

## *Executive summary*

### **Overview**

This, the third biennial report on vaccine preventable diseases and vaccine coverage in Australia, brings together the four most important national sources of routinely collected data about vaccine preventable diseases and vaccination (deaths, notifications, hospitalisations and vaccination coverage) for all age groups between 2001 and 2002. The general trend towards improved control of disease and improved vaccine coverage is evident, particularly in the childhood years. Detailed results are available in 14 individual chapters.

Notifications, hospitalisations and deaths for 11 diseases are summarised in Table 1. Although these data have limitations which are discussed in detail in the body of the report, some clear trends are evident. First, vaccination coverage, estimated using Australian Childhood Immunisation Register (ACIR) data, reached the targets set by the *Immunise Australia* program, with levels of full immunisation exceeding 90 per cent and approaching 95 per cent at 12 months of age and reaching 90 per cent at 24 months of age by the end of 2003.

Second, accompanying this increase in vaccine coverage, notifications for the eight diseases covered by the routine childhood vaccination schedule (diphtheria, *Haemophilus influenzae* type b (Hib) disease, measles, mumps, pertussis, polio, rubella and tetanus) continued to decline, although less sharply than in the previous review period, from an average of 8,046 cases each year in 1997–2000 to 7,806 in 2001–2002. Table 1 highlights the decrease in measles, mumps and rubella which has continued since the national Measles Control Campaign (MCC) was conducted in 1998. However, reductions in these three diseases were offset to some extent by the large number of pertussis notifications arising from the 2001 epidemic, with six deaths in 2001–2002. These pertussis deaths were almost all in very young infants and emphasise the importance of initiatives implemented in the 2003 *Australian Immunisation Handbook* to improve pertussis control.

Third, cases of Hib disease also continued to decline with improved vaccine coverage. Of vaccine preventable diseases not included on the childhood schedule during the review period, the greatest morbidity and mortality at all ages was from influenza (44 deaths), pneumococcal disease (15 deaths), meningococcal disease (44 deaths) and varicella (10 deaths). Deaths from meningococcal disease increased from an average of 31 and influenza decreased from an average of 117, compared with 1997–2000.

### **Comment**

The years 2001 and 2002 have been a period of consolidation in immunisation practice and coverage in Australia, following the implementation of the new vaccination schedule in 2000. Australia, like many other industrialised countries, faces the dual challenges of maintaining high immunisation coverage and public confidence in immunisation while implementing increasingly complex decisions about the introduction of new vaccines for children and adults.

In surveillance, improved control of vaccine preventable diseases means that laboratory confirmation, together with accurate information on the vaccination status and any underlying medical conditions, is essential to evaluate program impact. In vaccination practice, vaccination coverage targets are probably close to their highest achievable levels in children. However, improving control through vaccination of measles and pertussis in young adults and adolescents stands out as a challenge for the next few years.

Important programs across the age spectrum in influenza and pneumococcal disease have commenced or gained momentum during this review period. The impact of these and the campaign to control disease due to serogroup C meningococcal disease should be more apparent in 2003–2004. Careful evaluation of the additional benefits of new programs and continued efforts to maintain current programs will be required to sustain the success of immunisation in Australia over the first decade of the 21st Century.

**Table 1. Notifications, hospitalisations and deaths from 11 diseases preventable by vaccination, Australia, 1997 to 2002\***

Disease <sup>†</sup>	Notifications		Hospitalisations		Deaths	
	Average per year 1997–2000	Average per year 2001–2002	Average per year July 1996–June 2000	Average per year July 2000–June 2002	Average per year 1997–2000	Average per year 2001–2002
Diphtheria	0	0.5	1	0.5	0	0
Hib (<5 yr)	22	12	40 <sup>‡</sup>	30 <sup>‡</sup>	0.5 <sup>‡</sup>	0.5 <sup>‡</sup>
Influenza <sup>§</sup>	NN	2,480 <sup>  </sup>	4,767	2,905	117	44
Measles	368	86	96	53	0	0
Meningococcal disease	547	677	741	871	31	44
Mumps <sup>¶</sup>	193	92	53	43	0	0.5
Pertussis	6,749	7,359	708	639	1.5	3
Pneumococcal disease	NN	2,294 <sup>  </sup>	754	1,055	15	15
Polio	0	0	1.5 <sup>**</sup>	1.5 <sup>**</sup>	0	0
Rubella	710	256	43	27	0	0
Tetanus	6	3	35	27	1.25	0.5
<b>Total</b>	8,593 <sup>††</sup>	8,483 <sup>††</sup> (13,257) <sup>‡‡</sup>	7,238 <sup>††</sup>	5,651 <sup>††</sup>	166	107.5

NN = not notifiable.

\* Notifications where the month of onset was between January 1997 and December 2002; hospitalisations where the month of separation was between 1 July 1996 and 30 June 2002; deaths where the date of death was recorded between 1997 and 2002.

† See Chapter 3 for case definitions.

‡ Note that hospitalisations and deaths are for *Haemophilus influenzae* disease and, unlike notifications, are not limited to type b.

§ Limitations of notification systems and coding for influenza hospitalisations and deaths limit the representativeness of these data, which grossly underestimate the disease burden due to influenza.

|| Notifications only complete for 2002 – notifications for 2002 only.

¶ Queensland did not notify mumps in 2000 or for complete calendar years in 1999 or 2001.

\*\* Principal diagnosis only.

†† Average per year for the total does not equal the sum of that for each disease, due to rounding.

‡‡ Total including influenza and pneumococcal notifications.

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The report was reviewed by a representative of the Commonwealth, the Australian Institute of Health and Welfare and each Australian jurisdiction from the Communicable Diseases Network Australia before publication.

## Abbreviations

ABS	Australian Bureau of Statistics	IPV	Inactivated poliomyelitis vaccine
ACIR	Australian Childhood Immunisation Register	LOS	Length of stay
ADT	Adult diphtheria-tetanus	MCC	Measles Control Campaign
AFP	Acute flaccid paralysis	MenCCV	Meningococcal C conjugate vaccine
AIHW	Australian Institute of Health and Welfare	MMR	Mumps-measles-rubella
Anti-HBc	Hepatitis B core antibody	NCIRS	National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases
ASVS	Australian Standard Vaccination Schedule	NHMRC	National Health and Medical Research Council
CDT	Combined diphtheria-tetanus	NIS	National Immunisation Strategy
CRS	Congenital rubella syndrome	NNDSS	National Notifiable Diseases Surveillance System
CSF	Cerebrospinal fluid	OPV	Oral poliomyelitis vaccine
cVDPV	Circulating vaccine-derived poliovirus	PCV7	7-valent conjugate pneumococcal vaccine
DT	Diphtheria-tetanus	PHOFA	Public health outcome funding agreement
DTP	Diphtheria-tetanus-pertussis	PPV	Positive predictive value
DTPa	Diphtheria-tetanus-pertussis (acellular)	PRP-OMP	<i>Haemophilus influenzae</i> type b polysaccharide conjugated to the outer membrane protein of <i>Neisseria meningitidis</i> vaccine
dTpa	Adult diphtheria-tetanus-pertussis (acellular)	RSV	Respiratory syncytial virus
DTPw	Diphtheria-tetanus-pertussis (whole cell)	SSPE	Subacute sclerosing panencephalitis
FAG	Finance assistance grant	VAPP	Vaccine-associated paralytic poliomyelitis
HAV	Hepatitis A virus	VPD	Vaccine preventable disease
HBV	Hepatitis B virus	VZV	Varicella-zoster virus
Hep B	Hepatitis B (vaccine abbreviation)	WHO	World Health Organization
HBsAg	Hepatitis B surface antigen	7vPCV	7-valent conjugate pneumococcal vaccine
Hib	<i>Haemophilus influenzae</i> (type b)	23vPPV	23-valent polysaccharide pneumococcal vaccine
HFG	Hospital funding grant		
HZ	Herpes zoster		
ICD	International Classification of Diseases		
IgM	Immunoglobulin M		
IPD	Invasive pneumococcal disease		