

Short reports

WHAT DO WE KNOW ABOUT 7VPCV COVERAGE IN ABORIGINAL AND TORRES STRAIT ISLANDER CHILDREN? A 2007 UPDATE

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Abstract

In 2001, a publicly funded 7 valent pneumococcal conjugate vaccine (7vPCV) program commenced for Aboriginal and Torres Strait Islander children aged less than 2 years. This study updates early estimates of 7vPCV coverage in Aboriginal and Torres Strait Islander children using Australian Childhood Immunisation Register data between 31 December 2004 and 30 September 2007. We chose four 3-month birth cohorts of children and assessed their immunisation status at 12 months of age for pneumococcal conjugate vaccine and for 'fully immunised'. After the introduction of universal childhood conjugate pneumococcal vaccination in 2005, 7vPCV coverage increased substantially among Aboriginal and Torres Strait Islander children nationally, and in all jurisdictions but remained lower than among non-Indigenous children. The results re-emphasise the greater impact of universal, compared with targeted, programs on vaccine coverage among Indigenous children. *Commun Dis Intell* 2008;32:257–260.

Keywords: pneumococcal, vaccination coverage, immunisation register, Indigenous

Introduction

Invasive pneumococcal disease (IPD) became largely preventable in Australian children less than 2 years of age for the first time with the approval of pneumococcal conjugate vaccine in December 2000, which targeted the 7 most common IPD serotypes in non-Indigenous children. However, these 7 serotypes were responsible for a substantially lower proportion of IPD among Indigenous children in central and northern Australia who have the highest incidence of IPD.^{1–3} In June 2001, a publicly funded 7 valent pneumococcal conjugate vaccine (7vPCV) program commenced for Aboriginal and Torres Strait Islander and other high risk children aged under 2 years and since May 2001, 7vPCV vaccination encounters have been recorded on the Australian Childhood Immunisation Register (ACIR). On 1 January 2005, the publicly funded program was expanded to include all Australian children under 2 years of age. In 2004, an initial evaluation of 7vPCV cover-

age among Indigenous children from ACIR data showed that estimated 7vPCV coverage increased over time but was still less than 50% for all jurisdictions except the Northern Territory, Queensland, and Western Australia. Importantly, since this time, the completeness of recording of Indigenous status has improved.⁴

The aim of this study was to evaluate trends in 7vPCV coverage in Indigenous children by jurisdiction since the introduction of universal pneumococcal conjugate vaccination and compare this to 'fully immunised' (not including 7vPCV) coverage for the same children.

Methods

Immunisation status assessment

The National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases receives downloads of ACIR immunisation data from Medicare Australia each quarter. This analysis was undertaken using ACIR data as of 31 December 2004 and 30 September 2007. We chose four 3-month birth cohorts, the first cohort included children born between 1 January 2003 and 31 March 2003 (using ACIR data as at 31 December 2004), the other 3 cohorts using ACIR data were as at 30 September 2007 (born between 1 April 2004 and 30 June 2004, 1 January 2006 and 31 March 2006, and 1 April 2006 and 30 June 2006). The immunisation status of children, recorded on the ACIR as Aboriginal and Torres Strait Islander, in the 4 birth cohorts was assessed at 12 months of age for pneumococcal conjugate vaccine and for 'fully immunised'. 'Fully immunised' was defined as receipt of all of 3 doses of diphtheria-tetanus-pertussis and poliomyelitis, and the second or third dose of *Haemophilus influenzae* type b and hepatitis B vaccines used to assess whether a child is completely immunised at 12 months of age in all years under study. Immunised for 7vPCV was defined as receipt of 3 doses of 7vPCV vaccine by 12 months of age in all years under study. The third dose assumption was applied in this analysis, so if the third dose was recorded as administered, it

was assumed that previous doses were administered.⁶ The analysis was undertaken using the SAS software system.⁷

Aboriginal and Torres Strait Islander population denominators

In addition to ACIR Aboriginal and Torres Strait Islander denominator data, data on the number of Aboriginal and Torres Strait Islander births in all states and territories for the year 2006 was also obtained from the Australian Bureau of Statistics (ABS).⁸ If the Aboriginal and Torres Strait Islander field on the ACIR was left blank, it was assumed that the child was not of Aboriginal or Torres Strait Island descent.

Results

Table 1 compares the number of Aboriginal and Torres Strait Islander children recorded on the ACIR (using the Indigenous indicator) and ABS (using Indigenous registered births) databases in Australia in 2002 and 2006. In 2002, the number of children in Australia identified as Aboriginal and Torres Strait Islander by the ACIR was 60% of the ABS estimates, with much variation between the states and territories (ranging from 98% in the Northern Territory to 14% in Queensland). However, by 2006 there was substantial improvement throughout the country and, in

some jurisdictions, (the Australian Capital Territory, the Northern Territory, Queensland and Western Australia) the ACIR identified more children as Aboriginal and Torres Strait Islander than the ABS.

Table 2 shows a comparison of 7vPCV vaccine coverage estimates with 'fully immunised' coverage estimates for Aboriginal and Torres Strait Islander children for the 4 study birth cohorts. Prior to the introduction of universal childhood pneumococcal vaccination in Australia in 2005, 'fully immunised' and 7vPCV coverage improved marginally in Aboriginal and Torres Strait Islander children from the 2003 cohort to the 2004 cohort, with increases varying by jurisdiction. However, with the exception of the Northern Territory, 7vPCV vaccine coverage estimates in all jurisdictions remained considerably lower than 'fully immunised' coverage estimates for all scheduled vaccines at 12 months of age. After the introduction of universal pneumococcal vaccination for all Australian children, 7vPCV coverage increased substantially among Aboriginal and Torres Strait Islander children nationally and in all jurisdictions, although it remained below 80% in South Australia and Western Australia. Importantly, differential coverage between 7vPCV and other scheduled vaccines ('fully immunised') was absent after the introduction of the universal conjugate pneumococcal vaccination program.

Table 1. Comparison of the number of Aboriginal and Torres Strait Islander children, ACIR data versus ABS, 2002 versus 2006

State or territory	Indigenous population – ACIR data 2002 [*]	Indigenous population (births) – ABS 2002 [†]	Ratio of ATSI identified by ACIR / ABS (%) [‡]	Indigenous population – ACIR data 2006 [§]	Indigenous population (births) – ABS 2006	Ratio of ATSI identified by ACIR/ABS (%) [¶]
ACT	72	105	68.6	132	109	121.1
NSW	2,714	3,568	76.1	3,249	3,516	92.4
NT	1,422	1,445	98.4	1,615	1,565	103.2
Qld	489	3,493	14.0	3,852	3,463	111.2
SA	498	665	74.9	586	733	79.9
Tas.	109	482	22.6	327	413	79.2
Vic.	495	680	72.8	684	782	87.5
WA	1,411	1,653	85.4	1,970	1,910	103.1
Aust.	7,210	12,094	59.6	12,415	12,496	99.4

* Numbers for the 12 month birth cohort (born 1 January 2002 to 31 December 2002).

† Australian Bureau of Statistics. Births Australia 2002. Canberra: Australian Bureau of Statistics. Projected indigenous births from the 1996 Census.

‡ Accuracy of Australian Childhood Immunisation Register (ACIR) Indigenous data (The number of children estimated by the ACIR for 2002/the number of Census projection births in 2002)*100.

§ Numbers for the 12 month birth cohort (born 1 January 2006 to 31 December 2006).

|| Australian Bureau of Statistics. Births Australia 2006 Canberra: Australian Bureau of Statistics. Projected indigenous births from the 2001 Census.

¶ Accuracy of ACIR Indigenous data (The number of children estimated by the ACIR for 2006/the number of Census projection births in 2006)*100.

Table 2. A comparison of 7vPCV and 'fully immunised' coverage estimates calculated from the ACIR for Aboriginal and Torres Strait Islander children born in four 3-month birth cohorts

State or territory	n*	% coverage for cohort born 1/1/03 – 31/3/03		% coverage for cohort born 1/4/04 – 30/6/04		% coverage for cohort born 1/1/06 – 31/3/06		% coverage for cohort born 1/4/06 – 30/6/06	
		7vPCV	Fully immunised†	7vPCV	Fully immunised	7vPCV	Fully immunised	7vPCV	Fully immunised
ACT	32	42.1	79.0	70.4	92.6	85.2	85.2	90.6	90.6
NSW	764	40.9	85.3	51.2	81.4	86.0	85.6	83.0	82.9
NT	422	79.2	80.3	82.6	84.5	86.7	85.2	87.7	87.9
Qld	954	60.8	85.6	62.9	82.1	86.5	85.2	87.1	86.2
SA	149	39.4	81.7	53.2	78.0	77.2	76.0	77.9	77.2
Tas.	67	13.0	87.0	31.1	92.2	95.4	95.4	85.1	88.1
Vic.	186	17.5	90.3	44.8	88.0	83.6	85.3	88.2	86.0
WA	527	51.5	80.2	55.1	75.9	79.2	77.7	78.6	78.0
Aust.	3,101	52.5	83.6	58.4	81.9	84.9	84.0	84.3	83.8

* Total number of Indigenous children in the cohort born 1 April 2006 to 30 June 2006.

† All of the third doses of diphtheria-tetanus-pertussis and poliomyelitis, and second or third dose of *Haemophilus influenzae* type b and hepatitis B vaccines used to assess whether a child is completely immunised at 12 months of age.

Table 3 compares 7vPCV coverage estimates between Aboriginal and Torres Strait Islander and non-Indigenous children in one cohort of children born after the introduction of the universal pneumococcal vaccination program in 2005. It shows that coverage for 7vPCV at 12 months is lower among Aboriginal and Torres Strait Islander children than among non-Indigenous children overall and in all jurisdictions.

Summary

This analysis has confirmed earlier reports⁴ that the reporting of Indigenous status on the ACIR has improved substantially in recent years and is now high in almost all jurisdictions. The trend in increased reporting, previously shown to be 95% by 2005⁴ has increased further to 99% in 2007. The ACIR can now be used with more confidence by vaccination program managers and other public health practitioners to estimate vaccine coverage in Aboriginal and Torres Strait Islander children.

The updated analysis of recent ACIR data allows a comparison of 7vPCV immunisation coverage among Aboriginal and Torres Strait Islander children in Australia before and after the introduction of the pneumococcal conjugate vaccine program to all Australian children in 2005. Prior to this date, the publicly funded 7vPCV program only included Aboriginal and Torres Strait Islander children. The main finding is that 7vPCV coverage among Aboriginal and Torres Strait Islander children in Australia increased substantially between the 2 periods, despite the fact that the program was publicly funded throughout for this population. This suggests that universal programs targeting all Australian chil-

Table 3. A comparison of 7vPCV coverage estimates at 12 months of age for Aboriginal and Torres Strait Islander versus non-Indigenous children in the cohort born between 1 April and 30 July 2006

State or territory	% coverage for Indigenous	% coverage for non-Indigenous
ACT	90.6	94.2
NSW	83.0	91.5
NT	87.7	90.7
Qld	87.1	91.4
SA	77.9	91.8
Tas.	85.1	91.9
Vic.	88.2	91.5
WA	78.6	90.0
Aust.	84.3	91.4

dren rather than solely Aboriginal and Torres Strait Islander children,⁹ may positively impact on coverage for the latter group of children. While under-reporting of 7vPCV vaccinations to the ACIR may have been more pronounced prior to 2005, leading to an under-estimation of coverage in that period, a survey of Queensland Indigenous children also produced similar findings of lower coverage with non-standard vaccines, including 7vPCV.¹⁰

It is also worthwhile to note that 7vPCV coverage among Indigenous children has now approached that of other vaccines on the immunisation schedule. While coverage for other vaccines at 12 months of age has been lower in Indigenous compared to non-Indigenous children, this disparity disappears

by 24 months of age, indicating that timeliness is the main obstacle to maintaining equity in coverage at 12 months of age.¹¹ Although there have been substantial gains throughout the time period under study, 7vPCV coverage among Aboriginal and Torres Strait Islander children is still less than that of non-Indigenous children. States and territories should continue to ensure that all children, especially Aboriginal and Torres Strait Islander children, are receiving all recommended vaccines in a timely manner.

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