHW, 2021 [95]

Observed survival rates are available by remoteness, for the same jurisdictions, in the period 2007-2016, which show survival generally decreases with remoteness [95]. The five-year survival rate for major cities was 53%, while for inner and outer regional locations it was 47% and for remote and very remote locations it was 38%.

Hospitalisation

In 2019-20, there were 10,073 hospital separations for neoplasms (including all types of cancer), representing 3.3% of all separations (excluding dialysis) among Aboriginal and Torres Strait Islander people (Derived from [59]). More detailed hospitalisation data for Aboriginal and Torres Strait Islander people are available for 2015-17 [43]. In this period there were 10,232 hospitalisations for cancer as the principal diagnosis, at an age-standardised rate of 12 per 1,000 [43]. The rate was higher for males (14 per 1,000) than for females (10 per 1,000). The rate of hospitalisations increased with age, with the highest age-specific rate being 49 per 1,000 among the 65 years and over age-group. Most hospitalisations were in regional locations (46%) and major cities (36%), while 17% were in remote and very remote locations.

The numbers of hospitalisations are available for selected cancer types for 2015-17, including: 1,281 hospitalisations (13% of total hospitalisations for malignant neoplasms) for cancers of the blood and lymphatic system; 985 (9.6%) for lung cancer; 678 (6.6%) for breast cancer; 605 (5.9%) for bowel cancer; 464 (4.5%) for bladder cancer; 463 (4.5%) for prostate cancer (in males); 437 (4.3%) for cancers of the mouth and throat; 188 (1.8%) for cervical cancer (in females); and 1,346 (13%) for cancers of unknown primary site (Derived from [43]).

Mortality

For 2015-2019, the age-standardised mortality rate due to cancer of any type was 230 per 100,000 [95]. The rate for males, 276 per 100,000, was much higher than for females, 194 per 100,000. Numbers of deaths relating to cancer among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT are available for 2015-2019. The combined total number of deaths for all cancers was 3,576, comprising 1,939 males and 1,637 females. Table 17 shows numbers of deaths for males and females for selected cancers.

Table 17. Number of deaths for Aboriginal and Torres Strait Islander people by sex, for all cancer combined and selected cancers, NSW, Qld, WA, SA and the NT, 2015-2019

Cancer site/type	Number of deaths Males	Number of deaths Females	Total number of deaths
Lung	526	416	942
Breast	6	185	191
Colorectal (bowel)	148	128	276
Prostate	119	n/a	n/a
Head and neck	162	57	219
Melanoma (skin)	19	11	30
Liver	170	97	267
Non-Hodgkin lymphoma	38	28	66
Uterine	n/a	39	n/a
Unknown primary site	126	106	232
Pancreatic	117	123	240
Cervical	n/a	69	n/a
Kidney	32	18	50
Bladder	35	19	54
All cancers combined	1,939	1,637	3,576

Notes:

1 Numbers of deaths due to cervical cancer are for females only, and prostate cancer is for males only.

2 All cancers combined include cancer types not listed in the table.

3 This table only includes deaths due to malignant neoplasms (cancerous tumours) and excludes deaths due to non-malignant neoplasms (in situ tumours, benign tumours and tumours of uncertain or unknown malignancy).

4 n/a – non applicable.

Source: AIHW, 2021 [95]

Further information is available regarding mortality for some of the more common types of cancer. In 2020, cancers of the trachea, bronchus and lung combined were the fourth leading cause of death overall for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT, being responsible for 209 deaths [49]. There was an 9.6% increase in the age-standardised mortality rates for cancers of the trachea, bronchus and lung in Aboriginal and Torres Strait Islander people between 2011-2015 and 2016-2020 (54 per 100,000 for 2011-2015 to 59 per 100,000 for 2016-2020).

The age-standardised death rate for cancers of the trachea, bronchus and lung among Aboriginal and Torres Strait Islander people in 2020 was 56 per 100,000 (females: 49 per 100,000; males: 66 per 100,000) [49]. Of the top five causes of death in 2020, by sex, cancers of the trachea, bronchus and lung ranked as the fifth most common cause of death for Aboriginal and Torres Strait Islander males (109 deaths) and fourth for females (100 deaths). Between 2011-2015 and 2016-2020, males accounted for the highest increase in trachea, bronchus and lung cancers at 16%, for females, there was an increase of 2.3%.

Age-specific information is available for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT for the 2016-2020 [49]. The rate for deaths from cancers of the trachea, bronchus and lung (as an underlying cause of death) increased with age from 35 per 100,000 in the 45-54 years age-group, 123 per 100,000 in the 55-64 years age-group and 278 per 100,000 in the 65-74 years age-group.

Other types of cancer that were listed in the top 20 leading causes of death for Aboriginal and Torres Strait Islander people in 2020 included: cancers of the colon (bowel), sigmoid, rectum and anus (26 deaths per 100,000 people); cancers of the liver and intrahepatic bile ducts (17 per 100,000); pancreatic cancer (15 per 100,000); and cancers of the lymphoid, haematopoietic and related tissue (15 per 100,000) [49].

Indigenous identification data for mortality due to bowel cancer were collected by the National Mortality Database for 2015-2019, and presented in the *National Bowel Cancer Screening Program monitoring report 2021* [96]. The crude mortality rate for Aboriginal and Torres Strait Islander people aged 50-74 years, living in NSW, Qld, WA, SA and the NT, was 33 per 100,000.

In the five-year period 2015-2019, there were 61 deaths due to cervical cancer among Aboriginal and Torres Strait Islander females aged 25-74 years in NSW, Qld, WA, SA and the NT [97]. The crude mortality rate was 7.3 per 100,000 females.

The *BreastScreen Australia monitoring report 2021* provides mortality analysis for Aboriginal and Torres Strait Islander females in NSW, Qld, WA, SA and the NT. For 2015-2019, there were 185 deaths due to breast cancer [98]. Mortality rates are provided only for females in the 50-74 years age-group. For Aboriginal and Torres Strait Islander females in this age-group, 105 died from breast cancer at a crude mortality rate of 38 per 100,000.

The patterns of Aboriginal and Torres Strait Islander cancer incidence and mortality can be partly explained by the higher level of risk factors, most notably tobacco use [100]. The rate of daily smokers among Aboriginal and Torres Strait Islander adults across all jurisdictions, as self-reported in the 2018-19 NATSIHS, was 40% [88]. This is the main contributing factor to the high incidence of lung cancer. High incidence rates of liver cancer are consistent with risky levels of alcohol consumption and a higher prevalence of hepatitis B infection. In 2018-19, 20% of Aboriginal and Torres Strait Islander adults were considered to have exceeded the lifetime risk guidelines for alcohol consumption [88]. Other factors contributing to cancer mortality include:

- Aboriginal and Torres Strait Islander people being more likely to have cancers that have a poor prognosis
- being diagnosed with cancer at a later stage
- being more likely to present with co-morbidities (that may lead to poorer outcomes)
- being less likely to receive any treatment, or adequate treatment
- low participation rates in national cancer screening programs [98, 101, 102].

Burden of disease

In 2018, cancer accounted for 9.9% of the total burden of disease among Aboriginal and Torres Strait Islander people [4]. Of all disease groups, cancer made the fourth highest contribution to total burden. It was a major cause of burden among both males and females from around 45 years of age through to 75 years of age and over.

In 2018, lung cancer was the 10th leading specific cause of total burden with an age-standardised rate of 13 DALY per 1,000 people [4].

Diabetes

Diabetes is a chronic disease marked by high levels of glucose in the blood, caused by the pancreas not producing enough insulin[26] or not being able to use the insulin effectively, or both [103].

There are several types of diabetes. The most frequently occurring are type 1, type 2 and gestational diabetes mellitus (GDM) [103]. Type 1 diabetes is usually diagnosed in children and young people but can occur at any age. Type 2 diabetes is the most common form [104] and is largely preventable by maintaining a healthy lifestyle. GDM develops in some women during pregnancy [104].

Diabetes can cause life-threatening complications [105], and reducing its impact among Aboriginal and Torres Strait Islander people is one of the key goals of the *Australian national diabetes strategy 2021-2030* [106]. Type 2 diabetes occurs at earlier ages for Aboriginal and Torres Strait Islander people and is often undetected and untreated. Complications from diabetes may occur within months of diagnosis, while others may develop over several years [107]. Aboriginal and Torres Strait Islander people with diabetes tend to have higher levels of risk factors such as smoking [103] and may show signs of other chronic conditions, including CKD, CVD, liver disease and anaemia [108].

Extent of diabetes among Aboriginal and Torres Strait Islander people

Incidence and prevalence

In the 2018-19 NATSIHS, 7.9% of Aboriginal and Torres Strait Islander people reported having diabetes [88]. Prevalence was similar among Torres Strait Islander people (7.9%) and Aboriginal people (7.8%). The prevalence of diabetes among Aboriginal and Torres Strait Islander males and females was also similar (7.6% and 8.2% respectively). Diabetes levels increased with age, with the prevalence among those aged 55 years and over (35%) being 14 times higher than those aged 25-34 years (2.5%). The proportion of people with diabetes was highest in WA and the NT (both 11%), followed by Qld (8.7%), SA (8.6%), NSW (6.3%), Vic (5.5%), the ACT (5.2%) and Tas (4.7%). Prevalence was higher in remote areas (12%) than non-remote areas (7.0%).

Analysis of the 2018-19 NATSIHS found that 13% of Aboriginal and Torres Strait Islander adults[27] reported having diabetes or high glucose levels (HGL) [43]. Of those who reported having diabetes or HGL, 92% reported having their blood glucose levels checked in the last 12 months. The prevalence of self-reported diabetes or HGL was similar among males and females (13% and 14% respectively) and increased with age (18-24 years of age: 0.8%, to 55 years of age and over: 36%). The proportion of self-reported diabetes or HGL for Aboriginal and Torres Strait Islander adults varied by jurisdiction, with the highest in WA (19%) and the lowest in Tas (7.2%). Prevalence was higher in remote areas (19%) compared with non-remote areas (12%).

In 2019, 130 Aboriginal and Torres Strait Islander people were diagnosed with type 1 diabetes [109]. The age-standardised incidence rate was 13 per 100,000 (males: 16 per 100,000, females: 9.8 per 100,000). In 2018, the crude prevalence of type 1 diabetes among Aboriginal and Torres Strait Islander young people aged 0-24 years was estimated to be 208 per 100,000 (males: 186 per 100,000, females: 231 per 100,000) [110].

In 2017-18, there were 1,715 new cases of GDM among Aboriginal and Torres Strait Islander women aged 15-49 years, with a crude incidence proportion of 13% [110]. More detailed information is available for 2016-17 when there were 1,647 new cases of GDM among Aboriginal and Torres Strait Islander women aged 15-49 years [111]. Incidence increased with age and was highest in the 40 years and over age-group (32%).

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[26] Insulin is necessary to convert glucose to energy [103].

[27] Aged 18 years and over.

A 2021 study using cross-sectional data from primary healthcare services found that in northern Australia the crude prevalence of youth-onset type 2 diabetes in Aboriginal and Torres Strait Islander people aged 24 years or younger was 6.7 per 1,000 [112]. Prevalence was higher among females than males, and higher among those aged 15-24 years than those younger than 15 years. Of the four regions that make up northern Australia (the Top End, Central Australia, the Kimberley and Far North Qld), Central Australia had the highest estimated prevalence (14 per 1,000).

Hospitalisation

Hospital services are typically required to treat the advanced stages of complications of diabetes or acute episodes of poor glycaemic control [105]. In 2018-19, there were 4,786 potentially preventable hospitalisations of Aboriginal and Torres Strait Islander people for a principal diagnosis of diabetes [113]. The age-standardised rate of hospitalisation for diabetes complications was 7.2 per 1,000.

More detailed information is available for July 2015 to June 2017. During this period, 6,504 Aboriginal and Torres Strait Islander people were hospitalised for a principal diagnosis of diabetes, at a crude rate of 4.1 per 1,000 [43]. They were most likely to be hospitalised for type 2 diabetes (61% of diabetes hospitalisations) followed by type 1 diabetes (24%) and GDM (14%).

In 2015-17, crude hospitalisation rates for diabetes were similar for Aboriginal and Torres Strait Islander males (4.0 per 1,000) and females (4.1 per 1,000) [43]. Age-specific hospitalisation rates increased with age, from 0.2 per 1,000 for those aged 0-4 years to 16 per 1,000 for those aged 65 years and over. Age-specific rates were higher for males than females from age 35 years onwards.

In the same period, the age-standardised rate of hospitalisations was highest for Aboriginal and Torres Strait Islander people living in very remote areas (9.3 per 1,000) and lowest for those living in inner regional areas (4.2 per 1,000) [43]. The rates varied by jurisdiction and were lowest in Tas (2.7 per 1,000) and highest in WA (8.8 per 1,000).

In 2017-18, there were 2,504 hospitalisations with a principal diagnosis of type 2 diabetes among Aboriginal and Torres Strait Islander people [114]. The age-standardised hospitalisation rate was 5.1 per 1,000, with higher rates among males than females (5.5 per 1,000 and 4.7 per 1,000 respectively). Rates were highest in the 45 years and over age-groups (45-54 years: 7.9 per 1,000, 55-64 years: 11 per 1,000, 65 years and over: 17 per 1,000). Hospitalisation rates for type 2 diabetes among Aboriginal and Torres Strait Islander people living in remote and very remote areas were 2.3 times higher than for those living in major cities (8.4 per 1,000 and 3.6 per 1,000 respectively).

In 2017-18, the crude rate of hospitalisations with a principal and/or additional diagnosis of type 2 diabetes among Aboriginal and Torres Strait Islander people was 85 per 1,000 [110]. The hospitalisation rate was higher among females (99 per 1,000) than males (71 per 1,000).

In 2017-18, there were 1,016 hospitalisations with a principal diagnosis of type 1 diabetes, with an age-standardised rate of 1.3 per 1,000 (males: 1.1 per 1,000 and females: 1.4 per 1,000) [114]. Rates were highest in the 15-44 years age-groups (15-24 years: 1.9 per 1,000, 23-34 years: 1.7 per 1,000, 35-34 years: 2.5 per 1,000) and lowest in the 0-4 years age-group (0.3 per 1,000). Hospitalisation rates for type 1 diabetes among Aboriginal and Torres Strait Islander people living in major cities were 1.8 times higher than for those living in remote and very remote areas (1.3 per 1,000 and 0.7 per 1,000 respectively).

In 2017-18, the crude rate of hospitalisations with a principal and/or additional diagnosis of type 1 diabetes among Aboriginal and Torres Strait Islander people was 3.7 per 1,000 [110]. The hospitalisation rate was similar among males (3.8 per 1,000) and females[28] (3.7 per 1,000).

In 2017-18, there were 589 hospitalisations with a principal diagnosis of diabetes during pregnancy among Aboriginal and Torres Strait Islander women [114]. The hospitalisation rates were highest among women aged 35-39 years (88 per 1,000) followed by women aged 40-44 years (67 per 1,000), with the lowest rate in the 10-19 years age-group (15 per 1,000). Hospitalisation rates increased with remoteness; the rate was more than five times higher for those living in remote or very remote areas than for those living in major cities (119 per 1,000 and 22 per 1,000 population respectively).

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[28] Excludes hospitalisation of inner-hospital contracted patients to private sector hospital in WA [110].

Mortality

Diabetes was the second leading specific cause of death among Aboriginal and Torres Strait Islander people in NSW, Qld, SA, WA and the NT combined in 2020, accounting for 266 deaths (7.4% of all deaths) [49]. The age-standardised mortality rate was 75 per 100,000. Diabetes was the second leading cause of death for females (144 deaths) and the fourth for males (122 deaths). In 2016-2020, diabetes was a significant cause of death for older Aboriginal and Torres Strait Islander people; age-specific mortality rates ranged from 51 per 100,000 for those aged 45-54 years to 589 per 100,000 for those aged 75 years and over. In 2020, the age-standardised diabetes mortality rate was highest in the NT (160 per 100,000) and lowest in NSW (41 per 100,000)[29].

Burden of disease

In 2018, type 2 diabetes was the fourth leading specific cause of total burden among Aboriginal and Torres Strait Islander people, with an age-standardised rate of 15 DALY per 1,000 people [4].

Social and emotional wellbeing (including mental health)

Social and emotional wellbeing (SEWB) has been defined as a multidimensional concept of health that includes mental health, but which also encompasses domains of health and wellbeing such as connection to land, culture, spirituality, family and community, the body and emotions [9, 115].

Aboriginal and Torres Strait Islander culture and self-determination can be powerful protective factors in providing a buffer to psychological distress [116]. Factors that have been identified as enhancing SEWB include: maintaining connection to Country, spirituality, ancestry and kinship networks, as well as strong community governance and cultural continuity [7]. Renewal of Aboriginal and Torres Strait Islander culture and Indigenous knowledge systems and the capacity for self-determination is increasingly being seen as fundamental to healing and supporting SEWB [115].

In recent years, the approach to conceptualising SEWB in cultural contexts has been expanded to embrace Cultural Social and Emotional Wellbeing (CSEWB) [117, 118]. The key to understanding this expanded framework is acceptance of the importance of challenging the denial of cultural rights, identity and expression [118]. Evaluations of the National Empowerment Program utilising the CSEWB approach have demonstrated that participants in the program developed approaches and skills that they could utilise on their healing journeys [117, 118].

Social and emotional wellbeing and Coronavirus disease

The COVID-19 pandemic has exposed a number of risks to the mental health and wellbeing of Aboriginal and Torres Strait Islander people due to higher levels of stress, uncertainty, loss of control and isolation [118, 119]. Evidence from previous pandemics indicates that mental health impacts are to be expected [118]. Nevertheless, there has been a discernible increase in racism during the pandemic [68]. A study in Qld found that there were statistically significantly fewer presentations in emergency departments by Indigenous people for suicide and self-harm in March to August 2020 compared with March to August 2019 [120]. There have been calls for a greater commitment to support young Indigenous people and to promote the positive health buffering effects of the cultural determinants of health [121]. A national Aboriginal and Torres Strait Islander COVID-19 working party has proposed a number of recommendations for responding to the anticipated mental health impacts that are equitable, needs based, strengths based, and place based [3].

Extent of social and emotional wellbeing, mental illness and mental health problems among Aboriginal and Torres Strait Islander people

Prevalence

In the 2018-19 NATSIHS there were some encouraging and positive indicators. For Aboriginal and Torres Strait Islander males over 18 years of age, 80% of respondents reported feeling calm and peaceful all/most of the time; 87% felt happy all/most of the time and 79% felt full of life all/most of the time [60]. For females over 18 years of age it was a similarly positive picture with 78% reporting feeling calm and peaceful all/most

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[29] Of those four jurisdictions for which separate jurisdictional data were available (NSW, Qld, WA and the NT) [49].

of the time; 88% felt happy all/most of the time and 76% felt full of life all/most of the time. The proportion of people reporting positive indicators increased with remoteness. Feeling calm and peaceful all/most of the time ranged from 78% in non-remote areas (major cities and regional areas) to 83% in remote areas (remote and very remote). The results for happiness followed a similar pattern (non-remote: 87% and remote: 90%) and full of life (non-remote: 76% and remote: 84%).

The 2018-19 NATSIHS found that 31% of Aboriginal and Torres Strait Islander respondents aged 18 years and over reported high or very high levels of psychological distress in the four weeks prior to the interview (Aboriginal people: 31% and Torres Strait Islander people: 23%) [88]. In 2018-19, more females reported high or very high levels of psychological distress compared with males (35% and 26% respectively). Similar levels of high to very high psychological distress were reported across age-groups, with the highest proportion (33%) reported among the 45-54-years age-group. Vic and SA were the jurisdictions that reported the highest proportion of people with high levels of distress (both 36%) and the NT the lowest (26%). The proportion of Aboriginal and Torres Strait Islander people who experienced high or very high levels of psychological distress was higher in non-remote areas (31%) than remote areas (28%).

In the 2018-19 NATSIHS, 25% of Aboriginal people and 17% of Torres Strait Islander people, aged two years and over, reported having a mental and/or behavioural condition [88]. The proportion of people with a mental health condition was about the same for males (23%) and females (25%). Respondents aged between 25-54 years were the most likely to have a mental and/or behavioural condition (30-32%), with the lowest proportion in the 0-14 years age-group (15%). Across the jurisdictions, mental and behavioural conditions were reported the most in the ACT (40%), followed by Tas (34%) and Vic (33%), with the lowest reporting in the NT (10%). Mental and behavioural conditions were around three times more likely to be reported by Aboriginal and Torres Strait Islander people living in non-remote areas (28%) than remote areas (9.8%).

Further information from the 2018-19 NATSIHS indicated that anxiety was the most common mental or behavioural condition reported by Aboriginal and Torres Strait Islander people aged two years and over (17%) [88]. Anxiety was almost twice as common for females (21%) than males (12%). The age-groups with the highest proportion of anxiety were the 25-34 years (25%) and 35-44 years age-group (24%).

Depression was the second most common condition reported under mental and behavioural conditions (13%), with females reporting higher levels (16%) compared with males (10%) [88]. The reporting of depression increased with age, from 2.5% among those aged 0-14 years to 23% among those aged 45-54 years, before decreasing to 20% among people aged 55 years and over.

Hospitalisation

In 2019-20, there were 26,228 hospital separations of Aboriginal and Torres Strait Islander people with a principal ICD diagnosis of ‘Mental and behavioural disorders’ [59]. These separations accounted for 8.6% of all hospital separations (excluding dialysis) for Aboriginal and Torres Strait Islander people (Derived from [59]).

For 2015-17, the age-adjusted separation rates for ICD ‘Mental and behavioural disorders due to psychoactive substance use’ and ‘Schizophrenia, schizotypal, and delusional disorders’ were higher among Aboriginal and Torres Strait Islander males (15 per 1,000 and 8.4 per 1,000 respectively) compared with females (11 per 1,000 and 5.5 per 1,000 respectively) [43]. Rates for ‘Mood disorders’ and ‘Neurotic, stress-related and somatoform disorders’ were higher among females (5.1 per 1,000 and 4.2 per 1,000 respectively) compared with males (3.3 per 1,000 and 3.0 per 1,000 respectively).

‘Intentional self-harm’ categorised as a principal diagnosis[30], was responsible for 3,094 (0.5%) of all hospital separations for Aboriginal and Torres Strait Islander people in 2019-20 (Derived from [59]).

Mortality

Detailed information indicates that mental health conditions accounted for 523 deaths among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT in 2014-2018 [43]. Of these 523 deaths, 230 were among males and 293 among females (Table 18)[31].

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[30] Intentional self-harm as a principal diagnosis for external causes of injury or poisoning for Aboriginal and Torres Strait Islander people.

[31] Under the ICD, intentional self-harm is classified under ‘External causes of morbidity and mortality’ (codes X60-X84); details are provided separately.

Table 18. Numbers and rates of deaths from mental health related conditions (excluding intentional self-harm) for Aboriginal and Torres Strait Islanders, by sex and cause of death, NSW, Qld, WA, SA, and the NT, 2014-2018

Cause of death	Males		Females	
	Number	Rate	Number	Rate
Mental disorders due to substance use	78	8.5	22	1.8
Organic mental disorders	132	39	217	46
Other mental disorders	20	4.6	54	11
All mental disorders	230	52	293	59

Notes:

1 Rates are deaths per 100,000, rounded to the nearest whole number, age-standardised using the 2001 Australian standard population.

2 Details of death from intentional self-harm (suicide) are not included in this table.

3 'Mental disorders due to substance use' comprises ICD codes F10-F19, 'Organic mental disorders' ICD codes F00-F09, and 'Other mental disorders' ICD codes F20–F99, G30, G47.0, G47.1, G47.2, G47.8, G47.9, O99.3, R44, R45.0, R45.1, R45.4, R48.

Source: AIHW, 2020 [43]

In 2020, 197 Aboriginal and Torres Strait Isla≠nder people living in NSW, Qld, WA, SA, and the NT died from intentional self-harm [49]. It was the 5th leading cause of death overall (2nd for males and 10th for females). The age-standardised death rate for suicide was 28 per 100,000 (males: 43 per 100,000 and females: 13 per 100,000).

In 2020, the median age at death from intentional self-harm among Aboriginal and Torres Strait Islander people was 31.5 years for males and 31.0 years for females [49].

For 2016-2020, in NSW, Qld, WA, SA and the NT, age-groups with the highest age-specific rates of death by intentional self-harm were 35-44 years for males (74 per 100,000) and 15-24 years for females (26 per 100,000) [49].

For 2016-2020, age-standardised death rates from intentional self-harm (suicide), for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT ranged from 20 per 100,000 in NSW to 33 per 100,000 in WA (Table 19) [49].

Table 19. Age-standardised death rates for intentional self-harm (suicide) among Aboriginal and Torres Strait Islander people, by sex and jurisdiction, NSW, Qld, WA, SA and the NT, 2016-2020

Jurisdiction	Males		Females		Persons	
	Number	Rate	Number	Rate	Number	Rate
NSW	185	32	51	8.3	236	20
Qld	230	44	80	13	310	28
WA	121	46	58	21	179	33
SA	28	29	14	n.p.	42	21
NT	92	43	31	14	123	29

Notes:

1 Rates per 100,000 population, rounded to the nearest whole number, have been calculated using Aboriginal and Torres Strait Islander population estimates and projections based on the 2016 Census.

2 n.p.: not published.

Source: ABS, 2021 [49]

WA recorded the highest death rates, with a rate of 33 per 100,000 in 2016-2020 [49]. Large national surveys do not reflect the higher rates of suicide that some communities experience. A report sourcing data from the ABS, WA Department of Health and the WA Police Force for two, five-year periods (2008-2012 and 2013-2017) found that the suicide rate for Indigenous people in the Kimberley region in WA was twice as high as the suicide rate among all Indigenous Australians (5.2 per 10,000 compared with 2.5 per 10,000) [122].

Burden of disease

In 2018, mental and substance use disorders accounted for 23% of total burden among Aboriginal and Torres Strait Islander people [4]. Of all disease groups, mental and substance use disorders made the highest contribution to total burden. Males experienced more than three times the amount of burden due to suicide and self-inflicted injuries than females (ranked fourth in males). Females suffered more burden from anxiety (ranked second in females) and depressive disorders (ranked fourth in females) compared with males. Across the life course, mental and substance use disorders and injuries (including suicide) were the main cause of burden for older children, adolescents and adults up to 44 years of age.

In 2018, anxiety was the third leading specific cause of total burden with an age-standardised rate of 17 DALY per 1,000 people, depressive disorders the sixth leading (14 DALY per 1,000) and suicide and self-inflicted injuries the ninth leading (13 DALY per 1,000) [4].

Kidney health (renal disease)

Kidneys clean the blood by processing excess fluid, unwanted chemicals and waste and producing urine [123]. The most common cause of kidney disease is diabetes and there is a strong link between kidney disease and high blood pressure [124]. Other causes include immune diseases, congenital conditions, and genetic disorders, such as polycystic kidney disease. Many people are unaware that they have kidney disease as up to 90% of kidney function can be lost before symptoms appear [125].

CKD refers to conditions of the kidney that cause dysfunction or kidney damage that last for three months or more [125]. There are five stages of CKD according to the level of kidney function. In early stages (1-2), there are usually no symptoms, and the kidneys are still able to function when they are slightly damaged, making diagnosis difficult. In middle stages (3-4), levels of waste (urea and creatinine) in the blood rise and the person starts to feel unwell and kidney function slows down with increased urination. In end-stage kidney disease (ESKD)[32] (stage 5), a person will require dialysis or a transplant to stay alive.

CKD can be prevented by a healthy lifestyle or treatment, if detected early [126]. Modifiable risk factors include high blood pressure, tobacco smoking, overweight and obesity and impaired glucose regulation [125].

For Aboriginal and Torres Strait Islander people, non-modifiable risk factors associated with CKD also include being over the age of 30 years, family history of CKD, history of acute kidney injury and established vascular disease [127].

Kidney disease has a marked impact on the quality of life of those who suffer from the disease, as well as those who care for them [128-130]. Treating CKD is also expensive for the health system [131].

Extent of kidney disease among Aboriginal and Torres Strait Islander people

Prevalence/incidence

Around 1.8% of Aboriginal and Torres Strait Islander people (Aboriginal people: 1.9% and Torres Strait Islander people: 0.4%) reported kidney disease as a long-term health condition in the 2018-19 NATSIHS [88]. The proportion of Aboriginal and Torres Strait Islander people reporting kidney disease was higher for females (2.3%) than males (1.2%). The reported prevalence of kidney disease among Aboriginal and Torres Strait Islander people was less than 2% for all age-groups under 35 years, increasing to 2.3% for people aged 35-44 years, 2.7% for people aged 45-54 years and 7.6% for people aged 55 years and over. By jurisdiction, the highest proportions were reported for the NT (3.7%) and WA (2.9%), with the other states and territories (excluding Tas) less than 2% each. Proportions were higher for people living in remote area (3.4%) than non-remote areas (1.4%).

In the 2012-13 Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS), 18% of Aboriginal and Torres Strait Islander adults had biomedical signs of CKD (12% in stage 1 and 1.1% in stages 4-5) [132]. However, only 1.8% self-reported that they had kidney disease [133]. For those aged 18-34 years, 9% had biomedical signs of CKD, increasing to 49% among those aged 65 years and over [134].

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[32] Used interchangeably with end-stage renal disease (ESRD).

With most information on CKD limited to self-reported data, the primary focus in the literature has been on end-stage renal disease (ESRD). The overall incidence rate of ESRD for Aboriginal and Torres Strait Islander people is consistently reported as being higher than for non-Indigenous people [135]. The difference is complicated by the age-distributions of each population. Rates fluctuate from year to year, but in recent years Aboriginal and Torres Strait Islander rates have been increasing.

Data from the ANZDATA for the five-year period 2016-2020 reveal that the age-standardised notification rate of ESRD for Aboriginal and Torres Strait Islander people was 616 per 1,000,000 population (Derived from [30, 136-138]). The highest notification rates of ESRD were recorded for Aboriginal and Torres Strait Islander people living in the NT (1,723 per 1,000,000), WA (1,082 per 1,000,000), and SA (684 per 1,000,000) (Table 20).

Table 20. Numbers of notifications and age-standardised notification rates for ESRD for Aboriginal and Torres Strait Islander people, selected jurisdictions, Australia, 2016-2020

Jurisdiction	Aboriginal and Torres Strait Islander	
	Number	Rate
NSW	177	201
Vic	54	291
Qld	477	660
WA	391	1,082
SA	100	684
NT	483	1,723
Australia	1,707	616

Notes:

1 Rates per 1,000,000 population have been standardised using the ERP from 30 June 2001.

2 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, 2021 [138], ABS, 2018 [137], ABS, 2019 [30], ABS, 2003 [136]

Of people newly registered with the ANZDATA in 2016-2020, 55% of Aboriginal and Torres Strait Islander people were aged less than 55 years (Table 21) (Derived from [30, 136-138]).

Table 21. Numbers of notifications and notification rates of ESRD for Aboriginal and Torres Strait Islander people by age-group, Australia, 2016-2020

Age-group (years)	Aboriginal and Torres Strait Islander	
	Number	Rate
0-14	11	7.9
15-24	39	49
25-34	120	196
35-44	246	561
45-54	523	1,247
55-64	483	1,674
65-74	242	1,729
75+	43	803
All ages	1,707	616

Notes:

1 Rates per 1,000,000 population.

2 Rates for 'All ages' are age-standardised.

Source: Derived from ANZDATA, 2021 [138], ABS, 2019 [30], ABS, 2018 [137], ABS, 2003 [136]

Hospitalisation, dialysis and transplantation

Detailed information from ANZDATA is available for 2020, when a total of 314 Aboriginal and Torres Strait Islander people commenced haemodialysis (HD) and peritoneal dialysis (PD) (HD: 274 and PD: 40), a decrease from 2019 (383 people) [139]. The NT accounted for the highest proportion of patients commencing dialysis (29%), followed by Qld and WA (both 26%).

In 2020, there were 2,098 prevalent dialysis patients in Australia (PD and HD treatments) identified as Aboriginal and Torres Strait Islander [139]. HD accounted for the majority of treatment (93%), with only 7% of Aboriginal and Torres Strait Islander dialysis patients receiving PD (Derived from [139]). The highest proportion of patients on dialysis were from the NT (33%), followed by Qld (25%) and WA (23%) (Table 22). By modality, the NT had the highest proportion of patients on HD (34%) and Qld on PD (41%).

Table 22. Prevalence of Aboriginal and Torres Strait Islander people on dialysis, by modality, Australia, 2020

Jurisdiction	Total		HD		PD	
	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
NSW	206	9.8	186	9.5	20	14
Vic	53	2.5	46	2.4	7	4.8
Qld	522	25	462	24	60	41
WA	476	23	456	23	20	14
SA	121	5.8	119	6.1	2	1.4
NT	698	33	665	34	33	23
Total	2,098	100	1,952	100	146	100

Note:

1 Rounding may result in inconsistencies in calculated percentages.

2 Data for Tas and the ACT have not been shown separately because of the small numbers but are included in the figures for Australia.

Source: Derived from ANZDATA, 2021 [139].

In 2017-18, the crude hospitalisation rate was 33 per 1,000 (27 per 1,000 for males and 39 per 1,000 for females) for Aboriginal and Torres Strait Islander people with CKD as a principal or additional diagnosis [125]. For regular dialysis as a principal diagnosis, there were 284 per 1,000 hospitalisations for Aboriginal and Torres Strait Islander people (248 per 1,000 for males and 321 per 1,000 for females). For the incidence of treated ESKD, there were 0.39 per 1,000 (0.35 per 1,000 for males and 0.43 per 1,000 for females), with a total of 1,570 hospitalisations for Aboriginal and Torres Strait Islander people (703 males and 867 females).

In 2018-19 there were 242,274 hospitalisations for Aboriginal and Torres Strait Islander people for ESKD (289 per 1,000, crude rate) [60]. Detailed information for ESKD is available for 2016-18. The crude hospitalisation rate for ESKD among Aboriginal and Torres Strait Islander people was 278 per 1,000 (males: 241 per 1,000, females: 316 per 1,000). Rates increased with remoteness, 137 per 1,000 for major cities, 229 per 1,000 for inner and outer regional areas and 681 per 1,000 for remote and very remote areas. The rate for remote and very remote areas was 5.0 times the rate for major cities.

In 2019, there were 55 transplant operations for Aboriginal and Torres Strait Islander recipients [135]. At 31 December 2019, 58 (5.3%) of the 1,100[33] patients on the waiting list for a transplantation were Aboriginal and/or Torres Strait Islander.

Mortality

In 2018, the age-standardised death rate for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT from kidney disease was 20 per 100,000 [43]. For 2014-2018, 1.8% (259) deaths of Aboriginal and Torres Strait Islander people were due to kidney disease. There were also 2,709 deaths (182 per 100,000, age-standardised) where kidney disease was an associated cause of death. For 2015-2019, the age-standardised death rate for kidney disease (as a major cause of death) for Aboriginal and Torres Strait

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[33] Included 63 (5.7%) patients with an unreported Indigenous status [135].

Islander people living in NSW, Qld, WA, SA[34] and the NT was 19 per 100,000 [113]. The highest rate was reported for both WA and the NT: 40 per 100,000.

For 2016-2018, the crude death[35] rate was 72 per 100,000 among Aboriginal and Torres Strait Islander people (males: 64 per 100,000, females: 80 per 100,000) for CKD in NSW, Qld, WA, SA and the NT [125].

In 2020, diseases of the urinary system[36] were reported as an underlying cause of 110 deaths (males: 48; females: 62) among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT [49]. After age-adjustment, the death rate for Aboriginal and Torres Strait Islander people was 36 per 100,000 (males: 37 per 100,000, females: 36 per 100,000). For females, diseases of the urinary system were ranked as the 7th leading underlying cause of death, compared with males at 10th.

In 2020, 236 Aboriginal and Torres Strait Islander people who were receiving dialysis died [139]. The most common causes of death for the dialysis patients were CVD (78 deaths: 33%), ‘other’ (54 deaths: 23%) and withdrawal from treatment (49 deaths: 21%). Most deaths were among Aboriginal and Torres Strait Islander people on HD treatment (93%).

Burden of disease

In 2018, CKD was the seventh leading specific cause of total burden with an age-standardised rate of 13 DALY per 1,000 people [4].

Injury, including family violence

Injury includes both physical harm to a person’s body and non-physical harm, including grief, loss and suffering [141], but in public health practice attention is almost entirely confined to physical harm [142]. Even restricted to physical harm, assessing the total impact of injury is difficult because many injuries do not result in hospitalisation or death and there are few systematic data [143].

The classification of injury has generally followed the WHO ICD, which includes particular attention to the external cause of the injury[37] [40]. When looking at injury in the Aboriginal and Torres Strait Islander context, there are several factors which must be taken into consideration. These include low socioeconomic contexts [143, 145], alcohol and other drug (AOD) use, intimate partner violence [146], disruption to culture [141] as well as less access to prevention efforts and high-quality treatment and rehabilitation services.

Extent of injury and family violence among Aboriginal and Torres Strait Islander people

Prevalence

In the 2018-19 NATSIHS, 16% of Aboriginal and Torres Strait Islander people (17% of males and 14% of females) aged 15 years and over had experienced physical harm or threatened physical harm at least once in the last 12 months [88]. The proportion was highest for those aged 25-34 years (21%) and lowest for those aged 55 years and over (8.8%) [43]. Age-standardised proportions were highest in the ACT (21%) and WA (18%), and lowest in the NT (12%), Vic and Qld (both 14%). The crude proportion[38] was slightly lower in remote areas (14%) than non-remote areas (16%).

The 2012-13 AATSIHS reported that 2.5% of Aboriginal and Torres Strait Islander people had a long-term condition caused by injury, with the highest reported levels in the 35-44 years and 45-54 years age-groups [133]. Males reported a slightly higher level of injury (2.8%) than females (2.3%).

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[34] Data were not published for SA [113].

[35] As an underlying or associated cause of death.

[36] Disease of the urinary system includes disorders of the bladder and urethra, as well as those specifically of the kidneys and ureters [140].

[37] This system is followed in this section, but it has its limitations (for more details, see [144]).

[38] Crude proportion is the total number of cases in a given time period divided by the total number of persons in the population expressed as a percentage.

Hospitalisation

There were 38,737 hospital separations for injuries for Aboriginal and Torres Strait Islander people in 2019-20, representing 13% of all Aboriginal and Torres Strait Islander separations (excluding dialysis) (Derived from [59]). Injury was the leading cause of hospitalisation (excluding dialysis). The age-adjusted rate of hospitalisation was 53 per 1,000. The leading external causes of injury-related hospitalisation were falls (20%), assault (19%), exposure to mechanical forces (17%) and complications of medical and surgical care (14%) (Derived from [59]).

In 2018-19, the crude rate of hospitalised injury for Aboriginal and Torres Strait Islander people was 35 per 1,000 [147]. The rate was higher for males (38 per 1,000) than females (32 per 1,000). Rates were highest for those aged 25-44 years (50 per 1,000) and lowest for those aged 5-14 years (18 per 1,000). In 2015-17, crude rates of hospitalised injury were highest in the NT (81 per 1,000) and lowest in Tas (17 per 1,000) [43].

In 2018-19, the age-standardised rate of hospitalised injury for Aboriginal and Torres Strait Islander people in remote and very remote areas (82 per 1,000) was twice the rate for those in major cities (41 per 1,000) (Derived from [60]). For those living in remote and very remote areas, assault was the leading cause of hospitalised injury (34% of injury hospitalisations); in major cities, falls were the leading cause (22% of injury hospitalisations).

In 2018-19, there were 3,371 non-fatal hospitalisations for family violence assaults for Aboriginal and Torres Strait Islander people [60]. The crude hospitalisation rate for females (6.1 per 1,000) was about three times the rate for males (1.9 per 1,000). In 2016-18, spouses/domestic partners were the perpetrators of the majority (72%) of non-fatal hospitalised family violence assaults against females, while ‘other family members’ were the perpetrators of the majority (58%) against males. In 2016-18, age-adjusted hospitalisation rates were highest for those aged 35-44 years (10 per 1,000) and lowest for children aged 0-14 years (0.4 per 1,000). The NT and WA had the highest age-adjusted rates (19 per 1,000 and 8.0 per 1,000 respectively) and NSW and Vic had the lowest (both 0.9 per 1,000). Rates were highest in remote and very remote areas combined (14 per 1,000) and lowest in major cities (1.4 per 1,000).

Mortality

Important specific causes of injury deaths for NSW, Qld, SA, WA and the NT in 2020 were:

- intentional self-harm (197 deaths, 5.5% of all Aboriginal and Torres Strait Islander deaths)
- land transport accidents (99 deaths, 2.7% of all Aboriginal and Torres Strait Islander deaths)
- accidental poisoning (80 deaths, 2.2% of all Aboriginal and Torres Strait Islander deaths) (Derived from [49]).

In 2014-2018, there were 2,162 Aboriginal and Torres Strait Islander deaths from injury in NSW, Qld, WA, SA and the NT, representing 15% of all Aboriginal and Torres Strait Islander deaths (18% of male deaths and 10% of female deaths) [43]. Injury was the third leading cause of death. The crude injury death rate was 61 per 100,000 [60]. Leading specific causes of injury-related death, as a percentage of total injury deaths were intentional self-harm (40% for males and 30% for females), accidental poisoning (15% for males and 21% for females), transport accidents (20% for males and 17% for females), and assault (7.5% for males and 10% for females) [43]. Age-specific death rates for injury for people aged >1 year were highest for those aged 35-44 years (115 per 100,000) and 75 years and above (197 per 100,000), and lowest for those aged 5-14 years (10 per 100,000). Age-standardised injury death rates were highest in the NT (122 per 100,000) and lowest in NSW (61 per 100,000). The age-standardised injury death rate for those in remote areas was 1.6 times the rate for those in non-remote areas (Derived from [43]).

Burden of disease

In 2018, injury accounted for 12% of total burden among Aboriginal and Torres Strait Islander people [4]. Of all disease groups, injury made the second highest contribution to total burden.

In 2018, ‘suicide and self-inflicted injury’ accounted for 4.6% of total burden among Aboriginal and Torres Strait Islander people [4]. It was the ninth leading specific cause of total burden, with an age-standardised rate of 13 DALY per 1,000 people.

Respiratory health

Respiratory health comprises a number of conditions that affect the airways and other structures of the lung [148], and impair the process of breathing and oxygen delivery [149]. These conditions range from acute respiratory infections to chronic respiratory conditions [150].

Respiratory disease is associated with a number of contributing factors, including: risky behaviours (particularly tobacco use); environmental conditions; occupational exposures and hazards [150, 151]; family history and other health conditions (obesity, infectious diseases) [151]. Infants and children are particularly susceptible to developing respiratory diseases due to risk factors including: exposure to tobacco smoke; poor living conditions; poor nutrition and limited access to medical care [152, 153].

Extent of respiratory disease among Aboriginal and Torres Strait Islander people

Prevalence

Long-term diseases of the respiratory system[39] were reported by 29% of Aboriginal and Torres Strait Islander people who participated in the 2018-19 NATSIHS [88]. The level of respiratory disease among Aboriginal and Torres Strait Islander females was approximately 1.2 times higher than for males, 32% and 26% respectively. The proportion of Aboriginal and Torres Strait Islander people reporting respiratory diseases increased with age, from 19% in the 0-14 years age-group to 47% in the 55 years and over age-group (Table 23).

Asthma was reported by 16% of Aboriginal and Torres Strait Islander people (16% Aboriginal people and 12% Torres Strait Islander people) in the 2018-19 NATSIHS; it was the most commonly reported long-term respiratory disease and the second most commonly reported long-term disease overall [88]. Asthma was reported more commonly by females (18%) than by males (13%), and by people living in non-remote areas (17%) than those in remote areas (8.6%). The prevalence of asthma increased with age from 12% in the 0-14 years age-group to 26% in the 55 and over age-group (Table 23).

COPD[40] was reported by 3.4% of Aboriginal and Torres Strait Islander people in the 2018-19 NATSIHS [88]. The proportions were higher among females (4.3%) than males (2.5%), and increased with age, apart from the 0-14 years age-group, with the highest proportion in the 55 years and over age-group (13%) (Table 23). By remoteness, reported COPD was 2.7 higher in non-remote areas compared with remote areas, 3.8% and 1.4% respectively.

The other specific long-term respiratory disease reported by Aboriginal and Torres Strait Islander people in the 2018-19 NATSIHS was chronic sinusitis (7.4%), with the proportion being almost twice as high in females than males (9.3% and 5.3% respectively) [88]. Proportions for chronic sinusitis mostly increased with age (Table 23).

Table 23. Long-term respiratory diseases among Aboriginal and Torres Strait Islander people, by age-group, all jurisdictions, 2018-19, proportion (%)

	Age-group (years)						
	0-14	15-24	25-34	35-44	45-54	55+	Total
COPD	1.7	0.8	1.3	3.6	6.4	13	3.4
Asthma	12	14	15	17	21	26	16
Chronic sinusitis	2.6	4.7	8.9	13	14	13	7.4
Other diseases of the respiratory system	8.6	16	20	19	19	20	15
Total respiratory system diseases	19	28	32	35	37	47	29

Note:

1 ‘Other diseases of the respiratory system’ includes hay fever and allergic rhinitis, chronic sinusitis, all other diseases of respiratory system, symptoms/signs involving respiratory systems.

Source: ABS, 2019 [88]

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[39] Individuals who reported a current respiratory condition that had lasted, or was expected to last, for six months or more [88].

[40] COPD relates to a progressive lung disease for which the symptoms are not fully reversible, and includes chronic bronchitis and emphysema [154].

Hospitalisation

For 2019-20, there were 28,213 hospital separations with a principal diagnosis of respiratory disease among Aboriginal and Torres Strait Islander people [59], representing 9.3% of all separations (excluding dialysis) identified as Aboriginal and Torres Strait Islander (Derived from [59]). In 2019-20, 1.2% of hospitalisations involving a COVID-19 diagnosis (32 of 2,628 total COVID-19 hospitalisations) were for Aboriginal and Torres Strait Islander people.

For 2018-19, the crude hospitalisation rates for Aboriginal and Torres Strait Islander people by respiratory condition were influenza and pneumonia (9.2 per 1,000), COPD (6.7 per 1,000), acute upper respiratory infection (4.6 per 1,000) and asthma (2.7 per 1,000) [60].

For 2016-18, detailed information is available regarding hospitalisation rates for specific respiratory conditions including COPD, acute upper respiratory infections, influenza and pneumonia and asthma, by age and remoteness [60]. Crude hospitalisation rates were highest for Aboriginal and Torres Strait Islander people presenting with influenza and pneumonia (8.3 per 1,000), followed by COPD (6.0 per 1,000), acute upper respiratory infections (4.4 per 1,000) and asthma (2.8 per 1,000) (Table 24). The age-specific hospitalisation rates for acute upper respiratory infections were highest in the 0-14 years age-group (8.3 per 1,000), for influenza and pneumonia in the 65 years and over age-group (31 per 1,000), followed by the 45-64 years age-group (17 per 1,000), and for asthma in the 0-14 years age-group (4.0 per 1,000).

Table 24. Hospitalisation rates for selected respiratory diseases among Aboriginal and Torres Strait Islander people, by age-group, 2016-18, proportion (%)

	Age-group (years)					
	0-14	15-24	25-44	45-64	65+	Crude rate
Influenza and pneumonia	5.5	2.2	6.7	17	31	8.3
COPD	n/a	n/a	n/a	n/a	n/a	6.0
Acute upper respiratory infection	8.3	2.9	2.4	2.1	2.0	4.4
Asthma	4.0	1.5	2.3	2.9	2.6	2.8

Note: n/a – non applicable, information unavailable.
Source: SCRGSP (Derived from [60])

For 2016-18, the age-standardised rates of hospitalisation for Aboriginal and Torres Strait Islander people with COPD, influenza and pneumonia, acute upper respiratory infections and asthma all increased with remoteness [60]. The rate for influenza and pneumonia was 3.4 times[41] higher for Aboriginal and Torres Strait Islander people living in remote/very remote areas (25 per 1,000) compared with the rate for those living in major cities (7.2 per 1,000).

Mortality

In 2020, chronic lower respiratory disease (which includes asthma, bronchitis, bronchiectasis, emphysema and COPD) was the third highest cause of death overall for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT, being responsible for 245 deaths [49].There was an 18% increase in the age-standardised mortality rates for chronic lower respiratory diseases in Aboriginal and Torres Strait Islander people between 2011-2015 and 2016-2020 (2011-2015: 66 per 100,000 to 2016-2020: 78 per 100,000).

The age-standardised death rate for chronic lower respiratory disease among Aboriginal and Torres Strait Islander people in 2020 was 75 per 100,000 (females: 65 per 100,000; males: 87 per 100,000) [49]. Of the top five causes of death in 2020, by sex, chronic lower respiratory disease ranked as the third most common cause of death for both Aboriginal and Torres Strait Islander males (133 deaths) and females (112 deaths).

Age-specific information is available for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT for 2016-2020 [49]. The rate for deaths from chronic lower respiratory diseases (as an underlying cause of death) increased with age from 35 per 100,000 in the 45-54 years age-group, 111 per 100,000 for the 55-64 years age-group, 272 per 100,000 for the 65-74 years age-group and 723 per 100,000 for 75 years and over age-group.

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[41] Rounding may lead to inconsistencies in rates reported.

In 2020, influenza and pneumonia were responsible for 38 Aboriginal and Torres Strait Islander deaths, with an age-standardised death rate of 12 per 100,000 [49].

There were no deaths of Aboriginal and Torres Strait Islander people from COVID-19 in 2020 [49]. Twenty deaths from COVID-19 were reported for June to December 2021 [50].

For 2014-2018, there were 1,383 deaths among Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT due to respiratory diseases as an underlying cause of death [43]. This accounted for 9.4% of the total deaths of Aboriginal and Torres Strait Islander people. Of these deaths, 62% (856 deaths) were a result of COPD, 17% (232 deaths) due to pneumonia and influenza, and 4.6% (63 deaths) from asthma.

Burden of disease

In 2018, respiratory diseases accounted for 7% of total burden among Aboriginal and Torres Strait Islander people [4]. Of all disease groups, respiratory diseases made the sixth highest contribution to total burden. It affected all age-groups, accounting for between 3% and 14% of total burden in both males and females across the age-groups.

In 2018, COPD was the second leading specific cause of total burden with an age-standardised rate of 19 DALY per 1,000 people. Asthma was the 11th leading specific cause of total burden with an age-standardised rate of 11 DALY per 1,000 people [4].

Eye health

Eye health, particularly for Aboriginal and Torres Strait Islander people, can be affected by several factors; however, they are complex and are often dependent on a range of social and cultural determinants of health [155]. Factors include, for example: previous eye problems; access to services; care coordination; medical factors (age, obesity, high blood pressure, diabetes, LBW and malnutrition); environmental and living conditions; use of alcohol and tobacco and living in remote areas [155-157]. Eye disease and poor vision can limit opportunities in education, employment and social engagement and also increase the risk of injury, which can lead to dependence on services and other people [43, 158, 159]. Even partial loss of vision can reduce an individual’s ability to live independently and increase the risk of mortality [160, 161].

There is evidence that Aboriginal and Torres Strait Islander children, especially those living in remote areas, generally experience better vision than non-Indigenous children [20, 162]. Data reported in the 2016 National Eye Health Survey (NEHS) suggested there has been some improvement in the eye health of Aboriginal and Torres Strait Islander adults [155]. It was estimated that 90% of vision impairment (VI) and blindness is preventable or treatable [163].

Extent of eye health problems among Aboriginal and Torres Strait Islander people

Estimates of the prevalence of eye health problems among Aboriginal and Torres Strait Islander people have been obtained from surveys[42] and surveillance activities that rely on eye examinations or self-report[43].

Prevalence

This section provides data for prevalence estimates of eye health problems based on data from eye examinations. The NEHS, a cross-sectional population based study, was conducted between March 2015 and April 2016 [163]. It provides the latest evidence about the prevalence, causes and treatment of VI[44] and blindness[45] among Indigenous adults in Australia. The NEHS examined the eyes of 1,738 Indigenous people (aged 40-92 years) and 3,098 non-Indigenous people (aged 50-98 years) living in 30 randomly selected urban, rural and remote sites across Australia. According to the NEHS, bilateral VI (VI in both eyes) and bilateral blindness occurred among 11% and 0.3% of Indigenous people aged 40 years and over respectively.

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42 Survey findings may not be directly comparable due to differing ways of defining and assessing vision loss [163, 164].

43 Self-reported survey data are open to interpretation; they provide insight on an individual’s view of their eye health, but these may not have been diagnosed by a health professional [155]. The surveys do not count eye conditions that the respondent is not aware of.

44 The NEHS defines VI as ‘presenting distance visual acuity <6/12 in the better eye’ [163].

45 The NEHS defines blindness as ‘presenting distance visual acuity <6/60 in the better eye’ [163].

There was no statistically significant difference in the prevalence of VI or blindness between Indigenous males and females [163]. VI increased with age among Indigenous adults participating in the NEHS, ranging from 5.7% for those in the 40-49 years age-group to 46% for those aged 80 years and over. The prevalence of VI among Indigenous adults in outer regional and very remote areas (17% and 15% respectively) was up to double that in other areas (8.2% in major cities, 8.4% in inner regional areas and 8.3% in remote areas). In 2016, it was estimated that up to 18,300 Indigenous people aged 40 years or older were living with VI or blindness.

According to the NEHS, the main causes of VI in Indigenous adults were uncorrected refractive error[46] (63%) and cataract (20%) [163]. Diabetic retinopathy (DR) was the third most common cause of VI in Indigenous adults (5.5%). Among those participants with self-reported diabetes, a high proportion of Indigenous adults had DR and vision-threatening DR (39% and 9.5% respectively) [165]. While not among the main causes of VI, the prevalence of vision loss due to ocular trauma (eye injury) among Indigenous adults was 0.8% [166]. Participants who were male or living in a very remote area were also more likely to have vision loss from ocular trauma.

The NEHS identified five Indigenous participants with bilateral blindness, the main causes of which were cataract (two people), DR (one person), optic atrophy (one person) and a combination of mechanisms (one person) [163].

Prevalence estimates of eye health problems based on self-reported data

Although self-report is considered an unreliable population-based research tool for identifying eye disease in those with vision loss [167], self-reported information is the only recent data available for some aspects of eye health.

Eye and sight problems[47] were reported in the 2018-19 NATSIHS by more than one-third (38%) of Aboriginal and Torres Strait Islander people (38% of Aboriginal people and 40% of Torres Strait Islander people), making it the most commonly reported condition among the long-term health conditions that data were collected for in the survey [88]. In the survey, eye and sight problems were reported by 32% of males and 43% of females. The proportion of Aboriginal and Torres Strait Islander people reporting eye or sight problems in non-remote areas combined[48] was 40% and in remote areas combined 30%. The lowest proportion reported was among people living in very remote areas at 27%. Proportions of people reporting eye or sight problems varied across jurisdictions, with the highest proportion being recorded in SA (49%) and the lowest in the NT (29%). Proportions reported for the other states and territories: the ACT: 47%; Tas: 47%; Vic: 43%; NSW: 38%; Qld: 37%; and WA: 33%.

The most common eye conditions reported by Aboriginal and Torres Strait Islander people in the 2018-19 NATSIHS were: hyperopia (long-sightedness: 22%), myopia (short-sightedness: 16%), other diseases of the eye and adnexa[49] (8.7%), cataract (1.4%), blindness (0.9%) and glaucoma (0.5%) (Table 25) [88]. Females reported higher levels of refractive error (hyperopia and myopia) compared with males, while males reported slightly higher levels of blindness and glaucoma compared with females.

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[46] A condition in which light that passes through the front of the eye fails to focus precisely on the retina, causing long or short sightedness and difficulties changing focus [163].

[47] Eye and sight problems include: cataract; glaucoma; disorders of the choroid and retina; disorders of the ocular muscles, binocular movement, accommodation and refraction; visual disturbances and blindness; and other diseases of the eye and adnexa [88].

[48] Non-remote areas include major cities and inner and outer regional areas [88].

[49] 'Other diseases of the eye and adnexa' include: macular degeneration, astigmatism, presbyopia, other disorders of choroid, retina/ocular muscles binocular, colour blind, other visual disturbances or loss of vision and other diseases of the eye and adnexa [88].

Table 25. Prevalence (%) of diseases of the eye and adnexa among Aboriginal and Torres Strait Islander people, by sex, 2018-19

	Males (%)	Females (%)	Persons (%)
Hyperopia	18	25	22
Myopia	11	20	16
Cataract	1.3	1.4	1.4
Blindness	0.9	0.8	0.9
Glaucoma	0.6	0.4	0.5
Other diseases of the eye and adnexa	8.3	9.2	8.7
Total	32	43	38

Notes:

1 Proportions are non-age standardised.

Source: ABS, 2019 [88]

In 2018-19, the reported prevalence of all diseases of the eye and adnexa in the Aboriginal and Torres Strait Islander population generally increased with age [88]. The total eye and adnexa diseases increased from 10% in the 0-14 years age-group to 93% in the 55 years and over age-group, apart from the 15-24 years (32%) and 25-34 years (29%) age-groups.

In 2018-19, 10% of Aboriginal and Torres Strait Islander children aged 0-14 years, were reported to have diseases of the eye and adnexa[50] [88]. The most commonly reported conditions were hyperopia (4.3%) and myopia (4.0%).

Prevalence of trachoma and trichiasis

Trachoma primarily occurs in remote and very remote Indigenous communities in WA, SA and the NT, with cases being found in NSW and Qld in 2008 [156]. Australia is the only high-income country with endemic levels of trachoma. The National Trachoma Surveillance and Reporting Unit provides prevalence data for trachoma which shows there have been substantial improvements in trachoma control in Indigenous communities in Australia [168].

The estimated prevalence[51] of active trachoma among Indigenous children aged 5-9 years in selected at-risk remote communities decreased from 15% in 2009 to 4.8% in 2012 and then remained at a level of 4.5% from 2013-2019 [155]. However, persistently high levels of trachoma were still found in some regions in 2018 and 2019. [156]. From 2018 to 2019, there was a decrease in the number of communities found to be at-risk of trachoma (from 120 in 2018 to 115 in 2019) [156, 170]; however, the overall prevalence of trachoma in Australia increased slightly from 3.9% to 4.5% in this period [156] and the number of communities with endemic trachoma decreased from 63 to 45.

In 2019, screening was undertaken in at-risk communities in Qld, WA, SA, and the NT [156]. Among the 3,154 children aged 5-9 years who were screened, 263 cases (8.3%) of trachoma were detected: 168 were in the NT, 82 in WA, 13 in Qld and no cases in SA. This was an increase from levels in 2018 when the total number of cases detected was 144 (7.0%) from 2,045 children screened [170]. No trachoma was reported in children aged 5-9 years in 52% of at-risk communities, an increase from 2018 when 30% of at-risk communities reported no trachoma [156].

If left untreated, trachoma can cause scarring of the eyelid and in-turned eyelashes that lead to blindness (trichiasis) [156]. In 2019, screening in at-risk communities in Qld, WA, SA and the NT detected trichiasis in both 0.1% of Indigenous adults aged 15 years and over and 40 years and over [156]. A total of 11 cases of trichiasis were detected in 127 screened communities [156]; this had decreased from 2018 when 23 cases were detected in 131 screened communities [170].

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[50] An adult was asked to respond on behalf of children aged less than 15 years [88].

[51] Small population sizes and the mobility of the population may result in fluctuations in the rates reported [169].

Hospitalisation

In 2019-20, there were 4,916 hospital separations for diseases of the eye and adnexa among Aboriginal and Torres Strait Islander people in Australia [59], accounting for 1.6% of all separations (excluding dialysis) (Derived from [59]).

Hospitalisation data is available for July 2017 to June 2019 [169]. In this period, there were 9,681 hospitalisations for diseases of the eye (by principal diagnosis) among Aboriginal and Torres Strait Islander people at a crude rate of 5.8 per 1,000 population. The majority of hospitalisations (5,826) were for disorders of the lens (primarily refers to cataracts) at a crude rate of 3.5 per 1,000. Crude hospitalisation rates for diseases of the eye for Aboriginal and Torres Strait Islander people aged 45 years and over increased with age from 6.5 per 1,000 in the 45-54 years age-group to 76 per 1,000 in the 75 years and over age-group. The age-standardised hospitalisation rates by jurisdiction ranged from 7.1 per 1,000 in the ACT to 13 per 1,000 in WA. Age-standardised hospitalisation rates increased with remoteness, from 9.5 per 1,000 in major cities to 13 per 1,000 in remote/very remote areas.

For 2017-19, detailed information is available for hospitalisation rates for eye diseases (by principal diagnosis) by the Roadmap to Close the Gap for Vision[52] project's Indigenous Regions [169]. Crude hospitalisation rates ranged from 12 per 1,000 in the Pilbara (WA) to 1.9 per 1,000 in Western Metropolitan Sydney (NSW). The top four after the Pilbara were South West Qld (12 per 1,000), Ngaanyatjarra Lands (WA) (11 per 1,000), East Gippsland (Vic) (10 per 1,000) and Barkly (NT) and Central NT (both 9.8 per 1,000). The lowest rates after Western Metropolitan Sydney were in Northern Metropolitan Sydney (2.3 per 1,000), the ACT (2.4 per 1,000), Limestone Coast (SA) (2.5 per 1,000) and South West Metropolitan Sydney (2.7 per 1,000).

Between July 2017 and June 2019, there were 2,019 hospitalisations for eye injury among Aboriginal and Torres Strait Islander people (crude rate of 1.2 per 1,000), with the majority (664) being for an open wound of the eyelid and periocular area (eye socket) (crude rate 0.4 per 1,000) [169]. When comparing males with females in all age-groups from 0 years of age, crude hospitalisation rates for eye injury were highest among Aboriginal and Torres Strait Islander males across all age-groups except the 25-34 years and 75 years and over. The highest rate for males was in the 35-44 years age-group at 2.5 per 1,000, and for females in the 25-34 years and 35-44 years age-groups, at 2.2 per 1,000 for both. The age-standardised hospitalisation rates by jurisdiction ranged from 0.6 per 1,000 in Vic/Tas to 3.8 per 1,000 in the NT. Age-standardised hospitalisation rates increased with remoteness, from 0.9 per 1,000 in major cities to 3.0 per 1,000 in remote/very remote areas.

Ear health and hearing

Otitis media (OM) is the medical term for all forms of inflammation and infection of the middle ear [171]. OM can be caused by viruses or bacteria or both, and often occurs as a result of another illness, such as a cold [172]. The main cause of hearing loss in Aboriginal and Torres Strait Islander children is OM and its complications, including OM with effusion (glue ear) and chronic suppurative OM (CSOM) (persistent discharge through a hole in the eardrum) [171, 173].

The hearing loss associated with OM can cause speech, language and psychosocial delays, and impact on education and employment outcomes [172, 174-179]. Additionally, a lack of detection of hearing problems further exacerbates these outcomes [180]. OM can affect Aboriginal and Torres Strait Islander babies within weeks of birth and a high proportion of children living in remote communities will continue to suffer from CSOM throughout their developmental years [181].

As with many other areas of Aboriginal and Torres Strait Islander health, high rates of recurring ear infections are associated with social disadvantage, crowded housing conditions, inadequate access to clean water and functional sewerage systems, nutritional problems and poor access to health care [20, 182]. A reduced risk of OM has been found for children who were breastfed [20, 183].

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[52] The Roadmap to Close the Gap for Vision project was undertaken by the University of Melbourne's Indigenous Eye Health Unit to review health services and develop a model of care to improve eye care for Indigenous people. The 64 Roadmap regions provide assistance at a community level [155].

Extent of ear disease among Aboriginal and Torres Strait Islander people

Prevalence

High levels of ear disease and hearing loss have been reported for many years in Aboriginal and Torres Strait Islander communities [172]. The levels of chronic OM among children living in some remote communities in northern and central Australia are higher than the WHO classification identified as being 'a massive public health problem' requiring 'urgent attention' [184, p.2].

Multiple surveys undertaken between 2001 and 2013 showed that 90% of children under three years of age living in remote communities in the Top End region of Australia had some form of OM [185-187]; however, changes in vaccination schedules in the NT have been associated with a sustained improvement in the severity of OM seen in these children [187].

Ear and/or hearing problems were reported as a long-term health condition by 14% of all Aboriginal and Torres Strait Islander people who participated in the 2018-19 NATSIHS [88]. Levels of reported ear/hearing problems were the same for males and females (both 14%). The proportion of Aboriginal and Torres Strait Islander people with reported ear/hearing problems in the 2018-19 NATSIHS increased with age, from 6.9% of children aged 0-14 years, to 34% of those aged 55 years and over. For children aged 0-14 years, the prevalence of OM was 2.6% and of partial or complete deafness was 3.8%. Hearing loss in adults ranged from 6.5% of adults aged 15-24 years to 30% of those aged 55 years and over.

Prevalence differed little between remote areas (13%) and non-remote areas (14%) [88]. Of Australia's states and territories, the ACT had the highest reported prevalence of ear/hearing problems (21%) and the NT the lowest (10%). Ear/hearing problems were reported by 10% of Torres Strait Islander people and 14% of Aboriginal people.

The 2018-19 NATSIHS included, for the first time, an independent measure of hearing loss which aimed to find the level of under-reported ear/hearing problems [188]. Of those Aboriginal and Torres Strait Islander people aged seven years and over who volunteered to self-administer the test, 43% had hearing loss in one or both ears at the time of interview[53]. Of those, 79% did not report having a long-term ear/hearing problem (84% of people in remote areas and 77% in non-remote areas). The proportion of males (43%) with hearing loss in at least one ear was similar to females (42%). Prevalence was higher in remote areas (59%) than non-remote areas (39%). In remote areas, the prevalence of independently measured hearing loss was more than five times the prevalence of self-reported hearing problems (11%). The prevalence of hearing loss doubled between the ages of 35-44 years (41%) and 55 years and over (82%). The prevalence of hearing loss among children aged 7-14 years was 29%, and of those, the majority (92%) did not report a hearing problem[54]. The results of the hearing test reveal that under-reporting of ear/hearing problems may be substantial and add support to research that highlights hearing health as intrinsic to wellbeing and good educational and employment outcomes.

Long-term ear or hearing problems were reported for 6.9% of Aboriginal and Torres Strait Islander children aged 0-14 who participated in the 2018-19 NATSIHS [60]. OM was reported for 2.6% of children and deafness for 3.8%. Ear and hearing problems were more prevalent among children in remote areas (9.7%) than children in non-remote areas (6.4%).

Information about the ear health and hearing status of young Aboriginal and Torres Strait Islander people in the NT is collected from an outreach ear program funded by the Australian Government[55] [189]. Of the 1,802 Aboriginal and Torres Strait Islander people aged 0-20 years who received a service through the program in 2020, 58% were diagnosed with at least one type of ear condition at their latest visit. The prevalence of ear conditions ranged from 42% among those aged 16-20 years to 68% among those aged 0-2 years. Among children and young people who had an ear condition, the most common diagnosis was OM with effusion (24%), followed by eustachian tube dysfunction[56] (19%), CSOM without discharge (11%) and CSOM with

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[53] Hearing loss measured may not always relate to a long-term hearing problem. Hearing loss can result from short-term congestion or conditions in which the test was taken, including environmental noise [188].

[54] This estimate has a high margin of error and should be interpreted with caution [188].

[55] Population is not a random sample and is not representative of all Aboriginal and Torres Strait Islander children and young people in the NT [189].

[56] Blocking of the tubes that run between the middle ear and the upper throat [189].

discharge (9%). Of the children who received an audiology service, 43% were found to have some hearing loss in one or both ears.

Information about the ear health and hearing status of young Aboriginal and Torres Strait Islander people in Qld is collected from the Deadly Ears program, which provides clinical services across rural and remote locations[57] [190]. Of the 2,586 Aboriginal and Torres Strait Islander people aged under 18 years[58] who attended an ear, nose and throat clinic service between 2015 and 2019, 64% had an ear condition at their first visit. The prevalence of ear conditions ranged from 54% among those aged 10-17 years to 71% among those aged 0-4 years. Among children and young people who had an ear condition, the most common diagnosis was OM with effusion (21%), followed by retraction (14%), eustachian tube dysfunction (11%), dry perforation (7.2%) and CSOM (5.7%). Of the children who received an audiology service through the program in 2015-2019, 41% were found to have some hearing loss in one or both ears.

Hospitalisation

There were 3,280 ear-related hospitalisations in 2019-20 [59], representing 1.1% of all hospitalisations (excluding dialysis) of Aboriginal and Torres Strait Islander people (Derived from [59]). Aboriginal and Torres Strait Islander people were hospitalised for ear disease at an age-adjusted rate of 3.4 per 1,000 population.

In 2018-19, there were 2,424 ear-related hospitalisations for Aboriginal and Torres Strait Islander children aged 0-14 years [60], of which 90% were for diseases of the middle ear and mastoid (Derived from [60]). The crude rate of ear-related hospitalisation for children aged 0-14 years was 8.7 per 1,000 (13 per 1,000 for children aged 0-3 years and 7.2 per 1,000 for children aged 4-14 years) [60]. In 2016-18, the crude rate of ear-related hospitalisation for children in remote areas (15 per 1,000) was higher than the rate for children in regional areas (7.6 per 1,000) and major cities (7.3 per 1,000).

Burden of disease

In 2018, hearing loss was the 13th leading specific cause of total burden among Aboriginal and Torres Strait Islander people, with an age-standardised rate of 8.9 DALY per 1,000 people [4].

Oral health

Oral health is defined as the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex [191]. The two most common oral diseases are dental caries (tooth decay) and periodontal disease (gum disease) [192].

Dental caries occurs when bacteria in plaque interacts with sugar in food and drink to produce acids that degrade tooth enamel [193]. The stickiness of the plaque keeps these acids in contact with teeth and, over time, the enamel can break down and a cavity forms. The main contributor to caries is the consumption of free sugars[59]. Untreated caries can lead to pain and an increased likelihood of root canal therapy or tooth extraction being needed.

Periodontal diseases are a group of inflammatory diseases that affect the gums and other parts of the mouth structure [193]. Gingivitis is an early reversible form of the disease which, if untreated, can lead to a serious condition called periodontitis. The factors associated with periodontitis include smoking, diabetes, obesity, low socioeconomic status, adverse maternal outcomes, poor oral hygiene and older age.

The importance of improving the oral health of Aboriginal and Torres Strait Islander people was recognised by the Australian Medical Association (AMA) in 2019 when it dedicated its annual report card on Indigenous health to the topic of oral health [194]. Actions identified by the AMA as crucial to the improvement of Aboriginal and Torres Strait Islander oral health included increasing fluoridation of Australia's water supplies, enhancing oral health promotion, growing the Aboriginal and Torres Strait Islander dental workforce and strengthening data collection.

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[57] Population is not a random sample; children and young people with worse ear and hearing health are more likely to be captured in data collection [190].

[58] A small number of adults are included in this data [190].

[59] Free sugars are added sugars plus those naturally occurring in honey, fruit juice and fruit concentrate.

Extent of oral health problems among Aboriginal and Torres Strait Islander people

Child oral health

The 2012-2014 National Child Oral Health Study (NCOHS), which included a clinical examination component, found that:

- The proportion of Aboriginal and Torres Strait Islander children aged 5-10 years who had experienced any tooth decay in their primary (baby) teeth was 61% [192]. The average number of decayed, missing or filled primary tooth surfaces[60] for Aboriginal and Torres Strait Islander children aged 5-10 years was 6.3.
- The proportion of Aboriginal and Torres Strait Islander children aged 6-14 years who had experienced any tooth decay in their permanent (adult) teeth was 36% [192]. The average number of decayed, missing or filled permanent tooth surfaces for Aboriginal and Torres Strait Islander children aged 6-14 years was 1.3.
- The prevalence of visible dental plaque among Aboriginal and Torres Strait Islander children aged 5-14 years was 60% and the prevalence of gingivitis was 34% [192]. Both are indicators of oral hygiene status.

Dental services in the NT have been provided to Aboriginal and Torres Strait Islander children aged 0-15 years through a succession of programs funded by the Australian Government and delivered by the NT Government, most recently through the Northern Territory Remote Aboriginal Investment Oral Health Program [195]. In 2020, among the 3,046 service recipients for whom complete data are available, tooth decay prevalence was highest among children aged 9 years (88% of children) and lowest among children aged 1-3 years (37% of children)[61]. Children aged 5 years old had the highest average number of decayed, missing or filled primary teeth (5.6 teeth), and children aged 15 years had the highest average number of decayed, missing or filled permanent teeth (4.0 teeth).

Adult oral health

The 2017-18 National Study of Adult Oral Health (NSAOH), which included a clinical examination component, found that 7.1% of Aboriginal and Torres Strait Islander people aged 15 years and over had complete tooth loss [196]. Of those who still had some natural teeth, 13% did not have adequate natural dentition (enough natural teeth[62] to chew or function properly) and 11% wore dentures. Over half (55%) had one or more filled teeth. For those who still had some natural teeth:

- the average number of missing teeth[63] was 5.7
- the average number of decayed, missing or filled teeth was 7.5
- the average number of decayed, missing or filled tooth surfaces was 18.7.

Of those people who still had some natural teeth, 35% said they experienced toothache and 29% rated their oral health as fair or poor [196]. Of all Aboriginal and Torres Strait Islander people aged 15 years and over, 45% said they were uncomfortable about their dental appearance and 36% said they avoided foods due to dental problems.

Dentist visits and hospitalisation

In the 2018-19 NATSIHS, 44% of Aboriginal and Torres Strait Islander people aged two years and over reported having seen a dentist or dental professional in the 12 months prior to the survey [88]. The proportion of young people (aged 2-17 years) who had made a dental visit (57%) was higher than the

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[60] Counting the number of surfaces of a person's tooth that are decayed, missing or filled, or the number of teeth that are decayed, missing or filled, gives an indication of oral health.

[61] Children who receive services through this program are not a random sample of the population and, as such, the data may not be representative of the general population of Aboriginal and Torres Strait Islander children in the NT.

[62] Twenty natural teeth are considered sufficient for chewing function [196].

[63] Missing for any reason.

proportion of adults (36%). The proportion of people who had made a dental visit was highest in Vic (51%) and lowest in WA (40%). People in remote areas were about as likely to have made a dental visit as people in non-remote areas (41% and 44% respectively).

In the 2017-18 NSAOH, 51% of Aboriginal and Torres Strait Islander people aged 15 years and over reported having seen a dentist in the 12 months prior to the survey [196]. The proportion decreased in older age groups from 63% for 15-34 years to 41% for 55-74 years. The proportion of people whose last dental visit was five or more years ago was 14%.

In the 2012-2014 NCOHS, 75% of Aboriginal and Torres Strait Islander children aged 5-14 years were reported as visiting a dental provider in the 12 months prior to the survey [192].

In 2018-19, there were 3,773 potentially preventable hospitalisations for dental conditions for Aboriginal and Torres Strait Islander people [60]. The crude hospitalisation rate was 4.5 per 1,000. In 2015-17, the crude rate of hospitalisation for dental problems was similar for males (2.6 per 1,000) and females (2.5 per 1,000) [43]. Age-specific rates were much higher for children aged 0-4 and 5-14 years (around 6 per 1,000) than for all other age-groups (all less than 1.0 per 1,000).

In 2018-19, the age-standardised hospitalisation rate for acute dental conditions for Aboriginal and Torres Strait Islander people was highest in the NT (6.1 per 1,000) and lowest in Tas (3.0 per 1,000) [113].

In 2016-18, the crude rate of hospitalisation for potentially preventable dental conditions was highest in remote and very remote areas (6.3 per 1,000) and lowest in major cities (3.4 per 1,000) [60].

In 2015-17, the crude rate of hospitalisation for periodontal diseases for Aboriginal and Torres Strait Islander people was 1.1 per 1,000. Males and females were hospitalised at similar rates (1.1 per 1,000 and 1.2 per 1,000 respectively) [43]. Age-specific rates for periodontal hospitalisation were highest for 25-34 year olds (1.7 per 1,000) and lowest for those aged 65 and over (0.3 per 1,000).

Disability

The word 'disability' does not have a direct translation in Aboriginal or Torres Strait Islander languages [197]. Within medical literature, disability is often defined as a limitation, restriction or impairment which has lasted, or is likely to last, for at least six months and restricts the everyday activities of an individual [198]. It can be considered in terms of: the nature of the impairment in body structure or function; a limitation in activities (such as mobility and communication); a restriction in participation (involvement in life situations, such as work, education and social interaction) and the interaction between an individual and their personal and environmental context [45, 199].

Understandings of disability by Aboriginal and Torres Strait Islander people are likely to focus on body function and be interwoven with the experience of disability, viewed within the context of their beliefs, attitudes and experiences of disability, and historic, social and economic disadvantages [60, 197, 200].

The main source of information about the level of disability at a population level in Australia is the periodic Survey of Disability, Ageing and Carers (SDAC), which collects information about the prevalence of disability as well as people's need for assistance with core activities by primary carers [198]. The 2018 SDAC categorises disabilities into six groups: (1) sensory, (2) intellectual, (3) physical, (4) psychosocial, (5) head injury, stroke or acquired brain injury, and (6) other [198]. A profound or severe core-activity limitation refers to a specified condition for which the person requires help or supervision in one or more core activities (self-care, mobility or communication). Information about disability within Aboriginal and Torres Strait Islander communities, at a population level, is usually collected in Australia's five-yearly censuses [201] and among Aboriginal and Torres Strait Islander people-specific surveys such as the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) [200] and the NATSIHS [88].

The burden of disability experienced by Aboriginal and Torres Strait Islander people is often associated with poorer physical and mental health, increased exposure to risk factors and higher levels of socioeconomic disadvantage [45, 103, 200].

Extent of disability among Aboriginal and Torres Strait Islander people

Prevalence

It was reported in the 2018-19 NATSIHS that 38% of Aboriginal and 35% of Torres Strait Islander people aged 15 years and over had a disability or restrictive long-term health condition [88]. The proportion for Aboriginal and Torres Strait Islander males was 39% and for females 37%. Disability was reported at similar proportions in non-remote settings (38%) and remote settings (37%). The survey also found that 8.2% of Aboriginal people and 8.3% of Torres Strait Islander people reported a profound or severe disability: the proportion for Aboriginal and Torres Strait males was higher (8.6%) than females (7.6%). A profound/severe disability was reported more often in non-remote areas (8.6%) than in remote areas (5.7%).

For Aboriginal and Torres Strait Islander people with a disability, the most reported disability groups were physical (63%), sensory (47%), psychological (23%), intellectual (18%) and head injury, stroke or brain damage (3.4%), with 30% classified as 'other' [43].

The 2016 Census provided information on assistance for Australians with a profound or severe disability [201]. In 2016, 6.7% of Aboriginal and Torres Strait Islander people reported a need for assistance with either self-care, mobility or communication (for an additional 6.1% of respondents, a need for assistance was not stated). Within Aboriginal and Torres Strait Islander populations, of those who needed assistance, more males (53%) needed assistance than females (47%) and the need for assistance was highest among the 5-14 years and 65 years and over age-groups (both 19%) followed by the 45-54 years and 55-64 years age-groups (both 15%).

In the 2018 SDAC, the total number of Aboriginal and Torres Strait Islander people who reported living with a disability [64] was 139,700 (24%) [202]. Of these, approximately 69% reported needing assistance with at least one daily activity. The age-group reporting the highest level of living with a disability was 55 years and over (54%). The proportion of people with disability varied by remoteness, with the highest proportion in inner regional areas (30%), followed by major cities (24%), outer regional areas (22%), and the lowest in remote areas (18%).

Among Aboriginal and Torres Strait Islander people in the 2018 SDAC, 8.8% had a profound or severe limitation [202]. The highest reported areas of need were with cognitive and emotional tasks (40%), health care (29%), mobility (27%), transport (21%), property maintenance (20%) and self-care (18%).

Services

The 2018-19 NATSIHS provides information for health service use (GP, specialist and hospital admissions) among Aboriginal and Torres Strait Islander people with a disability or restrictive long-term health condition [88]. In the last 12 months, prior to the survey, 94% saw a GP or specialist and 27% were admitted to hospital.

For disability services provided under the National Disability Agreement (NDA) for 2018-19, 5.3% of service users identified as Aboriginal and/or Torres Strait Islander [203]. In 2018-19, service use was higher among Aboriginal and Torres Strait Islander males (58%) than females (42%) [203]. The majority (94%) of Aboriginal and Torres Strait Islander service users were aged under 60 years, with the average age for users being 35 years. When considering the living arrangements of users, 39% lived alone, 33% lived with others and 25% lived with family. It was reported that 21% of Aboriginal and Torres Strait Islander disability service users had an informal carer. For those whose informal carer was their primary carer, mother (52%) was the most common relationship to the service user.

In 2018-19, the proportion of Aboriginal and Torres Strait Islander service users who lived in major cities was 45% [203]. A further 28% lived in an inner regional area, 21% lived in an outer regional area and 4.6% lived in a remote or very remote area.

In 2018-19, the service group most commonly used by Aboriginal and Torres Strait Islander people under the NDA was employment (80%), followed by community support (16%) [203]. The main disability groups accessing services were Aboriginal and Torres Strait Islander people with a psychiatric condition (37%),

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[64] The SDAC does not include Aboriginal and Torres Strait Islander people living in cared accommodation, discrete Indigenous communities and very remote areas [202].

physical disability (24%) and intellectual disability (15%). Physical (21%) and psychiatric (18%) conditions were most commonly reported as ‘other’ significant disability groups for Aboriginal and Torres Strait Islander people with a main disability.

In 2018-19, 1,066 Aboriginal and/or Torres Strait Islander NDA service users transitioned to the National Disability Insurance Scheme (NDIS) [203]. This included 894 people who identified as Aboriginal, 82 who identified as a Torres Strait Islander and 90 who identified as both an Aboriginal and Torres Strait Islander.

As at 30 June 2019, there were 16,417 Aboriginal and Torres Strait Islander participants in the NDIS [204]. This included 64% males, 35% females and 1% unknown. The age-group with the highest proportion of participants in the NDIS was 7-14 years (29%), followed by 0-6 years (16%). Seventy-five percent (75%) of participants were aged less than 34 years. By jurisdiction, 38% of participants resided in NSW, 24% in Qld and 11% in Vic, with the lowest participation recorded in the ACT of 2%. More participants lived in major cities (43%) compared with participants in remote and very remote areas (11%). The main disability groups accessing NDIS services at the end of June 2019 were people with an intellectual disability (30% of the 16,417 participants), autism (28%) and a psychosocial disability (9%).

To best meet the needs of Aboriginal and Torres Strait Islander people living with disability, it is important that services understand Aboriginal and Torres Strait Islander concepts of disability, address the social determinants of health and disability, and provide culturally safe supports that are inclusive and work in partnership with Aboriginal and Torres Strait Islander communities [60, 205].

Communicable diseases

Communicable diseases (caused by infectious agents including bacteria, viruses, parasites, fungi, or their toxic products) can be transmitted from a person or an animal to another [182]. Disease transmission may occur directly (e.g. via contact with bodily fluids), indirectly (e.g. by sharing a drinking glass), or through vectors (e.g. mosquitoes). While illnesses caused by communicable disease are often mild and brief (e.g. a common cold) and do not require medical care, risk factors may vary according to the type of disease. Improvements to sanitation and the increased use of vaccination and antibiotics have markedly reduced some infectious diseases in Australia [182, 206].

Sexually transmissible infections

Sexually transmissible infections (STIs) include bacterial, viral and parasitic infections that are transmitted through sexual contact [207]. Young people are particularly vulnerable to STIs. The use of condoms is regarded as fundamental in preventing STI transmission. Most STIs are treatable and early detection is important in the management of STIs.

Chlamydia

Chlamydia is an infection caused by the bacterium *Chlamydia trachomatis* and symptoms mainly consist of an inflamed urethra, causing discharge for males and pain during urination and intermenstrual bleeding for females [208]. However, chlamydia is asymptomatic (showing no symptoms) in about 80% of cases. Chlamydia can also lead to reproductive issues for females such as infertility, pelvic inflammatory disease and ectopic pregnancies.

In 2019, there were 7,647 notifications[65] of chlamydia for Aboriginal and Torres Strait Islander people [209]. The age-standardised notification rate[66] for chlamydia among Aboriginal and Torres Strait Islander people was 1,216 per 100,000. Rates among females (1,597 per 100,000) were 1.9 times higher than for males (853 per 100,000). In 2019, for the jurisdictions where data are reported, the highest notification rates were in the NT (2,007 per 100,000), followed by WA (1,234 per 100,000), Qld (1,079 per 100,000), SA (670 per 100,000) and the ACT (536 per 100,000) [209].

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[65] Chlamydia notifications include notifications that have evidence of recent infections, and unspecified that have no evidence of recent infection.

[66] Notification rates by Aboriginal and Torres Strait Islander status are only included if data provided by jurisdictions where Aboriginal and Torres Strait Islander status was reported for ≥50% of diagnoses for each of the reported years. For chlamydia this included Qld, WA, SA , the ACT and the NT [209].

There was a 1.3% increase in chlamydia notification rates for Aboriginal and Torres Strait Islander males from 842 per 100,000 in 2015 to 853 per 100,000 in 2019, however, for males between 2015 and 2018 there was a 7.1% increase before a decrease between 2018 and 2019 of 5.5% [209]. For females, there was a 4.3% increase in notification rates from 1,531 per 100,000 in 2015 to 1,597 per 100,000 in 2019.

Gonorrhoea

Gonorrhoea is an infection caused by the bacterium *Neisseria gonorrhoeae* and displays similar symptoms to chlamydia [208]. Gonorrhoea is also largely asymptomatic in approximately 80% of female cases and 50% of male cases, and can lead to reproductive issues if left untreated [208, 210].

In 2019, there were 4,042 gonorrhoea notifications[67] for Aboriginal and Torres Strait Islander people [209]. The age-standardised notification rate[68] for Aboriginal and Torres Strait Islander people was 586 per 100,000. Rates among females (636 per 100,000) were 1.2 times higher than for males (541 per 100,000).

In 2019, among the jurisdictions where data are reported, the highest notification rates were in the NT (1,290 per 100,000), followed by SA (853 per 100,000) and WA (835 per 100,000) [209]. In the NT, the notification rate decreased over the 2018-2019 period, from 2,083 per 100,000 in 2018, a decrease of 38%.

There was a 2.3% increase in gonorrhoea notification rates for Aboriginal and Torres Strait Islander males from 528 per 100,000 in 2015 to 541 per 100,000 in 2019, however, between 2015 and 2018 there was a 25% increase, before a decrease between 2018 and 2019 of 18% [209]. For females, there was a 4.0% increase in gonorrhoea notification rates from 612 per 100,000 in 2015 to 636 per 100,000 in 2019, however, between 2015 and 2018 there was a 26% increase, before a decrease between 2018 and 2019 of 17%.

Syphilis

Syphilis is an infection caused by the bacterium *Treponema pallidum* which can be contracted through sexual contact, blood-to-blood contact and from mother to child during pregnancy [208, 211]. If a fetus contracts syphilis during pregnancy it is called congenital syphilis, and often results in the fetus dying if left untreated. The primary symptom of syphilis is a painless ulcer located at the area of infection, which appears within the first couple of weeks after infection, followed by a rash, which usually appears on the palms of the hands or soles of the feet if left untreated and progresses into what is termed secondary syphilis. Following the secondary stage, the infection is asymptomatic.

From 2011, there has been an ongoing outbreak of syphilis recorded among young Aboriginal and Torres Strait Islander people, which began in Qld, followed by the NT, WA and SA [212].

In 2019, there were 1,021 syphilis notifications[69] for Aboriginal and Torres Strait Islander people [209]. The age-standardised notification rate[70] for Aboriginal and Torres Strait Islander people was 119 per 100,000. Rates among males (123 per 100,000) were higher than for females (117 per 100,000). In 2019, among the jurisdictions where data are reported, the highest notification rates were in the NT (367 per 100,000), followed by WA (224 per 100,000) and Qld (129 per 100,000) [209]. WA experienced the highest increase in notification rates for the 2018-2019 year, from 86 per 100,000 to 224 per 100,000, an increase of 161%.

For 2015-2019, there was a 117% increase in infection syphilis notification rates for Aboriginal and Torres Strait Islander people, from 55 per 100,000 in 2015 to 119 per 100,000 in 2019 [209]. The highest increase (162%) was among females, from 45 per 100,000 in 2015 to 117 per 100,000 in 2019. For males, the increase (86%) was from 66 per 100,000 in 2015 to 123 per 100,000 in 2019.

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[67] Gonorrhoea notifications include notifications that have evidence of recent infections, and unspecified that have no evidence of recent infection.

[68] Notification rates by Aboriginal and Torres Strait Islander status are only included if data provided by jurisdictions where Aboriginal and Torres Strait Islander status was reported for ≥50% of diagnoses for each of the reported years. For gonorrhoea this included Vic, Qld, WA, SA , Tas , the ACT and the NT [209].

[69] Syphilis notifications include notifications that have evidence of recent infections, and unspecified that have no evidence of recent infection. They only include infection syphilis and not congenital syphilis.

[70] Notification rates by Aboriginal and Torres Strait Islander status are only included if data provided by jurisdictions where Aboriginal and Torres Strait Islander status was reported for ≥50% of diagnoses for each of the reported years. For infectious syphilis this included all jurisdictions [209].

Human immunodeficiency virus (HIV)

The human immunodeficiency virus (HIV) can be transmitted through certain body fluids such as blood, vaginal fluid, semen and breast milk [213]. It can also be transmitted during pregnancy or birth from mother to child. HIV affects a person's immune system and over time prevents their body's ability to overcome infections and illnesses. If untreated, HIV can progress to acquired immune deficiency syndrome (AIDS) [208].

The risk factors associated with contracting HIV include: engaging in unprotected sex (anal, oral or vaginal), having an STI, sharing injecting equipment, using unsterile piercing and tattooing equipment or accidental needle stick injuries [213, 214].

HIV symptoms often vary and develop over time, meaning it is common for people who are infected to be unaware they are HIV positive until the later stages of infection [213]. However, the most infectious time period is the first few months after infection.

In 2019, there were 901 cases of newly diagnosed HIV infection in Australia, of which 25 (2.8%) were among Aboriginal and Torres Strait Islander people [209]. This is the lowest number of HIV notifications recorded among Aboriginal and Torres Strait Islander people in the last five years. The age-standardised rate of HIV diagnosis for Aboriginal and Torres Strait Islander people was 3.1 per 100,000 population in 2019, down from 4.2 per 100,000 in 2018.

In 2019, Aboriginal and Torres Strait Islander males accounted for 80% of new HIV cases among Aboriginal and Torres Strait Islander people, down from 91% in 2018 [209]. The HIV age-standardised notification rate among males was 5.0 per 100,000, and among females, 1.3 per 100,000. Across all age-groups from 0 years of age and above, the highest rates were in the 30-39 years age-group (7.9 per 100,000) followed by the 20-29 years age-group (6.7 per 100,000).

Hepatitis

Hepatitis is an inflammation of the liver which can be caused by viral infections [45].

Hepatitis C

Transmission of hepatitis C virus (HCV) mainly occurs via blood contact from mother to newborn [208] and through injecting drug use [209]. Treatment for HCV using direct-acting antiviral (DAA) therapies has been found to be highly effective [215]. There is no vaccine to protect people against HCV, but due to the efforts to increase access to DAAs over recent years, Australia is predicted to eliminate HCV by 2030 [216, 217].

In 2020, of the 675[71] newly acquired[72] HCV notifications, 274 (41%) were identified as Aboriginal and Torres Strait Islander [209]. Age-standardised notification rates are only available for 2019 for newly acquired HCV, at a rate of 199 per 100,000 population for Aboriginal and Torres Strait Islander people[73]. In 2019, the HCV notification rates for Aboriginal and Torres Strait Islander males were two and a half times higher than for females (282 per 100,000 and 115 per 100,000 respectively). Across all age-groups, from 0 years of age and above, the highest rates were in the 25-39 years age-group (440 per 100,000) followed by the 15-24 years age-group (302 per 100,000).

The pattern of notification rates for HCV has been different between males and females. There has been an increase of just over 19% in newly acquired HCV notification rates for Aboriginal and Torres Strait Islander males from 236 per 100,000 in 2015 to 282 per 100,000 in 2019, and a 3% increase for females from 111 per 100,000 in 2015 to 115 per 100,000 in 2019.

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[71] 13 (1.9%) of the 675 HCV notifications had status as 'not reported'.

[72] For newly acquired hepatitis C, these are notifications that have evidence of recent infections, aside from the unspecified hepatitis C infections, which have no evidence of recent infection.

[73] Notification rates by Aboriginal and Torres Strait Islander status are only included if data provided by jurisdictions where Aboriginal and Torres Strait Islander status was reported for ≥50% of diagnoses for each of the reported years. Hepatitis C notifications for all jurisdictions are for newly acquired notifications.

Hepatitis B

Transmission of hepatitis B virus (HBV) may be from blood or sexual contact or from mother to child at birth [208].

In 2020, of the 120[74] newly acquired[75] HBV notifications, 22 (18%) were identified as Aboriginal and Torres Strait Islander [209]. The age-standardised notification rate for newly acquired HBV, only available for 2019, was 25 per 100,000 population for Aboriginal and Torres Strait Islander people[76]. In 2019, the HBV notification rates for Aboriginal and Torres Strait Islander males were nearly two times higher (1.8 times) than for females (32 per 100,000 and 18 per 100,000 respectively). Across all age-groups, from 0 years of age and above, the highest rates were in the 30-34 years age-group (52 per 100,000) followed by the 35-39 years age-group (49 per 100,000).

There has been a 54% decline in newly acquired HBV notification rates for Aboriginal and Torres Strait Islander people from 53 per 100,000 in 2015 to 25 per 100,000 in 2019 [209]. It is suggested that this reduction is due to 97% of the Aboriginal and Torres Strait Islander population aged two years being vaccinated against HBV as at 31 December 2018 [60]. While recommended [218], HBV vaccination for Aboriginal and Torres Strait Islander adults is not funded under the National Immunisation Program (NIP) [219].

For 2018-19, the crude hospitalisation rate for acute HBV across all jurisdictions was 2.5 per 100,000 [60].

Pneumococcal disease

Pneumococcal disease results from infection by the bacterium *Streptococcus pneumoniae,* which may cause severe invasive disease including meningitis, pneumonia, bacteraemia and non-invasive disease, including OM [218]. Pneumococcal disease is most common in very young children and the elderly [220].

Nationally-funded vaccination for pneumococcal disease is available for Aboriginal and Torres Strait Islander infants and children, adults aged 50 years and older [221] and those aged 15-49 years at high-risk [218]. Funded under the NIP, all Aboriginal and Torres Strait Islander children will receive a single dose at ages two, four and 12 months, and children living in WA, SA, the NT and Qld will receive an additional dose at six months of age [221, 222].

In the three year period 2016-2018, there were 626 notifications (12% of the total notification of 5,192) of invasive pneumococcal disease (IPD) for Aboriginal and Torres Strait Islander people [43]. This was similar to 2014-2016, when 581 (12%) of the 4,727 notified cases of IPD were identified as Aboriginal and Torres Strait Islander [223].

More detailed information is available for 2011-2015, when of the 8,316 notified cases of IPD, 1,152 (14%) were identified as Aboriginal and Torres Strait Islander [219]. The highest age-specific notification rate was for Aboriginal and Torres Strait Islander people aged 50 years and over (63 per 100,000 population), followed by the 0-4 years age-group (42 per 100,000), with the lowest rate in the 15-24 years age-group (13 per 100,000). Underlying medical conditions, household crowding, exposure to tobacco smoke and other non-vaccine factors may contribute to the transmission of IPD, which may explain the higher levels of IPD found in adults.

For 2014-15, Aboriginal and Torres Strait Islander children aged 0-4 years living in NSW, Vic, Qld, WA, SA and the NT were hospitalised for IPD at an age-standardised rate of 0.4 per 100,000 [224].

For 2011-2015, there were 26 deaths (12% of the total of 223 deaths) attributed to IPD among Aboriginal and Torres Strait Islander people, with 11 of the 26 deaths (42%) in the 50 years and over age-group [219].

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[74] Four (3.3%) of the 22 HBV notifications had status as ‘not reported’.

[75] For newly acquired hepatitis B, these are notifications that have evidence of recent infections, aside from the unspecified hepatitis B infections, which have no evidence of recent infection.

[76] Notification rates by Aboriginal and Torres Strait Islander status are only included if data provided by jurisdictions where Aboriginal and Torres Strait Islander status was reported for ≥50% of diagnoses for each of the reported years. Hepatitis B jurisdictions included NSW, Vic, Qld, WA, SA, Tas and the NT for newly acquired notifications.

Meningococcal disease

Meningococcal disease is caused by the bacterium *Neisseria meningitidis* (also known as meningococcus) [218]. The most common clinical presentations of invasive meningococcal disease are septicaemia and/or meningitis. Meningococcal disease is more common in infants, adolescents and adults aged over 45 years [225].

The most common serogroups[77] of meningococcus found in Australia are B, C, W and Y [225]. The MenACWY vaccination is now funded under the NIP as a single dose for all children aged 12 months and for adolescents aged 14 to 16 years via school-based immunisation and/or primary care providers [226]. This funding covers specific populations, including Aboriginal and Torres Strait Islander people. A vaccine for serogroup B[78] is available Australia-wide for Aboriginal and Torres Strait Islander infants aged from six weeks; a catch-up vaccine is also available until June 2023 for children aged up to 23 months [226, 227].

For 2014-2016[79], 63 (11%) of the 602 cases of meningococcal disease were identified as Aboriginal and Torres Strait Islander [223].

For 2011-2015, 101 (10%) of the 966 notified cases of meningococcal disease were identified as Aboriginal and Torres Strait Islander [219]. The age-specific notification rates decreased with age from 14 per 100,000 population in the 0-4 years age-group to 0.4 per 100,000 in the 50 years and over age-group. Serogroup B was responsible for most cases during this reporting period.

Detailed hospitalisation data for meningococcal disease are not available, however, for 2011-2015, Aboriginal and Torres Strait Islander people experienced high levels of admissions for meningococcal disease, with the highest admissions being in the 0-4 and 5-14 years age-groups [219].

For 2011-2015, of the 53 reported deaths from meningococcal disease, six (11%) were recorded for Aboriginal and Torres Strait Islander people [219].

Tuberculosis

Tuberculosis (TB) is primarily a lung infection caused by the inhalation of *Mycobacterium tuberculosis* bacteria [218]. With high incidence rates in the NT, Qld and northern SA among Aboriginal and Torres Strait Islander people [218], the National Tuberculosis Advisory Committee recommends neonates in high incidence communities receive the Bacille Calmette-Guérin (BCG) vaccine [228].

In 2018, of the 1,438 notifications of TB in Australia, 29 (2.0%) were identified as Aboriginal and/or Torres Strait Islander [229]. It was reported that 29 (18%) of the 161 notifications of TB among Australian-born people in Australia in 2018 were identified as Aboriginal and Torres Strait Islander (Derived from [229]). The notification rate for TB among Aboriginal and Torres Strait Islander people was 3.6 per 100,000. The rate of TB for Aboriginal and Torres Strait Islander people was highest in the 35-44 years and 65 years and over age-groups (10 per 100,000 and 12 per 100,000 respectively). By jurisdiction, the rate was highest for SA (7.1 cases per 100,000 population), followed by Qld (6.3 cases per 100,000 population) and the NT (5.4 cases per 100,000).

In 2018-19, Aboriginal and Torres Strait Islander people were hospitalised for TB at a crude rate of 8.8 per 100,000 [60]. For 2016-18, hospitalisation rates were highest for Aboriginal and Torres Strait Islander people in the 65 years and over age-group (26 per 100,000), followed by the 45-64 years age-group (23 per 100,000)[80]. The lowest hospitalisation rate for Aboriginal and Torres Strait Islander people during the same period was reported for the 15-24 years age-group (2.2 per 100,000).

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[77] A serogroup is a group of bacteria containing a common antigen.

[78] SA provides free vaccination for eligible children and young people.

[79] Annual surveillance reports do not include Indigenous status; this is the latest data for Aboriginal and Torres Strait Islander people.

[80] Rates were not available for the 0-14 year age-group.

Haemophilus influenzae type b

Haemophilus influenzae type b (Hib) is a bacterium that can cause a number of conditions including meningitis, pneumonia, epiglottitis, septic arthritis and cellulitis [218]. Children are particularly susceptible to Hib, which is serious in its invasive form [219]. Vaccination has substantially reduced notifications of invasive Hib disease in Australia, with a reduction of more than 99% across both the Aboriginal and Torres Strait Islander and non-Indigenous populations compared with the pre-immunisation era. In 2018, it was estimated that 93% of Aboriginal and Torres Strait Islander children were vaccinated against Hib at one year of age [60].

For 2000-2017, 76 (22%) of the 345 cases of invasive Hib disease notified in all jurisdictions were identified as Aboriginal and/or Torres Strait Islander [230]. The median age at notification was 14 months. For 2014-2016, 17% of Hib notifications were among Aboriginal and Torres Strait Islander people [231].

More detailed information is available for 2011 to 2015. Of the 86 Australian Hib notifications, 16 (19%) were among Aboriginal and Torres Strait Islander people [219]. The highest notification rate was for children aged 0-4 years (3.3 per 100,000 population). The only other Aboriginal and Torres Strait Islander age-group to report cases was the 25-49 years age-group (0.2 per 100,000). Between 2007-2010 and 2011-2015 notification rates decreased by around 67%, from 0.9 per 100,000 to 0.3 per 100,000 [219, 232].

Skin health

The most common skin infections affecting Aboriginal and Torres Strait Islander children are scabies and impetigo [233, 234]. Scabies is a skin disease caused by the mite *Sarcoptes scabiei* that produces skin inflammation and itching [235]. Scratching in response to a scabies infestation can result in impetigo[81], a bacterial infection of the skin [235, 237]. Research suggests that scabies mites could also spread bacterial infection and promote bacterial growth [238, 239]. Crusted scabies can also occur when there are a high number of scabies mites present on the infected skin [240]. Impetigo in Aboriginal and Torres Strait Islander communities commonly involves GAS, which brings a risk of severe effects including kidney disease and, possibly, ARF [241-245].

Risk factors for skin infections include: perinatal risk factors (such as male sex and LBW) [246], low family income, overcrowding, quality of water supply and housing, access to affordable healthy food, poor hygiene and non-adherence to antibiotic treatments [247, 248]. Aboriginal and Torres Strait Islander children living in the high-rainfall, humid areas of northern Australia, are also vulnerable to a variety of other fungal and bacterial infections [249].

Resource-poor environments [250, 251] and the ‘normalisation’ of infections in communities [247, 252, 253] are associated with an increased burden of skin infections and infestations. The treatment and control of scabies and impetigo in remote Aboriginal communities has been a challenge for many years [247]. Preventative, focused and collaborative programs based within remote Aboriginal communities have had some positive outcomes [254, 255], however, these outcomes have not continued over the longer-term [256]. One current program, the SToP (See, Treat, Prevent) Skin Sores and Scabies Trial in WA, aims to address the issues of sustainability and the ethical aspects of Indigenous research so that the positive outcomes of this trial, and others that may follow, will extend beyond the life of the program [256]. Traditional approaches, such as using bush medicines, have been highlighted as an effective method of treating scabies and skin sores by Aboriginal and Torres Strait Islander community members [247]. Additionally, research suggests that swimming in chlorinated swimming pools can have a positive effect on reducing skin infections among children [247, 248].

Extent of skin diseases among Aboriginal and Torres Strait Islander people

Scabies is endemic in some remote central and northern Aboriginal and Torres Strait Islander communities, affecting both adults and children [257, 258]. Most available prevalence data are for children, with research indicating that the most frequent age of the first infection for both skin sores and scabies is at three to four months of age [259] and that children presenting with one of these conditions are more likely to also have the other [233, 260].

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[81] Impetigo is also referred to as skin sores, or the broader term, pyoderma, and these terms are commonly used interchangeably [236].

Aboriginal and Torres Strait Islander children under 15 years of age were screened between September 2004 and August 2007 in five remote NT communities for the East Arnhem Healthy Skin Project (EAHSP) [261]. Over the course of the study, the average monthly prevalence for pyoderma was 36% and for scabies 13%. However, scabies prevalence did decrease with age. For children aged 3-14 years, scabies prevalence was 11%, half that of children aged 0-3 years (23%). Nearly all participants (92%) had presented with pyoderma and 35% with scabies on at least one occasion during the study.

A study of medical records for children born between 2001-2006, participating in the EAHSP, found that 69% of children had presented with scabies and 82% had presented with skin sores during their first year of life [260].

A retrospective review of clinical records (2007-2012) of 231 Aboriginal children, aged 0-5 years, in four remote communities in the Western Desert region of WA found that 16% of all clinical presentations were for skin infections (skin sores: 12%, scabies and fungal infections: both 2%) [262]. The median age when first presenting with scabies was 1.1 years of age and for skin sores 3.2 years of age. In the study, among older children, scabies was less likely to be diagnosed than skin sores.

A two-year study of crusted scabies notifications in the NT was conducted between 2016 and 2018 [240]. The study found 92 cases of crusted scabies; 80 patients were notified to the NT Health's Centre for Disease Control during this period, with 95% of patients identifying as Indigenous Australian.

The 2018-19 NATSIHS provides some data for diseases of the skin and subcutaneous tissue[82] [88]. The proportion of Aboriginal and Torres Strait Islander people reporting a disease of the skin and subcutaneous tissue was 3.2% (males: 2.4% and females: 4.0%). The prevalence reported ranged from 2.1% in the 0-14 years age-group to 4.7% in the 25-34 years age-group.

Hospitalisation and primary health care presentation

There were 11,992 hospital separations with a principal diagnosis of 'diseases of the skin and subcutaneous tissue' among Aboriginal and Torres Strait Islander people in 2019-20, at an age-standardised rate of 17 per 100,000 Aboriginal and Torres Strait Islander people [59]. These separations represent 3.9% of all Aboriginal and Torres Strait Islander hospital separations (excluding dialysis) (Derived from [59]).

In 2018-19, there were 1,230 Aboriginal and Torres Strait Islander children, aged 0-4 years, who were hospitalised with a principal diagnosis of 'diseases of the skin and subcutaneous tissue', representing 4.0% of the total number of hospitalisations for this age-group [60]. Information is available by remoteness for 2016-18 for Aboriginal and Torres Strait Islander children, aged 0-4 years. The crude hospitalisation rate increased by remoteness from 7.7 per 1,000 in major cities, 10 per 1,000 in inner and outer regional areas to 37 per 1,000 in remote and very remote areas.

A report by the Australasian College for Emergency Medicine examined the experiences of Aboriginal and Torres Strait Islander people presenting to public hospital emergency departments[83] [263]. For 2014-15, 6.7% of emergency presentations among Aboriginal and Torres Strait Islander people were for illness of the skin, subcutaneous tissue and breast. Such emergency presentations for skin related conditions were most common among the 0-14 years age-group (7-10%). Emergency presentations in NSW, Vic, Qld, WA, SA and the NT for illness of skin, subcutaneous tissue and breast were highest in WA (10% of presentations in that state), followed by the NT (8.3%) and NSW (5.5%).

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[82] Includes dermatitis, eczema, psoriasis and other diseases, symptoms and signs of the skin and subcutaneous tissue.

[83] The information presented utilises data obtained from the National Non-admitted Patient Emergency Department Care Database managed by the AIHW for reporting public hospitals.

Factors contributing to Aboriginal and Torres Strait Islander health

Selected health risk and protective factors

The factors contributing to the health status of Aboriginal and Torres Strait Islander people should be seen within the broader context of the social and cultural determinants of health [11, 182, 264]. The WHO describes the social determinants of health as the conditions in which people are born, grow, live, work and age [265]. The cultural determinants of health have been described as originating from and promoting perspectives that are strengths based, acknowledging that stronger connections to Country and culture build stronger individual and collective identities [264]. These stronger connections also help build resilience, self-esteem and improved outcomes in education, community safety and economic stability and other health determinants. A life course approach to health and the risk of disease, known as life course epidemiology, integrates theories around the social determinants of health, fetal and developmental origins of disease, and the impact of lifestyle and individual behaviour on later life health and disease risk [266]. The social, cultural and other determinants of health, some of which are discussed in the *Social and cultural concepts* section of this *Overview*, are further shaped by a wider set of forces and systems, including policies, political systems and social norms [265, 267].

To support a better quality of life and the health of Aboriginal and Torres Strait Islander people, reducing economic and social disadvantage is essential, alongside modifiable and non-modifiable health risks as well as protective factors, which can reduce the burden of disease and improve health outcomes [264]. Generally, health risks are the behaviours, characteristics or exposures that may increase or decrease the likelihood of developing a particular condition or interfering with the treatment of an existing health condition [182]. High blood pressure, obesity and being overweight can be influenced by health behaviours; these are known as biomedical risk factors, bodily states that carry relatively direct and specific risks for health. Behavioural risk factors can be modified and include: poor diet, obesity, excessive alcohol consumption, tobacco smoking and physical inactivity [182, 268]. Age, genetics and intergenerational influences such as psychological and physical makeup are non-modifiable factors that can also contribute to health risk. Protective factors, on the other hand, are health determinants that can influence health risks and/or outcomes in positive ways, such as a healthy diet, maintaining a healthy body weight and regular exercise, which can assist managing health conditions. It is important to note that risk is based on probability or likelihood, so not everyone who is exposed to a known risk factor will have an adverse outcome [269, 270]. Similarly, while protective factors may be an indicator of the absence of a modifiable or non-modifiable factor, people may develop a health condition without ever having been exposed to an associated risk factor [269].

The selected health risk and protective factors summarised in the following sections are generally related to individual behaviours. However, these behavioural factors should be considered within the context of the social and cultural determinants of health, and the structural influences that shape behaviour and the ability to make changes over a person’s lifespan [264, 271, 272]. For Aboriginal and Torres Strait Islander people with a strengthened identity, resilience and wellbeing, the cultural determinants of health are very important, as good health is strongly correlated to a strong connection with culture. Another important consideration is that any reinforcement of a deficit view of health, through a narrow focus on health inequities, prevents a strengths based cultural determinants approach to health for Aboriginal and Torres Strait Islander people and the strongly supported ‘centrality of culture’ in health and life [264, 273].

Nutrition

The diets of Aboriginal and Torres Strait Islander people have changed since the time of colonisation, from traditional diets that were high in protein, fibre, polyunsaturated fat and complex carbohydrates to a more highly refined carbohydrate diet, with added sugars, saturated fat, sodium and low levels of fibre [274]. Traditional foods remain an important part of the diet for many people, and are strongly linked to culture, identity and Country.

The nutritional status of Aboriginal and Torres Strait Islander people is influenced by many factors such as socioeconomic status and environmental, geographical and social factors [275]. Poor diet is an important factor contributing to being overweight and obese, malnutrition, CVD, type 2 diabetes and tooth decay [275, 276]. The *Australian Dietary Guidelines* recommend that adults eat fruit and plenty of vegetables every day, selected from a wide variety of types and colours [276]. The guidelines also recommend including reduced fat varieties of milk, yoghurts and cheeses, and limiting the intake of added sugar and salt, and the consumption of 'discretionary'[84] foods and drinks.

Fruit consumption

In the 2018-19 NATSIHS, in which participants self-reported their usual serves of fruit eaten per day, 39% of Aboriginal and Torres Strait Islander people (aged 15 years and over) met the recommended fruit intake guidelines (at least two serves per day) [88]. Females (aged 15 years and over) were more likely than males to have eaten an adequate amount of fruit (44% and 35% respectively). The guidelines for daily fruit intake were met by 69% of Aboriginal and Torres Strait Islander children aged 2-14 years and 92% of 2-3 year olds. A slightly higher proportion of Aboriginal and Torres Strait Islander people living in remote areas usually met the guidelines for daily serves of fruit compared with non-remote areas (42% and 39% respectively). For children aged 2-17 years, this was reversed (61% and 66% respectively). The proportions for children aged 2-14 years by remoteness were 65% in remote areas and 69% in non-remote areas [60].

Vegetable consumption

In the 2018-19 NATSIHS, in which participants self-reported their usual serves of vegetables eaten per day, 4.2% of Aboriginal and Torres Strait Islander people (aged 15 years and over) met the recommendations for daily serves [88]. Females (aged 15 years and over) were more likely than males to have eaten an adequate amount of vegetables (6.3% and 1.7% respectively). The guidelines for daily vegetable intake were met by 23% of 2-3 year olds. Similar proportions of Aboriginal and Torres Strait Islander people (aged 15 years and over) living in non-remote and remote areas usually met the guidelines for daily serves of vegetables (4.3% and 3.6% respectively). For children (aged 2-17 years), this was also the case (6.2% and 5.6% respectively). When data from the 2018-19 NATSIHS and the 2017-18 NHS were combined, 6.5% of Aboriginal and Torres Strait Islander children aged 2-14 years met the guidelines for daily vegetable intake; the proportions for non-remote and remote areas were 6.6% and 5.8% respectively [60].

Fruit and vegetable dietary behaviour and labour force

The 2012-13 AATSIHS examined associations between dietary behaviour and labour force status and educational attainment [278]. After age-adjustment, unemployed Aboriginal and Torres Strait Islander people were more likely to have an inadequate daily fruit intake (63%) and inadequate vegetable intake (98%) than those who were employed (54% and 94% respectively), or not in the labour force (60% and 95% respectively). When considering educational levels, Aboriginal and Torres Strait Islander people who had completed year 10 or below were more likely to consume inadequate amounts of fruit (59%) and vegetables (95%) than those who had completed year 12 or equivalent (54% and 93% respectively).

Discretionary foods

According to the 2012-13 National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey (NATSINPAS), discretionary foods were consumed by a large proportion of Aboriginal and Torres Strait Islander people (aged 2 years and over) in the 24 hours prior to the survey, including confectionery (25%), snack foods (20%) and alcoholic beverages (11%) [279]. On average, Aboriginal and Torres Strait Islander people consumed 41% of their total daily energy in the form of discretionary foods, including 8.8% of daily energy as cereal-based products (such as cakes, biscuits and pastries), and 6.9% of daily energy as non-alcoholic beverages (such as soft drinks) [280]. Aboriginal and Torres Strait Islander children aged 2-3 years recorded a lower energy intake (32%) from discretionary foods than all other age-groups. Similar proportions of females and males consumed all discretionary foods except for alcoholic beverages, which twice as many males as females reported consuming (15% and 7.7% respectively) [279]. People in non-remote areas were more likely to consume all discretionary foods types than those in remote areas, except for non-alcoholic beverages (99% of people in both non-remote and remote locations).

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[84] Foods that are energy dense but do not provide many/any nutrients and that typically contain high levels of sugar, salt and fat [276, 277].

In the 2018-19 NATSIHS, 24% of Aboriginal and Torres Strait Islander people (aged 15 years and over) reported that they usually consumed sugar sweetened drinks every day and 5.5% consumed diet drinks; 71% (75% of males and 67% of females) usually consumed sugar sweetened drinks or diet drinks at least once per week [88]. For children (aged 2-14 years), 20% usually consumed sugar sweetened drinks daily and 1.5% consumed diet drinks daily; 63% usually consumed sugar sweetened drinks or diet drinks at least once a week. The proportion of people (aged 15 years and over) who usually consumed sugar sweetened or diet drinks was higher for people living in remote areas (77%) than for non-remote areas (69%). The proportion was lowest for those aged 45-54 years (63%) and 55 years and over (49%), compared with 81% for people aged 18 to 24 years.

Sugar consumption

The WHO recommends that both adults and children consume less than 10% of daily dietary energy from free sugars[85] [281]. According to the 2012-13 NATSINPAS, Aboriginal and Torres Strait Islander people consumed 111 grams (g) of total sugars per day on average [277]. Around two-thirds of this (75 g or 18 teaspoons of white sugar) was free sugars, which equated to an average of 14% of daily dietary energy from free sugars. Ninety-one percent (91%) of the free sugars were added sugars (Derived from [277]). Males consumed more total sugars on average than females (121 g compared with 101 g), especially in the 14-18 years age-group (147 g compared with 102 g). The variation in sugar consumption across age and sex was mostly due to the consumption of free sugars, as the amount of intrinsic and milk sugars consumed remained relatively constant across all age and sex groups. Most free sugars consumed were from discretionary foods and beverages.

Sodium (salt) consumption

According to the 2012-13 NATSINPAS, the average daily amount of sodium consumed from food by Aboriginal and Torres Strait Islander people was 2,379 milligrams (mg) (approximately one teaspoon of salt) [280]. This excluded salt added by consumers when preparing or eating food. Sodium consumption was higher among males than females (2,638 mg and 2,122 mg respectively). Males in all age-groups, except for those aged 51 years and older, had average intakes that exceeded the upper level of sodium intake recommended by the National Health and Medical Research Council (NHMRC).

Bush foods

As a proxy measure of bush food consumption, participants in the 2012-13 NATSINPAS were asked about their consumption of foods that were naturally harvested or wild-caught, such as fish and seafood, wild harvested fruit and vegetables, reptiles and insects [279]. Aboriginal and Torres Strait Islander people (aged 2 years and over) in remote areas were more likely than those in non-remote areas to eat non-commercially caught fin fish (7.8% and 1.8% respectively); crustacea and molluscs (1.2% and 0.3% respectively); wild harvested meat (7.7% and 0% respectively) and reptiles (3.9% and 0.1% respectively). A study conducted from October 2017 to February 2018 of dietary intakes of children aged 6-36 months in one remote community in the Top End of the NT described the frequency with which children consumed traditional food, including as the introduction to solids, as a positive practice [282].

Biomarkers of nutrition

The 2012-13 AATSIHS collected information on biomarkers of nutrition, including vitamin D, anaemia and iodine [132]. It found that:

- More than a quarter of Aboriginal and Torres Strait Islander adults (27%) had a vitamin D deficiency. The levels of vitamin D deficiency were similar for both Aboriginal and Torres Strait Islander males and females across all age-groups (ranging from 25% to 29%). Vitamin D deficiency was more common among Aboriginal and Torres Strait Islander people living in remote areas (39%) than those in non-remote areas (23%).

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[85] Free sugars are added sugars plus those naturally occurring in honey, fruit juice and fruit concentrate [277].

- The proportion of Aboriginal and Torres Strait Islander adults who were at risk of anaemia was 7.6%. Females were more likely to be at risk of anaemia than males (10% compared with 4.8%). The risk of anaemia was higher for those living in remote areas compared with those living in non-remote areas (10% compared with 6.9%).
- The Aboriginal and Torres Strait Islander adult population was found to be iodine sufficient. Those living in remote areas had higher median levels than those living in non-remote areas.

Food security

The 2012-13 NATSINPAS addressed the issue of food security by asking respondents if they had run out of food and could not afford to buy more in the last 12 months [283]. This had been a problem for 22% of respondents; 7.0% of respondents had run out and gone without food, while 15% had run out but not gone without food. People in remote areas were more likely to run out of food than people in non-remote areas (31% and 20% respectively) and slightly more likely to go without (9.2% and 6.4% respectively). A study conducted in 2018 in urban settings identified that food insecurity was intermittently experienced by Aboriginal and Torres Strait Islander families, occurring particularly when large household bills were due [284]. A study of five remote community stores on the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands of SA in June 2017 assessed food insecurity and found that nearly 50% of disposable household income was spent on food (compared with the international benchmark of 30%), with 62% of this food budget appearing to be allocated to discretionary foods and drinks (alcohol was not available in the communities) [285]. In the remote community study in the NT, mentioned above, it was found that pay cycle fluctuations of food insecurity impacted both the quantity and quality of children's diets[86] [282].

Breastfeeding

Sustained breastfeeding was practiced by Aboriginal and Torres Strait Islander women prior to colonisation [286-289]. Descriptions of traditional practices align with the WHO and United Nations International Children's Emergency Fund (UNICEF) recommendations of exclusive breastfeeding for six months followed by complementary feeding with continued breastfeeding for up to two years or beyond [290]. The *Australian Dietary Guidelines*' recommendation is to 'encourage, support and promote breastfeeding' [276]. The Victorian Consultative Council on Obstetric and Paediatric Mortality and Morbidity highlights the large number of babies given formula in hospital as an area for better practice to support breastfeeding for longer durations [291, 292].

Breast milk is the natural and optimum food for babies and provides all the energy and nutrients that a baby needs for the first six months of life [276, 290]. Breastfeeding promotes sensory and cognitive development, contributes to the development of the baby's microbiome and protects the baby against OM, SIDS, asthma, obesity, infectious diseases and some chronic diseases later in life [290, 293]. Exclusive breastfeeding aids a quicker recovery from illness and reduces infant deaths from common childhood illnesses such as pneumonia and diarrhoea. Where housing conditions are poor and do not support the sterilising of bottles, breastfeeding is additionally protective [43]. Breastfeeding contributes to the health of the mother by improving metabolic health, reducing the risk of ovarian and breast cancers and reducing maternal depression [286, 290, 293].

In the 2018-19 NATSIHS, it was reported that 87% of Aboriginal and Torres Strait Islander children aged 0-2 years had been breastfed [43]. The NATSIHS found that 13% of Aboriginal and Torres Strait Islander children aged 0-2 years had never been breastfed. Of those who had been breastfed, 30% of Aboriginal and Torres Strait Islander babies had been breastfed for 1 to less than 6 months and 12% for 6 to less than 12 months. Around 7% of Aboriginal and Torres Strait Islander babies were breastfed for 12 months or more.

In 2018-19, the proportion of Aboriginal and Torres Strait Islander children aged 0-2 years who had been breastfed ranged across jurisdictions: 97% in Qld, 87% in the NT, 85% in NSW, 84% in WA, 79% in SA, 77% in Tas, 71% in the ACT and 64% in Vic [43]. Breastfeeding proportions for Aboriginal and Torres Strait Islander children were higher in remote areas (91%) compared with major cities (84%).

Alternative jurisdictional data on breastfeeding initiation or at discharge as recorded by health professionals, are available from NSW, the NT and Vic. In the 2019 NSW Perinatal Data Collection[87], 59% of liveborn

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[86] The findings of this study are not generalisable to other communities.

[87] The NSW Perinatal Data Collection covers all births including public and private hospitals and home births [294].

babies born to Aboriginal or Torres Strait Islander mothers were fully breastfed at discharge; 13% were partially breastfed and 26% received infant formula only [295]. In NSW Local Health Districts, rates of full breastfeeding by residence varied from 80% in Northern Sydney to 45% in South Western Sydney. In the 2018 Northern Territory Midwives' Collection, full-term singleton babies born in hospital to primipara (first baby) Aboriginal mothers were exclusively breastfed at a higher rate (83%) compared with those born to non-Aboriginal primipara mothers (81%) [296]. For all Aboriginal mothers of full-term singleton babies, 87% exclusively breastfed at discharge, 9.1% partially breastfed, 1.8% initiated breastfeeding but used formula at discharge and 1.8% never breastfed. In the 2016 Victorian Perinatal Data Collection[88], 87% of Aboriginal women initiated breastfeeding [291].

A study[89] of women giving birth to an Aboriginal baby in SA between July 2011 and June 2013 found that while 86% initiated breastfeeding, this fell to 54% at 12 weeks and 33% at 6 months postpartum [297]. Exclusivity of breastfeeding was not recorded. The study also found that women living in remote or regional areas were more likely to breastfeed for longer. In another study (October 2017 to February 2018), in one remote NT community, responsive breastfeeding into the second year of life was practiced by most mothers [282].

A study of infant feeding behaviour among Aboriginal women in rural Australia concluded that lack of intergenerational support, unsupportive social factors and the pervasive presence of infant formula produced strong barriers to breastfeeding [298]. However, the study in SA mentioned above concluded that Aboriginal Family Birthing program services – which provide care by Aboriginal women – have a beneficial impact on rates of breastfeeding of Aboriginal babies in urban areas [297, 299].

Burden of disease

All dietary factors were the fifth leading risk factor contributing to the total burden of disease among Aboriginal and Torres Strait Islander people in 2018 (responsible for 6.2%) [4]. Dietary factors contributed to 2.1% of non-fatal burden and 11% of fatal burden.

Physical activity

Physical activity is important for maintaining good overall health and wellbeing [300]. Physical activity is considered a protective factor against disease and, by contrast, a lack of physical activity is considered a risk factor for ill-health and reduced life expectancy [60]. Regular physical activity reduces the risk of many health problems, such as CVD, type 2 diabetes, anxiety, depression and some cancers [301]. Low levels of physical activity, including sedentary behaviour, are a risk factor for a range of chronic conditions as well as being a strong contributor to obesity, which in itself is a risk factor for chronic disease [60, 300].

Australia's physical activity and sedentary behaviour guidelines 'the guidelines' for adults recommends a combination of moderate and vigorous intensity physical activity on most, preferably all, days of the week to improve health and reduce the risk of chronic disease and other conditions [301]. However, the health benefits of being physically active are cumulative so doing some physical activity is better than doing none at all [302].

In the 2018-19 NATSIHS, 11% of Aboriginal and Torres Strait Islander people aged 15 years and over reported they had met the guidelines'[90] target of combining some or all of the following physical activities in the week prior to the survey: walking for transport, walking for fitness (recreation or sport), moderate or vigorous intensity exercise and strength or toning activities [88]. Prevalence varied by state and territory, with the highest proportion of Aboriginal and Torres Strait Islander people who met the guidelines living in the ACT (21%) compared with the lowest proportion living in the NT (7.2%).

Nationally, 89% of Aboriginal and Torres Strait Islander people aged 15 years and over had reported that they had not met the guidelines, and 22% had not participated in any physical activity in the week prior to the survey [88]. Prevalence varied across all states and territories for those people who did not meet the guidelines, with the highest proportions being in the NT (93%) and WA (92%) compared with the lowest proportion in the ACT (79%).

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[88] The Victorian Perinatal Data Collection covers all births including public and private hospitals, birthing centres and home births [291].

[89] The findings of this study should be treated with caution due to the small number of participants.

[90] The NATSIHS used the 2014 Australia's physical activity and sedentary behaviour guidelines for Australian adults aged 18 years and over. The workplace component of the guidelines was excluded.

For Aboriginal and Torres Strait Islander adults living in non-remote areas, 12% had met the guidelines [88]. A larger proportion of these adults (20%) had done strength or toning activities on two or more days in the week prior to the survey.

Among Aboriginal and Torres Strait Islander adults living in non-remote areas, a higher proportion of males than females met the guidelines (13% compared with 10% respectively) and had done strength or toning activities on two or more days in the week prior to the survey (24% compared with 15% respectively) [88]. The proportion of Aboriginal and Torres Strait Islander adult males who participated in strength or toning activities on three or more days was 18%, while the proportion for adult females was 12%.

In the 2014-15 NATSISS, 75% of Aboriginal and Torres Strait Islander children (aged 5-14 years) were physically active for at least one hour per day, every day of the week [60]. Almost half of all children (49%) had played or trained for an organised sport in the previous year. The most common physical activities among Aboriginal and Torres Strait Islander children aged 5-17 years living in non-remote areas in 2012-13 were active play and children's games (57%) and swimming (18%) [300]. This age-group spent an average of two hours per day participating in physical activity (exceeding the recommendation of one hour per day). Among children aged 5-17 years living in remote areas, 82% were physically active for more than 60 minutes per day. The most common physical activities among this group were walking (82%), running (53%) and playing football or soccer (33%).

Levels of physical activity can be influenced by socioeconomic conditions such as education and employment [60]. The *Social determinants and Indigenous health* report [303] presented some analyses of the 2018-19 NATSIHS data collection about health risk factors among Aboriginal and Torres Strait Islander people, including physical activity. The data indicated a relationship between education and employment, and levels of physical activity. The proportion of adults who reported they met physical activity guidelines was higher among those who were employed and those who had completed a higher level of education. Fifteen percent (15%) of adults who had completed year 12 (or equivalent) met the guidelines compared with 9.1% of those whose education ended in year 10 or below. Among adults who were in the workforce, 15% met the guidelines, compared with 8.5% of those who were not employed.

Addressing the gap in socioeconomic conditions, as well as increasing access to exercise programs and facilities that are culturally safe [60], may lead to increased levels of physical activity. This could contribute to reducing the prevalence of obesity and chronic conditions and increasing life expectancy among for Aboriginal and Torres Strait Islander people [60, 301, 304].

Bodyweight

The most common measure for classifying a person's weight status is body mass index (BMI) or by measuring their waist circumference (WC) [305]. Being overweight (BMI 25 to 29) or obese (BMI of 30 or more) [305] increases a person's risk for CVD, type 2 diabetes, certain cancers, CKD and some musculoskeletal conditions [306]. A high BMI can be a result of many factors, alone or in combination, such as poor nutrition, physical inactivity, socioeconomic disadvantage, genetic predisposition, increased age and alcohol use [276, 307]. Being underweight (BMI less than 18.5) [103] can also have adverse health consequences, including lower immunity (leading to increased susceptibility to some infectious diseases) and osteoporosis (bones becoming weak and brittle) [276].

Abdominal obesity, a risk factor for the development of metabolic syndrome, can be measured by WC alone (greater than 94 cm for males and greater than 80 cm for females), or waist-hip ratio (WHR) (greater than or equal to 0.90 for males and 0.85 for females) [308].

Obesity and abdominal obesity, as measured by BMI and WC, have been shown to be risk factors for hypertension [309] and type 2 diabetes in Aboriginal and Torres Strait Islander people [310]. However, optimal BMI and WC cut-offs are still uncertain for Aboriginal and Torres Strait Islander people (due to differences in body shape and other physiological factors) when calculating type 2 diabetes and cardiovascular risk [311-313]. It has been suggested that a BMI of 22 might be more appropriate than 25 as a measure of acceptable BMI for Aboriginal people [313]. There is also evidence that measuring the WHR in Aboriginal people is more accurate and easier to measure than BMI. An equation has been developed for calculating fat free mass in Aboriginal and Torres Strait Islander adults using the easily acquired variables of resistance[91], height, weight, age and sex for use in the clinical assessment and management of obesity [314].

Results from the 2018-19 NATSIHS indicated that 71% of Aboriginal and Torres Strait Islander people aged 15 years and over were either overweight or obese (Aboriginal people: 71% and Torres Strait Islander people: 75%) [88]. In these age-groups, 29% were overweight and 43% were obese. A further 25% of people were in the normal weight range and 3.9% were underweight. The survey found that the proportion of people measured who were obese, was higher for females (45%) than for males (40%). There was no marked difference between males and females who were overweight (31% compared with 27% respectively), normal weight (26% compared with 24% respectively) and underweight (3.2% compared with 4.5% respectively).

Between 2012-13 and 2018-19, the proportion of people who were overweight or obese increased for Aboriginal and Torres Strait Islander people aged 15 years and over (from 67% to 73%) in non-remote areas [88]. Overweight and obesity increased with age: 15-17 years age-group: 42%, 18-24 years age-group: 59%, 25-34 years age-group: 73%, 35-44 years age-group: 80%, 45-54 years age-group: 81% and for those aged 55 years and over: 82%.

By jurisdiction (except the ACT where results had a high margin of error), the proportion of Aboriginal and Torres Strait Islander people, aged 15 years and over, who were overweight/obese was highest in Tas (76%) followed by NSW (74%) and Vic and WA (both 73%) [88]. The NT reported the highest proportion of people who were underweight/normal weight (41%), with Qld reporting 30% and Tas 24%.

There was a greater proportion of Aboriginal and Torres Strait Islander people aged over 18 years living in major cities considered to be overweight or obese based on their BMI than those living in very remote areas (76% and 66% respectively) [88]. However, 80% of people living in inner regional areas were overweight or obese. For respondents aged 15 years and over, those living in inner regional areas were most likely to be classified as overweight or obese based on their BMI (76%) followed by major cities (73%), with the overall proportion higher for non-remote areas (73%) compared with remote areas (64%). People living in remote areas were more likely to be underweight or have a normal BMI (36%) compared with non-remote residents (27%).

WC is used to determine if a person is of a healthy weight. Measurements of WC were taken by participants in the 2018-19 NATSIHS to help determine levels of risk for developing certain chronic diseases, such as type 2 diabetes and heart disease [88]. Based on WC, 71% of Aboriginal and Torres Strait Islander people aged 18 years or older were at an increased risk of developing chronic diseases, a higher proportion of females (81%) than males (60%) were at risk. This risk was highest in the 55 years and over age-group for both males and females (86%).

According to the 2018-19 NATSIHS, based on BMI information reported for children aged 2-17 years, 38% were overweight or obese (overweight: 24%, obese: 14%); 53% were normal weight and 8.8% were underweight [88]. For males, the highest BMI (overweight/obese) was reported in the 12-13 years age-group (54%) and the lowest in the 2-3 years age-group (22%). For females, the highest proportion was reported in the 2-3 years age-group (44%) and the lowest in the 4-8 years age-group (35%). For normal weight, the highest proportions were reported for males in the 2-3 years age-group (68%) and for females in the 4-8 years age-group (57%). For the underweight category, the highest proportions for males were in the 4-8 years age-group (14%) and for females in the 14-17 years age-group (11%).

Immunisation

Immunisation is the process of becoming immune to a disease as a result of a vaccine [315]. Vaccines work by producing an immune response in the body without causing illness. In recent decades, immunisation has been very successful in contributing to improvements in Aboriginal and Torres Strait Islander health and child survival [218].

The vaccines recommended for Aboriginal and Torres Strait Islander people at different stages of life are set out by the NIP Schedule [316]. Vaccines on the NIP Schedule, which are funded by the Australian Government, are free.

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[91] When an electrical current is passed through the body, fatty tissue offers more resistance than lean tissue. The resistance to the flow of electricity is used to calculate the proportion of body fat in the individual.

Vaccines given to people of all ages in Australia from birth to death are recorded on the Australian Immunisation Register [317]. Data from this register are used to measure the proportion of Aboriginal and Torres Strait Islander children who are fully immunised [318]. Reliable national measurements of adult and adolescent vaccination coverage for most vaccines do not currently exist but will be reported when estimates become available.

Childhood vaccination

Vaccinations set out in the NIP Schedule for Aboriginal and Torres Strait Islander children include HBV, diphtheria, tetanus, pertussis (whooping cough), polio, Hib, rotavirus, pneumococcal disease, meningococcal B[92], meningococcal ACWY, measles, mumps and rubella (MMR), varicella (chickenpox) and hepatitis A[93] [221]. Australia's national childhood immunisation target is 95% immunisation coverage for children aged 1, 2 and 5 years [321].

As at September 2021, the proportion of Aboriginal and Torres Strait Islander children aged 5 years who were fully immunised exceeded the national target, but the proportion of children aged 1 and 2 years did not (Table 26) [318].

Table 26. Percentage (%) of Aboriginal and Torres Strait Islander children assessed as fully immunised, by age, as at 30 September 2021

Age (years)	1	2	5
Percentage assessed as fully immunised	92.9%	91.5%	97.0%

Note: Proportion expressed as percentages rounded to one decimal point.
Source: Australian Government Department of Health, 2021 [318]

The percentage[94] of Aboriginal and Torres Strait Islander children who were fully immunised at 30 September 2021 varied by state [318]:

- from 88.3% in WA to 96.0% in Tas for those aged 1 year
- from 87.0% in WA to 93.2% in Vic for those aged 2 years
- from 95.9% in WA to 97.8% in Vic for those aged 5 years.

In 2021, the *National Preventive Health Strategy 2021-2030* set a target to maintain vaccine coverage of at least 95% for Aboriginal and Torres Strait Islander children aged 5 years, and raise coverage to at least 95% for Aboriginal and Torres Strait Islander children aged 1 and 2 years by 2030 [322].

Seasonal influenza vaccination, which is not included in the vaccination coverage target above, is recommended annually for Aboriginal and Torres Strait Islander children aged over 6 months [319, 320]. In 2020, seasonal influenza vaccine coverage in Aboriginal and Torres Strait Islander children aged 6 months to <5 years was 44% [323]. Coverage was highest in the NT (71%) and lowest in NSW (35%).

Adolescent vaccination

Vaccinations set out in the NIP Schedule and provided through school programs for Aboriginal and Torres Strait Islander adolescents include those for human papillomavirus (HPV), diphtheria, tetanus, pertussis and meningococcal ACWY [221].

The proportion of Aboriginal and Torres Strait Islander people turning 15 in 2019 who were fully vaccinated[95] against HPV by age 15 was 69% (males: 65%, females: 72%) [324]. One-dose HPV vaccine coverage by age 15 was 84% (males: 81%, females: 87%).

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[92] Not included in definition of 'fully immunised' for purposes of calculating childhood immunisation coverage [319].

[93] For children in Qld, WA, SA and the NT [320]; not included in definition of 'fully immunised' for purposes of calculating childhood immunisation coverage [319].

[94] Proportion expressed as percentages rounded to one decimal point.

[95] Full HPV vaccination requires two or three doses (depending on age and risk factors) [221].

Adult vaccination

Vaccinations set out in the NIP Schedule for Aboriginal and Torres Strait Islander adults include pneumococcal, shingles, pertussis and seasonal influenza [221].

As at June 2020, 42% of regular clients of Indigenous-specific primary health care services[96] aged 50 years and over had had an influenza vaccination within the previous 12 months [325]. Coverage was highest in the NT (49%) and lowest in NSW/the ACT combined (36%). Coverage was highest in very remote areas (50%) and lowest in inner regional areas (37%).

The *Evaluation of the National Shingles Vaccination Program: process and early impact evaluation: final report* provides information on shingles vaccination for the period November 2016 to March 2018 [326]. The national vaccination coverage for Aboriginal and Torres Strait Islander people aged 70 years in the program was 43%, and 33% in the 71–79 years age-group. In Vic, 71% of Aboriginal and Torres Strait Islander people aged 70 years were vaccinated for shingles, compared with 28% in WA (for the same period).

For further information about immunisation, see:

- COVID-19 vaccination
- vaccine preventable infectious diseases (including HBV, pneumococcal, TB, meningococcal and Hib) in communicable diseases
- vaccine preventable hospitalisations in potentially preventable hospitalisations.

Tobacco use

Tobacco use has a number of health impacts, including increasing the risk of chronic disease, such as CVD, many forms of cancer, and lung diseases, as well as a variety of other health conditions [327]. 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 concern to health, with children particularly susceptible to resultant problems that include exacerbation of middle ear infections, asthma and increased risk of SIDS.

Extent of tobacco use among Aboriginal and Torres Strait Islander people

Prevalence

The 2018-19 NATSIHS found 37% of Aboriginal and Torres Strait Islander people aged 15 years and over reported they were current daily smokers [88]; a reduction from levels reported in the 2012-13 AATSIHS (41%). This is consistent with findings from the *National Drug Strategy Household Survey 2019* (NDSHS), which found 25% of Aboriginal and Torres Strait Islander people aged 14 years and over reported smoking daily, declining from 27% in 2016 and 32% in 2013 [328]. The *National Preventive Health Strategy 2021-2030* set a target to reduce daily smoking rates among Aboriginal and Torres Strait Islander people aged 15 years and over to 27% or less by 2030 [322].

When comparing smoking prevalence between the 2018-19 NATSIHS and the 2012-13 AATSIHS, the highest reductions in daily smoking were found in the younger age-groups [88]. Daily smoking rates among 15-17 year olds decreased from 18% in 2012-13, to 9.7% in 2018-19. Similarly, in the same period there was a reduction in daily smoking prevalence among the 18-24 years age-group (decreasing from 42% to 36%) and the 25-34 years age-group (decreasing from 52% to 44%). A 2017 survey among Aboriginal and Torres Strait Islander students aged from 12 to 17 years found that 10% had reported smoking tobacco in the past week, declining from 21% in 2005 [329]. It also found that 70% of the students had never smoked tobacco, a significant increase from 49% in 2005.

In 2018-19, the proportion of Aboriginal and Torres Strait Islander males who were current daily smokers (39%) was higher than the proportion for females (36%) [88]. Aboriginal and Torres Strait Islander males had the highest proportion of current daily smokers across all age-groups, most notably in the 25-34 years age-group (47% compared with 41% of females). For Aboriginal and Torres Strait Islander people, the age-group with the highest proportion of current daily smokers was 35-44 years (47%).

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[96] Organisations funded by the Australian Government under its Indigenous Australians' Health Programme to deliver culturally appropriate primary health care services [325].

In 2018-19, Aboriginal and Torres Strait Islander people living in remote areas reported a higher proportion of current daily smokers (49%) compared with those living in non-remote areas (35%) [88]. While there has been a decrease in smoking rates for non-remote areas since 2012-13 (down from 39%), the overall proportion of current smokers in remote areas in 2018-19 has only seen a minor decrease since 2012-13 (49% and 50% respectively).

In 2019, 43% of Aboriginal and Torres Strait Islander mothers reported smoking during pregnancy (down from 50% in 2009) [33]. This decrease in smoking reported by pregnant women was evident in all areas of remoteness, with the exception of very remote areas, where there were similar proportions in smoking during pregnancy: 53% in 2012 and 54% in 2019 [33, 330]. In 2019, approximately 1 in 10 Aboriginal and Torres Strait Islander mothers quit smoking during pregnancy (42% reported smoking in the first 20 weeks of pregnancy and 37% reported smoking after 20 weeks) [33].

In 2014-15, the NATSISS found 57% of Aboriginal and Torres Strait Islander children aged 0-14 years lived in households with a daily smoker (a decline from 63% in 2008) [200]. For those children living with a daily smoker, 13% were living in households where people smoked indoors.

The Tackling Indigenous Smoking (TIS) program is an Australia-wide initiative to reduce smoking rates among Aboriginal and Torres Strait Islander people through a population health approach. A 2021 study, including 8,549 Aboriginal and Torres Strait Islander participants (aged 16 years and older), sought to examine differences in smoking-related attitudes and behaviours among people residing in TIS-funded areas of Australia compared with those in non-TIS funded areas [331]. The study found that there was a 15% lower prevalence of smoking inside the home in TIS-funded areas compared with non-TIS areas. Among people who currently smoked, there was a significantly lower prevalence in TIS-funded areas compared with non-TIS funded areas of smoking 21 or more cigarettes per day and smoking a cigarette within five minutes of waking (both of which are indicators of nicotine dependence).

Mortality

In 2018, around 800 deaths (23% of all deaths among Aboriginal and Torres Strait Islander people) were attributable to tobacco use [4].

A 2021 prospective study conducted among 1,388 Aboriginal and Torres Strait Islander people in NSW determined that smoking was the cause of 50% of deaths for people aged 45 years and above, and 37% of deaths among all ages [332]. However, it was found that quitting smoking at any age was beneficial compared with continuing to smoke. The study is the first to give direct estimates of deaths attributable to smoking for Aboriginal and Torres Strait Islander people by analysing linked questionnaire and mortality data from 2006-2009 to mid-2019. The Aboriginal and Torres Strait Islander participants were part of a larger longitudinal study tracking the health of 267,153 people from the NSW general population.

Burden of disease

In 2018, tobacco use was the leading risk factor contributing to the burden of disease among Aboriginal and Torres Strait Islander people, responsible for 12% of the total burden of disease [4]. In the same year, 5.5% of non-fatal burden and 19% of fatal burden among Aboriginal and Torres Strait Islander people was attributable to tobacco use. Tobacco use was the leading risk factor contributing to the burden of disease for both males and females.

Alcohol use

Drinking too much alcohol, both on single drinking occasions (binge drinking) and over a person's lifetime can lead to health and social harms including chronic diseases, injury and transport accidents, mental health disorders, intergenerational trauma and violence [328, 333]. This affects individuals, families and the wider community. Many factors influence why people may drink too much alcohol, for example, socioeconomic disadvantage, stress and negative early life experiences [334, 335]. With regard to Aboriginal and Torres Strait Islander people, as noted elsewhere in the *Overview*, it is important to understand the historical and social contexts of colonisation; the effects of dispossession of land and culture, economic exclusion and how these factors have influenced alcohol use [333, 336, 337].

Extent of alcohol use among Aboriginal and Torres Strait Islander people

Aboriginal and Torres Strait Islander people are less likely to drink alcohol than non-Indigenous people, but those who do drink are more likely to at levels that cause harm [43, 338].

Assessing risks from use of alcohol

The 2020 NHMRC *Australian guidelines to reduce health risks from drinking alcohol* provide recommendations on reducing the risk of alcohol-related harm for adults, children and people under 18 years of age, and women who are pregnant or breastfeeding [339]:

- Guideline 1 recommends that to reduce the risk from alcohol-related disease or injury, men and women should drink no more than 10 standard drinks a week and no more than four standard drinks on any one day. Drinking less, lowers the risk of harm from alcohol.
- Guideline 2 recommends that to reduce the risk of alcohol-related harm and injury, children and people aged under 18 years should not drink alcohol.
- Guideline 3 recommends that to prevent alcohol-related harm to an unborn child, women who are planning a pregnancy, or who are pregnant, should not drink alcohol. For women who are breastfeeding, not drinking alcohol is the safest option for their baby.

Abstinence or no consumption of alcohol in the last 12 months

The 2018-19 NATSIHS found that 26% of Aboriginal and Torres Strait Islander people aged 18 years or older reported they had never drank alcohol or had not done so for more than 12 months (26% of Aboriginal people and 23% of Torres Strait Islander people) [88]. The proportion was higher for females (31%) than males (19%). The proportion was lowest in younger age-groups, 18-24 years (19%) and 25-34 years (18%), and highest in people aged 55 years and older (42%). Across the jurisdictions, the proportion ranged from 44% in the NT, followed by SA (28%), WA and Qld (both 25%), with the lowest in the ACT (10%). It was higher for people living in very remote areas (43%) than major cities (19%).

Single occasion risk

In the 2018-19 NATSIHS[97], 18% of Aboriginal people and 22% of Torres Strait Islander people aged 18 years and over reported not exceeding the 2009 guidelines for drinking at risk on a single occasion[98] [88]. However, 54% of Aboriginal and Torres Strait Islander people reported exceeding the guidelines, a decrease from 57% since the 2012-13 survey [88, 133]. In 2018-19, males were 1.5 times more likely than females to exceed the guideline (65% compared with 43% respectively). Respondents in the younger age-groups were more likely to exceed the guideline (18-24 years: 65% and 25-34 years: 62%) than those in older age-groups, and respondents aged 55 years and older were least likely to exceed the guideline (34%). In 2018-19, across Australia, WA reported the highest level of exceeding the guideline (61%) and the NT the lowest (42%) [88]. The proportion exceeding the guidelines was similar for people living in remote areas (53%) or non-remote areas (54%).

Lifetime risk

In the 2018-19 NATSIHS, 26% of Aboriginal and Torres Strait Islander people aged 18 years and over reported not exceeding the 2009 guideline for drinking at lifetime risk[99] (Aboriginal people: 26% and Torres Strait Islander people: 21%) [88]. In the survey, 20% of Aboriginal people and 24% of Torres Strait Islander people reported exceeding the guideline. Aboriginal and Torres Strait Islander males were three times more likely to exceed the guideline for lifetime risk (30%) compared with females (10%), and across all age-groups. Qld reported the highest proportion of people exceeding the guidelines (25%) among the jurisdictions and the NT the lowest (13%). The proportion was higher in non-remote areas (21%) compared with remote areas (17%).

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[97] The 2018-2019 NATSIHS assessed a person's alcohol consumption for single occasion and lifetime risk using the previous NHMRC's 2009 guidelines [88].

[98] Four or less standard drinks on a single day for both males and females [88].

[99] No more than two standard drinks on any single day [88].

The 2019 NDSHS reported that between 2010 and 2019 there was a decline (from 32% to 19%)[100] in the proportion of Aboriginal and Torres Strait Islander people aged 14 years and older exceeding the 2009 guidelines for lifetime risk[101] [328].

Evidence suggests that Aboriginal and Torres Strait Islander people have better health outcomes when there are adequately resourced and culturally safe AOD services provided by community controlled organisations [336, 340]. In 2019-20, one in six (17%) clients aged 10 years and older seeking treatment from publicly funded AOD treatment services identified as being Aboriginal and/or Torres Strait Islander [341]. Alcohol was the main drug of concern for 34% of Aboriginal and Torres Strait Islander clients who were seeking treatment for their own AOD use.

Alcohol and pregnancy

Drinking alcohol in pregnancy may affect the unborn baby leading to fetal alcohol spectrum disorder (FASD), a diagnostic term that describes a range of conditions including central nervous system dysfunction, poor growth, characteristic facial features and developmental delay [342, 343]. In 2018-19, 90% of mothers of Aboriginal and Torres Strait Islander children aged 0-3 years self-reported they did not consume alcohol during their pregnancy [43].

Hospitalisation

In 2016-18, the crude alcohol-related hospitalisation rate for Aboriginal and Torres Strait Islander people was 7.6 per 1,000 [60]. The rate was higher for males than females (8.4 per 1,000 and 6.8 per 1,000 respectively). The highest crude rate of hospital separations related to alcohol use for Aboriginal and Torres Strait Islander people was for mental and behavioural disorders at 6.4 per 1,000 (males: 7.1 per 1,000 and females: 5.6 per 1,000).

The crude rate of hospital separations related to alcohol use due to acute intoxication for Aboriginal and Torres Strait Islander people in 2018-19 was 4.3 per 1,000 [60]. Hospital separation rates due to acute intoxication in 2016-18 varied by level of remoteness. Aboriginal and Torres Strait Islander people living in remote and very remote areas (combined) had the highest crude rate of hospitalisation due to acute intoxication (11 per 1,000) while people in major cities had the lowest (2.4 per 1,000) [60].

Mortality

For 2014-2018 in NSW, Qld, WA, SA and the NT, the Aboriginal and Torres Strait Islander age-standardised death rate due to alcohol was 20 per 100,000 [60]. The alcohol-related death rate for Aboriginal and Torres Strait Islander males was 2.9 times higher compared with females (31 per 100,000 and 11 per 100,000 respectively). The main cause of alcohol-related deaths was from alcoholic liver disease.

Burden of disease

In 2018, alcohol use was the second leading risk factor contributing to the total burden of disease among Aboriginal and Torres Strait Islander people, accounting for 10% of the burden of disease [4]. For non-fatal burden of disease among Aboriginal and Torres Strait Islander people, 9.2% was attributable to alcohol use, the most of any risk factor.

Alcohol use disorders were the fourth leading group of diseases causing burden among Aboriginal and Torres Strait Islander people in 2018 (4.4% of total DALY) [4]. Males recorded more than three times the amount of burden due to alcohol use disorders compared with females. In 2018, alcohol use disorders were the fifth leading specific cause of total burden among Aboriginal and Torres Strait Islander people, with an age-standardised rate of 14 DALY per 1,000 people.

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[100] The calculation of drinking status and alcohol risk variable was updated for all years in 2019 [328].

[101] Estimate should be interpreted with caution due to the small sample size [328].

Illicit drug use

Illicit drug use describes the use of drugs that are illegal to possess (e.g. cannabis, heroin, cocaine and methamphetamine), and the non-medical use of prescribed drugs such as painkillers [333, 344]. Illicit drug use is associated with an increased risk of mental illness, poisoning, self-harm, infection with blood borne viruses from unsafe injection practices, chronic disease and death [150, 208, 345].

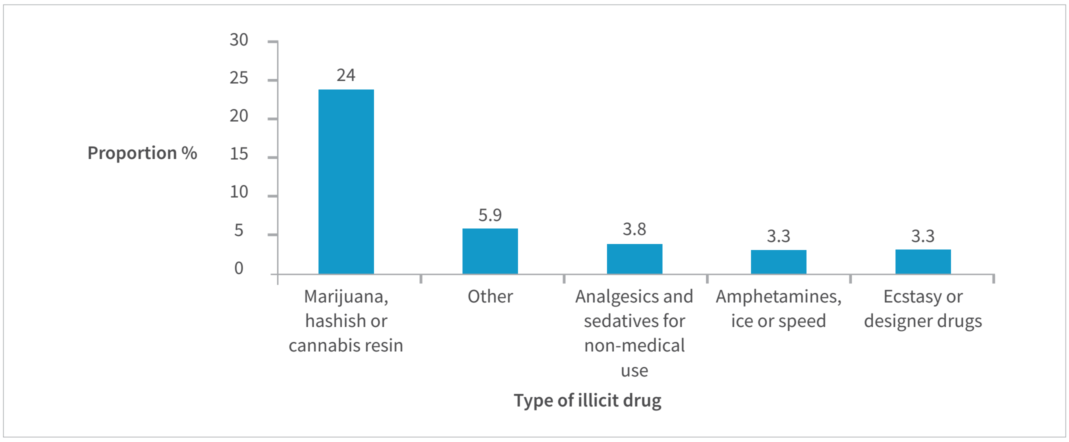
Extent of illicit drug use among Aboriginal and Torres Strait Islander people

Surveys consistently show that most Aboriginal and Torres Strait Islander people report they do not use illicit drugs [88, 200, 328]. The two most recent national surveys to collect this data, the 2018-19 NATSIHS and the 2019 NDSHS, found that 70% of Aboriginal and Torres Strait Islander people aged 15 years and over (NATSIHS) and 77% aged 14 years and over (NDSHS) reported either they had never used illicit drugs or had not used illicit drugs in the last 12 months (Derived from [88, 328]).

The 2018-19 NATSIHS found that 28% of Aboriginal and Torres Strait Islander people aged 15 years and over reported using illicit drugs in the last 12 months [88]. Similar proportions were reported in the 2019 NDSHS, which found 23% of Aboriginal and Torres Strait Islander people aged 14 years and over reported using illicit drugs in the last 12 months [328].

The 2018-19 NATSIHS found that cannabis (marijuana, hashish or cannabis resin) was the most commonly used illicit drug, used by 24% of Aboriginal and Torres Strait Islander people in the previous 12 months [88]. Slightly lower proportions were found in the NDSHS which reported 16% of Aboriginal and Torres Strait Islander respondents used cannabis in the last 12 months [328]. The NATSIHS reported that, after cannabis, the most commonly used illicit drugs were ‘other drugs’ (5.9%), analgesics and sedatives for non-medical use (3.8%), amphetamines, ice or speed (3.3%) and ecstasy or designer drugs (3.3%) (Figure 2) [88].

Figure 2. Proportion of Aboriginal and Torres Strait Islander people who reported illicit drug use in the last 12 months, 2018-19



Note:

1 ‘Other’ includes heroin, cocaine, petrol, LSD/synthetic hallucinogens, naturally occurring hallucinogens, kava, methadone and other inhalants.

Source: ABS, 2019 [88]

In 2018-19, Aboriginal and Torres Strait Islander males were more likely than females to report having used an illicit drug in the previous 12 months (37% and 21% respectively) [88]. The higher proportions of use by males were found for all drug types. Almost three times as many males as females had used amphetamines (5.0% compared with 1.8%), and almost twice as many males had used cannabis (31% compared with 18%). Use of illicit drugs in the previous 12 months was similar for people aged 15 years or over living in non-remote areas and remote areas in 2018-19 (29% and 27% respectively).

In 2019-20, 17% of clients seeking treatment for alcohol and drug use from general AOD treatment services were Aboriginal and Torres Strait Islander [341]. After alcohol, the most common principal drugs of concern that Aboriginal and Torres Strait Islander people sought treatment for were amphetamines (27%), cannabis (24%) and heroin (4.8%).

Use of amphetamines is associated with risky behaviour such as injecting drug use [346]. A 2020 report on the National Syringe Program (NSP) found that stimulants and hallucinogens (predominantly methamphetamines) were the most commonly injected drugs reported by attendees of NSPs [347]. Of those attending NSPs, 21% identified as Aboriginal or Torres Strait Islander.

Hospitalisation

In 2018-19, the most common drug-related conditions resulting in hospitalisation for Aboriginal and Torres Strait Islander people were ‘poisoning’ and ‘mental and behavioural disorders’ [60]. The crude hospitalisation rate for Aboriginal and Torres Islander people from poisoning due to drug use was 3.0 per 1,000 population and for mental and behavioural disorders due to drug use 4.7 per 1,000. In 2016-18, hospitalisation for mental and behavioural disorders from use of amphetamines[102] had the highest rate of separations due to drug use at 2.1 per 1,000. Cannabis use was the second highest cause of hospitalisation for mental and behavioural disorders due to drug use, at 1.0 per 1,000.

For 2016-18, crude hospitalisation rates related to drug use were higher for Aboriginal and Torres Strait Islander people in major cities (9.2 per 1,000) than in inner and outer regional areas (6.6 per 1,000) and remote and very remote areas (4.3 per 1,000) [60].

Mortality

In 2019, the age-standardised rate of unintentional drug-induced deaths for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT was 20 per 100,000 [348]. The five-year aggregated (2015-2019) age-standardised rates for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT show that the leading drug types involved in unintentional drug-induced deaths were opioids (9.1 per 100,000), followed by stimulants (6.5 per 100,000) [348].

For 2014-2018, SA recorded the highest age-standardised rate of drug-induced deaths for Aboriginal and Torres Strait Islander people (20 per 100,000), followed by NSW (18 per 100, 000), and WA (17 per 100,000) [60]. Rates of drug induced deaths were higher for Aboriginal and Torres Strait Islander males (17 per 100,000) than for females (11 per 100,000).

Burden of disease

Illicit drug use contributed to 6.9% of the total burden of disease among Aboriginal and Torres Strait Islander people in 2018, responsible for 5.1% of non-fatal burden and 8.9% of fatal burden [4].

Volatile substance use

Volatile substance use (VSU) involves sniffing substances that give off fumes at room temperature such as petrol, paint, glue or deodorants [349]. They are also called ‘inhalants’ because of the way people use them by inhaling the fumes through the nose or mouth. Absorbing these substances into the lungs affects different parts of the body such as the liver, the brain and the heart [349, 350].

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[102] ICD code F15 hospitalisation from use of other stimulants includes amphetamine-related disorders and caffeine but not cocaine.

Most volatile substances such as solvents and aerosol sprays, are depressant drugs that slow down the central nervous system [349]. Short-term effects include: slurred speech, lack of coordination, dizziness and euphoria [349, 351]. Sniffing volatile substances, particularly butane, propane and aerosols, can cause sudden death [352]. This is known as sudden sniffing death, a syndrome where a lack of oxygen and an unexpected event that stimulates an adrenalin release causes heart failure [351, 352]. Sudden sniffing death can happen to a first-time user who is otherwise healthy. VSU can also cause a person to lose consciousness, increasing the risk of death by suffocation.

Unlike other forms of drug use, the products used in VSU are readily available in common household and commercial products, posing a particular risk for young people [351]. Typically, use of volatile substances is initiated at a young age (around 12 years, and sometimes younger) which has implications for the developing brain and long-term health of young people using volatile substances [353, 354]. Exposure to toluene[103] through sniffing petrol in adolescents has been shown to be associated with impaired growth for both height and weight and a 'failure to thrive' [354]. Excessive harmful inhalant use can also lead to permanent acquired brain injury [354-356]. Petrol is one of the most dangerous volatile substances to sniff, especially when it contains tetraethyl lead (found in leaded petrol and no longer sold in Australia), which can result in damage to the brain [356, 357]. Long-term abstinence from inhalants, however, may allow recovery of normal brain function, where encephalopathy (damage or disease that affects the brain) from lead poisoning is not present [356].

Sniffing volatile substances repeatedly is also associated with damage to the peripheral nervous system (resulting in numbness and limb weakness), as well as damage to the respiratory system, injury to the digestive tract, kidney damage and anaemia [350].

Extent of VSU use among Aboriginal and Torres Strait Islander people

The 2014-15 NATSISS found that 0.7% of Aboriginal and Torres Strait Islander people aged 15 years and over reported using petrol and other inhalants in the last 12 months [358]. In 2019-20, 1.8% of Aboriginal and Torres Strait Islander clients identified volatile solvents as the main drug they were seeking treatment for in publicly funded AOD services [341].

An overall decline in VSU in communities has been reported, with one study showing that in 17 Aboriginal communities the total number of people sniffing petrol has fallen, from 647 in 2005-06 to 78 in 2013-14, a reduction of 88% [359]. This decrease in prevalence of sniffing has been associated with the replacement of regular unleaded petrol with low aromatic fuel (LAF).

A follow up study on the effects of LAF found that in 25 Indigenous communities, for which there is comparable data, the total estimated number of people sniffing petrol fell from 453 in 2006 to 22 in 2018, a decline of 95% [353]. The number of people sniffing petrol for these communities represented just under 1% of the Aboriginal and Torres Strait Islander population aged 5-39 years.

While overall the number of people using volatile substances is small, the issue of VSU remains a potential for concern in some regions where opportunistic or casual sniffing of petrol and use of other volatile substances such as deodorants have been reported [353].

Hospitalisation

In 2016-18, the crude rate of hospital separations for Aboriginal and Torres Strait Islander people from poisoning due to the toxic effect of organic solvents (e.g. petrol) was 0.05 per 1,000 [60]. Hospitalisation for accidental poisoning from organic solvents was 0.03 per 1,000. For males, hospitalisation rates from poisoning due to the toxic effect of organic solvents was 0.06 per 1,000 and for females 0.04 per 1,000. Hospitalisation for accidental poisoning from organic solvents was 0.04 per 1,000 for males, and 0.02 per 1,000 for females.

The crude rate of hospital separations due to mental and behavioural disorders from use of volatile substances was 0.06 per 1,000 (males: 0.07 per 1,000 and females: 0.04 per 1,000) [60].

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[103] Toluene is the primary volatile solvent in misused products.

Mortality

The systematic collection of VSU associated mortality data is very limited due to the practice of listing the medical explanation for death rather than the use of volatile substances as a cause [360]. For example, the death of a chronic petrol sniffer may be recorded as 'end-stage renal failure', not 'petrol sniffing'. This practice has most likely resulted in VSU mortality and morbidity rates being underestimated.

Environmental health

Environmental health refers to the physical, chemical and biological factors which potentially impact a person's health and wellbeing such as housing conditions, drinking water and air quality, sanitation, disease control and food safety [60, 361]. Health conditions associated with poor environmental health include intestinal infectious diseases; skin infections, such as scabies; middle ear infections; ARF; respiratory issues, such as asthma; and some cancers, such as lung cancer [362, 363].

Aboriginal and Torres Strait Islander people are disproportionately affected by the diseases associated with environmental health due to a number of factors, including the remoteness of some communities, overcrowding and lack of adequate housing, poor infrastructure, lack of functioning health and home hygiene hardware[104], lack of access to tradespeople and repairs, and the cost of infrastructure maintenance [361-363, 365]. The *National Aboriginal and Torres Strait Islander Health Plan 2013-2023* also acknowledged that environmental health is an important issue and that addressing housing, waste management and water security are key priorities [361]. The physical and emotional wellbeing of Aboriginal and Torres Strait Islander people, and especially of children, can be enhanced by reducing the rates and spread of diseases that are commonly linked to environmental causes [60].

This section will primarily cover housing, hospitalisation and mortality. For more detailed information about some of the health conditions associated with environmental health, see the *Cardiovascular health* section for information on ARF, the *Eye health* section for information on trachoma, the *Respiratory health* section for information on asthma and other related conditions, as well as the *Skin health* section for information about scabies and other skin health issues.

Housing

Housing issues such as overcrowding[105] and poor infrastructure contribute significantly to the ill health and wellbeing of Aboriginal and Torres Strait Islander people [60, 200, 368].

Overcrowding

In the 2018-19 NATSIHS, the proportion of Aboriginal and Torres Strait Islander people who reported living in overcrowded households was 18% [60]. Overcrowding prevalence was highest in the NT (51%), followed by Qld (20%), WA (19%), SA (15%), NSW and Tas (both 11%), Vic (10%) and the ACT (7.8%). Overcrowding generally increased with remoteness, from 10% in major cities to 51% in very remote areas.

Infrastructure

An important contributor to the health and wellbeing of Aboriginal and Torres Strait Islander people is access to sufficient, working and regularly maintained infrastructure in housing and communities, including health hardware, clean water supply, sewerage, and electricity which support and encourage healthy living practices for hygiene, safety and nutrition [60, 264, 369]. A recent evaluation of the NSW Housing for Health program, which for the last 20 years has been assessing and repairing Aboriginal and Torres Strait Islander community housing, has shown a 40% reduction in infectious disease hospital separations due to regular maintenance [370].

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[104] The kitchen, toilet, showers and laundry are recognised as home hygiene hardware [364].

[105] As defined by The Canadian National Occupancy Standard, a measure widely used in Australia to estimate the proportion of dwellings that are overcrowded by assessing bedroom requirements [366] [367].

In the 2018-19 NATSIHS, 80% of Aboriginal and Torres Strait Islander households reported living in houses of an acceptable standard[106] [60]. In the same period, 33% of Aboriginal and Torres Strait Islander households reported major structural issues within their dwelling. Dwellings with major structural problems increased with remoteness: in 2014-15, for Aboriginal and Torres Strait Islander households in very remote areas, 37% reported living in a house with major structural problems, compared with 26% in major cities [60]. The most significant issues for Aboriginal and Torres Strait Islander dwellings were major cracks in the walls/floors (11%), walls or windows not straight (6.1%), major plumbing problems (5.7%), sinking/moving foundations (5.6%), wood rot/termite damage (5.4%) and sagging floors (4.2%).

In the 2018-19 NATSIHS, the majority of respondents reported having access to household facilities, including facilities for washing people (97%), washing bedding and clothes (96%), preparing/storing food (91%) and sewerage facilities (98%) [60]. Access to functioning facilities was lower in the NT than other jurisdictions, and lower in remote areas than non-remote areas.

In a 2016 national survey of tenants in social housing, 72% of Aboriginal and Torres Strait Islander respondents reported living in social housing of an acceptable standard [371]. In addition, 25% of Aboriginal and Torres Strait Islander people reported that their household facilities were of an acceptable standard, but the structure of the dwelling was not. *Aboriginal and Torres Strait Islander people: a focus report on housing and homelessness,* released in 2019, also reported infrastructure stress on bathrooms, sewerage systems, laundry facilities, and food preparation areas in overcrowded households [372].

Hospitalisation

In 2018-19, the crude hospitalisation rates for Aboriginal and Torres Strait Islander people for selected diseases associated with poor environmental health were 9.2 per 1,000 for influenza and pneumonia, 9.0 per 1,000 for intestinal infectious diseases, 8.0 per 1,000 for bacterial diseases, 4.6 per 1,000 for acute upper respiratory infections, 2.7 per 1,000 for asthma and 1.8 per 1,000 for scabies [60]. In 2016-18, hospitalisation rates for most conditions associated with environmental health were much higher in remote/very remote areas than major cities.

Mortality

For 2014-2018, the age-standardised death rate for Aboriginal and Torres Strait Islander people living in NSW, Qld, WA, SA and the NT, from conditions associated with poor environmental health, was 44 per 100,000 for males and 40 per 100,000 for females [60].

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[106] Housing of an acceptable standard includes two components: having four working household facilities; and not more than two major structural problems [60].

Concluding comments

This *Overview* describes the current health status of Aboriginal and Torres Strait Islander people in Australia. It provides a 'snapshot' of the most recent indicators of health. As noted in our 2020 *Overview,* COVID-19 has had a profound impact on all aspects of our lives. In 2021, the challenge was to develop safe and efficacious vaccines. Several vaccines were developed in record time. In Australia, the approved vaccines were initially Pfizer and AstraZeneca. The reputation of the AstraZeneca vaccine was negatively affected by publicity about a rare but potentially harmful side effect (blood clotting). While this was a rare side effect it led to vaccine hesitancy among some people. A number of specific initiatives to enhance vaccination rates in Aboriginal and Torre Strait Islander communities were implemented, however at the time of publication, low vaccination rates continued to be an issue in some communities.

In addition, we expanded the SEWB section to make some specific comments on the impact of COVID-19 on the SEWB and mental health of Aboriginal and Torres Strait Islander people during the pandemic. Our focus on physical health and key issues such as vaccine hesitancy is warranted and increasingly well understood, but it is important to also recognise the potential long-term consequences on the SEWB and mental health of Aboriginal and Torres Strait Islander people. Of particular concern are reports of increased racism [68]. This seems counter to the rhetoric of 'we are all in this together'. However, to redress this has been the outstanding work done by Aboriginal and Torres Strait Islander health leaders and agencies throughout Australia [3].

The release of the *National Aboriginal and Torres Strait Islander health plan 2021-2031* [373] makes a decades long commitment to ways of working that are exemplified in the words of Ms Donna Murray, Co-Chair of the Implementation Plan Advisory Group, and Health Plan Working Groups.

> *'We, as Aboriginal and Torres Strait Islander people, know what is best for our health and wellbeing… While our people and cultures are strong and resilient, we continue to see harmful policies and practice implemented by government. While this can be difficult to hear, true change exists within discomfort and progress is made when all parties are open to listening and responding'.* [373, p.4]

Ms Murray concludes her introduction with the observation that the health plan has been developed in true partnership between the Health Plan Working Groups, Implementation Plan Advisory Group and government to develop a plan that is strengths based, respects human rights and, importantly, embeds the cultural (and social) determinants of health. It also acknowledges and explicitly locates the plan with an acknowledgment of the intersectional diversity of Aboriginal and Torres Strait Islander identities. For too long identities were homogenised both within and across the extraordinary diversities of Aboriginal and Torres Strait Islander people. Encouragingly, the *National Preventive Health Strategy 2021-2030* also highlights and commits to the cultural determinants of health [322].

At the Health*InfoNet* we strive to play our small part in seeking a more just, equitable and healthy future for Aboriginal and Torres Strait Islander people and communities throughout Australia by providing information that is timely, accessible and relevant to the everyday practice of the Aboriginal and Torres Strait Islander health sector workforce striving to achieve the goals of the health plan for the benefit of all Australians.

Appendix 1

Limitations of the sources of Aboriginal and Torres Strait Islander health information

The assessment of Aboriginal and Torres Strait Islander people's health status requires accurate information about the size of the population and the numbers of specific health conditions/occurrences. This information is required at national, regional and local levels.

There have been improvements in recent years - both in estimates of the Indigenous population (the denominator for calculation of rates) and in the availability of data for a number of health conditions/occurrences (the numerators for calculating rates) - but there is still some uncertainty in most areas.

In relation to population estimates, the ABS has made considerable efforts to achieve accurate counts of the Aboriginal and Torres Strait Islander population in the five-yearly Australian censuses [366]. Despite these efforts, there are impacts on data quality such as non-responses for identification. As at 30 June 2016, 88% of Aboriginal and Torres Strait Islander Australians were reported to be living in NSW, Qld, WA, SA and the NT [32] and the data from these jurisdictions are considered sufficient quality for reporting [5].

The ABS, the AIHW and state and territory authorities have worked together to improve the accuracy of Indigenous status in several health-related collections, including:

- birth and death registrations
- hospital administrative data
- maternal/perinatal collection
- pathology forms
- primary health care data
- AOD treatment services
- mental health services
- community services data collection [94](cited in [374]).

A persistent problem, however, is the extent to which Aboriginal and Torres Strait Islander people are correctly identified in the various health-related data collections. There is currently no national approach on how to determine Indigenous status where classification is inconsistent or missing across multiple data sets, which may lead to different methodology being applied and difficulties in the interpretability and comparability of data [374]. In death registrations, for example, not all Aboriginal and Torres Strait Islander deaths are correctly identified as such [48, 374]. Due to concerns about the mortality rates of Aboriginal and Torres Strait Islander people relative to the total population, there has been ongoing data integration to investigate the quality of the data using health and death records by several state and territory government departments.

The ABS Death Registration collection collects information on Indigenous status from the 'death registration form'; some states and territories also collect this information from medical certificates of causes of death [46]. While, according to the ABS, most deaths of Aboriginal and Torres Strait Islander people are registered, the Indigenous status of some deaths is not registered, raising concerns about the accuracy of this information. Aboriginal and Torres Strait Islander deaths may be underestimated because of:

- inaccurate data
- lag in registration (the interval between when a death occurs and when it is registered).

This lag in registration is often longer for the Aboriginal and Torres Strait Islander population than the non-Indigenous population [48]. However, there is normally only a slight difference between registered and occurring deaths because, for each year, the number of deaths not registered balances out the deaths that occurred in the previous year but were registered late.

Estimating the proportions of deaths identified correctly is not simple, so it is difficult to estimate the actual number of Indigenous deaths occurring and the corresponding rates. The ABS uses estimates of the proportions of registered deaths correctly identified as Indigenous in preparing its life tables, the source of life expectancy figures [48].

The 2016 Death Registrations to Census Linkage Project (previously referred to as the Indigenous Mortality Study) [375] involved linking death registrations with 2006 Census records, with the aim to assess the consistency of Indigenous status across the two datasets [48]. This was repeated for the 2011 Census and the 2016 Census. Based on the 2016 Census, of the 3,246 Aboriginal and Torres Strait Islander death records 2,315 (71%) were linked.

The ABS has estimated that the proportion of Indigenous births identified correctly was 96% in 2002-2006, a significant improvement over the level for previous years [376]. Completeness of identification varied across the country, with only Vic, Qld, WA, SA and the NT having levels above 90%.

The National Perinatal Data Collection provides data on pregnancy and childbirth; prior to 2011, the Indigenous status of the baby was based on the Indigenous status of the mother. Since then, the Indigenous status of the baby has been based on the mother and/or father identifying as being of Aboriginal and/or Torres Strait Islander origin [20]. This means that previously there was an underestimation of Aboriginal and/or Torres Strait Islander births. Indigenous status for around 6% of births is unknown, due to unknown status of the father. Identification of the father is not compulsory for birth registrations.

The level of identification in hospital admissions is variable, but overall it has been estimated that 88% of Aboriginal and Torres Strait Islander patients were correctly identified in Australian public hospital admission records (private hospitals were not included [59]) in 2011-12 [58]. It has been suggested that the more accurate number of admissions was approximately 9% higher than recorded [55]. The accuracy of the identification of Indigenous people varied between states and territories, from 98% in the NT to 58% in the ACT [58]. The accuracy of identification also varied with remoteness level, from 99% in very remote areas to 77% in major cities. Another limitation is that all hospitalisation data for Tas, the ACT and the NT include only public hospitals [59].

The levels of Aboriginal and Torres Strait Islander people's identification in many of the other health-related data collections are generally so incomplete as to preclude reasonably accurate estimates. With these uncertainties, there must be some doubt about the precision of the various estimates of health status.

Despite the important advances that have been made in recent years in both the extent and quality of information about the health of Aboriginal and Torres Strait Islander people, there is substantial scope for further improvement. For example:

- There are deficiencies in the information available for some important areas. Probably the best example is cancer, a leading cause of death among Aboriginal and Torres Strait Islander people. National data on cancer incidence and mortality among Aboriginal and Torres Strait Islander people are not available and Indigenous-specific information about screening is only collected for breast cancer and bowel cancer (both self-reported) and not for cervical cancer [5, 98, 377, 378].
- COVID-19 has highlighted the poor level of identification on pathology forms used for testing [378, 379]. This has resulted in unreliable data on how many Aboriginal and Torres Strait Islander people have been tested and the accuracy of the infection rate among this population. Work is now being undertaken to improve Indigenous identification on forms used by both public and private laboratories. While this work is being undertaken in response to COVID-19, enhanced practices for Indigenous identification on pathology forms will also benefit screening and testing programs to enable accurate reporting of outcomes for Aboriginal and Torres Strait Islander people.
- Special reports related to Aboriginal and Torres Strait Islander health (see the Sources of information section) tend to be selective rather than comprehensive in their coverage of the various health topics.
- The time periods for which detailed information is available tend to vary substantially; this means that documents like this *Overview* need to draw on information from various time periods in attempting to compile a comprehensive picture.
- Important data sources, particularly major national surveys, are generally only conducted around every five years; this is inevitable, but it means that relevant information is often quite dated.
- Self-reported survey data are open to interpretation; they provide insight on an individual's view of their health, but these may not have been diagnosed by a health professional.
- Changes in aspects like methodology and levels of reporting in publications pose difficulties in the analysis and synthesis of information for periods of time.

Glossary

Aboriginal and Torres Strait Islander

people who identify themselves as being of Aboriginal and/or Torres Strait Islander origin. See also **Indigenous**

age-adjustment or age-adjusted

see **age-standardisation**

age-specific rate

an estimate of the number of people experiencing a particular event in a specified age-group relative to the total number of people 'at risk' of that event in that age-group

age-specific death rate

the number of deaths of persons of a specific age-group in a calendar year per 1,000 persons of the same age-group. For the purposes of this report, the age-specific death rate is calculated per 100,000 persons of the same age-group so the rate can be expressed as a whole number

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 method of removing the influence of age when comparing populations with different age structures. This is necessary because the rates of many diseases increase with age. The age structures of the different populations are converted to the same 'standard' structure; then the disease rates that would have occurred with that structure are calculated and compared. This method is used when making comparisons for different periods of time, different geographic areas and/or different population sub-groups (e.g. between one year and the next and/or states and territories, Indigenous and non-Indigenous populations). They have been included for users to make comparisons that may not be available in this report. See **direct standardisation** and **indirect standardisation**

age-standardised disability-adjusted life year rate

leading specific causes of total burden of disease are ranked by age-standardised disability-adjusted life year rate

avoidable mortality

a death that, theoretically, could have been avoided given an understanding of causation, the adoption of available disease prevention initiatives and the use of available health care

body mass index

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+)

burden of disease (and injury)

the quantified impact of a disease or injury on a population using the **disability-adjusted life year** measure

cause of death

as entered on the medical certificate of cause of death - refers to all diseases, morbid conditions or injuries that either resulted in or contributed to death

crude rate

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

disability-adjusted life year

a year of healthy life lost, either through premature death or living with a disability due to illness or injury

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

fatal burden

the burden of dying prematurely from a disease or injury as measured by **years of life lost**. It offers a way to compare the impact of different diseases, conditions or injuries on a population. See **non-fatal burden**

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 (from admission to discharge, transfer or death), or part of a patient's stay in hospital that results in a change to the type of care (for example, from acute care to rehabilitation)

hospital separation

see **hospitalisation**. Also, the formal process by which a hospital records the completion of treatment and/or care for an admitted patient

hospital separation rate

the total number of episodes of care for admitted patients divided by the total number of persons in the population under study. Often presented as a rate per 1,000 or 100,000 members of a population. Rates may be crude or standardised

incidence

the number of instances of illness commencing, or of persons falling ill, during a given period in a specified population

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

term used to refer collectively to the two Indigenous sub-populations within Australia – Australian Aboriginal and Torres Strait Islander people

infant mortality

the death of a live-born child who dies before reaching his/her first birthday

infant mortality rate

the number of deaths of children under one year of age in a specified period per 1,000 live births in the same period

International Classification of Diseases

WHO's internationally accepted classification of death and disease. The ICD-10-AM (Australian modification) was introduced in hospitals and other healthcare agencies in 1999 to report morbidity data

life expectancy

see **expectation of life**

maternal mortality

pregnancy-related deaths occurring to women during pregnancy or up to 42 days after delivery

maternal mortality ratio

number of maternal deaths divided by the number of confinements (expressed 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-fatal burden

the burden from living with ill health, as measured by **years lived with disability**

non-Indigenous

a person who does not identify as Aboriginal and/or Torres Strait Islander

potentially preventable hospitalisations

hospital separations from a specified range of conditions where hospitalisation is considered to be largely preventable if timely and adequate care had been provided through population health services, primary care and outpatient services

prevalence

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

rate

one number (the numerator) divided by another number (the denominator). The numerator is commonly the number of events in a specified time. The denominator is the population at risk of the event. Rates (crude, age-specific and age-standardised) are generally multiplied by a number such as 100,000 to create whole numbers

risk factor

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

self-reported data

data based on how an individual perceives their own health. It relies on survey participants being aware, and accurately reporting, their health status and health conditions, which is not as accurate as data based on clinical records or measured data

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 **age-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

years lived with disability

measures the years of what could have been a healthy life that were instead spent in states of less than full health. Years lived with disability represent **non-fatal burden**

years of life lost

measures years of life lost due to premature death, defined as dying before the ideal lifespan (based on the lowest observed death rates from multiple countries). Years of life lost represent **fatal burden**

Abbreviations

AATSIHS - Australian Aboriginal and Torres Strait Islander Health Survey

ABS - Australian Bureau of Statistics

ACCHOs - Aboriginal Community Controlled Health Organisations

ACT - Australian Capital Territory

AHMAC - Australian Health Ministers' Advisory Council

AIHW - Australian Institute of Health and Welfare

AMA - Australian Medical Association

ANZDATA - Australia and New Zealand Dialysis and Transplant Registry

AOD - Alcohol and other drug

ARF - Acute rheumatic fever

BMI - Body mass index

CKD - Chronic kidney disease

COAG - Council of Australian Governments

COPD - Chronic obstructive pulmonary disease

CSEWB - Cultural social and emotional wellbeing

CSOM - Chronic suppurative otitis media

CVD - Cardiovascular disease

DAA - Direct-acting antiviral

DALY - Disability-adjusted life year

DR - Diabetic retinopathy

EAHSP - East Arnhem Healthy Skin Project

ERP - Estimated resident population

ESKD - End-stage kidney disease

ESRD - End-stage renal disease

GAS - Group A streptococci

GDM - Gestational diabetes mellitus

GP - General practitioner

HBV - Hepatitis B virus

HCV - Hepatitis C virus

HD – Haemodialysis

HGL - High glucose levels

Hib - *Haemophilus influenzae* type b

HIV - Human immunodeficiency virus

HPV - Human papillomavirus

ICD - International Classification of Diseases - the World Health Organization's internationally accepted classification of death and disease

IHD - Ischaemic heart disease

IMR - Infant mortality rate

IPD - Invasive pneumococcal disease

LAF - Low aromatic fuel

LBW - Low birthweight

LGA - Local Government Area

MMR - Maternal mortality ratio

NACCHO - National Aboriginal Community Controlled Health Organisation

NATSIHS - National Aboriginal and Torres Strait Islander Health Survey

NATSINPAS - National Aboriginal and Torres Strait Islander Nutrition and Physical Activity Survey

NATSISS - National Aboriginal and Torres Strait Islander Social Survey

NCOHS - National Child Oral Health Study

NDA - National Disability Agreement

NDIS - National Disability Insurance Scheme

NDSHS - National Drug Strategy Household Survey

NEHS - National Eye Health Survey

NHMRC - National Health and Medical Research Council

NHS - National Health Survey

NIP - National Immunisation Program

NSAOH - National Study of Adult Oral Health

NSP - National Syringe Program

NSW - New South Wales

NT - Northern Territory

OM - Otitis media

PD - Peritoneal dialysis

Qld - Queensland

RHD - Rheumatic heart disease

SA - South Australia

SCRGSP - Steering Committee for the Review of Government Service Provision

SDAC - Survey of Disability, Ageing and Carers

SEWB - Social and emotional wellbeing

SIDS - Sudden infant death syndrome

STI - Sexually transmissible infection

Tas - Tasmania

TB - Tuberculosis

TIS - Tackling Indigenous Smoking

VI - Vision impairment

Vic - Victoria

VSU - Volatile substance use

WA - Western Australia

WC - Waist circumference

WHO - World Health Organization

WHR - Waist-hip ratio

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