

Vaccine preventable diseases and vaccination coverage in Australia, 1993-1998¹

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Introduction

Since the introduction of childhood vaccination for diphtheria in 1932 and the widespread use of vaccines to prevent tetanus, pertussis (whooping cough) and poliomyelitis in the 1950s, deaths in Australia from vaccine preventable diseases (VPDs) have declined by more than 99 per cent. It is important, however, that the downward trend in morbidity and mortality from VPDs is maintained and carefully monitored, and that changes are interpreted in relation to vaccination coverage.

This report aimed to bring together information from three national sources of routinely collected data on the morbidity and mortality from VPDs during the period 1993-1998 for the eight diseases then on the routine childhood vaccination schedule, and for four other diseases potentially preventable by childhood vaccination. It also examined vaccination coverage for the same period.

Methods

Data were sourced from the National Notifiable Diseases Surveillance System (NNDSS) (notifications), the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database (hospitalisation data), and the Australian Bureau of Statistics (ABS) Causes of Death Collection (deaths). Vaccination coverage was calculated using data from the Australian Childhood Immunisation Register (ACIR). All data sources were expected to have some

limitations, the most important being under-reporting for notifications and vaccination encounters, and coding errors in the hospital morbidity data. For each disease, trends over time, measures of severe morbidity and mortality, and age, sex, and geographical distributions were reported, together with a discussion of these data.

Overview of results

Notifications for the eight diseases covered by the routine schedule declined by 42 per cent, from an average of 11,537 cases each year in 1993-1997 to 6700 in 1998. Hospitalisations fell by 12 per cent, from an average of 1745 per year to 1536 in 1997/1998, while deaths remained unchanged at 7 each year over the period of review (Table). Tetanus caused 1 or 2 of the deaths each year. Of the 7 deaths in 1997, 6 were in infants during a major outbreak of pertussis. Pertussis caused the most notifications, hospitalisations and deaths during the review period. While most of these were in children, 46 per cent of the notifications and 13 per cent of the hospitalisations for pertussis occurred in persons aged 15 years or more. There were notable declines in the numbers of notifications of invasive *Haemophilus influenzae* type b (Hib) disease in children under 5 years of age (77%), measles (87%) and rubella (75%). There were no notifications of diphtheria or poliomyelitis.

Vaccination coverage estimated using ACIR data increased during the review period. Coverage for the first three doses of diphtheria, tetanus, pertussis and Hib

Table. Notifications, hospitalisations and deaths from diseases preventable by vaccines on the current childhood vaccination schedule, Australia, 1993-1998.*

Disease	Notifications		Hospitalisations		Deaths	
	Average per year 1993-1997	1998	Average per year July 93-June 97	1997/98	Average per year 1993-1996	1997
Diphtheria	0	0	5	0	0	0
Hib (aged <5 yrs)	103 [†]	24	129	80	3	0
Measles	2,418	313	517	156	2	0
Mumps	116 [‡]	181	55	51	1	0
Pertussis	5,887	5,413	910	1,165	0	6
Polio	0	0	4 [§]	2 [§]	0	0
Rubella	3,006 [†]	762	99	48	0	0
Tetanus	8	7	28	34	2	1
Total	11,537 [#]	6,700	1,745 [#]	1,536	7 [#]	7

* Notifications where the month of onset was between January 1993 and December 1998; hospitalisations where the month of admission was between 1 July 1993 and 30 June 1998; deaths where the date of death was recorded between 1993 and 1997.

[†] Not all States/Territories were reporting in all years (see Appendix 2 of report for details).

[‡] Only the ACT, NSW and Victoria reported mumps notifications for the entire period. For these States/Territories the average number of mumps notifications per year from 1993 through 1997 was 78 and there were 96 notifications in 1998.

[§] Principal diagnosis only (see page 27 of report for comment).

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

vaccines, assessed at 1 year of age, increased from 75 per cent to 85 per cent, while coverage for measles-mumps-rubella (MMR) vaccine, assessed at 2 years of age, increased from 83 per cent to 86 per cent. It is likely that these data underestimated coverage by 5 to 10 per cent, and that the increase in coverage partly reflected better reporting to the ACIR by providers.

Comment

This is the first comprehensive report on VPDs and vaccination coverage in Australia using multiple data sources. It provides a valuable baseline for ongoing measurement of trends and the impact of interventions. The striking features were the low rates of VPDs in 1998. Notable are the marked decline in Hib disease, following the introduction of routine Hib vaccination in 1993, and in both measles and rubella due to the introduction of the second dose of MMR vaccine in 1994 and the Measles Control Campaign in 1998. Compared with deaths prior to the introduction of routine Hib vaccination, Hib deaths in children under the age of 5 years fell by 83 per cent, suggesting that Hib vaccine prevented 62 deaths in this age group between 1993 and 1997. The ongoing morbidity and

mortality from pertussis indicates the need for additional interventions aimed at controlling spread of this infection in both children and adults.

Want more information?

Data giving historical comparisons of deaths from diseases commonly vaccinated against in Australia 1926-97 are found in Table 2 of the full report. The burden of morbidity and mortality from vaccine preventable diseases in Australia are found in Table 14 of the full report.

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