# 10 Home environment

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| Strategic areas for action |
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| Governance, leadership and culture |  | Early child development |  | Education and training |  | Healthy lives |  | Economic participation |  | Home environment |  | Safe and supportive communities |
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| 10.1 Overcrowding in housing10.2 Rates of disease associated with poor environmental health10.3 Access to clean water and functional sewerage and electricity services |
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Environmental health relates to physical, chemical and biological factors external to a person which potentially affects a person’s health, and better environmental health can have positive outcomes for Aboriginal and Torres Strait Islander Australians, and is especially beneficial for children’s physical and emotional wellbeing.

The following indicators included in this chapter cover some factors that contribute to a healthy home environment and good environmental health for Aboriginal and Torres Strait Islander Australians:

* Overcrowding in housing (section 10.1) — reducing overcrowding is associated with positive effects on health, family relationships and children’s education
* Rates of disease associated with poor environmental health outcomes (section 10.2) — improvements in environmental health can help reduce the spread of diseases that are linked to environmental causes
* Access to clean water and functional sewerage and electricity services (section 10.3) — clean water and functional sewerage and electricity services, and housing of an acceptable standard, encourage and support healthy living practices.

The home environment affects other COAG targets and headline indicators:

* life expectancy (section 4.1)
* young child mortality (section 4.2)
* disability and chronic disease (section 4.9)
* family and community violence (section 4.12).

Other COAG targets and headline indicators can directly influence the home environment:

* employment (section 4.7)
* household and individual income (section 4.10).

Outcomes in the home environment area can be affected by outcomes in several other strategic areas for action, or can influence outcomes in other areas:

* early child development (chapter 6)
* education and training (chapter 7)
* healthy lives (chapter 8)
* economic participation (chapter 9).

Attachment tables for this chapter are identified in references throughout this chapter by an ‘A’ suffix (for example, table 10A.1.1). These tables can be found on the web page (www.pc.gov.au/oid2016).

10.1 Overcrowding in housing**[[1]](#footnote-1)**

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| Box 10.1.1 Key messages |
| * Less cramped living conditions has been linked to positive health, education and family outcomes for Aboriginal and Torres Strait Islander Australians.
* Nationally, the proportion of Aboriginal and Torres Strait Islander Australians living in overcrowded households decreased from 27.0 per cent in 2004‑05 to 20.6 per cent in 2014‑15 (figure 10.1.1), including a decrease in overcrowding in very remote areas (from 63.4 per cent to 49.4 per cent) (table 10A.1.2).
* The proportion of Aboriginal and Torres Strait Islander adults reporting overcrowding as a stressor decreased by more than two‑thirds, from 20.8 per cent in 2002 to 6.5 per cent in 2014‑15. The largest decrease over this period was in very remote areas (from 50.2 per cent to 9.8 per cent) (figure 10.1.3).
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| Box 10.1.2 Measures of overcrowding in housing |
| There is one main measure for this indicator. *Overcrowding in housing* is defined as the proportion of Aboriginal and Torres Strait Islander people, of all ages, who live in overcrowded houses. Supplementary data are provided for Aboriginal and Torres Strait Islander people aged 15 years and over (for comparable time series back to 2002).Overcrowding is calculated according to the Canadian National Occupancy Standard for housing appropriateness (more detail can be found in box 10.1.3). The main data sources for this measure are the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS), and the Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS), with the most recent available data for 2014‑15 (all jurisdictions and remoteness). Supplementary data are also available from the ABS Census of Population and Housing, with the most recent data for 2011 (all jurisdictions by remoteness). Survey and Census data are not directly comparable. Supplementary information is also provided on overcrowding as a stressor. |
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In 2009, COAG agreed to the National Affordable Housing Agreement (NAHA), and included an outcome for Aboriginal and Torres Strait Islander people to have ‘the same housing opportunities as other Australians, and improved housing amenity and reduced overcrowding, particularly in remote areas and discrete communities’ (COAG 2009a). The NAHA is supported by National Partnership agreements on homelessness and, for Aboriginal and Torres Strait Islander Australians, remote Indigenous housing. In remote and very remote areas in particular, it is more expensive and logistically more difficult to construct and maintain housing and associated infrastructure (COAG 2009b; Fien and Charlesworth 2012; Office of the Auditor General Western Australia 2015; Pholeros and Phibbs 2012).

Better, less cramped living conditions have been linked to positive effects on Aboriginal and Torres Strait Islander health, education and family relationships:

* health — if a house is appropriately designed for the number of residents and adequately maintained, the bathroom, and adequate kitchen and laundry facilities make it easier to prevent the spread of infectious diseases and to encourage good environmental health (AIHW 2015; Clifford et al. 2015; NSW Department of Health 2010). The impacts of environmental health are discussed further in section 10.2
* education — learning and cognitive development of all Australian children has been shown to be negatively affected by crowding, with the effect increasing for each additional person per bedroom. The same study showed that Aboriginal and Torres Strait Islander children were more likely to experience crowding (Dockery et al. 2013). Extra space gives children and young people opportunities for enough sleep and relaxation, and allows them to do homework and study without outside disruptions (Biddle 2007)
* family relationships — increase in control over living space, or additional space may help to reduce domestic tensions, leading to fewer instances of domestic violence (Bailie and Wayte 2006).

Cultural and social factors influence the way housing is used by different Aboriginal and Torres Strait Islander people and communities, and it is important to consider the relationship between culturally appropriate household size and overcrowding (AIHW 2014; Birdsall-Jones and Corunna 2008; Memmott, Birdsall-Jones and Greenop 2012; 2014; Memmott 2014). Households with many members, often of multiple generations, and including extended family, are not unusual in Aboriginal and Torres Strait Islander communities, and may be the preferred way of living for some families (AHMAC 2015; Memmott, Greenop and Birdsall-Jones 2014). McDonald (2011), summarising the research and policy on Aboriginal and Torres Strait Islander housing and the relationship to Closing the Gap, notes that larger Aboriginal and Torres Strait Islander households also frequently encompass kin who are elderly, or people with poor mental or physical health, which presents additional stress and challenges.

Larger households may also increase social connectivity, which is associated with positive impacts on health (AHMAC 2015). In a small qualitative study of 69 Aboriginal and Torres Strait Islander householders, Memmott, Greenop and Birdsall-Jones (2014) found that sharing was a central value of Aboriginal and Torres Strait Islander identity, as was mutual care of extended family and people chose to stay in houses with large numbers of people due to ties with kin and place. The number of people staying in the house was not the most significant source of stress, but rather a lack of control over who stayed and/or their behaviour. Stress was mediated when the householder required firm adherence to house rules, including the organisation of sleeping spaces, and sharing visitors among other family households. Foster et. al’s (2011) research synthesis of housing and health evidence, suggests that if heads of Indigenous households have the ability to control and manage the available space (including the allocation of bedrooms), it protects against some of the effects of overcrowding. Furthermore, the research synthesis included a summary of Zubrick et.al’s (2006) work on the Western Australian Aboriginal Child Health Survey (WAACHS), which showed that children in larger households were ‘half as likely [to be] at risk of clinically significant behavioural and emotional difficulties as children in low‑occupancy households’.

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| Box 10.1.3 Housing occupancy standard used by ABS |
| There is no single standard measure for housing overcrowding. The ABS uses a standard which is sensitive to both household size and composition (based on the Canadian National Occupancy Standard). Using the following criteria to assess bedroom requirements, households requiring at least one additional bedroom are considered to be overcrowded:* There should be no more than two persons per bedroom
* A household of one unattached individual may reasonably occupy a bed‑sit (that is, have no bedroom)
* Couples and parents should have a separate bedroom
* Children less than five years of age of different sexes may reasonably share a bedroom
* Children five years of age or over of different sexes should not share a bedroom
* Children less than 18 years of age and of the same sex may reasonably share a bedroom.

Single household members aged 18 years or over should have a separate bedroom (ABS 2011). |
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The housing occupancy standard used for this report will reflect the culture and preferences of some, but not all, Aboriginal and Torres Strait Islander people. For example, it does not account for the influence of climate and culture on living arrangements, which vary widely across Australia. In climatic conditions such as extreme heat, it is likely that all members of the household will occupy the most comfortable area of the house (DSS 2007). In warmer rural areas, people may live outside their houses rather than inside them at certain times of the year, and the standard does not take into account how verandahs or larger living spaces might be used (Pholeros, Rainow and Torzillo 1993).

The sizes of Aboriginal and Torres Strait Islander households and community populations can fluctuate dramatically. People may move to visit relatives, to avoid adverse weather events, to escape overcrowding or domestic violence, or to travel to access health and social services. A shortage of affordable and flexible housing options may lead travellers to overcrowded homes of relatives’, public space dwelling and homelessness (Habibis et al. 2011). Some Aboriginal and Torres Strait Islander Australians reported to the ABS that they have family and cultural responsibilities in providing shelter, and that refusing visitors is considered culturally inappropriate, leading to crowded dwellings (ABS 2013).

### Overcrowding in housing

Nationally in 2014‑15, the proportion of Aboriginal and Torres Strait Islander Australians of all ages living in overcrowded households was 20.6 per cent. This was a similar result to 2012‑13 (22.6 per cent), but lower than in 2008 (27.5 per cent) and 2004‑05 (27.0 per cent). From 2004‑05 to 2014‑15, there were decreases in overcrowding in Queensland (from 29.6 per cent to 20.0 per cent), WA (from 32.7 per cent to 25.4), SA (from 24.1 per cent to 12.9 per cent) and the NT (from 66.2 per cent to 53.0 per cent) (figure 10.1.1).

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| Figure 10.1.1 Proportion of Aboriginal and Torres Strait Islander people (of all ages) in overcrowded households, 2004‑05 to 2014‑15**a,b** |
| Figure 10.1.1 Proportion of Aboriginal and Torres Strait Islander people (of all ages) in overcrowded households, 2004-05 to 2014-15  More details can be found within the text surrounding this image.  |
| a Households requiring at least one additional bedroom, based on the Canadian National Occupancy Standard for Housing Appropriateness. b Error bars represent 95 per cent confidence intervals around each estimate. |
| *Sources*: ABS (unpublished) National Aboriginal and Torres Strait Islander Health Survey 2004‑05; ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2008; ABS (unpublished) Australian Aboriginal and Torres Strait Islander Health Survey 2012‑13 (2012‑13 NATSIHS component); ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2014‑15; table 10A.1.1. |
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The average number of people per bedroom in Aboriginal and Torres Strait Islander households was 1.1 in 2004‑05 and 2008, 1.0 in 2012‑13 and 0.8 in 2014‑15. These data are also reported by State and Territory, by average number of bedrooms per household and average number of persons per bedroom (table 10A.1.4).

Overcrowding increases with remoteness. In 2014‑15, the proportion of Aboriginal and Torres Strait Islander people of all ages living in overcrowded households ranged from 15.3 per cent in major cities up to 49.4 per cent in very remote areas, with a similar trend observed in 2004‑05, 2008 and 2012‑13. Over time, overcrowding in very remote areas, decreased from 63.4 per cent in 2004‑05 to 49.4 per cent in 2014‑15 (figure 10.1.2).

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| Figure 10.1.2 Proportion of Aboriginal and Torres Strait Islander people (of all ages) in overcrowded households, by remoteness, 2004‑05 to 2014‑15**a,b** |
| Figure 10.1.2 Proportion of Aboriginal and Torres Strait Islander people (of all ages) in overcrowded households, by remoteness, 2004 05 to 2014-15  More details can be found within the text surrounding this image.  |
| a Households requiring at least one additional bedroom, based on the Canadian National Occupancy Standard for Housing Appropriateness. b Error bars represent 95 per cent confidence intervals around each estimate. |
| *Sources*: ABS (unpublished) National Aboriginal and Torres Strait Islander Health Survey 2004‑05; ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2008; ABS (unpublished) Australian Aboriginal and Torres Strait Islander Health Survey 2012‑13 (2012‑13 NATSIHS component); ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2014‑15; table 10A.1.2. |
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Although not directly comparable with survey results, Census data indicate that overcrowding rates among non‑Indigenous Australians are relatively low compared with those for Aboriginal and Torres Strait Islander Australians (in 2011, 6.1 per cent compared with 23.4 per cent) (table 10A.1.8)). Census data by Indigenous status, by household size (10A.1.7), and overcrowding in Aboriginal and Torres Strait Islander households are also reported for all jurisdictions by remoteness (10A.1.8) and by tenure type (10A.1.9).

#### Overcrowding by housing tenure

Rates of overcrowding vary according to housing tenure. In 2014‑15, Aboriginal and Torres Strait Islander people of all ages living in rental households had higher overcrowding rates (23.5 per cent) than those living in households that were owned with or without a mortgage (13.0 per cent). Around four in five of those in overcrowded households were living in rental households (table 10A.1.5).

Additional data on housing by tenure type is available in section 9.3.

### Overcrowding as a stressor

Nationally, the proportion of Aboriginal and Torres Strait Islander people aged 18 years and over reporting overcrowding as a stressor fell by more than two‑thirds from 20.8 per cent in 2002 to 6.5 per cent in 2014‑15. Decreases over this period were seen across all remoteness areas, with the largest decrease in very remote areas (from 50.2 per cent to 9.8 per cent) (figure 10.1.3).

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| Figure 10.1.3 Proportion of Aboriginal and Torres Strait Islander people (18 years and over) reporting overcrowding as a stressor, by remoteness, 2002 to 2014‑15**a** |
| Figure 10.1.3 Proportion of Aboriginal and Torres Strait Islander people (18 years and over) reporting overcrowding as a stressor, by remoteness, 2002 to 2014-15  More details can be found within the text surrounding this image. |
| a Error bars represent 95 per cent confidence intervals around each estimate. |
| *Sources*: ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2002; ABS (unpublished) National Aboriginal and Torres Strait Islander Health Survey 2004­05; ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2008; ABS (unpublished) Australian Aboriginal and Torres Strait Islander Health Survey 2012­13 (2012­13 NATSIHS component); ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2014‑15; table 10A.1.6. |
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### Things that work

Overcrowding can be due to lack of access to adequate, appropriate and well‑maintained housing stock (AIHW 2009). Larger households need not be overcrowded, provided sufficient space is available, which includes extra bedrooms, bathrooms, kitchen spaces and storage space for personal possessions. This requires innovation in the provision of housing, rather than changes to household structure (AHMAC 2012; Healthhabitat 2013).

Aside from additional or improved housing stock, better service responses can help manage overcrowding. This could be done by providing transport or financial assistance to individuals and families to return to home communities (when visiting larger population centres for access to services), supporting host households to manage visitors, providing accessible short‑term accommodation, and developing partnerships with health services (for example, to meet the needs of renal dialysis patients) (Habibis et al. 2011).

### Future directions in data

The current model of overcrowding used by the ABS, based on the Canadian National Occupancy Standard, is structured around the number of people per bedroom (box 10.1.3). The size and type of housing influences the impact of overcrowding, and the lifespan and amenity of houses. Data on the number of bedrooms, the number and type of areas for storing food, washing people, laundry and sewerage facilities would give a more complete picture. Pholeros and Phibbs (2012) note that crowding could also be examined using a ‘stress model’ where reducing or removing sources of stress may be more helpful. It is desirable to investigate the most suitable concepts for measuring overcrowding in Aboriginal and Torres Strait Islander households, to present a more meaningful picture of how it affects Aboriginal and Torres Strait Islander Australians.

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## 10.2 Rates of disease associated with poor environmental health**[[2]](#footnote-2)**

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| Box 10.2.1 Key messages |
| * From 2003–2007 to 2010–2014, after adjusting for differences in population age structures, the death rate for Aboriginal and Torres Strait Islander Australians from diseases associated with poor environmental health decreased (from 52.2 to 43.0 per 100 000 population) but was still 1.7 times the non‑Indigenous rate (for NSW, Queensland, WA, SA and the NT combined) (tables 10A.2.8–10).
* Nationally in 2014‑15, hospitalisation rates for Aboriginal and Torres Strait Islander Australians for diseases associated with poor environmental health:
* were highest for intestinal infectious diseases (758.3 per 100 000 population), influenza and pneumonia (736.0 per 100 000 population), and bacterial disease (512.1 per 100 000 population) (table 10A.2.1)
* (after adjusting for population age structures) were higher than for non‑Indigenous Australians for all selected diseases (table 10A.2.4)
* were higher in remote and very remote areas than in non‑remote areas for all selected diseases. There was no clear relationship between disease rates and remoteness for non‑Indigenous Australians (table 10A.2.4–6).
* From 2004‑05 (2008‑09 for intestinal infectious diseases) to 2014‑15 for NSW, Victoria, Queensland, WA, SA and the NT combined, hospitalisation rates for Aboriginal and Torres Strait Islander Australians for most selected diseases increased (table 10A.2.7).
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| Box 10.2.2 Measures of rates of disease associated with poor environmental health |
| There are two main measures for this indicator.* *Hospitalisation rates for selected types of environmentally based diseases* is defined as the number of people with a disease associated with poor environmental health divided by the population, and is presented as a rate per 100 000 people. Data for this measure are sourced from the AIHW National Hospital Morbidity Database, with the most recent data available for 2014‑15 (all jurisdictions; age; remoteness).
* *Death rates for diseases associated with poor environmental health* is defined as the number of deaths associated with poor environmental health divided by the population, and is presented as a rate per 100 000 people. Data for this measure are sourced from the ABS Causes of Death collection, with the most recent available data for 2014 (NSW, Queensland, WA, SA and the NT; sex).
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During the late 1800s and early 1900s, most public health efforts focused on the control of infectious diseases, particularly epidemics. In the following century, improvements in sanitation, drinking water quality, food safety, disease control and housing conditions resulted in large improvements in public health and longevity for most Australians (AIHW 2014; EnHealth Council 2000). However, many rural and remote Aboriginal and Torres Strait Islander communities still struggle to achieve the basic level of environmental health that has been achieved for the rest of the population (EnHealth Council 2000; Knibbs and Sly 2014; McDonald, Bailie and Michel 2013).

Environmental risk factors can be defined as the biological, chemical and physical agents in the natural and built environments that are capable of causing harm (Knibbs and Sly 2014). Aboriginal and Torres Strait Islander Australians may be more likely to be affected by environmental risk factors, and factors that may be particularly relevant include poor housing, household crowding and inadequate waste, sanitation and waste facilities (Australian Indigenous HealthInfoNet 2008; Clifford et al. 2015; McDonald et al. 2008; Melody et al. 2016; Torzillo et al. 2008). Identifying the environmental health challenges within Aboriginal and Torres Strait Islander communities, and targeting factors to modify or reduce their negative impacts could result in significant improvements in health for Aboriginal and Torres Strait Islander individuals, however, more research is required as there is little current evidence from which to draw clear conclusions (Clifford et al. 2015; Knibbs and Sly 2014; Melody et al. 2016).

### Hospitalisation rates for selected diseases

The hospitalisation data used in this section reflect more serious cases of diseases, but do not necessarily show the overall incidence of disease, as people may not go to a hospital for treatment. Also, a patient in a remote area may be admitted to hospital whereas the same patient in an urban area might be managed as an outpatient. Hospital data can include some duplication, as patients can have multiple admissions for some chronic conditions, as well as changes in conditions (such as transfer from a medical ward to a rehabilitation centre within a hospital) (AIHW 2014).

For this report, hospitalisations data are presented for the non‑Indigenous population from 2012‑13 onwards (for prior years the data are presented for ‘other’ which includes non‑Indigenous Australians and those for whom Indigenous status is unknown or not stated). Prior to 2010‑11, six jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT) were considered to have adequate identification of Aboriginal and Torres Strait Islander Australians in hospitalisation data. The attachment tables for this report include hospitalisations data for all jurisdictions for 2012‑13 to 2014‑15 for Aboriginal and Torres Strait Islander Australians and non‑Indigenous Australians, as well as data for the six jurisdictions for 2004‑05 to 2014‑15 for Aboriginal and Torres Strait Islander Australians and other Australians.

Nationally in 2014‑15, hospitalisation rates for Aboriginal and Torres Strait Islander Australians for diseases associated with poor environmental health were highest for intestinal infectious diseases (758.3 per 100 000 population), influenza and pneumonia (736.0 per 100 000 population), and bacterial disease (512.1 per 100 000 population) (table 10A.2.1). For these three environmental diseases, hospitalisation rates were higher for those aged 65 years and over compared to younger age groups (table 10A.2.2).

In 2014‑15, after adjusting for differences in population age structures, hospitalisation rates for diseases associated with poor environmental health for Aboriginal and Torres Strait Islander Australians were 2.3 times higher than for non‑Indigenous Australians, and higher in remote and very remote areas than non‑remote areas for all disease types. There was no clear correlation between disease rates and remoteness for non‑Indigenous Australians (table 10A.2.4).

Data for 2012‑13 and 2013‑14 on hospitalisation numbers and rates for diseases associated with poor environmental health are available in table 10A.2.1, and by remoteness in tables 10A.2.5–6.

Between 2004‑05 and 2014‑15, for NSW, Victoria, Queensland, WA, SA and the NT combined, age standardised hospitalisation rates for Aboriginal and Torres Strait Islander Australians:

* increased for influenza and pneumonia (from 1011.7 to 1126.5 per 100 000 population) and bacterial disease (from 545.5 to 842.5 per 100 000 population)
* decreased slightly for asthma (from 318.3 to 296.4 per 100 000 population) (table 10A.2.7).

Between 2008‑09[[3]](#footnote-3) and 2014‑15, for NSW, Victoria, Queensland, WA, SA and the NT combined, age standardised rates for Aboriginal and Torres Strait Islander Australians for intestinal infectious diseases increased (from 716.0 to 985.0 per 100 000 population in 2012‑13) (table 10A.2.2).

For comparison between populations, age standardised rates showing the differences in hospitalisations between Aboriginal and Torres Strait Australians and non‑Indigenous Australians are presented in figure 10.2.1 for selected disease types, and show hospitalisation rates for Aboriginal and Torres Strait Islander Australians are higher than for non‑Indigenous Australians, with similar trends over time.

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| Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, NSW, Victoria, Queensland, WA, SA, and public hospitals in the NT, 2004‑05 to 2014‑15**a, b, c** |
| Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, NSW, Victoria, Queensland, WA, SA, and public hospitals in the NT, 2004 05 to 2014-15  Intestinal infectious diseases  More details can be found within the text surrounding this image.Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, NSW, Victoria, Queensland, WA, SA, and public hospitals in the NT, 2004 05 to 2014-15  Influenza and pneumonia  More details can be found within the text surrounding this image. | **Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, NSW, Victoria, Queensland, WA, SA, and public hospitals in the NT, 2004 05 to 2014-15  Bacterial diseases  More details can be found within the text surrounding this image.****Figure 10.2.1 Age standardised hospitalisation rates for selected diseases, NSW, Victoria, Queensland, WA, SA, and public hospitals in the NT, 2004 05 to 2014-15  Asthma  More details can be found within the text surrounding this image.** |
| a Directly age standardised using the 2001 Australian population. b ‘Other’ includes ‘non‑Indigenous’ and cases where Indigenous status was ‘not stated’. c See table 10A.2.7 for further caveats on these data. |
| *Sources*: AIHW (unpublished) National Hospital Morbidity Database; table 10A.2.7. |
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Acute rheumatic fever and trachoma are close to being unknown in the non‑Indigenous population but remain at relatively high rates among some populations of Aboriginal and Torres Strait Islander Australians, particularly in areas with poor environmental health coupled with poor hygiene practices (AIHW 2013, 2015; The Kirby Institute, UNSW 2015).

Although based on small numbers, in 2014‑15, after adjusting for differences in population age structures, the hospitalisation rate for Aboriginal and Torres Strait Islander Australians for acute rheumatic fever was 43 times the rate for non‑Indigenous Australians (table 10A.2.4). Hospitalisation rates for trachoma are suppressed due to the small numbers, but 2014 surveillance data are available for 125 communities at ‘higher risk’ of trachoma and screened for the condition in NSW (10 communities), WA (58 communities), SA (13 communities) and the NT (44 communities). In 2014, the rates of active trachoma prevalence in children aged 5–9 years were 5.5 per cent in the NT, 4.0 per cent in SA, 2.0 per cent in WA, and 0.0 per cent in NSW, and a total across the four states of 3.7 per cent (The Kirby Institute, UNSW 2015).

Remote Aboriginal communities of northern Australia have had some of the highest reported rates of crusted scabies in the world (Lokuge et al. 2014; Romani et al. 2015). In 2014‑15, after adjusting for differences in population age structures, the hospitalisation rate for Aboriginal and Torres Strait Islander Australians for scabies was 51 times the rate for non‑Indigenous Australians (table 10A.2.4).

### Death rates for diseases associated with poor environmental health

Data on deaths from diseases associated with poor environmental health are available for five jurisdictions (NSW, Queensland, WA, SA and the NT). The sample size of Aboriginal and Torres Strait Islander identification and quality of data from these jurisdictions was considered acceptable for statistical analysis. Data are available in five‑year groupings due to the volatility of small numbers each year.

After adjusting for population age structures, the death rate for Aboriginal and Torres Strait Islander Australians from diseases associated with poor environmental health was 1.8 times the non‑Indigenous rate in 2003–2007 and 1.7 times the non‑Indigenous rate in both 2008–2012 and 2010–2014 (for NSW, Queensland, WA, SA and the NT combined) (tables 10A.2.8–10). These ratios were similar for males and females (tables 10A.2.8–10).

### Things that work

Box 10.2.3 provides an example of a program that helps improve environmental health for Aboriginal and Torres Strait Islander Australians, through management of crusted scabies. Scabies is caused by a mite living in the skin, and subsequent skin infections can lead to kidney and heart problems. Crusted scabies, a type of scabies caused by the same mite, is highly contagious, and occurs when a person’s immune system cannot control the number of mites. There is often a reduced life expectancy and a high risk of reoccurrence, and this disease is managed as a chronic disease (Central Australian Rural Practitioners Association 2014).

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| Box 10.2.3 ‘Things that work’ — Improving environmental health for Aboriginal and Torres Strait Islander Australians |
| **The East Arnhem Scabies Control Program** (EASCP) was established in early 2011 as a joint initiative of One Disease, Miwatj Health Aboriginal Corporation and the NT Government Department of Health. The program has three main goals:1. to eliminate crusted scabies as a public health issue in all participating East Arnhem communities by the end of the third year of the program
2. to document a 50 per cent reduction in scabies and skin sores rates from baseline by the end of the third year of the program in at least three participating communities while aiming for all communities
3. to support related environmental health and regulatory initiatives.

The program was evaluated between August 2011 and June 2013.1 Seven patients in the three communities under evaluation and seven paired contacts (a household child contact with the same primary resistance) were included.The evaluation found that, compared to the baseline (prior to intervention), there was a significant decrease in total recurrences of crusted scabies (44 per cent) and paired contact presentations for simple scabies (58 per cent). These results are positive, although the generalisability of the results may be limited by the small sample size (active case finding by the EASCP across 11 remote communities of northern Australian has confirmed 20 cases from early 2011 to April 2014). Despite this limitation, the Central Australian Rural Practitioners Association Standard treatment manual (2014) has been updated to feature the EASCP’s model of care. |
| 1 Although this evaluation was not independent, it was published in the Medical Journal Of Australia (MJA), a leading peer‑reviewed general medical journal. |
| *Sources*: Lokuge, B., Kopczynski, A., Woltmann, A., Alvoen, F., Connors, C., Guyula, T., Mulholland, E., Cran, S., Foster, T., Lokuge, K., Burke, T. and Prince, S. 2014, ‘Crusted scabies in remote Australia, a new way forward: lessons and outcomes from the East Arnhem Scabies Control Program’, *The Medical Journal Of Australia*, vol. 200, no. 11, pp. 644–648; Central Australian Rural Practitioners Association 2014*, CARPA Standard Treatment Manual*, 6th edn, Centre for Remote Health, Alice Springs. |
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## 10.3 Access to clean water and functional sewerage and electricity services**[[4]](#footnote-4)**

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| Box 10.3.1 Key messages |
| * Access to clean water, functional sewerage and electricity services are essential services for all communities, affecting outcomes such as education and health.
* Nationally in 2014‑15, more than nine in ten Aboriginal and Torres Strait Islander households reported working household facilities (96.7 per cent for washing people, 96.5 per cent with working sewerage facilities, 91.3 per cent for washing clothes and bedding, 92.0 per cent for preparing and storing food (table 10A.3.2)).
* However, one in four Aboriginal and Torres Strait Islander households lived in a dwelling with at least one major structural problem (25.7 per cent), with the proportion higher in very remote areas (37.4 per cent) (table 10A.3.4).
* Compared with non‑Indigenous households, Aboriginal and Torres Strait Islander households were more likely to report at least one type of major structural damage to the dwelling (25.7 per cent and 13.6 per cent, respectively), and reported more of each type of structural damage (tables 10A.3.4–5; figure 10.3.2).
* New data on access to clean water, functional sewerage and electricity services for discrete Indigenous communities were not available for this report (the most recent available data are for 2006).
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| Box 10.3.2 Measures of access to clean water, functional sewerage and electricity services |
| There are two main measures for this indicator.* *Access to common/community water, sewerage and electricity services* is defined as the proportion of discrete Indigenous communities with access to common/community water, sewerage and electricity services. There is no current data source available for this measure (the most recent available data are for 2006).
* *Aboriginal and Torres Strait Islander households living in housing of an acceptable standard* is defined as a household with four working facilities and not more than two major structural problems. The data source for this measure is the ABS Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS)/National Aboriginal and Torres Strait Islander Social Survey (NATSISS), with the most recent data for 2014‑15 (all jurisdictions and capital city and balance of state). Supplementary data for the components of working facilities and major structural problems are also reported (all jurisdictions and remoteness). The data from the AATSIHS are ‘self‑reported’ and are based on the respondent’s view of their house and its functionality.
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Access to clean water, functional sewerage and electricity services are essential services for all communities, affecting services such as education and health, as well as an individual’s health (FaHCSIA and CAT 2010). A clean, adequate and reliable supply of water is required for drinking, cooking and washing, and a functional sewerage system prevents sewage from contaminating drinking water and food (Australian Indigenous HealthInfoNet 2008, 2013). Access to a reliable energy supply (generally electricity or gas) is essential for cooking, refrigeration, and running household appliances, such as washing machines (AHMAC 2012). Adequate disposal of human waste, rubbish removal and power supply are associated with better health outcomes (Osbourne, Baum and Brown 2013).

Access to functional ‘health hardware’, which supports the healthy living practices, is associated with a positive impact on health, as found in Ware’s review of housing and health literature (2013). Health hardware comprise key appliances and structures, and include: ‘toilets, lights, and drains to taps, showers and kitchens’ (Pholeros et al. 2013).

Literature reviews have found that it is more expensive and logistically more difficult to construct and maintain housing and associated infrastructure in remote areas (Fien and Charlesworth 2012; Ware 2013). Furthermore, concerns have been raised that infrastructure in remote Aboriginal and Torres Strait Islander communities does not meet the standard generally available in equivalent non‑Indigenous communities. A 2009‑10[[5]](#footnote-5) audit of municipal and essential services, involving site visits to 86 remote Aboriginal and Torres Strait Islander communities and 14 non‑Indigenous communities of comparable size and location, found that there were differences between remote Aboriginal and Torres Strait Islander communities, and remote non‑Indigenous communities, stating:

 … the level of infrastructure in remote Indigenous communities does not meet the standard generally available in non‑Indigenous communities of a similar size and location, and … services are consistently unreliable and suffer major disruptions … (DSS 2013).

There is a need for more data allowing comparison between services in Aboriginal and Torres Strait Islander communities and those in equivalent non‑Indigenous communities.

In 2009, COAG agreed to the National Affordable Housing Agreement (NAHA), which included an outcome that Aboriginal and Torres Strait Islander Australians should have ‘the same housing opportunities as other Australians, and improved housing amenity … particularly in remote areas and discrete communities’ (COAG 2009a).

The NAHA is supported by the National Partnership Agreement on Remote Indigenous Housing (NPARIH), which aims to improve housing in remote communities, including funding for minor repairs and maintenance (COAG 2009b). In 2015, the Department of the Prime Minister and Cabinet reported on progress under the COAG reform agenda, and stated that the NPARIH was on track to achieve its objectives. Since the commencement of NPARIH in 2008 to the end of March 2015, a total of 2662 new houses, and 7051 refurbishments have been completed (Department of the Prime Minister and Cabinet 2015).

### Water, sewerage and electricity services in Aboriginal and Torres Strait Islander communities

Many Aboriginal and Torres Strait Islander Australians live in urban areas where reliable drinking water, sewerage and electricity systems are available to everyone. In rural and remote areas, there is a greater reliance on local or individual household systems, like generators, septic tanks and drinking water sourced from bores and rainwater tanks (Australian Indigenous HealthInfoNet 2013). Access to water can be particularly important for community wellbeing, as water can play ‘ … a vital role in the cultural, spiritual, emotional and physical wellbeing of rural Aboriginal communities.’ (Jaravani et al. 2016).

There are no current data available for the Steering Committee’s preferred measure of ‘access to common/community water, sewerage and electricity services’. Previous reports have presented data from the 2001 and 2006 ABS Community Housing and Infrastructure Needs Survey (CHINS) (ABS 2007) (tables 10A.3.8–14), however, these CHINS data predate the introduction of the NAHA and NPARIH, and may not be representative of current conditions.

### Aboriginal and Torres Strait Islander households living in housing of an acceptable standard

Reporting on Aboriginal and Torres Strait Islander households living in housing of an acceptable standard is aligned with the related indicator in the National Affordable Housing Agreement (COAG 2009a).

The ‘acceptable standard’ measure is made up of two components:

* working household facilities
* major structural problems.

Nationally in 2014‑15, 81.8 per cent of Aboriginal and Torres Strait Islander households reported living in houses of an acceptable standard (with similar results in capital cities and other areas). These data were similar to 2008 (85.4 per cent), following an increase from 2012‑13 (77.8 per cent) driven by a rise in the proportion of those in areas outside of capital cities (from 76.2 per cent in 2013‑14 to 81.4 per cent in 2014‑15) (table 10A.3.1).

#### Access to household facilities

Nationally in 2014‑15, more than nine in ten Aboriginal and Torres Strait Islander households reported working household facilities:

* 96.7 per cent for washing people — similar to 2008 (97.8 per cent)
* 96.5 per cent with working sewerage facilities — similar to 2008 (97.7 per cent)
* 91.3 per cent for washing clothes and bedding — decreased from 2008 (93.4 per cent)
* 92.0 per cent for preparing and storing food — similar to 2008 (93.1 per cent) (table 10A.3.2).

In 2014‑15, a lower proportion of Aboriginal and Torres Strait Islander households in very remote areas reported access to working household facilities, for preparing food and washing clothing/bedding, than those in less remote areas (figure 10.3.1).

| Figure 10.3.1 Proportion of Aboriginal and Torres Strait Islander households reporting access to working household facilities, by remoteness, 2014‑15**a**  |
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| Figure 10.3.1 Proportion of Aboriginal and Torres Strait Islander households reporting access to working household facilities, by remoteness, 2014-15  More details can be found within the text surrounding this image. |
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| a Error bars represent 95 per cent confidence intervals around the estimate. |
| *Sources*: ABS (unpublished) National Aboriginal and Torres Strait Islander Social Survey 2014‑15; tables 10A.3.3. |
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#### Housing with major structural problems

Nationally in 2014‑15, one in four Aboriginal and Torres Strait Islander households lived in a dwelling with major structural problems (25.7 per cent) (table 10A.3.4), with a larger proportion of households in very remote areas (37.4 per cent) reporting these issues, compared with households in other areas. The most commonly reported problem (in remote and non‑remote areas) was major cracks in walls/floors (10.5 per cent) (table 10A.3.7).

The proportion of Aboriginal and Torres Strait Islander households reporting major structural problems (excluding rising damp, for historical comparisons) in 2014‑15 was similar to the proportion in 2008 (26.1 per cent in 2008 and 24.8 per cent in 2014‑15), following a decrease from 2012‑13 (33.8 per cent) (table 10A.3.4 and 10A.3.6).

In 2014‑15, the proportion of Aboriginal and Torres Strait Islander households reporting at least one type of major structural problem was almost twice that for non‑Indigenous households, and with higher proportions reported for each type of structural damage (table 10A.3.4–5; figure 10.3.2).

| Figure 10.3.2 Dwellings with major structural problems, by problem type, by Indigenous status, 2014‑15**a** |
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| Figure 10.3.2 Dwellings with major structural problems, by problem type, by Indigenous status, 2014-15  More details can be found within the text surrounding this image. |
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| a Error bars represent 95 per cent confidence intervals.  |
| *Sources*: ABS (unpublished) 2014‑15 National Aboriginal and Torres Strait Islander Social Survey; ABS (unpublished) 2013‑14 Survey of Income and Housing; tables 10A.3.4­–5.  |
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### Future directions in data

Recent data on access to water, sewerage and electricity services are not available. The CHINS was conducted in 1994, 2001 and 2006. There is currently no date for the next CHINS, despite an agreed NPARIH output being ‘improved data collection through a three‑yearly CHINS‑like collection’ (COAG 2009b). New data for this measure, whether from the CHINS or a comparable survey, are critical to enable ongoing reporting for Aboriginal and Torres Strait Islander access to common/community water, sewerage and electricity services.

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1. The Steering Committee notes its appreciation to the Working Group on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the report. [↑](#footnote-ref-1)
2. The Steering Committee notes its appreciation to the Working Group on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the report. [↑](#footnote-ref-2)
3. In 2008-09, coding for intestinal infectious diseases changed as a result of changes to gastroenteritis coding in the Australian Modification of the 10th revision of the International Classification of Diseases. Therefore, rates of intestinal diseases cannot be compared with rates for previous years, resulting in a break in the time series. See attachment tables for further caveats to these data. [↑](#footnote-ref-3)
4. The Steering Committee notes its appreciation to the Working Group on Aboriginal and Torres Strait Islander Environmental Health, which reviewed a draft of this section of the report. [↑](#footnote-ref-4)
5. The national Municipal and Essential Services Audit (the audit) was agreed to by the Commonwealth, State and NT Governments under the NPARIH in November 2008. The audit was undertaken by a number of audit delivery teams consisting of professional engineers, across each jurisdiction. The Australian Government advised that the audit was conducted in accordance with an audit implementation plan, agreed to by the Commonwealth, State and NT governments during November–December 2009. [↑](#footnote-ref-5)