# 6 Early child development

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| Strategic areas for action |
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In 2009, COAG agreed to the *National Partnership Agreement on Indigenous Early Childhood Development,* with the aim of improving the health and development outcomes of Aboriginal and Torres Strait Islander children across Australia (COAG 2009).[[1]](#footnote-1) Providing children with a good start can have a long lasting effect on the rest of their lives, opening up opportunities for the future. However, problems at this early stage can create barriers that prevent children achieving their full potential.

The indicators in the early child development strategic area focus on the drivers of long term advantage or disadvantage:

* antenatal care (section 6.1) — the health of women during pregnancy, childbirth and the period following birth is important for the wellbeing of both women and children
* health behaviours during pregnancy (section 6.2) — the health behaviours of women during pregnancy, including the consumption of tobacco and other drugs impacts on the wellbeing of both mother and children
* teenage birth rate (section 6.3) — teenage births are associated with lower incomes and poorer educational attainment and employment prospects for young parents
* birthweight (section 6.4) — the birthweight of a baby is a key indicator of health status. Low birthweight babies require longer periods of hospitalisation after birth and are more likely to have poor health, or even die in infancy and childhood. Low birthweight is also correlated with poorer health outcomes later in life
* early childhood hospitalisations (section 6.5) — the hospitalisation rate provides a broad indicator of the scale of serious health issues experienced by children
* injury and preventable disease (section 6.6) — most childhood diseases and injuries can be successfully prevented or treated without hospitalisation
* ear health (section 6.7) — Aboriginal and Torres Strait Islander children tend to have high rates of recurring ear infections that, if not treated early, can become chronic and lead to hearing impairment, which in turn can affect children’s capacity to learn and socialise
* basic skills for life and learning (section 6.8) — the early social and cognitive development of children provides the foundations upon which later relationships and formal learning depend.

Several COAG targets and headline indicators reflect the importance of early child development:

* young child mortality (section 4.2)
* early childhood education (section 4.3)
* substantiated child abuse and neglect (section 4.10).

Other headline indicators are important influences on early childhood outcomes:

* household and individual income (section 4.9)
* family and community violence (section 4.11).

Outcomes in the early child development area can be affected by outcomes in several other strategic areas, or can influence outcomes in other areas:

* healthy lives (access to primary health, obesity and nutrition) (chapter 8)
* economic participation (income support) (chapter 9)
* home environment (overcrowding, access to functioning water, sewerage and electricity services) (chapter 10)
* safe and supportive communities (alcohol/drug misuse and harm) (chapter 11).

#### Attachment tables

Attachment tables for this chapter are identified in references throughout this chapter by an ‘A’ suffix (for example, table 6A.1.1). These tables can be found on the Review web page (www.pc.gov.au/gsp), or users can contact the Secretariat directly.

## References

COAG, (Council of Australian Governments) 2009, *National Partnership Agreement on Indigenous Early Child Development*, Council of Australian Governments, Canberra, http://www.federalfinancialrelations.gov.au/content/npa/health\_indigenous/ctg-early-childhood/national\_partnership.pdf (accessed 3 June 2014).

## 6.1 Antenatal care[[2]](#footnote-2)

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| Box 6.1.1 Key messages |
| * Antenatal care provides expectant mothers with information and early screening that can identify and help manage issues that may affect birth outcomes. Fifty per cent of Aboriginal and Torres Strait Islander women who gave birth in 2011 attended at least one antenatal visit in the first trimester (table 6A.1.1) and 84.6 per cent attended five or more antenatal visits (table 6A.1.29). * In 2011, after adjusting for population age structures, Aboriginal and Torres Strait Islander mothers attended their first antenatal visit later in pregnancy than non-Indigenous mothers and attended less frequently (attended five or more visits at 0.9 times the rate for non‑Indigenous mothers) (tables 6A.1.7 and 6A.1.12). * Trends varied across the jurisdictions for which time series data are available but: * the proportion of Aboriginal and Torres Strait Islander mothers in very remote areas attending in the first trimester increased from 39.3 per cent in 2007 to 47.5 per cent in 2010 (NSW, SA and the NT combined) (table 6A.1.6) * the gap in mothers attending five or more visits narrowed in all remoteness areas from 2007 to 2011 (Queensland, SA and the NT combined) (tables 6A.1.22–26). |
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| Box 6.1.2 Measures of antenatal care |
| There are two main measures for this indicator (aligned with the associated NIRA indicator).   * *Antenatal visits in the first trimester* is defined as the proportion of women who gave birth who attended at least one antenatal visit in the first trimester. * *Five or more antenatal visits* is defined as the proportion of women who gave birth who attended five or more antenatal visits.   The most recent available data for both main measures are from the AIHW National Perinatal Data Collection (NPDC) (all jurisdictions; remoteness). Key points to note are:   * nationally standardised data items on *gestation at first antenatal visit* are only available from July 2010 (caution should be used in making jurisdictional comparisons prior to this date), and nationally standardised data items on *number of antenatal visits* are not yet available. * data by remoteness for 2011 are not directly comparable to data for previous years.   A supplementary measure on health and nutrition during pregnancy is also reported. |
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Although many Aboriginal and Torres Strait Islander women experience healthy pregnancies, some experience complications of pregnancy and childbirth, resulting in poorer birth outcomes than those experienced by non-Indigenous women.

Antenatal care provides expectant mothers with information and early screening that can identify and help manage issues that may affect birth outcomes. Inadequate or late access to quality antenatal care has been associated with poor pregnancy outcomes, such as prematurity, low birth weight and increased delivery intervention (DOHA 2013). Low birthweight infants are prone to ill health and at greater risk of dying during the first year of life (section 6.4, Birthweight).

Antenatal care may be especially important for Aboriginal and Torres Strait Islander women, as they are at higher risk of giving birth to low birthweight babies and have greater exposure to other risk factors such as anaemia, poor nutritional status, hypertension, diabetes, genital and urinary tract infections and smoking (AHMAC 2012). Antenatal care is an indicator in the National Indigenous Reform Agreement (NIRA) (COAG 2012), and improved access to antenatal care was a focus of the National Partnership Agreement on Indigenous Early Childhood Development (Australian Government 2009)[[3]](#footnote-3).

The optimal number of antenatal care visits is the subject of some debate (Gausia et al. 2013; Hunt and Lumley 2002). National evidence-based antenatal care guidelines have been developed by the Department of Health and Ageing in collaboration with State and Territory governments, and approved by the NHMRC (DOHA 2013). These guidelines include a recommended first visit within the first 10 weeks of gestation, with the subsequent schedule of antenatal visits to be based on the individual woman’s needs (for uncomplicated pregnancies — 10 visits for the first pregnancy and 7 visits for subsequent pregnancies). However, the indicator in this report is defined against a lower standard of five or more visits to align with the NIRA.

### Antenatal visits in the first trimester

Nationally in 2011, 50.0 per cent of Aboriginal and Torres Strait Islander women who gave birth attended at least one antenatal visit in the first trimester (table 6A.1.1). After adjusting for differences in population age structures, the rate for Aboriginal and Torres Strait Islander women was 0.8 times the rate for non-Indigenous women (table 6A.1.7).

Data were not available for all jurisdictions in all years, but there are comparable data available for three jurisdictions (NSW, SA and the NT) from 2007 to 2011. The gap between Aboriginal and Torres Strait Islander women and non-Indigenous women narrowed 9.1 percentage points in SA between 2007 and 2011 (figure 6.1.1).

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| Figure 6.1.1 Mothers who attended at least one antenatal visit in the first trimester, NSW, SA and the NT, 2007 to 2011a,b |
| Figure 6.1.1 Mothers who attended at least one antenatal visit in the first trimester, NSW, SA and the NT, 2007 to 2011  More details can be found wihtin the text surrounding this image. |
| a Data are by place of usual residence of the mother. b Due to data system reforms the Victorian Perinatal Data Collection for 2011 are provisional pending further quality assurance work. |
| *Source*: AIHW (National Perinatal Data Collection), cited in SCRGSP (2013); tables 6A.1.7–11. |
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The proportion of Aboriginal and Torres Strait Islander women attending at least one antenatal visit in the first trimester by remoteness area varied across jurisdictions. However, over time there has been a consistent improvement in very remote areas — combined data for NSW, SA and the NT showed an increase from 39.3 per cent in 2007 to 47.5 per cent in 2010 (the latest comparable year) (table 6A.1.6). Age standardised data are provided for comparisons with non-Indigenous women (tables 6A.17–21).

### Five or more antenatal visits

In 2011, 84.6 per cent of Aboriginal and Torres Strait Islander mothers attended five or more antenatal visits (NSW, Queensland, SA, Tasmania, ACT and the NT combined) (table 6A.1.29). After adjusting for differences in population age structures, the rate for Aboriginal and Torres Strait Islander women was 0.9 times the rate for non‑Indigenous women (table 6A.1.12).

Data were not available for all jurisdictions in all years, but there are comparable data available for three jurisdictions (Queensland, SA and the NT) from 2007 to 2011. When taking into account differences in population age structures, the gap between Aboriginal and Torres Strait Islander women and non-Indigenous women narrowed in Queensland (from 15.2 to 10.3 percentage points) and SA (from 23.0 to 14.7 percentage points) from 2007 to 2011. In the NT, the gap widened from 2007 to 2009 before narrowing again to 2011, resulting in less than a percentage point change from 2007 to 2011 (tables   
6A.1.12–16). For these three jurisdictions combined, the gap narrowed in all remoteness areas (tables 6A.1.22–26).

### Health and nutrition during pregnancy

Antenatal care provides an opportunity to identify maternal health issues. Nutrition and diet are important for the health of the mother and baby during pregnancy. Pregnant women and women considering pregnancy are advised to have a balanced diet and in particular to maintain adequate folate levels to decrease the risk of neural tube defects such as spina bifida.[[4]](#footnote-4) A number of studies have reported poor nutrition for Aboriginal and Torres Strait Islander women of childbearing age and during pregnancy (McDermott et al. 2009; Wen et al. 2010).

Aboriginal and Torres Strait Islander women are at higher risk of having Type 2 diabetes and gestational diabetes than non-Indigenous mothers, and these conditions pose a heightened risk of pre-term birth, delivery with no labour, caesarean section, hypertension and longer stay in hospital. In 2005–2007, nearly 7 per cent of Aboriginal and Torres Strait Islander mothers had diabetes during pregnancy: 1.5 per cent had pre-existing diabetes and 5.1 per cent had gestational diabetes mellitus (GDM), compared with 0.6 per cent of non‑Indigenous mothers who had pre‑existing diabetes and 4.7 per cent had GDM (AIHW 2010).

The most recent available national data on health and nutrition of mothers of Aboriginal and Torres Strait Islander children is from the 2008 ABS National Aboriginal and Torres Strait Islander Social Survey and was reported in the 2011 OID report. Relevant data by State and Territory and remoteness are reproduced in tables 6A.1.27–28 of this report.

### Things that work

Culturally safe service provision, involvement of Aboriginal and Torres Strait Islander elders and the community in developing services, and incorporation of traditional midwifery knowledge and skills have been found to encourage Aboriginal and Torres Strait Islander women to access maternity health services, and to lead to better maternal outcomes (Kildea and Van Wagner 2013; Kildea et al. 2012; Murphy and Best 2012; Reibel and Walker 2010; Simmonds et al. 2010; Wilson 2009). In a 2013 South Australian study, women with Aboriginal babies who attended Aboriginal Family Birthing Program services were almost five times as likely as women attending mainstream public care to say that their antenatal care was ‘very good’ (Glover et al. 2013)[[5]](#footnote-5).

Programs after birth also play an important part in health outcomes for mothers and their children (Bar-Zeev et al. 2012). Sivak, Arney and Lewig (2008) found that a family home visiting program for Aboriginal and Torres Strait Islander babies after birth had positive outcomes for the health and wellbeing of both mothers and babies.

Box 6.1.3 includes case studies of some things that are working to improve antenatal care for Aboriginal and Torres Strait Islander women.

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| Box 6.1.3 ‘Things that work’ – Antenatal care |
| The **Winnunga Nimmityjah Aboriginal Health Service** (ACT) is an Aboriginal community controlled primary health care service which provides culturally safe and holistic health services to the Aboriginal and Torres Strait Islander people of the ACT and surrounding areas. An independent evaluation in 2011 found that the **Aboriginal Midwifery Access Program** provided by the service was a benchmark program for the delivery of culturally appropriate midwifery services to parents and new-borns. It encouraged women to access treatment at an early stage in pregnancy, and provided comprehensive antenatal and postnatal services, including: home visits; assistance with appointments for antenatal investigations and specialist care; transport; birth support; postnatal follow-up; and immunisations (Wong et all 2011).  Although not formally evaluated, the Steering Committee has identified the **Bumps, Babies and Beyond** (BBB) program (Victoria) as a promising practice worth further examination. The BBB program has been offered since February 2012 through the Mallee District Aboriginal Services (MDAS; formerly Mildura Aboriginal Corporation). BBB is based on the Queen Elizabeth Centre’s (QEC) successful ‘Tummies to Toddlers’ pilot program, and the partnership between QEC and MDAS won a NAPCAN Play Your Part Award in 2012. BBB’s success has been recognised at a local and State level, and resulted in an invitation to present at the World Association for Infant Mental Health International conference in June 2014 (MDAS 2014).  BBB supports parents, particularly mothers, to develop positive interactions with their babies, improve their connectedness to support networks, reduce depression and anxiety, and assist the development of secure parent/child attachments. BBB combines home visits and group sessions, engaging pregnant women and their partners from about 26 weeks and continuing until their babies are around 18 months of age. Specific goals of the program include: antenatal appointments; post natal check-ups; maternal and child health key ages and stages; child immunisation; SIDS safe sleeping guidelines; QUIT and home safety (NAPCAN 2013). |
| *Sources*: Winnunga Nimmityjah Aboriginal Health Service 2013, *2012‑13 Annual Report*, http://www.winnunga.org.au/index.php?page=AR; Wong, R., Herceg, A., Patterson, C., Freebairn, L., Baker, A., Sharp, P., Pinnington, P. and Tongs, J. 2011, *Positive impact of a long-running urban Aboriginal medical service midwifery program*, Australian and New Zealand Journal of Obstetrics and Gynaecology, vol. 51, no. 6, pp. 518–522; NAPCAN 2013, *NAPCAN Play Your Part Award 2012 - Victoria Regional Recipient*, http://napcan.org.au/wordpress/wp-content/uploads/2013/08/ VicRegionalAwardrecipient-BumpstoBabesandBeyond.pdf (accessed 18 July 2014); MDAS 2014, News: MDAS program gets international recognition http://www.mdas.org.au/page.php?id=3&bid=68 (accessed 18 July 2014). |
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### Future directions in data

The data for both primary measures are from the National Perinatal Data Collection (NPDC) managed by the AIHW. It includes data items specified in the Perinatal National Minimum Dataset (NMDS) plus additional items collected by the states and territories.

The usefulness of NPDC data has historically been affected by some gaps in reporting, lack of national consistency and low response rates. Under schedule F of the National Indigenous Reform Agreement, the AIHW is improving the quality of NPDC data. Recent improvements include the collection of data on gestational age at first antenatal visit (included in this report). Data on the number of antenatal visits is anticipated to be available for reporting from 2016.

Data on the nutrition and health of Aboriginal and Torres Strait Islander mothers and young children are only available every six years (from the ABS NATSISS). More regular data and comparative data for non‑Indigenous mothers and children are required.

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## 6.2 Health behaviours during pregnancy[[6]](#footnote-6)

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| Box 6.2.1 Key messages |
| * Tobacco smoking, excessive alcohol drinking and illicit substance use during pregnancy can lead to miscarriage, stillbirth, foetal growth restriction, congenital anomalies, premature birth and low birthweight. * Nationally (excluding Victoria), the proportion of Aboriginal and Torres Strait Islander mothers who smoked during pregnancy declined by 4.2 percentage points from 2005 to 2011 (tables 6A.2.1—6A.2.7). * Nationally in 2011, half of Aboriginal and Torres Strait Islander mothers (50.0 per cent) smoked during pregnancy (table 6A.2.1), with the proportion slightly lower in major cities (45.7 per cent) compared with other areas (51.2–52.6 per cent) (table 6A.2.8). * After adjusting for differences in population age structures, the rate of smoking during pregnancy for Aboriginal and Torres Strait Islander mothers in 2011 was four times the rate for non-Indigenous mothers (table 6A.2.9). This ratio was highest in major cities (4.1 times as high) and lower in regional and remote areas (3.1–3.4 times as high) (table 6A.2.16). |
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| Box 6.2.2 Measuring of health behaviours during pregnancy |
| There is one main measure for this indicator (aligned with the associated NIRA indicator). *Tobacco smoking during pregnancy* is defined as the number of women who smoked during pregnancy as a proportion of the total number of women who have given birth.  The most recent available data are from the AIHW National Perinatal Data Collection (NPDC) (all jurisdictions; remoteness). Key points to note are:   * nationally standardised data items on tobacco smoking are available from July 2010. Caution should be used in making jurisdictional comparisons prior to this date * nationally comparable time series data, excluding Victoria, are available from 2005 to 2011 * data disaggregated by remoteness for 2011 are not comparable to data for previous years.   Data are also provided for three supplementary measures:   * The proportion of mothers, with Aboriginal and Torres Strait Islander children aged  0–3 years, who: * used tobacco during pregnancy * consumed alcohol during pregnancy * used illicit drugs during pregnancy.   (continued next page) |
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| Box 6.2.2 (continued) |
| The most recent available data for these measures are from the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS) 2008 (data available every six years) (all jurisdictions; remoteness).  Data on tobacco use during pregnancy from the NPDC and the NATSISS are not directly comparable. |
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Smoking in pregnancy can lead to miscarriage, stillbirth or premature birth and low birthweight (Gilligan et al. 2007; Samper et al. 2012; Walters 2009; Wills and Coory 2008). When a pregnant woman smokes, fetal levels of nicotine have been found to be 15 per cent higher than maternal levels, and fetal nicotine exposure can damage the brain, leading to health, behavioural and cognitive problems that emerge later in life (Behl et al. 2013; Hutchinson et al. 2010; Pickett et al. 2008; Stone KC et al. 2010; Stroud et al. 2009). A recent study suggests that maternal smoking during pregnancy is also an important risk factor for Attention Deficit Hyperactivity Disorder (ADHD) (Telethon Institute for Child Health Research 2013).

Negative health effects of maternal tobacco smoking may continue after birth via nicotine in breast milk and via passive (or second-hand) smoking (Johnston et al. 2011; Julvez et al. 2007). Passive smoking has been linked with higher rates of respiratory illness, sudden infant death syndrome (SIDS), vascular dysfunction, asthma and effects on hearing in children (Durante 2012; Ferrence 2010; Jones et al. 2011).

### Tobacco consumption during pregnancy

Nationally in 2011, the proportion of Aboriginal and Torres Strait Islander females smoking during pregnancy was 50.0 per cent (table 6A.2.1). The proportion was lower in major cities (45.7 per cent) compared with other areas (51.2–52.6 per cent), though the pattern varied across jurisdictions (table 6A.2.8).

After adjusting for differences in population age structures, the rate of smoking during pregnancy for Aboriginal and Torres Strait Islander women was four times the rate for non-Indigenous women (table 6A.2.9). This ratio was highest in major cities (4.1 times as high) and lower in regional and remote areas (3.1–3.4 times as high) (table 6A.2.16).

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| Figure 6.2.1 Rates of tobacco smoking during pregnancy for Indigenous females, 2005 to 2011a,b,c |
| Figure 6.2.1 Rates of tobacco smoking during pregnancy for Indigenous females, 2005 to 2011  More details can be found within the text surrounding this image. |
| a Excludes births where the mother's Indigenous status was not stated. b Data are not available for Victoria. Total excludes women who gave birth in Victoria. Due to small numbers, the total also excludes women who were Victorian residents who gave birth elsewhere in Australia. c Excludes mothers for whom smoking status was not stated. |
| *Source*: AIHW (unpublished) National Perinatal Data Collection; tables 6A.2.1—6A.2.7. |
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Nationally comparable time series data (excluding Victoria) are available from 2005.

Nationally (excluding Victoria), the proportion of Aboriginal and Torres Strait Islander females smoking during pregnancy decreased from 54.8 per cent in 2005 to 50.6 per cent in 2011 — a decrease of 4.2 percentage points (figure 6.2.1).

Survey data on smoking by mothers of Aboriginal and Torres Strait Islander children aged 0–3 years in 2008 show similar results to the 2011 NPDC data, although the survey data should be used with caution due to high relative standard errors for some results (tables 6A.2.23-24).

### Alcohol consumption during pregnancy

Heavy alcohol consumption during pregnancy may cause physical and neurocognitive disorders termed ‘fetal alcohol spectrum disorders’ (FASD) (Fitzpatrick et al. 2012; O’Leary et al. 2007). FASD are characterised by various combinations of growth restriction of the fetus, facial anomalies and impaired brain structure and function, including memory, cognition, gross and fine motor control, intellectual disability, language and behaviour problems (Fitzpatrick et al. 2012; O’Leary et al. 2007).

Measured prevalence of FASD varies depending on the method of identification and the true prevalence of FASD in Australia unknown (Burns et al. 2013; Elliott 2013; Fitzpatrick et al. 2012; House of Representatives 2012). The House of Representatives’ Inquiry into FASD estimates the prevalence in Australia to be between 0.06 and 0.68 per 1000 live births, and for Aboriginal and Torres Strait Islander Australians between 2.76 and 4.7 per 1000 births (House of Representatives 2012).

In 2010, the National Drug Strategy Household Survey found that, of all women surveyed who had been pregnant in the previous twelve months, 47.3 per cent consumed alcohol while pregnant before knowledge of their pregnancy, and 19.5 per cent consumed alcohol while pregnant after knowledge of their pregnancy (Callinan and Room 2012). In 2008, around one in five mothers of Aboriginal and Torres Strait Islander children aged   
0–3 years (19.6 per cent) reported that they consumed alcohol during pregnancy, with no significant differences in reported consumption across states and territories (table 6A.2.23) or remoteness areas (table 6A.2.24).

### Illicit drug use during pregnancy

Illicit drug use during pregnancy has detrimental effects on the fetus and the mother’s health. Effects on the mother and baby differ according to the drugs used, and can range from fetal drug dependency (neonatal abstinence syndrome), intra‑uterine growth retardation, prematurity, mortality, problems with normal brain development, low birthweight, and problems with behaviour such as sleeping patterns, mood, attention and cognitive deficits later in life (Derauf et al. 2009; Kennare, Heard and Chan 2005; Ludlow, Evans and Hulse 2004; Oei and Lui 2007).

In 2010, 4.2 per cent of all women aged 14 years and over used illicit drugs while pregnant and or breastfeeding (AIHW 2011). In 2008, 5.0 per cent of mothers aged 15 years and over of Aboriginal and Torres Strait Islander children aged 0–3 years reported using illicit drugs or substances during pregnancy, with no significant differences in reported consumption across states and territories (table 6A.2.23) or remoteness areas (table 6A.2.24). These data are not available disaggregated by the Indigenous status of mothers.

Glover et al. (2013) reported that 36 per cent of 130 women participating in their 2011 study of the antenatal experiences of Aboriginal women and families in SA used ‘yarndi’ (cannabis) during pregnancy.

### Things that work

Research on programs that support Aboriginal and Torres Strait Islander pregnant women and parents of young children to stop smoking is increasing, but researchers note the need for more evidence of strategies that work (Eades et al. 2012; Gould et al. 2013; Hefler and Thomas 2013; Marley et al. 2012; Wood et al. 2008). Passey, Sanson-Fisher and Stirling (2013) found that current pregnant Aboriginal and Torres Strait Islander women smokers were less positive about the effectiveness of strategies to quit smoking than service providers, and that family support was considered the most helpful strategy. Passey et al. (2012) found that knowledge of antenatal smoking risks was an insufficient strategy to stop smoking for Aboriginal and Torres Strait Islander women, whose social environment and daily stressors may be exacerbated by pregnancy. Glover et al. (2013) found that over half the women participating in a study of the antenatal experiences of Aboriginal women and families reported having to deal with three or more social health issues (e.g., housing problems, drug and alcohol issue, family violence, death of a family member) when they were pregnant. Box 6.2.3 includes case studies of some things that are working to stop smoking and reduce risk taking behaviours during pregnancy.

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| Box 6.2.3 ‘Things that work’ |
| NSW Aboriginal Maternal and Infant Health Service (AMIHS)  The AMIHS was established to improve the health of Aboriginal women during pregnancy and decrease perinatal morbidity and mortality for Aboriginal babies. The strategy included targeted antenatal/postnatal programs for Aboriginal women and infants; and a statewide training and support program for midwives and Aboriginal Health Workers (AHWs). The service is delivered through a continuity-of-care model, where midwives and AHWs collaborate to provide a high quality maternity service that is culturally sensitive, women centred, based on primary  health-care principles and provided in partnership with Aboriginal people.  A 2012 evaluation found that, consistent with earlier evaluations, the program was successfully meeting its goal to improve the health outcomes of Aboriginal mothers and babies by providing culturally appropriate maternity care. Specifically, there had been an increase in women receiving antenatal care before 20 weeks gestation, and a reduction in pre-term births. The evaluation noted that the strengths of the program included the partnerships between the AHWs and midwives, working together in a primary health-care model to provide continuity of care. The program has expanded to include secondary programs including mental health, drug and alcohol, and Quit for Life Smoking cessation in pregnancy programs, and Aboriginal health educators (Murphy & Best 2012).  Although not formally evaluated, the Steering Committee has identified the **Stop smoking in its tracks** project, a collaborative project undertaken by the University of Sydney and the AMIHS, as a promising practice worth further examination. This small scale program included incentives to stop smoking (vouchers for use at local stores) plus client assessment and intensive counselling, free nicotine replacement therapy, educational resources, social support groups, interventions for other drug use and support from household members. The completion rate for the trial was 86 per cent (19 women), with 84 per cent of the participants making a quit attempt and 42 per cent not smoking at 36 weeks. Participants appreciated the frequent and ongoing support, found the rewards very motivating, and considered that the constant reinforcement from the AMIHS team was important (Hefler and Thomas 2013). |
| *Sources*: Murphy and Best 2012, *The Aboriginal Maternal and Infant Health Service: a decade of achievement in the health of women and babies in NSW*, New South Wales Public Health Bulletin, vol. 23, no. 4, pp 68–72 ; Hefler and Thomas 2013, *The Use of Incentives to Stop Smoking in Pregnancy among Aboriginal and Torres Strait Islander Women,* Discussion Paper, August, Lowitja Institute. |
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### Future directions in data

The data for the primary measure are from the National Perinatal Data Collection (NPDC) managed by the AIHW. It includes data items specified in the Perinatal National Minimum Dataset (NMDS) plus additional data items collected by the states and territories.

The usefulness of NPDC data has historically been affected by some gaps in reporting, lack of national consistency and low response rates. Under schedule F of the National Indigenous Reform Agreement, the AIHW is improving the quality of NPDC data. Recent improvements include the collection of data on smoking during pregnancy (included in this report).

Limited information is available about the prevalence of Fetal Alcohol Spectrum Disorders (FASD) in Australia, due to factors including a low level of awareness by clinicians, complexity of diagnosis and the absence of nationally agreed and consistent diagnostic criteria and definitions. In 2013, the Department of Health contracted the AIHW to undertake a scoping project to identify ways of collecting and reporting information about children with FASD. The project has found that, with some development work, jurisdictional congenital anomalies registers could include notifications for FASD. The AIHW is aiming to release the report of this project by the end of 2014 (AIHW forthcoming).

The AIHW is also continuing to pursue the collection of data on alcohol use during pregnancy. Its National Maternity Data Development project (NMDDP) is developing nationally consistent perinatal data. Through the project, a list of high priority data items for national standardisation and addition to the Perinatal National Minimum Data Set (NMDS) has been developed, including data on Alcohol consumption in pregnancy. In June 2012, the AIHW sought agreement from states and territories to pilot the data item alcohol use in pregnancy for potential implementation. As that the time of preparing this report full agreement had not been received from the states and territories to commence the pilot.

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## 6.3 Teenage birth rate[[7]](#footnote-7)

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| Box 6.3.1 Key messages |
| * Giving birth as a teenager can pose additional risks for both the mother and the baby. * The Aboriginal and Torres Strait Islander teenage birth rate increased from 64.6 births per 1000 women aged 15–19 years in 2004 to 77.0 births per 1000 women aged 15–19 years in 2009, before decreasing to 68.1 births per 1000 women aged 15–19 years in 2012. The non‑Indigenous teenage birth rate followed a similar trend increasing from 13.4 births per 1000 women aged 15–19 years in 2004 to 15.0 births per 1000 women aged 15–19 years in 2008, before decreasing to 12.8 births per 1000 women aged 15–19 years in 2012 (table 6A.3.1). * Over time, there has been a change in the age profile of Aboriginal and Torres Strait Islander mothers, with a decrease in the proportion of mothers aged under 18 years from 9.5 per cent in 1998 to 7.3 per cent in 2012 (table 6A.3.2). * In 2012, 30.9 per cent of fathers of children of Aboriginal and Torres Strait Islander teenage mothers were aged less than 20 years, similar to the proportion of fathers of children of non‑Indigenous teenage mothers (28.0 per cent) (table 6A.3.7). |
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| Box 6.3.2 Measures of teenage birth rate |
| The main measure for this indicator is *Teenage birth rate*, defined as the number of live births per 1000 female population aged 15–19 years.  Data are also provided for three supplementary measures:   * Median age of parents * Births to teenage mothers, by age of mother * Births to teenage mothers, by age of father.   The most recent available data for all measures are from the ABS Birth Registrations Collection (all jurisdictions; age; remoteness). Births are reported according to the date of registration (which may occur in a different year to the birth itself).  Another potential source of data on teenage births is the AIHW’s National Perinatal Data Collection (NPDC), which records births reported by State and Territory health authorities to the National Perinatal Data Unit (a collaborating unit of the AIHW). However, data from the ABS Birth Registrations Collection are not directly comparable to data from the NPDC due to differences in methods, timing and reporting. Also, the NPDC has a shorter time series than the ABS birth data, with nationally comparable NPDC data on Indigenous status of the mother only available from 2005, and data on Indigenous status of the baby was only available for selected jurisdictions from 2012. |
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Giving birth as a teenager can pose a greater risk of adverse pregnancy outcomes (Shrim et al. 2011). The age of the mother is associated with the risk of foetal complications and perinatal health, with adverse outcomes more likely amongst mothers in their teenage years and mothers over the age of around 35 years (Laws and Sullivan 2004).

Many studies have measured the association between teenage pregnancy and the likelihood that the mother or child will experience socioeconomic disadvantage both at the time of birth and later in the mother’s or child’s life. Children of teenage mothers have worse outcomes in terms of education, earnings and health (Francesconi 2008). Jeon, Kalb and Vu (2011) examined welfare participation among Australian teenage mothers and found a strong association between welfare participation and being a teenage mother. In Australia, teenage mothers are overrepresented among recipients of the main income support payment for single mothers (Morehead and Soriano 2005), and are overrepresented among disability support payment recipients (Jeon, Kalb and Vu 2011). Teenage mothers are less likely than older mothers to have completed year 12, be employed or to have a post-school qualification (Kalb, Le and Leung 2012). A WA study found that not only are Aboriginal and Torres Strait Islander teenagers more likely to experience teenage pregnancy than non‑Indigenous teenagers, but are also more likely to experience a repeat pregnancy within two years (Lewis et al. 2010).

For some young women, motherhood can have transformative potential (Brand 2013; Keys 2007; Smith, Skinner and Fenwick 2012). Larkins et al (2011) found that teenage women in their Townsville study of 186 young Indigenous women took motherhood very seriously and spoke about how becoming a mother gave meaning to their lives. Those who had supportive families that provided emotional and practical support found the transition to motherhood easier than those who did not (Larkins et al. 2011). Unfortunately, Larkins et al (2011) found the young mothers in their study were highly mobile and generally had poor relationships with their mothers, distrust of men and a family history of early parenting. Some of these women also had experienced sexual or physical abuse or domestic violence in their families.

The Aboriginal and Torres Strait Islander population has a younger age structure than the non-Indigenous population. The median age of the Aboriginal and Torres Strait Islander population at 30 June 2011 was 21.8 years, compared to 37.6 years for the non-Indigenous population (ABS 2013b). This difference in age structure contributes to the relatively high fertility of Aboriginal and Torres Strait Islander women. In 2012, the median age of Aboriginal and Torres Strait Islander mothers was 25.2 years and the fertility rate was 2.71 babies per woman, compared to a median age of 30.9 years for non-Indigenous mothers and a fertility rate of 1.93 babies per non‑Indigenous woman (table 6A.3.4; ABS 2013a). The median age of Aboriginal and Torres Strait Islander mothers decreases as remoteness increases, but for non-Indigenous mothers the median age is lowest in regional areas (table 6A.3.5). These data are also reported by State and Territory (table 6A.3.4).

### Teenage birth rate

Aboriginal and Torres Strait Islander teenagers have a much higher birth rate and poorer outcomes compared to their non-Indigenous counterparts. Similar results have been found for other indigenous peoples internationally. Luong (2008) noted that, for Canadian Aboriginals, teenage pregnancy is much more common than for other Canadians. Teenage pregnancy is also much more common for Māori than other New Zealanders (Lawton et al. 2013).

The Aboriginal and Torres Strait Islander teenage birth rate has declined from 77.0 births per 1000 women aged 15–19 years in 2009, to 68.1 births per 1000 women aged   
15–19 years in 2012. The non-Indigenous teenage birth rate has also declined, from 15.0 births per 1000 women aged 15–19 years in 2008 to 12.8 births per 1000 women aged 15–19 years in 2012 (table 6A.3.1).

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| Figure 6.3.1 Teenage birth rate for Indigenous females, by age, 2004 to 2012a |
| Figure 6.3.1 Teenage birth rate for Indigenous females, by age, 2004 to 2012  More details can be found within the text surrounding this image. |
| a These data exclude 1911 registered births where the Indigenous status was not stated for mothers aged 15–19 years over the period 2004 to 2012. |
| *Sources*: ABS (unpublished) Births, Australia, 2012; ABS 2014, *Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 2001 to 2026*, Cat. no. 3238.0; Table 6A.3.1. |
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For Aboriginal and Torres Strait Islander females, the year at which the decrease in rates occurred differed by age. For those aged 17 years or younger, the decrease occurred from 2008, and for those aged 18 and 19 years, the decrease occurred from 2009 (figure 6.3.1).

These data are also reported by State and Territory (table 6A.3.1).

### Teenage birth by age of mother

Younger teenage mothers have higher risks than older teenage mothers, because their bodies have not had time to fully develop (Roth et al. 1998).

The age profile of Aboriginal and Torres Strait Islander teenage mothers has changed over time. From 1998 to 2012, the proportion of babies born to Aboriginal and Torres Strait Islander mothers aged 17 years or younger declined from 9.5 per cent in 1998 to 7.3 per cent in 2012, while the proportions of babies born to Aboriginal and Torres Strait Islander mothers aged 18 and 19 years remained relatively stable around 5 and 6 per cent respectively. The proportions of babies born to non‑Indigenous teenage mothers for most age groups decreased from 1998 to 2012 (table 6A.3.2). These data are also reported by State and Territory in table 6A.3.2. The number of births to teenage mothers, by age of mother between 1998 and 2012 is provided in table 6A.3.6.

The proportion of babies born to Aboriginal and Torres Strait Islander teenage mothers increases with remoteness (from 17.6 per cent in major cities to 19.5 per cent in remote areas and 22.4 per cent in very remote areas in 2012). The proportion of babies born to non‑Indigenous teenage mothers is highest in regional areas (9.8 per cent), followed by remote areas (6.9 per cent) and major cities (2.3 per cent). This pattern is consistent over time (table 6A.3.3) and consistent with the pattern for median age of Aboriginal and Torres Strait Islander and non-Indigenous mothers (table 6A.3.5).

### Teenage birth by age of father

International research indicates that children of young and teenage fathers also have an increased risk of adverse birth outcomes such as preterm birth, low birthweight, small for gestational age births, low Apgar Score[[8]](#footnote-8) and infant mortality (Chen et al. 2008; Doamekpor, Amutah and Ramos 2013), congenital malformations such as gastroschisis and trisomy 13 (Archer et al. 2007), schizophrenia (Wohl and Gorwood 2007), and some studies have found associations for neural tube defects (Kazaura, Lie and Skjærven 2004; McIntosh, Olshan and Baird 1995).

Information about the age of fathers of babies born to teenage females can assist in developing age appropriate programs to reduce teenage birth rates. Lohan et al. (2010) suggest that greater understanding of teenage fathers’ perspectives could re‑frame the idea that adolescent pregnancy is solely a women’s issue. Larkins et al. (2011) found that young Aboriginal and Torres Strait Islander men who had not yet become parents had idealised perceptions about teenage pregnancy and parenthood.

Nationally in 2012, 30.9 per cent of fathers of children of Aboriginal and Torres Strait Islander teenage mothers were aged less than 20 years, similar to the proportion of fathers of children of non-Indigenous teenage mothers (28.0 per cent) (table 6A.3.7). However, the age of the father is unknown in a large proportion of records (27.4 per cent where the mother is Aboriginal and Torres Strait Islander and 14.7 per cent where the mother is non-Indigenous), which makes interpretation of these data difficult (table 6A.3.7). These data are also reported by State and Territory (table 6A.3.7) and remoteness (table 6A.3.8).

### Things that work

Programs have been developed to assist teenage and young mothers to care for their children. Box 6.3.3 provides an example of programs designed to assist young Aboriginal and Torres Strait Islander mothers.

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| Box 6.3.3 Things that work — Teenage birth rate |
| The **Ngala Nanga Mai pARenT Group** Program is a small scale program operating in La Perouse, Sydney. It and aims to: improve the health of young Aboriginal parents and their children; facilitate parents’ return to educational opportunities; and improve social connectedness (ARCHI 2014). The program won several awards in 2010, and in 2013 was awarded the NSW/ACT State Creative Partnerships Arts and Health Award and was one of six finalists for a National Award (ICH 2014). The program provides:   * a twice-weekly, three hour art program for young parents * support and education programs for the parents by an Aboriginal Early Education Officer * health checks for the babies by an Early Childhood Nurse * provision of an accessible co-located paediatric clinic and health promotion talks by a Paediatric doctor * linkages to midwives who provide continuity of care from the antenatal to the postnatal period.   Tutoring support services are also provided by TAFE OTEN Aboriginal Education Training Unit’s Indigenous Tutorial Assistance Scheme, to enhance access to educational and employment opportunities.  A 2011 evaluation found that, between 2009 and 2012, 94 participants (parents of 133 children) attended the group at least once, with 31 participants identified as regular attendees. The program had facilitated access to health care, and program participants reported improved mental health, wellbeing and social connectedness. Twenty-five participants enrolled in higher education, and at least five participants gained full time employment with support from the program (ICH 2014).  The Closing the Gap Clearinghouse has found that effective parenting support programs for Aboriginal and Torres Strait Islander families generally include the following:   * use of cultural consultants in conjunction with professional parent education facilitators and home visitors   (continued next page) |
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| Box 6.3.3 (continued) |
| * long-term rather than short-term programs * a focus on the needs of both parents/carers and the child * a supportive approach that focuses on family strengths * use of structured early intervention program content while also responding flexibly to families (AIHW 2012). |
| *Sources*: ICH (Institute for Creative Health) 2014; ARCHI (Australian Resource Centre for Healthcare Innovations) 2014; AIHW 2012, *Parenting in the early years: effectiveness of parenting support programs for Indigenous families*, Resource sheet no. 16 produced for the Closing the Gap Clearinghouse. |
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### Future directions in data

There are limited data on teenage mothers’ and fathers’ access to sexual or reproductive health services, apart from contraception use (for women aged 18–49 years from ABS Aboriginal and Torres Strait Islander health surveys) and the number of antenatal check‑ups (from the AIHW National Perinatal Data Collection and included in section 6.1 of this report).

*Births, Australia* (ABS 2013a) is published annually by the ABS and provides data on Aboriginal and Torres Strait Islander births (where the father, mother or both identify as Aboriginal and/or Torres Strait Islander), births to Aboriginal and Torres Strait Islander women and non-Indigenous births (where neither the father nor mother identify as Aboriginal and/or Torres Strait Islander). While this collection includes the age of the father, for a high proportion of births by teenage mothers the age of the father is unknown. Identification of the father is currently not compulsory on birth registrations.

A complete estimation of teenage *pregnancy* rates would combine abortion figures with numbers of births and perinatal deaths. However, it is not currently possible to gain a precise figure for the number of abortions performed, either in the first or second trimester for Aboriginal and Torres Strait Islander teenage women.

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## 6.4 Birthweight[[9]](#footnote-9)

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| Box 6.4.1 Key messages |
| * Birthweight is a key indicator of the health status of babies and a predictor of their health outcomes later in life. * For available jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT), the proportion of low birthweight babies born to Aboriginal and Torres Islander mothers decreased from 11.7 per cent in 2000 to 11.1 per cent in 2011 (figure 6.4.1). * Nationally in 2011 for all jurisdictions, 11.2 per cent of babies born to Aboriginal and Torres Strait Islander mothers had low birthweight, compared to 4.6 per cent of babies born to non‑Indigenous mothers (table 6A.4.2). * The proportion of low birthweight babies born to Aboriginal and Torres Strait Islander mothers increased with remoteness, whilst the proportion of low birthweight babies born to non-Indigenous mothers decreased slightly as remoteness increased (excluding major cities) (tables 6A.4.6–11). |
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| Box 6.4.2 Measures of birthweight |
| There is one main measure for this indicator (aligned with the associated NIRA indicator). *Incidence of low birthweight among live-born babies* is defined as the number of low birthweight (less than 2500 grams) live-born singleton infants as a proportion of the total number of live‑born singleton infants with known birthweight.  The most recent available data for this measure are from the AIHW National Perinatal Data Collection (NPDC) (all jurisdictions; remoteness). Key points to note are:   * since 2011, data are available by the Indigenous status of the baby. Historical data are only available by the Indigenous status of the mother * data disaggregated by remoteness for 2011 are not directly comparable to data for previous years. |
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Children with a low birthweight require longer periods of hospitalisation after birth and are more likely to have poor health, or even die in infancy (AIHW 2011). Data on birthweight for Aboriginal and Torres Strait Islander and non-Indigenous fetal deaths shows similar proportions of low birthweight babies (table 6A.4.15). Low birthweight can also affect brain development and increase the likelihood of developing chronic diseases in adulthood, including hypertension, kidney disease and diabetes mellitus (Barker 2012; DeKieviet et al. 2012; Khalidi et al. 2012; Luyckx et al. 2013; Singh 2011).

Low birthweight can be a result of pre-term birth (although the infant may be within the expected weight range for its gestational age) or being born at the normal time (after 37 weeks) but of low birthweight (indicating fetal growth retardation) (ABS and AIHW 2008). In 2008-2009, 65 per cent of Aboriginal and Torres Strait Islander pre-term births were of low birthweight and 5 per cent of full term births were of low birthweight, compared with 56 per cent pre-term births and 2 per cent full term births for non‑Indigenous mothers (AIHW 2013).

For Aboriginal and Torres Strait Islander babies, the evidence is mixed on whether fetal growth retardation or pre-term birth is the main cause of low birthweight (Mackerras 1998; Rousham and Gracey 2002; Sayers and Powers 1997). Predictors of fetal growth retardation and pre-term birth are listed in table 6.4.1. Of these predictors, information on tobacco and alcohol consumption during pregnancy (section 6.2) and teenage birth rates (section 6.3) are available in this report. A multivariate analysis for the period 2006–2008 showed that, for Aboriginal and Torres Strait Islander mothers, 26 per cent of low birthweight births can be attributed to smoking during pregnancy (after taking into account pre-term birth and other factors — the rate is 33 per cent unadjusted), compared with 9 per cent for other mothers (AHMAC 2012). If the smoking rate during pregnancy among Aboriginal and Torres Strait Islander mothers were the same as for other mothers, after accounting for other factors, the proportion of babies with low birthweight among the Aboriginal and Torres Strait Islander population could be reduced by 19 per cent (AIHW 2013). Increasing the number of antenatal visits (section 6.1) has also been identified as having a positive impact on the birthweight of babies (Khalidi et al. 2012; Taylor et al. 2013). Antenatal visits enable education and monitoring of risk factors.

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| Table 6.4.1 Predictors of fetal growth retardation and pre-term birth |
| |  |  | | --- | --- | | Fetal growth retardation | Pre-term birth | | Maternal age  Maternal pre-pregnancy weight  Prior low birthweight infant  Gestational weight gain (maternal nutrition)  Maternal cigarette smoking  Alcohol consumption | Maternal anaemia  Infections  Maternal cigarette smoking  Maternal diabetes  Pregnancy induced hypertension | |
| *Sources*: Mackerras, D (2001) ‘Birthweight changes in the pilot phase of the Strong Women Strong Babies Strong Culture Program in the Northern Territory’, *Australian and New Zealand Journal of Public Health*, vol. 25, no. 1, pp34–40; Algert et al 1993 cited in Bambrick, H. J. 2003, ''Dying fast and young': Contemporary Aboriginal Health, Chapter 3' in Child Growth and Type 2 Diabetes Mellitus in a Queensland Aboriginal Community, April 2003, thesis submitted for the degree of Doctor of Philosophy, Australian National University, https://digitalcollections.anu.edu.au/bitstream/1885/46071/30/04 chapter3.pdf (accessed 10 February 2014). |
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Recent results from the Gudaga study (a birth cohort study of Aboriginal infants in an urban area of NSW) found that when all risk and protective factors were accounted for, there was no statistically significant difference in birthweight between Aboriginal and non‑Aboriginal infants (Comino et al. 2012). This reinforces that Indigeneity itself is not a factor for low birthweight, but rather the prevalence of individual risk and protective factors.

### Low birthweight

For available jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT), the proportion of low birthweight babies born to Aboriginal and Torres Strait Islander mothers decreased from 11.7 per cent in 2000 to 11.1 per cent in 2011 (figure 6.4.1). Over the same period, the proportion for non-Indigenous mothers remained relatively constant around 4.5 per cent (table 6A.4.1). Significance testing on the time series from 2000 to 2011 shows the decrease over this period for Aboriginal and Torres Strait Islander mothers was statistically significant (AIHW 2014).

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| Figure 6.4.1 Proportion of liveborn singleton babies of low birthweight born in NSW, Victoria, Queensland, WA, SA and the NT, to Indigenous mothers, 2000 to 2011**a,b,c** |
| Figure 6.4.1 Proportion of live born singleton babies of low birthweight born in NSW, Victoria, Queensland, WA, SA and the NT, to Indigneous mothers, 2000 to 2011  More details can be found within the text surrounding this image. |
| a Data relate to live births. Data exclude stillbirths; births both less than 20 weeks gestation and less than 400 grams birthweight; births less than 20 weeks gestation (where gestation is known) in Vic and WA; and multiple births. b Data are by place of usual residence of the mother. Table excludes non-residents, external territories and not stated State/Territory of residence. Babies born to mothers residing in Tasmania and the ACT are excluded. c Data on Indigenous births relate to babies born to Indigenous mothers only, and excludes babies born to non‑Indigenous mothers and Indigenous fathers. Therefore, the information is not based on the total count of Indigenous babies. |
| *Source*: AIHW 2014, *Birthweight of babies born to Indigenous mothers*, Cat. no. IHW 138, Canberra; table 6A.4.1. |
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Nationally in 2011 for all jurisdictions, 11.2 per cent of babies born to Aboriginal and Torres Strait Islander mothers had low birthweight, compared to 4.6 per cent of babies born to non-Indigenous mothers (table 6A.4.2).

The proportion of babies born with low birthweight born to Aboriginal and Torres Strait Islander mothers increases with remoteness — in 2011, this ranged from 9.9 per cent in major cities to 13.5 per cent in very remote areas. Proportions decreased for non‑indigenous mothers decreased as remoteness increased (excluding major cities) (tables 6A.4.6–4.11).

Aggregating three years of data enables subsetting of low birthweight into very low and extremely low birthweights. The ratio of proportions for Aboriginal and Torres Strait Islander mothers compared to non-Indigenous mothers for low birthweight is similar for very low and extremely low birthweights (around 2:1) (table 6A.4.14).

From 2011, data were available by Indigenous status of the infant (that is, where the mother and/or the father are Aboriginal or Torres Strait Islander), and for all jurisdictions except WA and SA (table 6A.4.12). However, caution should be used in interpreting these data as there are a large number of births for whom the Indigenous status of the infant could not be determined.

Additional data on selected birth outcomes for women are reported in tables 6A.4.16-17. Associations between birthweight and maternal health for Aboriginal and Torres Strait Islander children are reported in table 6A.4.18.

### Things that work

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| Box 6.4.3 Things that work — Birthweight |
| The national **Healthy for Life (HfL) program**, funded by the Office for Aboriginal and Torres Strait Islander Health, commenced in 2005-06 and includes a formal objective of improving child and maternal health care services.  The HfL program is available to established primary health-care providers in Aboriginal Community Controlled Health Services (ACCHS), State and Territory health services and Divisions of General Practice. ACCHS comprise about 65 per cent of the services participating in the program. The HfL program has a strong focus on continuous quality improvement and collects and reports data for a range of qualitative and quantitative indicators. These provide information on clinical outcomes in three health priority areas: maternal health, child health and chronic disease. Essential indicators are provided for each ACCHS, allowing them to benchmark themselves and assess areas where they have done well since the inception of the HfL program in 2007, as well as areas that could be improved.  An independent evaluation found over the year to June 2008 there was a decrease in the proportion of low birthweight babies, but also an increase in the proportion of high birthweight babies (Urbis 2009). More recent data from the HfL Report Card found that the number of Aboriginal and Torres Strait Islander babies with normal birthweight increased from 583 (81.5 per cent) in 2007–08 to 850 (84.2 per cent) in 2010–11 (AIHW 2013). |
| *Sources*: AIHW (2013) *Healthy for Life – Aboriginal Community Controlled Health Services Report card;* Urbis (2009) *Evaluation of the Healthy for Life Program*, Final report 30 June 2009. Prepared for the Department of Health and Ageing. |
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### Future directions in data

Although the National Perinatal Data Collection includes data from 2011 on the Indigenous status of the infant, for around 6 per cent of cases the Indigenous status is unknown, due to unknown Indigenous status of the father. Identification of the father is not compulsory on birth registrations.

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## 6.5 Early childhood hospitalisations[[10]](#footnote-10)

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| Box 6.5.1 Key messages |
| * For children aged 0–4 years: * nationally in 2012‑13, 29 658 per 100 000 Aboriginal and Torres Strait Islander children were hospitalised, compared with 23 318 per 100 000 non‑Indigenous children (table 6A.5.1) * nationally in 2012‑13, hospitalisation rates for Aboriginal and Torres Strait Islander children and other children were similar in major cities (24 389 and 23 713 per 100 000 population, respectively), but rates in regional areas were 1.2 times as high for Aboriginal and Torres Strait Islander children (27 185 and 23 238 per 100 000 population, respectively) and in remote areas were twice as high (45 447 and 23 562 per 100 000 population, respectively) (table 6A.5.10) * from 2004‑05 to 2012‑13, for NSW, Victoria, Queensland, WA, SA and the NT combined, hospitalisation rates for Aboriginal and Torres Strait Islander children increased from 23 725 to 30 406 per 100 000 population. Rates for other children fluctuated over the period with no clear trend, leading to a widening of the gap (figure 6.5.1). |
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| Box 6.5.2 Measures of early childhood hospitalisations |
| The main measure for this indicator is the *hospitalisation rate,* which is defined as the hospital separation rate per 100 000 of Aboriginal and Torres Strait Islander children aged 0–4 years, by principal diagnoses. Data is sourced from the National Hospital Morbidity Database (NHMD) (all jurisdictions; remoteness), with the most recent data available for 2012‑13. |
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This section and the next section (section 6.6 Injury and preventable diseases) should be read together. Section 6.6 provides data on a subset of hospitalisations that are potentially preventable. The Council of Australian Governments (COAG) National Indigenous Reform Agreement includes hospitalisation rates by principal diagnosis as a progress indicator for its target of ‘halving the gap in mortality rates for Indigenous children under five within a decade’ (COAG 2012). Related data on young child mortality are included in section 4.2.

Early childhood hospitalisation rates are an indicator of the health of young children. However, hospitalisations represent the most serious cases and are not a measure of the actual prevalence of injury and disease. Many children suffering disease and injury do not require hospital treatment — most do not require formal medical treatment or are treated by doctors, nurses and other primary health care providers outside of hospital. A high rate of hospitalisation may also indicate differential access and use of primary health care, as many hospital admissions could be prevented if more effective non‑hospital care were available and used (AIHW 2014; AHMAC 2011).

Monitoring the leading causes of hospitalisations can uncover emerging health risks, as well as highlight where there may be a need for more effective primary health care. The types of major diseases children present with, the number of multiple diagnoses and the duration and frequency of children’s hospitalisations are all important measures of the health of Aboriginal and Torres Strait Islander children.

The stage of a child’s development affects the types and seriousness of injuries requiring hospitalisation; for example, as children’s mobility increases, the hazards they are exposed to change. Steenkamp and Cripps identified that the risk of hospitalisation for falls increases with age but, for other conditions such as poisoning, children under five years have the highest risk of hospitalisation (AIHW 2014).

A Telethon Institute of Child Health study in Western Australia found that the most common reason for hospitalisation before the age of two was infection (mainly respiratory and gastrointestinal), accounting for 34 per cent of all admissions. Aboriginal children had significantly higher admission and comorbidity rates, stayed longer and were more likely than non‑Indigenous children to die in hospital. Hospitalisation rates for Aboriginal children for infections were more than four times as high as those for non‑Indigenous children — although, over time, admission rates had declined for Aboriginal children and increased for non‑Indigenous children (Carville et al. 2007). Another Western Australian study indicates that hospitalisation rates for Aboriginal and Torres Strait Islander children under five for burn injury were three times as high as those for non-Indigenous children for 1983 to 2008 (Duke et al. 2011).

O’Grady et al (2010) found that Aboriginal and Torres Strait Islander infants (aged less than 12 months) in the Central Australian region were hospitalised for pneumonia at among the highest rates reported in the world, with 78.4 episodes per 1000 child-years. A Western Australia study found that Aboriginal children aged up to two years were admitted for pneumonia at 14 times the rate for non‑Indigenous children between 1990 and 2000 (Carville et al. 2007).

### Hospitalisation rate

From 2010-11, Indigenous status in hospital separations data are considered of sufficient quality for reporting in all jurisdictions. Prior to 2010-11, six jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT) were considered to have acceptable quality of Aboriginal and Torres Strait Islander Indigenous identification in hospitalisation data. The attachment tables for this report include data for all jurisdictions for 2010-11 to 2012-13, as well as data for the six jurisdictions for 2004-05 to 2012-13.

Nationally in 2012‑13, 29 658 per 100 000 Aboriginal and Torres Strait Islander children were hospitalised, with the rate increasing as remoteness increased (tables 6A.5.1 and 6A.5.10). The rate for non‑Indigenous children was 23 318 per 100 000 population (table 6A.5.1).

In 2012‑13, diseases of the respiratory system were the most common cause of hospitalisation of Aboriginal and Torres Strait Islander children aged 0–4 years, with 7782 per 100 000 Aboriginal and Torres Strait Islander children hospitalised nationally, 1.7 times the rate for non-Indigenous children. Aboriginal and Torres Strait Islander children aged 0–4 years were twice as likely as other children to be hospitalised due to infectious and parasitic diseases (table 6A.5.1).

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| Figure 6.5.1 Hospitalisation rates for children aged 0–4 years, NSW, Victoria, Queensland, WA, SA and public hospitals in the NT, 2004-05 to 2012-13a,b,c,d |
| Figure 6.5.1 Hospitalisation rates for children aged 0–4 years, NSW, Victoria, Queensland, WA, SA and public hospitals in the NT, 2004-05 to 2012-13  More details can be found within the text surrounding this image. |
| a Data includes six jurisdictions for which the quality of Indigenous identification in hospitalisation data is considered acceptable (NSW, Victoria, Queensland, WA, SA and the NT only). b Data are based on principal diagnosis as classified by the ICD-10-AM classification of diseases (International Statistical Classification of Diseases) 10th Revision, Australian Modification. c Data are based on State of usual residence. d ‘Other children’ includes hospitalisations of non-Indigenous children and those for whom Indigenous status was not stated. |
| *Source*: AIHW (unpublished) National Hospital Morbidity Database; tables 6A.5.1–9. |
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From 2004-05 to 2012-13, hospitalisation rates for NSW, Victoria, Queensland, WA, SA and the NT combined for Aboriginal and Torres Strait Islander children increased from 23 726 to 30 406 per 100 000 population. Rates for other children fluctuated over the period with no clear trend, leading to an widening of the gap (figure 6.5.1). For Aboriginal and Torres Strait Islander children, hospitalisation rates increased for five of the six top diagnoses, while hospitalisations for ‘certain infectious and parasitic diseases’ decreased from 3086 per 100 000 population in 2004-05 to 2612 per 100 000 population in 2012‑13, (twice the rate for other children) (tables 6A.5.1 and 6A.5.9).

In 2012‑13, hospitalisation rates were similar for Aboriginal and Torres Strait Islander children and non-Indigenous children in major cities (24 390 and 23 713 per 100 000 population, respectively), but rates in regional areas were 1.2 times as high for Aboriginal and Torres Strait Islander children (27 185 and 23 238 per 100 000 population, respectively) and in remote areas were twice as high (45 448 and 23 562 per 100 000 population, respectively) (table 6A.5.10).

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## 6.6 Injury and preventable disease[[11]](#footnote-11)

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| Box 6.6.1 Key messages |
| * For children aged 0–4 years: * nationally in 2012-13, 16 083 per 100 000 Aboriginal and Torres Strait Islander children were hospitalised for potentially preventable diseases and injuries, while the rate for non‑Indigenous children was 9672 per 100 000 population. Diseases of the respiratory system accounted for almost half of all hospitalisations for both Aboriginal and Torres Strait Islander and non-Indigenous children (table 6A.6.1). * from 2004-05 to 2012-13, potentially preventable hospitalisation rates (for NSW, Victoria, Queensland, WA, SA and the NT combined) increased for Aboriginal and Torres Strait Islander children (from 14 652 to 16 561 per 100 000 population) and decreased for other children (from 10 835 to 9879 per 100 000 population) (tables 6A.6.1–9). * in 2008–2012, for NSW, Queensland, WA, SA and the NT combined, the death rate from injury and preventable diseases for Aboriginal and Torres Strait Islander children was 36.3 deaths per 100 000 population, a decrease from 41.7 per 100 000 population in  2003–2007 (figure 6.6.1). The rate for non-Indigenous children also decreased over this period (from 15.8 to 11.3 deaths per 100 000 population) (tables 6A.6.11-12). |
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| Box 6.6.2 Measures of injury and preventable disease |
| There are two main measures for this indicator:   * *Potentially preventable hospitalisations* is defined as the number of hospital separations for injury and potentially preventable disease for children aged 0–4 years as a rate per 100 000 children aged 0–4 years. The main data source is the AIHW National Hospital Morbidity Database (NHMD), with the most recent available data for 2012‑13 (all jurisdictions: remoteness). * *Potentially avoidable deaths* is defined as the number of deaths from potentially preventable and treatable injury and disease for children aged 0–4 years as a rate per 100 000 children aged 0–4 years. The main data source is the ABS Causes of Death collection with the most recent available data for 2012 (NSW, Queensland, WA, SA and the NT). |
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In Australia, many childhood diseases are generally prevented or successfully treated without hospitalisation. The main focus of this indicator is on the most serious cases of disease and injury, which result in a hospital admission. Some infections that may appear minor can have serious longer term health effects. Recurring skin and throat infections (caused by group A streptococcal bacteria) in some Aboriginal communities are associated with the highest worldwide rates of acute rheumatic fever, which can lead to rheumatic heart disease (Currie and Carapetis 2000 in Zubrick et al. 2004). The major pathogen of skin infection, group A streptococcus, is also associated with chronic renal failure — a prevalent and highly burdensome condition among Aboriginal adults (Zubrick et al. 2004).

A wide range of social, cultural, physical and economic factors influence the health of children. Communities and governments can assist in preventing disease and promote the health of children through improved access to quality medical care, disease registers to improve follow up care, free vaccination programs, the provision of adequate housing, education on the benefits of good nutrition and sanitation, and policies and promotion to reduce the risk of injury. Breastfeeding can reduce the risk of hospitalisation for a range of acute childhood illnesses, including gastrointestinal diseases and infections, and prevent the development of infections and chronic diseases such as diabetes and obesity in later life (FaHCSIA 2013; Queensland Health 2014).

Access to effective and appropriate health care services (including dental and immunisation services) can influence the health of children in the short and long term. More information on immunisation rates in children and the prevalence of vaccine preventable diseases as well as access to primary health care in general, is included in section 8.1. Section 6.7 includes information on ear infections in children and section 8.6 covers tooth decay in children (and adults). See section 10.2 for more information on diseases associated with poor environmental health.

### Potentially preventable hospitalisations

Hospitalisation rates are not a measure of the prevalence of a condition in the community, but they do provide an indication of the extent to which serious illnesses are being treated in hospitals. Potentially preventable hospitalisations include conditions that potentially could have been prevented by the provision of appropriate non-hospital health services, and injuries that potentially could have been prevented (usually outside the health system in broader society).

These data should be interpreted with care — research suggests that parents of Aboriginal and Torres Strait Islander infants use health services differently to parents of non‑Indigenous infants. Ou et. al (2010), using the Longitudinal Study of Australian Children, found that the health status of Aboriginal and Torres Strait Islander infants in the study was poorer than that of non‑Indigenous infants, and that parents of Aboriginal and Torres Strait Islander infants accessed certain health services less frequently than non‑Indigenous parents. The parents of Aboriginal and Torres Strait Islander infants were less likely to have used maternal and child health centres, help lines, maternal and child health nurse visits, general practitioners and paediatricians. However, Aboriginal and Torres Strait Islander infants were more likely than other Australian children to have received treatment at hospital outpatient clinics or to have been hospitalised (Ou et al. 2010). In Wave 3 of Footprints in Time, it was reported that the most common reasons for visits to hospital were asthma and chest infections, intestinal problems and ear problems (FaHCSIA 2012).

Nationally in 2012-13, the rate of hospitalisation of Aboriginal and Torres Strait Islander children aged 0–4 years for potentially preventable diseases was 16 083 per 100 000 population (table 6A.6.1), with the rate increasing as remoteness increased (table 6A.6.10). The rate for non-Indigenous children was 9672 per 100 000 population. Diseases of the respiratory system is the most common hospitalisation for both Aboriginal and Torres Strait Islander children and non-Indigenous children (around half of all hospitalisations for both) with the rate for Aboriginal and Torres Strait Islander children almost double that of non-Indigenous children (table 6A.6.1).

From 2010-11, Indigenous status in hospital separations data are considered of sufficient quality for reporting in all jurisdictions. Prior to 2010‑11, six jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT) were considered to have acceptable quality of Aboriginal and Torres Strait Islander Indigenous identification in hospitalisation data. The attachment tables for this report include data for all jurisdictions for 2010‑11 to 2012‑13, as well as data for the six jurisdictions for 2004‑05 to 2012‑13. From 2004-05 to 2012-13 in NSW, Victoria, Queensland, SA, WA and the NT combined, potentially preventable hospitalisation rates increased for Aboriginal and Torres Strait Islander children (from 14 652 to 16 561 per 100 000 population) and decreased for other children (from 10 835 to9879 per 100 000 population). The Aboriginal and Torres Strait Islander child hospitalisation rate increased from 1.4 to 1.7 times the rate of other child hospitalisations (tables 6A.6.1–9).

### Potentially preventable deaths of Aboriginal and Torres Strait Islander children

Mortality data disaggregated by Indigenous status are available for NSW, Queensland, WA, SA and the NT, as these jurisdictions have sufficient levels of Aboriginal and Torres Strait Islander identification and numbers of deaths to support analysis.

For 2008–2012, around one in five deaths (21.8 per cent) of Aboriginal and Torres Strait Islander children aged 0–4 years was attributable to external causes and preventable diseases, a rate of 36.3 per 100 000 population (table 6A.6.11).

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| Figure 6.6.1 Mortality rates from external causes and preventable diseases, Indigenous children aged 0–4 years, NSW, Queensland, WA, SA and the NT, 2003–2007 and 2008–2012a |
| Figure 6.6.1 Mortality rates from external causes and preventable diseases, Indigenous children aged 0-4 years, NSW, Queensland, WA, SA, and the NT, 2003-2007 and 2008-2012  More details can be found within the text surrounding this image. |
| a Data on deaths of Aboriginal and Torres Strait Islander Australians are affected by differing levels of coverage of deaths identified as Indigenous across states and territories. Care should be exercised in analysing these data, particularly in making comparisons across states and territories and between the Indigenous and non-Indigenous data. |
| *Source*: ABS (unpublished) Causes of Death, Australia, 2012; tables 6A.6.11-12. |
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There has been an overall decrease in the death rate from external causes and preventable diseases for Aboriginal and Torres Strait Islander children aged 0–4 years, from   
41.7 per 100 000 population in 2003–2007 to 36.3 per 100 000 population in 2008–2012 (figure 6.6.1). Over the same period the rate also decreased for non‑Indigenous children, from 15.8 deaths per 100 000 population to 11.3 deaths per 100 000 population (tables 6A.6.11-12).

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## 6.7 Ear Health[[12]](#footnote-12)

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| Box 6.7.1 Key messages |
| * The proportion of Aboriginal and Torres Strait Islander children aged 0–14 years with a hearing condition decreased from 11.2 per cent in 2001 (2.4 times the rate for non‑Indigenous children) to 7.1 per cent in 2012-13 (2.0 times the rate for non-Indigenous children in 2011-12) (figure 6.7.1). In remote areas, the proportion decreased from 17.5 per cent in 2001 to 9.1 per cent in 2012-13 (figure 6.7.2). * Nationally in 2012-13, the hospitalisation rate for diseases of the middle ear and mastoid for Aboriginal and Torres Strait islander children was 9.2 per 1000 children aged 0–3 years and 7.1 per 1000 children aged 4–14 years (table 6A.7.4). For children aged 0–14 years, the rate in remote areas (15.6 per 1000 population) was almost three times as high as the rate in major cities or regional areas (5.9 and 5.7 per 1000 population respectively) (table 6A.7.13). * Available data indicate that from 2004-05 to 2012-13 the hospitalisation rate for Aboriginal and Torres Strait Islander children for ear and hearing problems: * increased from 6.7 to 9.5 per 1000 population for 0–3 year olds (while the rate for other children declined slightly from 13.2 to 12.3 per 1000 population) * increased from 5.1 to 7.3 per 1000 population for 4–14 year olds (while the rate for other children declined slightly from 5.2 to 4.5 per 1000 population) (figure 6.7.3). |
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| Box 6.7.2 Measures of ear health |
| There are two main measures for this indicator:   * *Prevalence of hearing conditions in children* is defined as the proportion of children aged  0–14 years with a reported hearing condition. Data are sourced from the ABS Australian Aboriginal and Torres Strait Islander Health Survey (AATSIHS – NATSIHS component)/National Aboriginal and Torres Strait Islander Social Survey (NATSISS), with the most recent data for 2012-13 (national: by age; remoteness). Data for the non‑Indigenous population are sourced from the ABS Australian Health Survey (AHS – NHS component), with the most recent data for 2011‑12. Indicators using both AATSIHS (2012‑13) and AHS (2011‑12) are referenced as 2011–13.[[13]](#footnote-13) * *Hospitalisation rates for ear and hearing problems in children* is defined as the proportion of hospital separations for children aged 0–14 years where the principal diagnosis was diseases of the ear and mastoid. Data are sourced from the National Hospital Morbidity Database (NHMD) with the most recent data available for 2012‑13 (all jurisdictions; by age; remoteness). |
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Conditions affecting ear health are classified by the part of the ear (external, middle or inner) in which the condition occurs. The ear condition with the most significant impact on hearing for Aboriginal and Torres Strait Islander Australians is otitis media (inflammation and/or infection of the middle ear), which is caused by bacterial or viral infections, and is often the result of a cold. There are different levels of severity of otitis media (see Burns and Thomson 2013 for definitions) and complications, particularly if left untreated, can result in hearing loss. Some forms of otitis media are treatable either through antibiotics or surgery (Leach et al. 2008; O’Leary and Triolo 2009), but public health strategies focus on prevention, awareness and early identification for best results (Burrow and Thomson 2006; Burns and Thomson 2013).

Factors that have been identified as increasing the risk of ear health issues include: social disadvantage; limited access to primary health care and treatment (see section 8.1); nutritional problems (see section 8.5); crowded housing conditions (see section 10.1); inadequate access to water, functioning sewerage and waste removal systems (see section 10.3); passive smoking (see section 8.4); use of dummies beyond age of 11 months; and use of day care for children. Breastfeeding is associated with a reduced risk of otitis media (Burns and Thomson 2013).

Hearing loss adversely affects child development and has far reaching implications for social relationships and life opportunities. Severe cases of otitis media can lead to ongoing medical complications that negatively affect a child’s early acquisition of verbal language, intellectual development and social skills and educational attainment, and later in life their employment outcomes (CIRCA 2010).

### Prevalence of hearing conditions in children

Aboriginal and Torres Strait Islander Australians, particularly in remote areas, experience some of the highest levels of ear disease and hearing loss in the world, with rates up to ten times those for non‑Indigenous Australians (Senate Inquiry 2010). Some Aboriginal and Torres Strait Islander communities have a prevalence of chronic suppurative otitis media (CSOM — a middle year infection involving a perforated ear drum that can also be accompanied by hearing impairment) up to 10 times higher than the four per cent rate that the World Health Organization (WHO) identifies as ‘a massive public health problem’ requiring ‘urgent attention’ (WHO 2004).

For Aboriginal and Torres Strait Islander children, hearing loss is widespread and much more common than in the broader Australian population (Morris et al. 2006; Kong and Coates 2009; Burns and Thomson 2013). Among non‑Indigenous children, otitis media (middle ear infection) typically resolves with age and is rarely seen in children over the age of eight (Burrow and Thomson 2003). Generally, the incidence of otitis media peaks in two age groups: between 6 and 24 months (when many infants are weaned and exposed to environmental conditions); and at 4‑5 years (when children start kindergarten) (Kong and Coates 2009; Burns and Thomson 2013). Studies have consistently found that, in Aboriginal and Torres Strait Islander children, otitis media typically starts at a younger age, is much more common and is more likely to result in hearing loss than in non‑Indigenous children (Boswell and Nienhuys 1996; Couzos, Metcalf and Murray 1999; Morris et al. 2005; Rothstein, Heazlewood and Fraser 2007). Aboriginal and Torres Strait Islander children under three years of age are at the highest risk of ear disease — this is the most critical development period for speech and language development, underpinning communication, learning, and social and emotional development (Aithal, Yonovitz and Aithal 2008; Brouwer et al. 2005; Couzos, Metcalf and Murray 2007; Nienhuys 1992; Williams and Jacobs 2009).

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| Figure 6.7.1 Prevalence of hearing conditions in children aged  0–14 years, by age, 2001 to 2011–13a,b |
| Figure 6.7.1 Prevalence of hearing conditions in children aged 0-14 years, by age, 2001 to 2011-13  More details can be found within the text surrounding this image. |
| a Error bars represent 95 per cent confidence intervals around each estimate. b The 2011–13 reference year includes data for Aboriginal and Torres Strait Islander Australians from the 2012‑13 AATSIHS (NATSIHS component). Data for non‑Indigenous Australians are from the 2011–13 AHS (NHS component for the period 2011‑12). |
| *Sources*: ABS (unpublished) National Health Survey 2001; ABS (unpublished) National Health Survey 2004-05; 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) National Health Survey 2007‑08; ABS (unpublished) AATSIHS 2012‑13 (2012‑13 NATSIHS component); ABS (unpublished) AHS 2011–13 (2011-12 NHS component); table 6A.7.1. |
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In 2012-13, 7.1 per cent of Aboriginal and Torres Strait Islander children aged   
0–14 years had a hearing condition (2.0 times the rate for non‑Indigenous children in 2011‑12), a decrease from 11.2 per cent in 2001 (and from 2.4 times the rate for non‑Indigenous children). This decrease was statistically significant for children aged   
4–14 years. (A declining trend is also evident for children aged 0–3 years, but the sample was too small for the difference to be statistically significant) (figure 6.7.1).

Data specifically for otitis media are available in table 6A.7.2. Prevalence rates for this condition have decreased for Aboriginal and Torres Strait Islander children aged   
0–14 years from 4.4 per cent in 2004‑05 to 2.8 per cent in 2012‑13, and for non-Indigenous children from 2.4 per cent in 2001 to 1.2 per cent in 2011‑12.

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| Figure 6.7.2 Prevalence of hearing conditions in Indigenous children aged 0–14 years, by remoteness, 2001 to 2012‑13a |
| Figure 6.7.2 Prevalence of hearing conditions in Indigenous children aged 0-14 years, by remoteness, 2001 to 2012-13  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) NHS 2001; NATSIHS 2004‑05; NATSISS 2008; AATSIHS 2012‑13 (2012‑13 NATSIHS component); table 6A.7.3. |
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In remote areas, the proportion of Aboriginal and Torres Strait Islander children aged   
0–14 years with a hearing condition decreased from 17.7 per cent in 2001 to 9.1 per cent in 2012‑13. There was no statistically significant difference in the equivalent rates for non‑remote areas over this period (8.5 per cent in 2001 compared to 6.6 per cent in 2012‑13) (figure 6.7.2).

### Hospitalisations for ear and hearing problems in children

Hospitalisations data only include those who have accessed medical services, and have been diagnosed and admitted to hospital for the specified conditions. Cases that result in a visit to a general practitioner or to an emergency department, but do not lead to hospitalisation, are excluded. There may also be a large share of 0–3 year olds whose parents may not be aware that their children have an ear or hearing problem or where access to hospitals may be limited.

The following analysis focusses on diseases of the middle ear and mastoid (including otitis media), which are the most common reasons for hospitalisation related to ear and hearing problems. The attachment tables include additional information on hospitalisations for diseases of the external and inner ear, and other disorders of the ear.

From 2010-11, Indigenous status in hospital separations data is considered of sufficient quality for reporting in all jurisdictions. Prior to 2010-11, six jurisdictions (NSW, Victoria, Queensland, WA, SA and the NT) were considered to have acceptable quality of Aboriginal and Torres Strait Islander identification in hospitalisation data. The attachment tables for this report include data for all jurisdictions for 2010-11 to 2012-13, as well as data for the six jurisdictions for 2004-05 to 2012-13.

Nationally in 2012-13, the hospitalisation rate for middle ear and mastoid conditions for Aboriginal and Torres Strait Islander children aged 0–3 years (9.2 per 1000 population) was slightly lower than for non-Indigenous 0–3 year old children (12.0 per 1000 population). However, rates for Aboriginal and Torres Strait children aged   
4–14 years (7.1 per 1000 population) were higher than for non-Indigenous 4–14 year old children (4.4 per 1000 population) (table 6A.7.4).

The hospitalisation rate for diseases of the middle ear and mastoid for children aged   
0–14 years varied by remoteness.

* In major cities, hospitalisation rates for Aboriginal and Torres Strait Islander children (5.9 per 1000 population) were lower than rates for non-Indigenous children (6.7 per 1000 population).
* In remote plus very remote areas, hospitalisation rates for Aboriginal and Torres Strait Islander children (15.6 per 1000 population) were twice as high as rates for non‑Indigenous children (7.3 per 1000 population) (table 6A.7.13).

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| Figure 6.7.3 Rates of hospitalisation for diseases of the middle ear and mastoid, NSW, Victoria, Queensland, WA, SA and public hospitals in the NT, 2004‑05 to 2012-13a |
| Figure 6.7.3 Rates of hospitalisation for diseases of the middle ear and mastoid, NSW, Victoria, Queensland, WA, SA and public hospitals in hte NT, 2004-05 to 2012-13  More details can be found within the text surrounding this image. |
| a Other includes separations where Indigenous status was reported as non‑Indigenous or not stated. |
| *Source*: AIHW (unpublished) National Hospital Morbidity Database; tables 6A.7.4–12. |
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Between 2004‑05 and 2012‑13, the hospitalisation rate for diseases of the middle ear and mastoid increased for Aboriginal and Torres Strait Islander aged 0–3 years (from 6.7 to 9.5 per 1000 population) and 4–14 years (from 5.1 to 7.1 per 1000 population), while the rate for other children aged 4–14 years declined slightly from 5.2 to 4.5 per 1000 population (there was no clear trend for other children aged 0–3 years) (figure 6.7.3).

### Things that work

Outlined below is an example of an initiative that has worked to improve ear health for Aboriginal and Torres Strait Islander children (box 6.7.3).

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| Box 6.7.3 Things that work – Ear health |
| The national **Care for Kids’ Ears** initiative, launched on 1 July 2011, was designed and produced by the Australian Government to increase awareness of ear disease and hearing loss in Aboriginal and Torres Strait Islander communities, particularly for families and carers of children aged 0–5 years. The overarching goal of the campaign was to increase awareness of ear disease and highlight the importance of seeking and following treatment to prevent hearing loss. A specific website was developed to include information and resources for parents and carers; early childhood groups; teachers; and health professionals. The website includes a talking book in 22 Indigenous languages (DoH 2014).  An independent evaluation conducted from July 2011 to June 2013 by the Cultural and Indigenous Research Centre Australia (CIRCA) found that the campaign had a positive impact on awareness of ear disease among Aboriginal and Torres Strait Islander communities, including increased knowledge of symptoms and prevention, and increased help‑seeking behaviours. A follow-up survey of 200 mothers/female carers was conducted around 18 months after the campaign launch in urban and rural locations nationally. The survey found that those exposed to the campaign were more likely than those who weren’t to identify at least one prevention action unprompted (74.1 per cent compared to 51.3 per cent) and were also more likely to say they had taken their child to have their ears checked in the last 12 months when they did not have any signs or symptoms (70.4 per cent compared to 43.7 per cent of those not exposed) (CIRCA 2013). |
| *Sources*: DoH 2014, *Care for Kids’ Ears*, http://www.careforkidsears.health.gov.au/ (accessed 19 September 2014); CIRCA 2013, *Australian Government Department of Health and Ageing, Evaluation of the National Indigenous Ear Health Campaign – Final Report*. |
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### Future directions in data

Only limited data are available on the burden of hearing loss in Aboriginal and Torres Strait Islander children, with current survey data limited due to the difficulty in obtaining reliable estimates for small populations. More comprehensive and reliable data are required to enable the assessment of the type and severity of ear infections in Aboriginal and Torres Strait Islander children and the resulting hearing loss.

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## 6.8 Basic skills for life and learning[[14]](#footnote-14)

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| Box 6.8.1 Key messages |
| * The basic skills for life and learning indicator focusses on the development and learning of children in their early years (up to 8 years of age). * In 2012, the proportions of Aboriginal and Torres Strait Islander children classified as developmentally ‘on track’ were between 57–65 per cent across all Australian Early Development Index (AEDI) domains. The proportions increased across all domains between 2009 and 2012, with the largest increase in the domain of language and cognitive skills (from 48.1 per cent to 58.0 per cent) (tables 6A.8.1 and 6A.8.2). * These proportions are below those of non-Indigenous children (between 75‑84 per cent) (table 6A.8.1) but the gap has narrowed across all domains since 2009 (by between 1 and 6 percentage points). * The proportion of Aboriginal and Torres Islander children receiving a fourth year Aboriginal and Torres Strait Islander Health Assessment has more than tripled, from 17.7 per cent in 2007‑08 to 60.8 per cent in 2012‑13 (table 6A.8.7). Assessment rates increased with remoteness (from 40 per cent in major cities to 81.9 per cent in remote/very remote areas) (table 6A.6.8). |
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| Box 6.8.2 Measures of basic skills for life and learning |
| There are four main measures for this indicator. Data are available for all jurisdictions.   * *Children on track on Australian Early Development Index (AEDI) domains* is defined as the proportion of children entering their first year of school who are on track (top 75 per cent) in the five AEDI domains: physical health and wellbeing; social competence; emotional maturity; language and cognitive skills (school-based); and communication skills and general knowledge. The most recent available data are for 2012. * *Language background* is defined as the proportion of Aboriginal and Torres Strait Islander children entering their first year of school with a language background other than English. The most recent available data are for 2012 from the AEDI. * *Health checks* is defined as the proportion of children aged 4 years receiving a fourth year developmental health check. The most recent available data are for 2012‑13 from the Australian Government Department of Health. * *Informal learning activities* is defined as the proportion of children aged 3–8 years who undertook informal learning activities with their main carer in the last week. The most recent available data are for 2008 from the ABS National Aboriginal and Torres Strait Islander Social Survey (NATSISS) for Aboriginal and Torres Strait Islander children and the ABS Childhood Education and Care Survey (CEaCS) for non-Indigenous children. |
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This indicator focuses on the development and learning of children in their early years (up to 8 years of age). Young children who are well nurtured do better in school and develop the skills needed to be productive and responsible adults (Zubrick et al. 2006).

### Children on track on Australian Early Development Index[[15]](#footnote-15) (AEDI) domains

The AEDI is a population measure of children’s development as they enter full time school. The AEDI assists communities to understand the development of local children compared to other children nationally. In 2012, the AEDI checklist was completed for 289 973 children in their first year of formal full-time school (96.5 per cent of all children enrolled to begin school in 2012), including 15 490 Aboriginal and Torres Strait Islander children (5.3 per cent of all children surveyed) (Australian Government 2013).

The five developmental domains of the AEDI and their associated sub-domains are presented in table 6.8.1.

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| Table 6.8.1 AEDI domains of children’s development |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Physical health and wellbeing | Social  competence | Emotional  maturity | Language and cognitive skills (school-based) | Communication skills and general knowledge | | Physical readiness for the day | Overall social competence | Pro-social and helping behaviour | Basic literacy | Communication skills and general knowledge | | Physical independence | Responsibility  and respect | Anxious and  fearful behaviour | Interest in literacy, numeracy and memory |  | | Gross and fine motor skills | Approaches to learning | Aggressive behaviour | Advanced literacy |  | |  | Readiness to explore new things | Hyperactivity and inattention | Basic numeracy |  | |
| *Source*: Australian Government 2013, *A Snapshot of Early Childhood Development in Australia 2012 — AEDI National Report*, Canberra. |
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In 2012:

* Between 57–65 per cent of Aboriginal and Torres Strait Islander children were ‘on track’ in all of the five AEDI domains, compared to 75–84 per cent of non‑Indigenous children (table 6A.8.1)
* Aboriginal and Torres Strait Islander children were more likely to be classified as ‘on track’, and to have a smaller gap to non-Indigenous children, in the domains of ‘physical health and wellbeing’, ‘social competence’ and ‘emotional maturity’
* Aboriginal and Torres Strait Islander children were less likely to be classified as ‘on track’, and to have a larger gap to non-Indigenous children, in the domains of ‘language and cognitive skills’ and ‘communication skills and general knowledge’ (table 6A.8.1)
* the proportion of Aboriginal and Torres Strait Islander children classified as ‘on track’ in all domains decreased as remoteness increased (figure 6.8.1 for the domain of language and cognitive skills and table 6A.8.3 for other domains).

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| Figure 6.8.1 Australian Early Development Index, proportion of five year old children classified ‘on track’ in the language and cognitive skills domain, 2012**a** |
| Figure 6.8.1 Australian Early Development Index, proportion of five year old children classified as 'on track' in the language and cognitive skills domain, 2012  More details can be found within the text surrounding this image. |
| a ’On track’ children score in the highest 26–100th percentile of the AEDI. |
| *Source*: Australian Early Development Index 2012 (unpublished), Social Research Centre; table 6A.8.3. |
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From 2009 to 2012, the proportion of Aboriginal and Torres Strait Islander children classified as ‘on track’ increased across all domains, with the gap between Aboriginal and Torres Strait Islander and non-Indigenous children narrowing between 1 and 6 percentage points (tables 6A.8.1 and 6A.8.2) The largest percentage point increase for Aboriginal and Torres Strait Islander children was for ‘language and cognitive skills’ (from 48.1 per cent to 58.0 per cent) (tables 6A.8.1 and 6A.8.2). However, this domain still has the largest gap between Aboriginal and Torres Strait Islander and non-Indigenous children (table 6A.8.1).

Data are also reported by State and Territory (tables 6A.8.1-2) and by remoteness (tables 6A.8.3-4).

### Language background

Language development is one of the dimensions that determines a child’s readiness for school (Dockett et al. 2008). A child whose first language is not English may be disadvantaged in an English learning environment (Dockett, Perry and Kearney 2010; Fogarty and Schwab 2012; Zubrick et al. 2006).

Language is also important for life. Research indicates that a person’s primary language — the first language learnt, or the mother tongue — is used to gain knowledge of the world and is inextricably linked with how people become social beings and form their earliest memories. Language forms a significant component of a person’s cultural identity (Kral and Morphy 2006; LoBianco and Slaughter 2009).

The AEDI collects data on language background other than English, encompassing children who speak languages other than, or in addition to, English at home, or are reported by teachers to have English as a second language. In 2012, 19.8 per cent of Aboriginal and Torres Strait Islander children entering their first year of school had a language background other than English (Australian Government 2013). The proportion of Aboriginal and Torres Strait Islander children whose first language was not English ranged from 5 per cent in major cities to 59.3 per cent in remote and very remote areas (table 6A.8.6). Data are also available for selected jurisdictions (NSW, Vic, Qld, WA, NT) and for ‘rest of Australia’ (table 6A.8.5).

### Health checks

This section provides data on the proportion of Aboriginal and Torres Strait Islander and non-Indigenous children receiving a fourth year developmental health check. The aim of the checks is to improve the health and wellbeing of Australian children by promoting early detection of lifestyle risk factors and delayed development.

Two types of Medicare Benefits Schedule checks are reported in this section:

* The Aboriginal and Torres Strait Islander Health Assessment, which is available to   
  0–14 year old Aboriginal and Torres Strait Islander children (prior to 1 May 2010 this was called the Aboriginal and Torres Strait Islander Child Health Check). (Data for the Aboriginal and Torres Strait Islander Health Assessments are restricted to children aged 3–5 years, to align with the age scope for the Health Assessments, below.)
* The Health Assessment, which is available to all children (Aboriginal and Torres Strait Islander children and non-Indigenous children) aged three, four or five years (prior to 1 May 2010 this was called the Healthy Kids Check).

This section does not report on developmental health check activity conducted outside Medicare, such as State and Territory early childhood health assessments in preschools and community health centres.

In 2012‑13, almost two-thirds of Aboriginal and Torres Strait Islander 3–5 year olds (60.8 per cent) received a fourth year developmental health assessment, compared to just over one half of non-Indigenous 3–5 year olds (52.1 per cent) (table 6.8.7). Assessment rates increased with remoteness for Aboriginal and Torres Strait Islander children (from 40 per cent in major cities to 81.9 per cent in remote/very remote areas) and decreased with remoteness for non-Indigenous children (from 51.5 per cent in major cities to 33.9 per cent in remote/very remote areas) (table 6A.6.8).

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| Figure 6.8.2 Proportion of children receiving a fourth year developmental health check, 2007‑08 to 2012‑13**a,b,c,d,e** |
| Figure 6.8.2 Proportion of children receiving a fourth year developmental health check 2007-08 to 2012-13  More details can be found within the text surrounding this image. |
| a Financial year based on date of processing. bAboriginal and Torres Strait Islander Health Assessments data include claims for MBS Item 708 (Aboriginal and Torres Strait Islander Child Health Check pre 1 May 2010) and Item 715 (Aboriginal and Torres Strait Islander Peoples Health Assessment post 1 May 2010) for children aged 3–5 years. cData for Health Assessments include claims for MBS Items 709 and 711 (Healthy Kids Check pre 1 May 2010) and Items 701, 703, 705, 707 and 10 986 (Health Assessment post 1 May 2010) for all children (Indigenous status not specified) aged 3–5 years. dRates for the Aboriginal and Torres Strait Islander Health Assessment use Aboriginal and Torres Strait Islander projections of the population aged four years. Rates for the Health Assessment use an estimate of the four year old non-Indigenous population. eThe Health Assessment commenced in 2008 therefore data are not available for 2007-08. |
| *Sources*: DoH (unpublished) Medicare Benefits Schedule (MBS) data collection; ABS (2014) Estimates and Projections, Aboriginal and Torres Strait Islander Australians 2001 to 2026, Cat. no. 3238.0; ABS (2012, 2013) Australian Demographic Statistics, June 2012, December 2012 and June 2013, Cat. no. 3101.0; table 6A.6.7. |
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The proportion of four year olds receiving developmental health checks has increased over time for both Aboriginal and Torres Strait Islander and non‑Indigenous children. The proportion of Aboriginal and Torres Strait Islander children receiving fourth year developmental health checks increased from 17.7 per cent in 2007-08 to 60.8 per cent in 2012-13. The rate for non‑Indigenous children increased from 15.8 per cent in 2008-09 to 52.2 per cent in 2012‑13 (figure 6.8.2).

These data are also reported by State and Territory in table 6A.8.7.

### Informal learning activities

Informal learning, particularly from a carer, is important to Aboriginal and Torres Strait Islander children because it builds resilience and cultural knowledge, both of which are recognised in a strengths based approach to school readiness (Armstrong et al. 2012; Bath and Biddle 2011).

In non-remote areas in 2008, almost all Australian children aged 3–8 years did some form of informal learning activity with their main carer in the previous week, with the proportion of Aboriginal and Torres Strait Islander children (97.9 per cent) not significantly different to the Australian total (99.1 per cent) (table 6A.8.10).

However, the type of activities differed. Watching television, a video or a DVD was the most common informal learning activity a carer undertook with an Aboriginal and Torres Strait Islander child (91.7 per cent). Being read stories, or listening to the child read, was the most common activity a carer undertook with a non-Indigenous child (95.7 per cent) (table 6A.8.10).

Data for all remoteness areas are only available for Aboriginal and Torres Strait Islander children. The proportions of children undertaking informal learning activities with their main carer was consistently higher for those living in major cities than for those living in remote and very remote areas. The results for those who:

* were assisted with their homework — major cities, 53.0 per cent; remote and very remote areas, 22.0 per cent
* spent time with their carer on the computer — major cities, 37.7 per cent; remote and very remote areas, 12.3 per cent
* were read a book — major cities, 72.9 per cent; remote and very remote areas 51.1 per cent (table 6A.8.10).

These data are also reported by State and Territory in table 6A.8.9.

### Things that work

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| Box 6.8.3 Things that work — Basic skills for life and learning |
| Home Interaction Program for Parents and Youngsters (HIPPY)  After its initial introduction by the Brotherhood of St Laurence, the Australian Government rolled out the HIPPY program nationally from 2008. HIPPY is not specific to Indigenous Australians but is run in five areas with high Aboriginal and Torres Strait Islander populations. It has two Indigenous-specific pilot locations, where it was adapted to better meet Aboriginal and Torres Strait Islander families’ needs (AIHW 2013).  Under the program, home tutors work with parents for two years, to support children from disadvantaged backgrounds to transition to school. It is described as ‘a combined home and centre-based early childhood enrichment program that supports parents in their role as their child’s first teacher’ (Liddell et al. 2011).  A 2011 evaluation found that the HIPPY program provided significant benefits for parents. Positive outcomes for parents included: increased confidence to teach their child and talk to the child’s teacher; improved parenting skills; better relationships between parents and children; social connectedness with other parents; increased knowledge about the school’s requirements; improved awareness of the child’s skills and abilities; and pride in the child’s learning achievement. Benefits for the children included improved familiarity and confidence with school work. The evaluation noted that HIPPY was more successful where the local Indigenous leaders and community were closely involved and where there were strong relationships between the agency delivering HIPPY and other child and family services (Liddell et al. 2011; AIHW 2013). The Closing the Gap Clearinghouse identified that preschool programs with the following characteristics can assist children to transition to school and contribute to positive educational outcomes:   * extensive involvement and consultation with local Indigenous communities and a culturally appropriate approach * connections with services and organisations in the local community * flexibility to adapt to the needs of the local community (especially where mainstream education programs are being provided)   well-trained staff, using a mix of home and childcare-centre-based activities, with an explicit focus on child development (AIHW 2013). |
| *Sources*: Liddell et al (2011) *An evaluation of the national rollout of the Home Interaction Program for Parents and Youngsters (HIPPY)* produced for DEEWR; AIHW (2013) *What works? A review of actions addressing the social and economic determinants of Indigenous Health*, Issues Paper no. 7 produced for the Closing the Gap Clearinghouse. |
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### Future directions in data

Data on fourth year developmental health checks are sourced from the Medicare Benefits Schedule data collection. The relevant health checks include a Health Assessment (available to all children aged 3, 4 and 5 years) and the Aboriginal and Torres Strait Islander Health Assessment (available to all Aboriginal and Torres Strait Islander children aged 0–14 years). Data are not currently able to be disaggregated by Indigenous status for the Health Assessment, due to data quality issues. This disaggregation is important to provide a more accurate assessment of the number of Aboriginal and Torres Strait Islander children receiving fourth year developmental health checks.

Babies and young children may also receive regular developmental health checks from maternal and child health nurses employed by State, Territory or local governments. Data for health checks provided by maternal and child health nurses are currently not available.

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1. This National Partnership Agreement ended on 30 June 2014. [↑](#footnote-ref-1)
2. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-2)
3. The National Partnership Agreement on Indigenous Early Childhood Development expired on 30 June 2014. However, the antenatal and reproductive healthcare provisions have been funded for an additional 12 months under a multilateral Project Agreement for Indigenous teenage sexual and reproductive health and young parent support. [↑](#footnote-ref-3)
4. Neural tube defects are where an opening in the spinal cord or brain occurs during early fetal development. Spina bifida is one form of neural tube defect that affects spine development. [↑](#footnote-ref-4)
5. The questionnaire was undertaken by women living in Adelaide (44 per cent) and regional areas including Ceduna, Port Lincoln, Whyalla, Port August, Murray Bridge and Mt Gambier (56 per cent). [↑](#footnote-ref-5)
6. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-6)
7. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-7)
8. The Apgar score is a numerical score that indicates a baby’s condition shortly after birth. Apgar scores are based on an assessment of the baby’s heart rate, breathing, colour, muscle tone and reflex irritability. [↑](#footnote-ref-8)
9. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-9)
10. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-10)
11. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-11)
12. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-12)
13. The survey questions for children under 15 years old were completed by an adult in the child’s household. [↑](#footnote-ref-13)
14. The Steering Committee notes its appreciation to Dr Payi Linda Ford, Macquarie University, who reviewed a draft of this section of the report. [↑](#footnote-ref-14)
15. From 1 July 2014 the Australian Early Development Index became known as the Australian Early Development Census (AEDC). [↑](#footnote-ref-15)