

7 Childhood immunisation

Australian children are protected against a number of communicable diseases through routine childhood immunisation. In Australia today, large scale immunisation programs exist for a wide variety of communicable diseases including diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, measles, mumps, rubella, Haemophilus influenzae type b (Hib), hepatitis B, meningococcal C and pneumococcal disease.

Immunisation programs have proved very successful at preventing the spread of infectious diseases. For example, the worldwide eradication of smallpox and widespread elimination of poliomyelitis were largely achieved by limiting the spread of infection of these diseases through mass immunisation (AIHW 2004b).

Although serious adverse events following immunisation are rare, some people are concerned about or disagree with immunisation. Studies have shown that parents disagreeing with or having concerns about vaccination is the main reason why uptake of immunisation among children is incomplete (Hull et al. 2002). However, the risks of these diseases are far greater than the very small risks of immunisation. Vaccine-preventable diseases still have the potential to cause significant illness and death among children who are not immunised.

‘Immunisation against communicable diseases is an effective public health intervention that has significantly reduced the morbidity and mortality arising from childhood diseases’

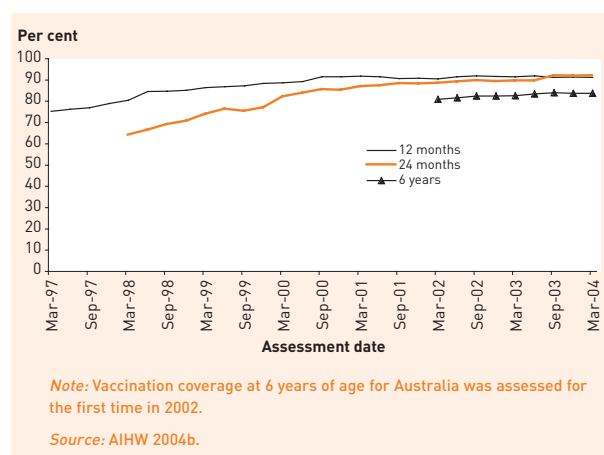
Vaccination coverage estimates

Vaccination coverage goals for Australia for the year 2000, recommended by the NHMRC, called for greater than 90% coverage of children at 2 years of age and near 100% coverage of children at school entry age. Vaccine coverage needs to exceed 90% in order to achieve and maintain the level of herd (or community) immunity necessary to interrupt the ongoing transmission of vaccine-preventable diseases (Lister et al. 1999).

Vaccination coverage estimates are obtained through the Australian Childhood Immunisation Register (ACIR), a national database for recording details of vaccinations given to Australian children under the age of 7 years. All children in this age group who are registered with Medicare are enrolled on the database. The ACIR was started in January 1996 as part of a response to a decline in childhood immunisation in Australia and an increase in preventable childhood diseases. Financial incentives are provided to doctors and parents to encourage both vaccination of their children and their inclusion on the ACIR.

The number of children fully vaccinated at 1, 2 and 6 years of age as a percentage of the total number of children in those age groups on the ACIR is presented in Table 7.1. Trends in vaccination coverage are presented in Figure 7.1.

Figure 7.1: Trends in vaccination coverage, 1997–2003



- There is a trend in increasing vaccination coverage over time for children aged 1, 2 and 6 years, although the rate of increase has slowed over the past 2 years.

Table 7.1: Children fully vaccinated at 30 June 2004 (per cent)

Fully immunised	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
1 year of age ^(a)	90.4	91.7	91.6	89.3	91.4	93.4	90.8	85.2	90.9
2 years of age ^(b)	91.0	92.3	91.8	90.6	92.7	94.9	90.0	94.5	91.7
6 years of age ^(c)	83.2	85.5	83.6	81.1	83.3	80.4	84.9	78.7	83.5

(a) Aged 12–15 months at 31 March 2004.
 (b) Aged 24–27 months at 31 March 2004.
 (c) Aged 72–75 months at 31 March 2004.
 Source: Australian Childhood Immunisation Register.

- Immunisation coverage at 1 and 2 years of age was around 90% among children in all states and territories.

Aboriginal and Torres Strait Islander children

There are varying estimates of the level of vaccination coverage among Indigenous Australian children. Coverage estimates vary from being much lower than those for other Australian children, to being about the same. In general, vaccination coverage tends to be higher among Indigenous Australian children from remote areas compared to Indigenous children living in non-remote areas.

Coverage estimates for Indigenous children vary because of difficulties or inadequacies in data collection are because estimates are drawn from a number of sources. Different methods can also be used to estimate the level of vaccination coverage among Indigenous children.

The National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS) undertook analysis to produce coverage estimates from the ACIR for Indigenous children (NCIRS 2004). These data are presented in Figure 7.2. Issues surrounding the identification of Indigenous children on the ACIR mean that estimates of immunisation coverage by Indigenous status may not be representative of the general population of Indigenous Australian children.

Figure 7.2: Coverage estimates from the Australian Childhood Immunisation Register for Indigenous and other children 'fully vaccinated' at age 1 and 2 years^(a)



- Full immunisation was better among Aboriginal and Torres Strait Islander children at 24 months than at 12 months, whilst immunisation rates at 12 and 24 months for other Australian children remained relatively consistent.

In another analysis of ACIR data, Hull et al. (2004) produced estimates of Indigenous immunisation coverage, using receipt of a particular Hib vaccine (PRP-OMP) as a proxy for Indigenous status. Their analysis showed that full immunisation for all scheduled vaccinations at 12 and 24 months was around 17% less for Indigenous children than for other Australian children. Another significant finding was that Indigenous immunisation coverage was more than 20% lower among children classified as living in the most highly accessible urban areas.

Indicator

- **Proportion of children who are fully vaccinated at 1, 2 and 6 years of age.**

Breastfeeding

Breastfeeding is one of the most important health behaviours to promote the health and development of infants. Not only does breastfeeding have many positive effects on the survival, growth, development and health of infants and young children, it is also associated with greater social and economic benefits.

Babies are born with an immune system that is not fully developed, so a mother's antibodies present in breast milk, can protect an infant from disease while its own immune system is developing, particularly in the first 4–6 months of life (NHMRC 2003). Breastfeeding has a protective effect against many acute conditions, such as diarrhoea, respiratory infection, otitis media, bacterial meningitis, urinary tract infection, and necrotising enterocolitis (a serious gastrointestinal disease which can lead to death). Studies show a protective effect of breast milk against sudden infant death syndrome (SIDS), as well as against chronic diseases such as diabetes mellitus and allergic diseases such as eczema and asthma (American Academy of Pediatrics 1997; NHMRC 2003).

Breastfeeding also has beneficial health effects for the mother. Breastfeeding is thought to encourage bonding between mother and baby and, in addition, studies have shown that breastfeeding can lead to less bleeding after giving birth, as well as delaying ovulation and menstruation. The positive aspects of breastfeeding are not limited to health benefits. Although difficult to quantify, high rates of breastfeeding can affect many sectors of society including families, employers, the health system and governments (NHMRC 2003).

Raisler et al. (1999) found that breastfed infants made fewer visits to health professionals, a finding supported by Weimer (2001), who suggested that breastfeeding can lead to reduced health care costs, as well as reducing the time parents are absent from work in order to care for a sick child.

Recommendations for breastfeeding

The optimal duration of breastfeeding has been the subject of some debate. The World Health Organization (WHO) commissioned a systematic review of the current scientific evidence on the optimal duration of exclusive breastfeeding, comparing the benefits of exclusive breastfeeding for up to 6 months versus 4 months of age. The WHO classification of exclusive breastfeeding refers to infant feeding practices that consist only of breast milk, but may also include the consumption of vitamins, minerals, drops, syrups and medicines.

The review concluded that exclusive breastfeeding up to 6 months of age has several benefits for the mother and infant and it was therefore recommended that infants should be breastfed up to 6 months, with the introduction of complementary food and continued breastfeeding thereafter (WHO 2001a).

In Australia, breastfeeding is listed among the 'Dietary guidelines for children and adolescents', with emphasis on the importance of encouraging and supporting breastfeeding. These guidelines (NHMRC 2003) recommend breast milk as the only food necessary for infants up to about 6 months.

'Breastfeeding is one of the most important health behaviours to promote the health and development of infants'

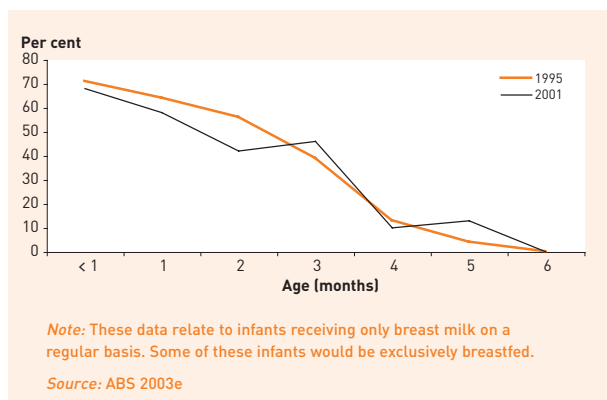
How many Australian babies are breastfed?

There are currently no national data available on the proportion of all Australian babies exclusively receiving breast milk.

Data from the ABS 2001 National Health Survey show that, in 2001, 87% of infants aged 0–3 years had, at some stage, obtained nutrition from breast milk, a similar figure to 1995 (86%). However, this figure includes those who had been obtaining all nutrition from breast milk, those obtaining nutrition from both breast milk, other milk and milk substitutes (e.g. infant formula, cows milk, soya milk), and those who obtained their nutrition from breast milk, other milk, milk substitutes and solids. Data from this survey cannot be compiled using the concept of ‘exclusively breastfed’ which has been adopted for national monitoring purposes.

However, information on babies who were fully breastfed—that is those babies who received only breast milk on a regular basis—is available from the ABS 1995 & 2001 National Health Survey (Figure 8.1).

Figure 8.1: Infants from newborn (<1 month) to 6 months fully breastfed, 1995 and 2001



- The proportion of infants fully breastfed decreased with age. In 2001, approximately 54% of babies were fully breastfed at 3 months of age or less, compared with around 32% of infants by 6 months of age or less.
- There was little change in the proportion of infants fully breastfed between the 1995 and 2001 surveys.

Population groups

Rates of breastfeeding vary between different population groups in Australia. For example, the 2001 ABS National Health Survey found that the proportion of infants receiving breast milk was higher among older mothers and also among mothers who had attained an associate diploma or higher qualification since leaving school (compared to mothers without a post-school qualification) (ABS 2003e).

Data from the NSW Child Survey also highlight a number of population differences (Table 8.1).

Indicator

- **Proportion of infants exclusively breastfed at ages 3 and 6 months.**

Table 8.1: Infants fully breastfed to 4 and 6 months, by population characteristics of mothers, children aged less than 2 years, NSW, 2001 (per cent)

Population characteristics of mothers	Fully breastfed to 4 months	Fully breastfed to 6 months
Maternal age		
<25 years	13.5	8.0
≥25 years	25.5	3.4
Maternal education		
Primary/secondary (less than tertiary)	20.2	4.0
Tertiary	32.3	5.5
Socioeconomic disadvantage		
Lowest 20% (most disadvantaged)	22.0	4.2
Quintile 2	20.0	2.7
Quintile 3	23.5	3.9
Quintile 4	30.2	5.9
Highest 20% (least disadvantaged)	26.4	6.1
Indigenous status (maternal)		
Aboriginal and Torres Strait Islander	15.8	5.9
Other Australian	24.9	4.6
Place of residence		
Urban	23.3	4.4
Rural	29.6	5.2

Source: NSW Centre for Public Health Nutrition 2004.

- The percentage of infants who were fully breastfed for at least 4 months was lower for those with mothers aged less than 25 years than for those with older (aged 25 years and over) mothers.
- The percentage of infants who were fully breastfed to at least 4 months was lower for those with mothers without a tertiary education than for those with mothers with a tertiary education.
- The percentage of infants who were fully breastfed to at least 4 months was lower for those with Aboriginal and Torres Strait Islander mothers than for those with non-Aboriginal and non-Torres Strait Islander mothers.

The level of breastfeeding among Aboriginal communities was investigated as part of the 2001 Western Australian Aboriginal Child Health Survey. Data from this survey showed that the proportion of Indigenous infants aged less than 6 months who were exclusively breastfed was 53%. Over a third of all Indigenous children were breastfed for more than 12 months. This represents a significantly higher proportion than observed in the total Western Australian population where around 20% of children were breastfed for 12 months or more (Zubrick et al. 2004).

9 Dental health

Australian children generally experience good oral health and Australia is among the top ranking countries in the world when comparing rates of dental decay (AIHW DSRU: Armfield et al. 2004). Good oral health throughout infancy and early childhood contributes to better dental health in adulthood, resulting in less decay and reduced loss of natural teeth. Early preventive strategies, including water fluoridation, improved oral hygiene practices, better diet, regular brushing and flossing and improved disease management, all help to maintain the health of teeth and gums.

Oral health research shows that the social determinants of general health are also related to oral health (AIHW DSRU 2003a). This means that factors such as socioeconomic position and other social determinants such as personal control, stress and social support can influence the use of dental services and self-care practices (e.g. tooth brushing and diet). The level of access to dental health services in terms of availability and affordability is also an important determinant of dental health.

A national survey monitoring children's dental health commenced in 1977 as part of the School Dental Scheme. The survey has shown great improvements in the dental health of Australian children, including a decline in average decay experience, and an increase in the proportion of children with no dental decay until the 1990s. Much of this improvement can be attributed to the addition of fluoride to the public water supply (AIHW 1998). However, in more recent years the decline in dental decay appears to have ceased and there are signs that decay experience among children is increasing.

'Good oral health throughout infancy and early childhood contributes to better dental health in adulthood'

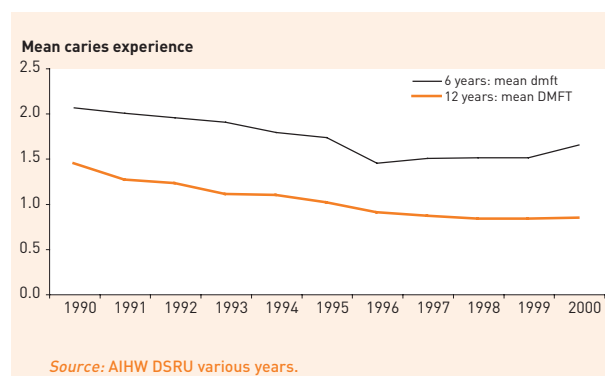
Dental health of school children

The Child Dental Health Survey monitors the dental health of children enrolled in the dental services operated by all state and territory health departments (AIHW DSRU: Armfield et al. 2004). Jurisdictionally funded school dental services typically provide dental care to primary school-aged children, although most states now extend the service into secondary school. The data obtained from the school dental services have some limitations, as only children enrolled with school dental services are represented in the sample. The services are not accessible to all school children and there is some variation among state and territory programs with respect to priority age groups and the nature of services. Some states and territories serve more than 80% of primary school children, while others serve smaller proportions. Data in this chapter come from the Child Dental Health Survey and the 1999 National Dental Telephone Interview Survey conducted by the Dental Statistics and Research Unit (DSRU) of the AIHW.

Dental decay experience is expressed as a dmft or DMFT score: the number of teeth currently decayed, teeth extracted due to decay, and teeth with fillings (AIHW 2000). The 'dmft' score describes decay experience in deciduous teeth (baby teeth), while the 'DMFT' score describes decay experience in permanent teeth. The other commonly used statistic is the percentage of individuals who are decay free, that is, when both dmft and DMFT equal zero.

The mean numbers of decayed teeth among children aged 6 years (dmft) and 12 years (DMFT) from 1990 to 2000 are shown in Figure 9.1.

Figure 9.1: Mean decay experience of children aged 6 and 12 years, 1990–2000



- The mean number of decayed teeth in children aged 6 and 12 years decreased between 1990 and 2000. Among children aged 6 years, the average number of deciduous teeth affected by decay (dmft) decreased from 2.1 to 1.7. Among children aged 12 years, the average number of permanent teeth affected by decay (DMFT) decreased from 1.4 to 0.8.
- The mean number of decayed teeth was higher in the baby teeth of children aged 6 years than in the permanent teeth of children aged 12 years. In addition, while improvements in decay experience for children aged 12 years have stalled, for children aged 6 years, the average number of deciduous teeth affected by decay (dmft) appears to be increasing again.
- Over the decade 1990–2000 the proportions of children aged 6 and 12 years free from decay experience gradually increased. The proportion of children aged 6 years rose from 49% to 57%, while the proportion of children aged 12 years rose from 38% to 65%.

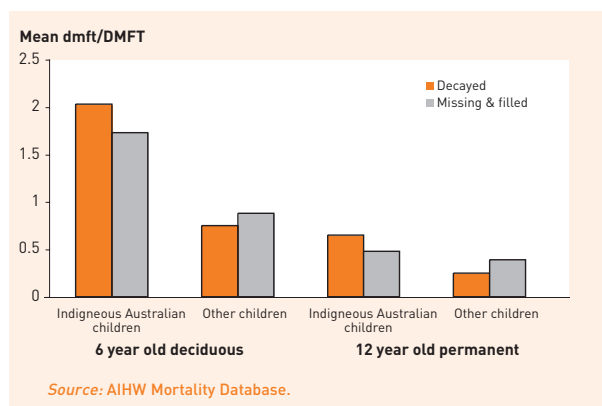
Aboriginal and Torres Strait Islander children

While there have been general improvements in the dental health of most Australian children, similar improvements have not occurred for Indigenous Australian children. In fact, one study in South Australia suggested that the dental caries rate for Indigenous Australian children seems to be increasing (AIHW DSRU 2003b). According to this study, Indigenous children have more than twice the caries rate of other Australian children in the deciduous dentition, and almost twice the dental caries rates of other Australian children at 12 years of age (Figure 9.2).

Indicators

- **Proportion of children decay-free at age 6 years and at age 12 years.**
- **Mean decayed, missing or filled teeth scores at age 6 years and at age 12 years.**

Figure 9.2: Caries experience of Indigenous and other children in South Australia, 2000



Water fluoridation

Water fluoridation is an effective public health measure to prevent dental decay. It reduces dental disease, loss of teeth, and potentially time away from work or school and anaesthesia-related risks associated with dental treatment (ARCPHO 2004). Fluoridation of public water is favoured by public health experts because it is the most equitable way to achieve community-wide exposure to the caries prevention effects of fluoride. The proportion of children residing in areas with optimum fluoride concentrations is presented in Table 9.1.

- Although most children have access to fluoridated water, some parts of Australia (particularly Queensland) do not include fluoride in the public water supply.

Table 9.1: Child population 0–14 residing in areas with optimum^(a) fluoride concentrations in the mains water

State/territory	Per cent
NSW	89.2
Vic	73.5
Qld	4.9
WA	88.9
SA	89.1
Tas	94.1
ACT	100.0
NT	80.8

(a) 0.7ppm, except SA and NT where >0.5ppm.

Source: DSRU unpublished data.