

NSW Annual Immunisation Coverage Report, 2020

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Abstract: Introduction: This report documents vaccination coverage in NSW up to 2020. **Methods:** Data from the Australian Immunisation Register (AIR), NSW School Vaccination Program and 2020 NSW Population Health Survey were used to estimate vaccination coverage trends. **Results:** 'Fully vaccinated' coverage at 12, 24 and 60 months of age in NSW was 0.6–1.0 percentage points higher in 2020 than 2019, reaching 94.8%, 91.9% and 94.7%, respectively. 'Fully vaccinated' coverage for Aboriginal children was 0.1 percentage points lower at 12 and 60 months of age in 2020 (94.3% and 97.5%, respectively) but 0.5 points higher at 24 months, reaching 92.8%. On-time vaccination (within 30 days of scheduled) was 0.8–3.0 percentage points higher in 2020 than 2019 for Aboriginal children for selected vaccine doses, but 4.8–11.3 points lower than non-Aboriginal. In 2020, the NSW School Vaccination Program administered human papillomavirus (HPV) vaccine first dose to 82% of female and 79% of male Year 7 students, diphtheria-tetanus-acellular pertussis-containing vaccine to 81% of Year 7 students and meningococcal ACWY vaccine to 73% of Year 10 students. These figures were 2–3 percentage points lower than 2019, with the percentage of students receiving HPV vaccine second dose 18 percentage points lower for girls and 17 points lower for boys, likely due to COVID-19

pandemic-related disruption. Influenza vaccine uptake on AIR in 2020 was 3.8 and 6.4 percentage points higher than 2019 for Aboriginal and non-Aboriginal children aged 6 months to <5 years. In adults aged ≥ 65 years, influenza vaccine uptake in 2020 was 62.8% in AIR and 83.1% in NSW Population Health Survey. **Conclusions:** This report reflects successful delivery of vaccination programs in NSW. It will be important to monitor catch-up vaccination rates in adolescents.

Introduction

This is the 12th annual immunisation coverage report for NSW, with analysis encompassing the years 2010–2020. These annual reports provide important information on trends in vaccination coverage and facilitate the monitoring of NSW vaccination programs.

This report uses the longstanding international practice of reporting coverage at key milestone ages to measure coverage against national benchmarks and to track trends over time. Its format is adapted from the annual national immunisation coverage reports published by the National Centre for Immunisation Research and Surveillance (NCIRS) since 2009.¹

High levels of reporting to the Australian Immunisation Register (AIR) are maintained for childhood vaccinations by a system of incentive payments for immunisation providers and parents/guardians.² Reported vaccination coverage may be impacted by changes to immunisation policy, the incentive payment system and changes to the 'fully vaccinated' coverage algorithms. Some of the key changes in Australian and NSW immunisation policy are highlighted in Box 1. The vaccines delivered through the NSW Immunisation Program in 2020 are outlined in Table 1.

Methods

The Australian Immunisation Register

The Australian Childhood Immunisation Register (ACIR) was established on 1 January 1996 by incorporating

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Box 1. Selected recent and significant changes in immunisation policy relevant to NSW³

July 2020: Meningococcal B vaccine funded under the National Immunisation Program (NIP) for all Aboriginal children at 6 weeks, 4 months and 12 months of age, with a catch-up program until 30 June 2023 for Aboriginal children less than 2 years of age. A single dose of 13-valent pneumococcal conjugate vaccine (13vPCV) funded for Aboriginal adults at 50 years of age, followed by a dose of 23-valent pneumococcal polysaccharide vaccine (23vPPV) 2–12 months later and then the second dose of 23vPPV 5–10 years after that. For non-Aboriginal adults, a single dose of 13vPCV is funded at 70 years of age, replacing the previously funded dose of 23vPPV at 65 years of age.

March 2020: Influenza vaccine funded under the NIP for all children aged 6 months to <5 years.

First enhanced quadrivalent influenza vaccine (adjuvanted) funded nationally for people aged 65 years and over.

April 2019: Meningococcal ACWY conjugate vaccine funded under the NIP for adolescents aged 14–16 years, delivered through a school-based program, and adolescents aged 15–19 years delivered through primary care providers as part of an ongoing catch-up program.

March 2019: NSW ceases state-funded meningococcal ACWY conjugate vaccine program for adolescents due to it becoming funded under the NIP in April.

February 2019: Annual seasonal influenza vaccination funded under the NIP for Aboriginal people aged 5–14 years, meaning all Aboriginal persons aged 6 months and over now eligible for funded vaccine.

July 2018: Schedule for routine childhood vaccination with 13vPCV changed from 2, 4 and 6 months of age to 2, 4 and 12 months of age, respectively.

Meningococcal ACWY conjugate vaccine funded for all children at 12 months of age, replacing the combined *Haemophilus influenzae* type b (*Hib*) and meningococcal C vaccine, with the Hib component moved to 18 months of age and given as monovalent vaccine.

April 2018: Annual seasonal influenza vaccination funded by NSW Health for all children aged 6 months to <5 years and enhanced trivalent influenza vaccines (high-dose and adjuvanted) funded nationally for all adults aged ≥65 years.

February 2018: Two-dose schedule of 9-valent human papillomavirus (9vHPV) vaccine funded under the NIP for adolescents aged 12–14 years, delivered through school-based vaccination program.

January 2018: Further strengthening of vaccination requirements for childcare enrolment in NSW.⁴

Meningococcal ACWY school-based vaccination program funded for all NSW secondary school students in Years 10 and 11, as well as adolescents aged 15–19 years who have not received the vaccine at school.⁵

May 2017: Meningococcal ACWY school-based vaccination program funded for all NSW secondary school students in Years 11 and 12, as well as adolescents aged 17–18 years who no longer attend school.⁵

February 2017: A two-dose human papillomavirus (HPV) vaccine schedule adopted in NSW for Year 7 students in line with World Health Organization recommendations.⁶

November 2016: National herpes zoster (HZ) vaccination program commences with single dose of HZ vaccine at 70 years of age and catch-up program for people aged 71–79 years.

March 2016: Booster (fourth) dose of diphtheria–tetanus–acellular pertussis (DTPa)-containing vaccine at 18 months of age re-introduced onto the NIP schedule.

January 2016: New immunisation requirements for federal government family assistance payments (the 'No Jab, No Pay' policy⁷) come into effect. Only parents of children (aged less than 20 years) who are 'fully vaccinated' or on a recognised catch-up schedule continue to receive the Child Care Benefit, Child Care Rebate and/or the Family Tax Benefit Part A end-of-year supplement. Children with medical contraindications or natural immunity for certain diseases continue to be exempt from the requirements. However, conscientious objection is no longer a valid exemption from immunisation requirements.

demographic data from Medicare on all enrolled children aged less than 7 years.⁸ Up to 31 December 2015, all vaccination records for a child remained on the register indefinitely, but no new vaccination encounter records were added after their seventh birthday.² The register was expanded from 1 January 2016 to include records of vaccinations given up to less than 20 years of age and from 30 September 2016 to become the AIR, which captures records of vaccinations given to eligible individuals in Australia throughout their life.⁹

Participation in the AIR is opt-out so that it constitutes a nearly complete population register. Persons not enrolled in Medicare can be added to the AIR via a supplementary number. Since 2001, vaccinations given overseas can be recorded if a provider endorses their validity. Data are transferred to the AIR when a recognised immunisation provider supplies details of an eligible vaccination. This can now only be done electronically, via medical practice software or through direct data entry on the AIR website. Medical contraindications or natural immunity to certain

Table 1. NSW Immunisation Program Schedule for children, adolescents and adults in 2020

Age	Vaccine							
Children								
Birth	Hep B							
6 weeks	Hep B ^a	DTPa ^a	Hib ^a	IPV ^a	MenB ^b		13vPCV	Rotavirus
4 months	Hep B ^a	DTPa ^a	Hib ^a	IPV ^a	MenB ^b		13vPCV	Rotavirus
6 months	Hep B ^a	DTPa ^a	Hib ^a	IPV ^a	MenB ^c		13vPCV ^c	Flu ^d
12 months					MMR	MenB ^b	Men ACWY ^e	13vPCV
18 months		DTPa	Hib ^f		MMRV			Flu ^d
4 years		DTPa ^g		IPV ^g				Flu ^d
Adolescents								
11–13 years (Year 7)	dTpa						HPV ^h	Flu ^d
15–17 years (Year 10)						Men ACWY		Flu ^d
Adults								
≥50 years								Flu ^d 13vPCV & 23vPPV ⁱ
≥65 years								Flu ^d
70 years						HZ ^j		13vPCV ^k
Pregnant women	dTpa ^l							Flu ^m
<p>Hep B: hepatitis B; DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation; Hib: <i>Haemophilus influenzae</i> type b; IPV: inactivated polio vaccine; 13vPCV: 13-valent pneumococcal conjugate vaccine; Flu: influenza; MMR: measles–mumps–rubella; Men ACWY: meningococcal ACWY conjugate vaccine; MMRV: measles–mumps–rubella–varicella; dTpa: diphtheria–tetanus–pertussis (acellular) – adolescent/adult formulation; HPV: human papilloma virus; 23vPPV: Pneumovax 23 vaccine; HZ: herpes zoster.</p> <p>^aUsually given as combined DTPa–HepB–IPV–Hib vaccine.</p> <p>^bFunded for Aboriginal children only.</p> <p>^cChildren with medical risk factors require an additional dose at 6 months of age as well as the routine schedule.</p> <p>^dAnnual vaccination for all children aged ≥6 months to <5 years, all people with medical risk conditions and all Aboriginal people aged ≥6 months, and non-Aboriginal adults aged ≥65 years.</p> <p>^eAs of 1 July 2018, Men ACWY vaccine replaced Hib–MenC vaccine given at 12 months of age.</p> <p>^fAs of 1 July 2018, a monovalent Hib vaccine given at 18 months of age.</p> <p>^gUsually given as combined DTPa–IPV vaccine.</p> <p>^hTwo-dose schedule.</p> <p>ⁱAll Aboriginal adults aged ≥50 years receive a dose of 13vPCV, followed by the first dose of 23vPPV 2–12 months later and then the second dose of 23vPPV at least 5 years later.</p> <p>^jFrom 1 November 2016, a single dose of HZ vaccine is recommended and funded for adults at 70 years of age. Adults aged 71–79 years are eligible under a five-year catch-up program until 31 October 2021.</p> <p>^kFrom July 2020, the 23vPPV dose at 65 years of age was replaced by a dose of 13vPCV at 70 years of age.</p> <p>^lUsually given to pregnant women at 28 weeks gestation but can be given anytime between 20 and 32 weeks gestation of each pregnancy and should be given as early as possible (from 20 weeks) to women identified as being at risk of early delivery.</p> <p>^mAt any stage of pregnancy.</p> <p>Source: http://www.health.nsw.gov.au/immunisation/Publications/nsw-immunisation-schedule.pdf.</p>								

diseases, based on guidance from the Australian Immunisation Handbook¹⁰ and a vaccination provider factsheet,⁷ can only be reported by eligible medical practitioners using the AIR immunisation medical exemption form.¹¹ All vaccination records for a person remain on the register indefinitely. Since 1 January 2016, conscientious objection to vaccination is no longer recorded on the AIR.

Measuring childhood vaccination coverage using the AIR

This report details vaccination coverage for 2020 using AIR data up to 31 March 2021. Where relevant, comparisons have been made to the 2019 vaccination coverage

estimates. The report also includes vaccination trend data from 2010 onwards. The cohort method has been used for calculating coverage at the population level (national and state/territory)¹² since the inception of the register. Cohort vaccination status was assessed at 12 months of age (for vaccines due at 6 months), 24 months of age (for vaccines due at 6, 12 and 18 months) and 60 months of age (for vaccines due at 48 months). A minimum 3-month lag period was allowed for the late notification of vaccinations to the AIR, but only vaccines given on or before a child's first, second or fifth birthday, respectively, were included in coverage calculations.¹² If a child's record indicates receipt of the last dose of a vaccine that requires more than

one dose to complete the series, it was assumed that earlier vaccinations in the sequence had been given. This assumption has been shown to be valid.^{13,14}

The proportion of children designated as ‘fully vaccinated’ was calculated using 12-month wide cohorts with the number of children completely vaccinated with the vaccines of interest by the designated age as the numerator and the total number of AIR-registered children in the age cohort as the denominator. The 12-month wide cohorts used were children born between 1 January 2019 and 31 December 2019 for the 12-month milestone, between 1 January 2018 and 31 December 2018 for the 24-month milestone, and between 1 January 2015 and 31 December 2015 for the 5-year (60-month) milestone.

Nationally agreed definitions of ‘fully vaccinated’ coverage for the purpose of standardised reporting were used as follows: ‘Fully vaccinated’ at 12 months of age was defined as a child having a record on the AIR of the third dose of DTPa-containing vaccine, the third dose of polio/Hib/hepatitis B-containing vaccine (usually given as the combined DTPa–hepB–IPV–Hib vaccine) and the second or third dose of 13vPCV. ‘Fully vaccinated’ at 24 months of age was defined as a child having a record on the AIR of the fourth dose of DTPa-containing vaccine, the third dose of polio/hepatitis B-containing vaccine, the fourth dose of Hib-containing vaccine (or the third dose of Hib-containing vaccine if given after 11.5 months of age), the second dose of measles–mumps–rubella (MMR)-containing vaccine, the first dose of varicella-containing vaccine, the first dose of meningococcal C-containing vaccine and the third dose of 13vPCV. ‘Fully vaccinated’ at 60 months of age was defined as a child having a record on the AIR of the fourth or fifth dose of DTPa-containing vaccine and the fourth dose of polio-containing vaccine. Vaccination coverage estimates were also calculated separately at the 12-month milestone for the second dose of rotavirus vaccine, a NIP vaccine that is not included in calculations for ‘fully vaccinated’ status.

Timeliness

On-time vaccination was defined as receipt of a scheduled vaccine dose within 30 days of the recommended age for administration. Timeliness of the second dose of 13vPCV, the first and third dose of DTPa-containing vaccine and the first and second dose of MMR-containing vaccine was measured using 12-month wide birth cohorts. To allow time for very late vaccinations to be included, children in the timeliness analysis were assessed up to 3 years after doses were due, and therefore these cohorts were not the same as those assessed for coverage milestones.

Trends in the percentage of Aboriginal and non-Aboriginal children vaccinated on time for the first and third dose of DTPa-containing vaccine were plotted for 2010–2020. Timeliness of the second dose of 13vPCV and the first and second

dose of MMR-containing vaccine in 2020 was compared in Aboriginal and non-Aboriginal children by plotting the cumulative percentage receiving the dose by age. Timeliness of the third dose of DTPa-containing vaccine and the second dose of MMR-containing vaccine was also assessed by Aboriginal status using a vaccination delay measure categorised as ‘no delay’, ‘delay of 1 to <3 months’, ‘delay of 3 to <7 months’ or ‘delay \geq 7 months’.

Local health districts

Vaccination coverage estimates and vaccination delay estimates are presented in this report for NSW and by local health district (LHD). There are 15 geographically-based LHDs in NSW – eight metropolitan and seven rural/regional. Data for an additional LHD (Network with Victoria) is also reported.

Aboriginal status

Vaccination coverage estimates and vaccination delay estimates are presented in this report for all persons in NSW and also by Aboriginal status. For the period covered by this report, Aboriginal status was recorded as ‘Indigenous’, ‘non-Indigenous’ or ‘unknown’, as reported by the person (or parent/carer) to Medicare. For this report, two categories of children were considered: ‘Aboriginal’ (Indigenous) and ‘non-Aboriginal’ (non-Indigenous). As completeness of Aboriginal identification for children in the ACIR was shown to have been good by 2005,¹⁵ individuals whose Aboriginal status was not specified (approximately 1.2% of the NSW population on the AIR) were classified as non-Aboriginal for the purposes of the analyses conducted for this report.

Small area coverage

Analysis of coverage was undertaken at small area level using the Australian Bureau of Statistics (ABS)-defined statistical area level 3 (SA3),¹⁶ chosen because each is small enough to show differences within areas and provide more detail than LHDs, but not too small to render maps unreadable. SA3s with a population size less than 26 for a year-wide birth cohort of children were excluded prior to any mapping due to the imprecision of any coverage estimates calculated for these areas. Maps were created using version 15 of the MapInfo mapping software¹⁷ and the ABS Census Boundary Information. As postcode is the only sub-jurisdictional geographical indicator on the AIR, the ABS Postal Area to SA3 Concordance 2016 was used to match residential postcodes to SA3s.¹⁸

Measuring adolescent vaccination coverage in the school-based program

Coverage data for vaccines given to adolescents in 2020 were provided by NSW Health from their School

Vaccination Program.¹⁹ Vaccination data for HPV vaccine and dTpa vaccine for Year 7 students and meningococcal ACWY vaccine for Year 10 students, are recorded by school immunisation teams and collated by the LHDs and NSW Health. Coverage for each vaccine was calculated using the counts of students vaccinated as the numerator and the school population enrolments, as at the start of the year, as the denominator. Coverage estimates may be an underestimate of true vaccination coverage as they represent only those vaccinations received through the school program and do not include doses received from general practitioners or other immunisation providers.²⁰ For HPV vaccination, school catch-up vaccination has been offered since 2012 to Year 8 students who commenced the course of HPV vaccine in Year 7 to support course completion. Annual Year 7 HPV vaccination coverage estimates from 2012 to 2019 include school catch-up vaccinations given in Year 8 in the following year. In 2020, schools were closed for certain periods due to the COVID-19 pandemic, which led to disruption of the school program. As a result, the vaccination coverage estimates for 2020 are provisional with significant catch-up vaccinations expected to have occurred in 2021.

Measuring adolescent vaccination uptake and coverage using the AIR

A National HPV Vaccination Program Register (HPV Register) was established in 2008 by the Victorian Cytology Service Foundation, under contract to the Australian Government Department of Health, to capture all HPV vaccination encounters administered as part of the National HPV Vaccination Program. With the expansion of the ACIR to the AIR, all data held in the HPV Register were transferred to the AIR in late 2018. All HPV vaccinations given through school-based programs, as well as HPV vaccinations given by any other immunisation provider, are now reported directly to the AIR.²¹

The number of dose 1 and dose 2 HPV vaccinations given during 2020 to NSW adolescents aged less than 15 years was determined by gender, Aboriginal status and residential LHD, and compared to the number of doses given in 2019. Of the adolescents aged less than 15 years with a record on AIR of the first dose of HPV vaccine given during 2020, the proportion who also received dose 2 by 31 December 2020 was calculated to assess course completion in the same calendar year. This proportion was compared to the proportion of adolescents completing the two-dose HPV vaccination schedule within the calendar year of 2019.

The World Health Organization recommends assessing coverage by 15 years of age for the purpose of international comparison over time.²² HPV vaccination in NSW is delivered routinely in Year 7, usually around 12–13 years of age. Annual HPV vaccination coverage in NSW was

calculated for 2020 using the number of 15 year olds recorded on the AIR to have received dose 1 and dose 2 of the HPV vaccine before their 15th birthday as the numerator, and the total number of Medicare registered adolescents aged 15 years in 2020 as the denominator. HPV vaccination coverage was determined by gender, Aboriginal status and residential LHD.

For the first time in this series of reports, coverage of dTpa vaccination by 15 years of age and coverage of meningococcal ACWY vaccination by 17 years of age were also calculated for 2020 using similar methodology.

Measuring influenza vaccination coverage

Influenza vaccination coverage for all persons aged 6 months and older was calculated for specific age groups (6 months to <5 years, 5 to <15 years, 15 to <50 years, 50 to <65 years and ≥65 years) by dividing the number of persons with at least one dose of influenza vaccine recorded on the AIR in a calendar year by the total number of persons registered on the AIR in each age group. Influenza vaccination coverage was calculated for 2019 and 2020 by age group, Aboriginal status, LHD, NSW and Australia overall.

Influenza vaccination data have also been collected for adults aged 65 years and over since 1997 through the NSW Adult Population Health Survey.²³ This is a rolling telephone survey utilising random digit dialling, with vaccination status determined from patient response to the interview question asking ‘Were you vaccinated or immunised against flu in the last 12 months?’ Annual influenza vaccination coverage in adults aged 65 years and older by LHD was not available as a single calendar year in 2019 and 2020 as the target number of completed surveys was not met across all LHDs, and as such, is reported by LHD as combined 2019–2020 data and compared to the combined 2018–2019 data. Data were obtained from the NSW HealthStats website.²⁴

Summary of Results

Childhood vaccination coverage

- Quarterly ‘fully vaccinated’ coverage estimates in NSW, assessed at 12, 24 and 60 months of age were 94.8%, 91.7% and 95.3%, respectively, in the December 2020 quarter (Figure 1), all higher than the December 2019 quarter.
- The annual NSW coverage estimate of ‘fully vaccinated’ at the 12-month milestone was 94.8% in 2020 (Table 2), an increase of 0.6 of a percentage point from 2019.
- ‘Fully vaccinated’ coverage at 12 months of age increased in 2020 compared with 2019 in the majority of NSW LHDs and was 94.0% or greater in all LHDs except Northern NSW (Table 2).

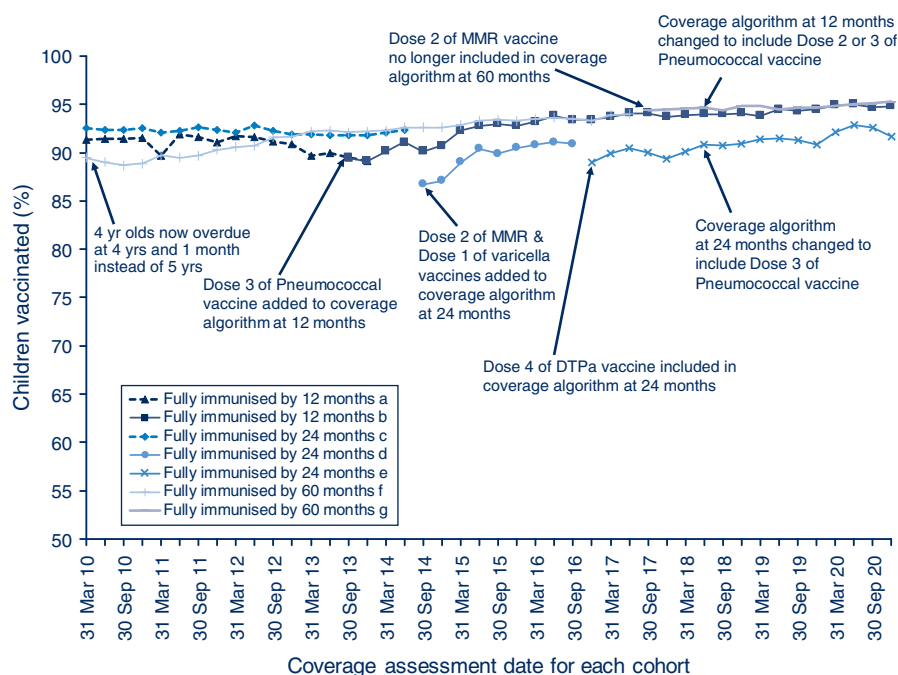


Figure 1. Trends in ‘fully vaccinated’ coverage, NSW, 2010–2020.

^aUp until 30 June 2013, ‘fully vaccinated’ at 12 months of age was defined as a child having a record of the third dose of DTPa-containing vaccine, and third doses of polio-containing, Hib-containing and Hep B-containing vaccines.

^bBetween 1 July 2013 and 31 March 2018, ‘fully vaccinated’ at 12 months of age was defined as a child having a record of the third dose of DTPa-containing vaccine, third doses of polio-containing, Hib-containing and Hep B-containing vaccines, and the third dose of 13-valent PCV. Since 1 April 2018, the definition was changed to include the second or third dose of 13-valent PCV.

^cUp until 30 June 2014, ‘fully vaccinated’ at 24 months of age was defined as a child having a record of the third dose of DTPa-containing vaccine, third doses of polio-containing and Hep B-containing vaccines, the fourth dose of Hib-containing vaccine, and the first dose of MMR-containing vaccine.

^dBetween 1 July 2014 and 30 September 2016, ‘fully vaccinated’ at 24 months of age was defined as a child having a record of the third dose of DTPa-containing vaccine, third doses of polio-containing and Hep B-containing vaccines, the fourth dose of Hib-containing vaccine, the second dose of MMR-containing vaccine, the first dose of varicella-containing vaccine and the first dose of Men C-containing vaccine.

^eBetween 1 October 2016 and 31 March 2018, ‘fully vaccinated’ at 24 months of age was defined as a child having a record of the fourth dose of DTPa-containing vaccine, third doses of polio-containing and Hep B-containing vaccines, the fourth dose of Hib-containing vaccine, the second dose of MMR-containing vaccine, the first dose of varicella-containing vaccine and the first dose of Men C-containing vaccine. Since 1 April 2018, the definition was changed to include the third dose of 13-valent PCV.

^fBetween 1 October 2007 and 30 June 2017 ‘fully vaccinated’ at 60 months of age was defined as a child having a record of the fourth dose of DTPa-containing vaccine, the fourth dose of polio-containing vaccine and the second dose of MMR-containing vaccine.

^gSince 1 July 2017, ‘fully vaccinated’ at 60 months of age was defined as a child having a record of the fourth or fifth dose of DTPa-containing vaccine and the fourth dose of polio-containing vaccine.

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Hep B: hepatitis B.

Hib: *Haemophilus influenzae* type b.

Men C: meningococcal C.

MMR: measles–mumps–rubella.

PCV: pneumococcal conjugate vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

- Compared with 2019, state-level coverage for all individual vaccines/antigens at 12 months of age increased marginally in 2020. The greatest increase was seen in rotavirus vaccine coverage, which increased by 0.6 percentage points to reach 92.9%, however it remains lower than other vaccines as catch-up vaccination cannot be given once infants turn 15 weeks (dose 1) and 25 weeks (dose 2) of age. State-level coverage for all other individual vaccines/antigens at 12 months of age is now greater than 95% (Figure 2, Table 2).
- Coverage for all individual vaccines/antigens at the 12-month milestone, except rotavirus vaccine, was greater than 94.0% in all LHDs except Northern NSW (Table 2). Compared to 2019, these coverage estimates increased slightly in 2020 for all LHDs except Central Coast, Network with Victoria, Northern NSW and Western Sydney.

Table 2. Percentage of children vaccinated at 12 months of age^a by antigen/dose and local health district, NSW, compared with NSW overall and Australia, 2020

Antigen/Dose	Local Health District ^b																	Australia %
	CC %	FW %	HNE %	IS %	MN %	MM %	NBM %	NV %	NN %	NS %	SES %	SWS %	SN %	SYD %	WN %	WS %	NSW %	
Diphtheria–tetanus–pertussis (acellular) Dose 3	96.2	98.0	96.6	96.1	94.6	96.8	96.0	96.3	87.9	96.0	95.6	94.6	95.8	96.1	97.2	94.9	95.4	95.3
Poliomyelitis Dose 3	96.2	98.0	96.6	96.1	94.6	96.8	96.0	96.3	87.8	96.0	95.6	94.5	95.8	96.1	97.2	94.9	95.4	95.3
<i>Haemophilus influenzae</i> type b Dose 3	96.2	98.0	96.6	96.1	94.5	96.7	95.9	96.2	87.7	95.9	95.6	94.5	95.7	96.0	97.2	94.8	95.4	95.2
Hepatitis B Dose 3	96.1	98.0	96.6	96.0	94.4	96.7	95.9	96.3	87.6	95.7	95.4	94.5	95.6	95.8	97.2	94.6	95.3	95.1
Rotavirus Dose 2	93.2	96.2	93.9	93.8	90.7	94.6	93.1	93.9	83.8	94.1	93.5	92.0	92.8	94.0	94.5	92.5	92.9	92.5
13-valent pneumococcal conjugate Dose 2 or 3 ^c	97.0	98.8	97.4	97.1	95.5	97.7	96.8	96.7	89.3	96.8	96.5	96.2	96.8	96.7	98.4	96.3	96.5	96.5
Fully vaccinated^c	95.8	98.0	96.3	95.7	94.3	96.4	95.4	95.9	87.3	95.2	94.8	94.0	95.2	95.2	97.1	94.1	94.8	94.8
Total number of children	3,857	345	10,644	4,603	2,352	2,953	5,223	734	3,058	9,468	9,812	14,682	2,198	6,894	3,530	14,314	95,155	297,757

^aCohort born 1 January 2019–31 December 2019.

^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

^c'Fully vaccinated' at 12 months of age was defined as a child having a record on the AIR of the third dose of diphtheria–tetanus–acellular pertussis-containing vaccine, third doses of polio-containing, *Haemophilus influenzae* type b-containing and hepatitis B-containing vaccines and the second or third dose of 13-valent pneumococcal conjugate vaccine. Source: Australian Immunisation Register, data as at 31 March 2021.

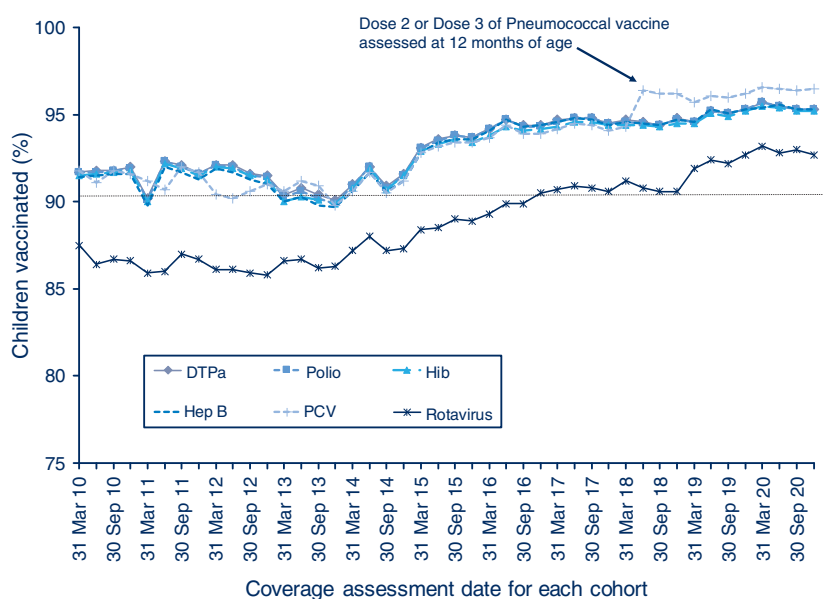


Figure 2. Trends in vaccination coverage estimates at 12 months of age by vaccine/antigen^a, NSW, 2010–2020.

By 3-month birth cohorts born between 1 January 2009 and 31 December 2019. Coverage assessment date was 12 months after the last birth date of each cohort.

^aThird doses of DTPa-containing, polio-containing, Hib-containing and Hep B-containing vaccines, the third dose of 13-valent PCV (second or third dose as of 1 April 2018) and the second dose of rotavirus vaccine.

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Hep B: hepatitis B.

Hib: *Haemophilus influenzae* type b.

PCV: pneumococcal conjugate vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

- At state level, ‘fully vaccinated’ coverage at the 24-month milestone increased from 90.9% in 2019 to 91.9% in 2020 (Table 3).
- Compared to 2019, ‘fully vaccinated’ coverage at 24 months of age increased in all NSW LHDs in 2020, except for a decrease of 0.5 of a percentage point in Murrumbidgee, and was 91.0% or greater in all LHDs except Northern NSW, South Eastern Sydney and Sydney LHDs (Table 3).
- Coverage for all vaccines/antigens at the 24-month milestone (except MMRV vaccine and the fourth dose of DTPa-containing vaccine) was greater than 94.0% at state level in 2020 (Figure 3) and 93.0% or greater for all LHDs except for Northern NSW (Table 3).

Table 3. Percentage of children vaccinated at 24 months of age^a by antigen/dose and local health district, NSW, compared with NSW overall and Australia, 2020

Antigen/Dose	Local Health District ^b																	
	CC %	FW %	HNE %	IS %	MN %	MM %	NBM %	NV %	NN %	NS %	SES %	SWS %	SN %	SYD %	WN %	WS %	NSW %	Australia %
Diphtheria–tetanus–pertussis (acellular) Dose 4	95.3	96.1	95.3	95.4	92.8	94.5	94.1	95.5	86.9	93.4	92.3	92.7	93.8	92.7	96.1	93.3	93.5	93.5
Poliomyelitis Dose 3	97.3	98.8	97.5	97.6	94.7	97.3	96.8	97.9	90.6	96.8	96.0	96.2	96.3	96.9	98.3	96.9	96.6	96.6
<i>Haemophilus influenzae</i> type b Dose 4	95.8	96.4	96.0	96.1	93.5	95.3	94.7	95.8	88.3	94.1	93.1	93.5	94.2	93.2	96.9	93.6	94.1	94.3
Hepatitis B Dose 3	97.2	98.8	97.3	97.4	94.5	97.2	96.8	97.9	90.4	96.0	95.5	96.1	96.1	96.3	98.3	96.4	96.3	96.4
Meningococcal ACWY Dose 1	96.3	98.2	96.2	96.5	93.8	95.9	95.8	96.3	89.3	94.1	93.0	94.6	94.3	94.1	96.8	94.9	94.8	95.0
Measles–mumps–rubella Dose 1	97.0	98.5	96.9	96.8	94.3	96.7	96.1	97.4	90.1	95.4	94.5	95.3	95.4	95.3	98.1	95.9	95.7	95.8
Measles–mumps–rubella Dose 2	95.4	96.1	95.6	95.7	93.2	95.2	94.5	95.9	88.0	93.8	92.6	93.1	94.0	93.1	96.4	93.7	93.9	94.0
Varicella Dose 1	95.4	96.1	95.6	95.6	93.2	95.2	94.6	96.0	87.8	93.9	92.7	93.1	94.0	93.1	96.4	93.7	93.9	94.0
13-valent pneumococcal conjugate Dose 3	96.7	98.2	96.9	96.7	93.6	96.2	95.8	97.2	89.1	95.5	94.4	95.0	95.4	94.9	97.8	95.6	95.4	95.6
Fully vaccinated^c	94.3	95.7	94.2	94.4	91.1	93.0	92.9	94.6	85.8	91.5	90.5	91.3	92.1	90.4	94.5	91.3	91.9	92.1
Total number of children	4,102	329	10,824	4,844	2,366	2,975	5,196	758	3,203	9,633	9,655	15,215	2,161	6,859	3,670	14,639	96,959	303,236

^aCohort born 1 January 2018–31 December 2018.

^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

^c'Fully vaccinated' at 24 months of age defined as a child having a record on the AIR of the fourth dose of diphtheria–tetanus–pertussis (acellular)-containing vaccine, third doses of polio-containing and hepatitis B-containing vaccines, the fourth dose of *Haemophilus influenzae* type b-containing vaccine (or the third dose of the *Haemophilus* B conjugate (PRP-T) vaccine if given after 11.5 months of age), the second dose of MMR-containing vaccine, the first dose of varicella-containing vaccine, the first dose of meningococcal C-containing vaccine and the third dose of 13-valent pneumococcal conjugate vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

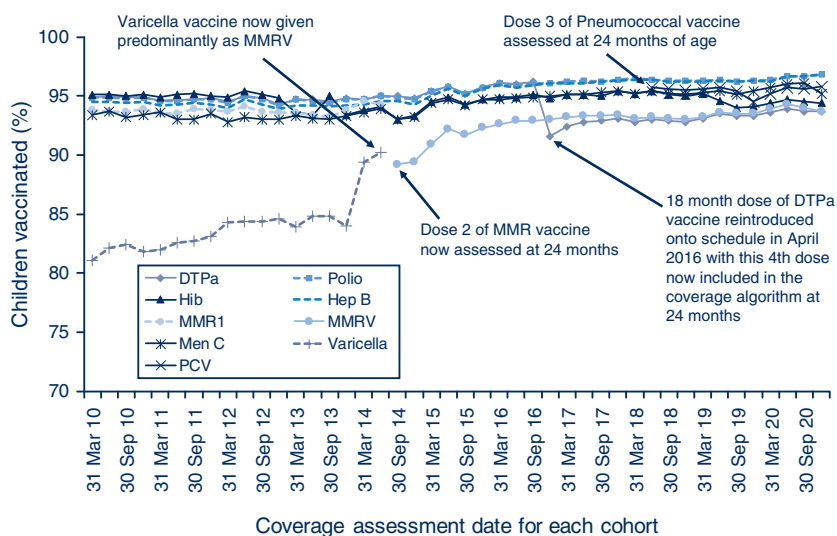


Figure 3. Trends in vaccination coverage estimates at 24 months of age by vaccine/antigen^a, NSW, 2010–2020.

By 3-month birth cohorts born between 1 January 2008 and 31 December 2018. Coverage assessment date was 24 months after the last birth date of each cohort.

^aDTPa-containing vaccine (third dose assessed up until 30 September 2016, fourth dose assessed from 1 October 2016), third doses of polio-containing and Hep B-containing vaccines, the fourth dose of Hib-containing vaccine, MMR-containing vaccine (first dose assessed up until 30 June 2014, second dose assessed from 1 July 2014), the first dose of varicella-containing vaccine, the first dose of Men C-containing vaccine, and the third dose of 13-valent PCV (assessed from 1 April 2018).

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Hep B: hepatitis B.

Hib: *Haemophilus influenzae* type b.

Men C: meningococcal C.

MMR: measles–mumps–rubella.

MMRV: measles–mumps–rubella–varicella.

PCV: pneumococcal conjugate vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

- Coverage of the fourth dose of DTPa-containing vaccine at 24 months of age increased at state level from 93.0% in 2019 to 93.5% in 2020, with coverage above 92.0% in all LHDs except for Northern NSW (Table 3).
 - Coverage of MMR-containing vaccine at 24 months of age at state level in 2020 increased by 0.7 of a percentage point to 95.7% for dose 1 and by 0.6 of a percentage point to 93.9% for dose 2 (Table 3). Coverage for the second dose of MMR-containing vaccine was greater than 92.5% for all LHDs except for Northern NSW, where it was 88.0% (Table 3).
 - Varicella-containing vaccine coverage at 24 months of age increased by 0.5 of a percentage point to 93.9% at state level in 2020 with coverage above 92.0% in all LHDs except for Northern NSW, where it was 87.8% (Table 3).
 - The state-level estimate of 'fully vaccinated' coverage at the 60-month milestone increased by 0.8 percentage points to reach 94.7% in 2020, and was greater than 93.0% in all LHDs except Northern NSW, South Eastern Sydney and Sydney (Table 4).
 - Coverage for all vaccines/antigens at the 60-month milestone was above 94.5% at state level in 2020 (Figure 4, Table 4) and greater than 92.0% in all LHDs except Northern NSW and South Eastern Sydney (Table 4).
 - Although not included in the 60-month 'fully vaccinated' coverage algorithm, coverage of the second dose of MMR-containing vaccine at 60 months of age was 96.7% at state level in 2020 and was above 95.0% in all LHDs except Northern NSW and South Eastern Sydney (Table 4).
- Coverage in Aboriginal children**
- 'Fully vaccinated' coverage at the state level for Aboriginal children at the 12-month milestone was 94.3% in 2020, a decrease of 0.1 of a percentage point from 2019 and 0.6 percentage points lower than for non-Aboriginal children at the same age, in whom coverage increased from 94.2% in 2019 to 94.9% in 2020 (Table 5).
 - 'Fully vaccinated' coverage for Aboriginal children at the 12-month milestone in 2020 varied by LHD – ranging from 89.9% in Sydney to 100% in Network with Victoria – and was the same or higher than for non-Aboriginal children in Central Coast, Mid North Coast, Network with Victoria, Northern NSW and South Eastern Sydney LHDs, but lower in the other LHDs (Table 5).
 - Coverage estimates at the state level for individual vaccines/antigens assessed at the 12-month milestone, excluding rotavirus vaccine, were above 94.5% for both Aboriginal and non-Aboriginal children in 2020 (Table 6). For Aboriginal children, these estimates were similar to the 2019 estimates, except for rotavirus vaccine that decreased by 0.7 of a percentage point. For non-Aboriginal children, coverage estimates for

Table 4. Percentage of children vaccinated at 60 months of age^a by antigen/dose and local health district, NSW, compared with NSW overall and Australia, 2020

Antigen/Dose	Local Health District ^b																	Australia %
	CC %	FW %	HNE %	IS %	MN %	MM %	NBM %	NV %	NN %	NS %	SES %	SWS %	SN %	SYD %	WN %	WS %	NSW %	
Diphtheria–tetanus–pertussis (acellular) Dose 4 or 5	97.6	99.7	97.9	97.9	95.0	98.2	97.4	97.4	90.9	96.0	94.9	97.3	97.0	95.7	98.4	97.0	96.7	96.7
Poliomyelitis Dose 4	96.1	99.1	96.6	96.5	93.8	97.2	96.1	96.3	89.4	93.5	91.8	95.6	95.1	92.5	97.5	94.9	94.8	94.9
<i>Haemophilus influenzae</i> type b Dose 4 ^c	97.7	99.4	97.9	97.7	94.9	98.4	97.7	97.1	91.3	95.7	95.0	97.2	97.2	95.6	98.3	96.5	96.6	96.7
Hepatitis B Dose 3 ^c	97.6	99.7	98.0	97.7	95.1	98.4	97.8	97.3	91.6	94.4	95.4	97.3	97.2	95.6	98.5	95.4	96.4	96.6
Meningococcal C Dose 1 ^c	97.7	99.7	98.0	98.0	95.7	98.5	97.8	97.6	91.4	96.2	95.5	97.7	97.3	96.3	98.4	97.4	97.0	97.1
Measles–mumps–rubella Dose 2 ^d	97.6	99.7	97.9	97.8	95.5	98.4	97.5	97.6	91.1	95.8	94.9	97.5	97.0	95.7	98.5	97.1	96.7	96.8
Varicella Dose 1 ^c	97.5	99.7	97.9	97.8	95.5	98.3	97.4	97.4	91.0	95.8	95.0	97.4	96.9	95.8	98.5	97.1	96.7	96.8
13-valent pneumococcal conjugate Dose 3 ^c	96.9	98.9	96.8	96.5	92.2	96.4	96.8	95.3	89.5	94.4	94.7	94.6	96.3	94.1	97.3	94.1	95.0	95.2
Fully vaccinated^e	96.1	99.1	96.6	96.5	93.8	97.1	96.1	96.3	89.4	93.5	91.7	95.6	95.1	92.5	97.5	94.9	94.7	94.8
Total number of children	4,350	349	11,737	5,025	2,609	3,115	5,425	816	3,450	11,157	9,608	15,133	2,396	6,544	3,850	15,524	101,795	324,139

^aCohort born 1 January 2015–31 December 2015.

^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

^cNot included in definition of 'Fully vaccinated' at 60 months of age.

^dAs of mid-2017, the second dose of MMR no longer included in the definition of 'Fully vaccinated' at 60 months of age.

^e'Fully vaccinated' at 60 months of age defined as a child having a record on the AIR of the fourth or fifth dose of diphtheria–tetanus–pertussis (acellular)-containing vaccine and the fourth dose of polio-containing vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

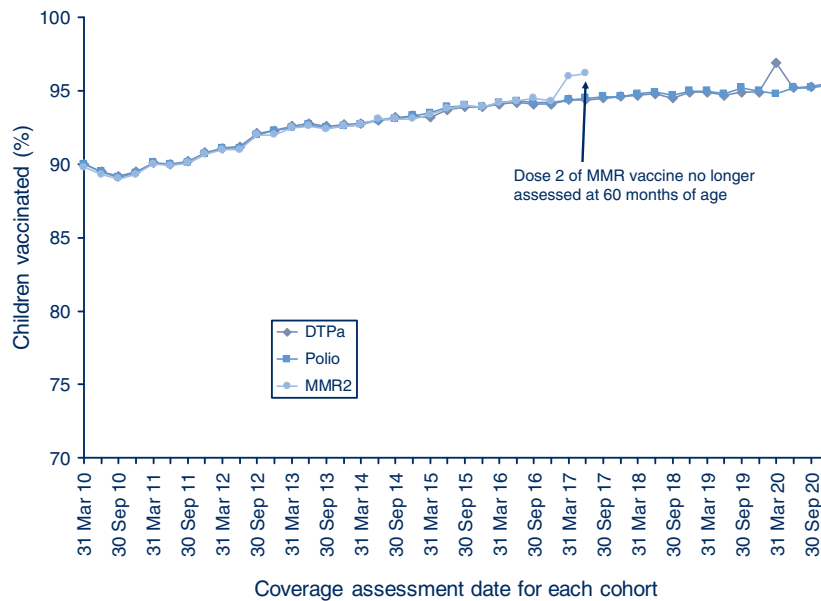


Figure 4. Trends in vaccination coverage estimates at 60 months of age by vaccine/antigen^a, NSW, 2010–2020.

By 3-month birth cohorts born between 1 January 2005 and 31 December 2015. Coverage assessment date was 60 months after the last birth date of each cohort.

^aDTPa-containing vaccine (fourth dose assessed up until 30 September 2016, fourth or fifth doses assessed from 1 October 2016), the fourth dose of polio-containing vaccine, and up until 30 June 2017, the second dose of MMR-containing vaccine.

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

MMR: measles–mumps–rubella.

Source: Australian Immunisation Register, data as at 31 March 2021.

individual vaccines/antigens increased by between 0.4 and 0.7 of a percentage point in 2020.

- Coverage estimates at the state level for individual vaccines/antigens assessed at the 12-month milestone in 2020 were marginally lower (less than 1 percentage point) for Aboriginal children compared to non-Aboriginal children except for 13vPCV, which was 0.3 of a percentage point higher in Aboriginal children and rotavirus vaccine which was 2.7 percentage points lower in Aboriginal children (Table 6).
- ‘Fully vaccinated’ coverage at the state level for Aboriginal children at the 24-month milestone increased from 92.3% in 2019 to 92.8% in 2020, and was 0.9 of a percentage point higher than for non-Aboriginal children at the same age, in whom coverage increased from 90.8% in 2019 to 91.9% in 2020 (Table 5).
- ‘Fully vaccinated’ coverage for Aboriginal children at the 24-month milestone in 2020 varied by LHD, ranging from 84.2% in Sydney to 98.8% in Network with Victoria, and was higher than for non-Aboriginal children in all LHDs except Hunter New England, Illawarra Shoalhaven, Sydney, Western NSW and Western Sydney (Table 5).
- Coverage estimates at the state level of individual vaccines/antigens assessed at the 24-month milestone in 2020 were all higher for Aboriginal children than for non-Aboriginal children (Table 6).
- ‘Fully vaccinated’ coverage at the state level for Aboriginal children at the 60-month milestone was 97.5% in 2020, a 0.1 of a percentage point decrease from 2019, and

2.9 percentage points higher than for non-Aboriginal children at the same age, in whom coverage increased from 93.7% in 2019 to 94.6% in 2020 (Table 5).

- ‘Fully vaccinated’ coverage for Aboriginal children at the 60-month milestone in 2019 was 96% or above in all LHDs except for South Eastern Sydney and Southern NSW, and was higher than for non-Aboriginal children in all LHDs except Southern NSW, where it was the same, and Western NSW, where it was 0.1 of a percentage point lower (Table 5).
- Coverage estimates at the state level for individual vaccines/antigens assessed at the 60-month milestone in 2019 were 2–3 percentage points higher in Aboriginal children than non-Aboriginal children (Table 6).

Timeliness

- In 2020, 96.3% of children in NSW were vaccinated on time with the first dose of DTPa-containing vaccine, 0.3 of a percentage point higher than in 2019. The disparity in on-time vaccination between Aboriginal and non-Aboriginal children for the first dose of DTPa-containing vaccine has steadily decreased from 13 percentage points in 2010 to 1.5 percentage point in 2020 (Figure 5).
- In 2020, 92.1% of children in NSW were vaccinated on time with the second dose of 13vPCV vaccine, 0.2 of a percentage point lower than in 2019, with the proportion higher for non-Aboriginal (92.4%) than Aboriginal

Table 5. Percentage of children fully vaccinated at 12, 24 and 60 months of age by Aboriginal status and local health district, NSW, compared with NSW overall and Australia, 2020

Child age and Aboriginal status	Local Health District ^a														Australia %				
	CC %	FW %	HNE %	IS %	MN %	MM %	NBM %	NV %	NN %	NS %	SES %	SWS %	SN %	SYD %		WN %	WS %	NSW %	
12 months – fully vaccinated^b																			
Aboriginal	96.8	97.0	94.5	94.5	95.5	95.3	93.8	100.0	92.2	91.9	94.9	92.8	94.3	89.9	95.0	91.6	94.3	93.1	
Non-Aboriginal	95.7	98.4	96.6	95.9	94.0	96.6	95.6	95.5	86.7	95.2	94.8	94.1	95.3	95.3	97.7	94.2	94.9	94.9	
24 months – fully vaccinated^c																			
Aboriginal	94.6	95.7	92.6	94.3	94.2	93.3	93.4	98.8	89.3	97.1	93.0	91.5	94.5	84.2	93.1	90.9	92.8	91.2	
Non-Aboriginal	94.3	95.6	94.4	94.4	90.5	92.9	92.9	94.1	85.4	91.5	90.5	91.3	91.9	90.5	94.9	91.3	91.9	92.1	
60 months – fully vaccinated^d																			
Aboriginal	97.8	100.0	98.3	98.2	97.3	97.9	97.4	98.3	96.0	97.1	94.9	96.6	95.1	99.1	97.4	96.1	97.5	97.0	
Non-Aboriginal	96.0	98.9	96.3	96.4	93.2	97.1	96.0	96.2	88.7	93.5	91.7	95.5	95.1	92.4	97.5	94.9	94.6	94.7	

^aCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.
^bCohort born 1 January 2019–31 December 2019: 'Fully vaccinated' at 12 months of age defined as a child having a record on the AIR of the third dose of diphtheria–tetanus–pertussis (acellular)-containing vaccine, third doses of polio-containing, *Haemophilus influenzae* type b-containing and hepatitis B-containing vaccines, and the second or third dose of 13-valent pneumococcal conjugate vaccine.
^cCohort born 1 January 2018–31 December 2018: 'Fully vaccinated' at 24 months of age defined as a child having a record on the AIR of the fourth dose of diphtheria–tetanus–pertussis (acellular)-containing vaccine, third doses of polio-containing and hepatitis B-containing vaccines, the fourth dose of *Haemophilus influenzae* type b-containing vaccine (or the third dose of the Haemophilus B conjugate (PRP-T) vaccine if given after 11.5 months of age), the second dose of MMR-containing vaccine, the first dose of varicella-containing vaccine, the first dose of meningococcal C-containing vaccine and the third dose of 13-valent pneumococcal conjugate vaccine.
^dCohort born 1 January 2015–31 December 2015: 'Fully vaccinated' at 60 months of age defined as a child having a record on the AIR of the fourth or fifth dose of diphtheria–tetanus–pertussis (acellular)-containing vaccine and the fourth dose of polio-containing vaccine.
 Source: Australian Immunisation Register, data as at 31 March 2021.

Table 6. Vaccination coverage estimates by age, vaccine/antigen and Aboriginal status, NSW, 2020

Vaccine/Antigen	Milestone age	Aboriginal	Non-Aboriginal
Diphtheria–tetanus–pertussis (acellular)	12 months ^a (Dose 3)	94.6	95.5
	24 months ^b (Dose 4)	93.8	93.5
	60 months ^c (Dose 4 or 5)	98.6	96.6
Poliomyelitis	12 months ^a (Dose 3)	94.6	95.5
	24 months ^b (Dose 3)	97.5	96.6
	60 months ^c (Dose 4)	97.5	94.6
<i>Haemophilus influenzae</i> type b	12 months ^a (Dose 3)	94.6	95.4
	24 months ^b (Dose 4)	95.1	94.1
	60 months ^c (Dose 4)	98.9	96.5
Hepatitis B	12 months ^a (Dose 3)	94.6	95.3
	24 months ^b (Dose 3)	97.5	96.2
	60 months ^c (Dose 3)	98.9	96.2
Measles–mumps–rubella	12 months	NA	NA
	24 months ^b (Dose 1)	97.1	95.6
	24 months ^b (Dose 2)	94.8	93.8
	60 months ^c (Dose 2)	98.8	96.6
Meningococcal ACWY/C ^d	12 months	NA	NA
	24 months ^b (Dose 1)	96.6	94.6
	60 months ^c (Dose 1)	98.9	96.9
Varicella	12 months	NA	NA
	24 months ^b (Dose 1)	94.6	93.9
	60 months ^c (Dose 1)	98.8	96.6
Pneumococcal conjugate vaccine	12 months ^a (Dose 2 or 3)	96.8	96.5
	24 months ^b (Dose 3)	96.8	95.4
	60 months ^c (Dose 3)	97.3	94.9
Rotavirus	12 months ^a (Dose 2)	90.4	93.1
	24 months	NA	NA
	60 months	NA	NA

^aCohort born 1 January 2019–31 December 2019.
^bCohort born 1 January 2018–31 December 2018.
^cCohort born 1 January 2015–31 December 2015.
^dMeningococcal ACWY vaccine assessed at 24 months but Meningococcal C-containing vaccine assessed at 60 months.
NA: not assessed.
Source: Australian Immunisation Register, data as at 31 March 2021.

(87.6%) children (Figure 6). However, on-time vaccination for the second dose of 13vPCV in 2020 was 0.8 of a percentage point higher for Aboriginal children than in 2019.

- In 2020, the proportion of children in NSW vaccinated on time with the third dose of DTPa-containing vaccine remained stable at 84.5%, with the proportion higher for non-Aboriginal (85.1%) than Aboriginal (75.3%) children (Figure 7, Table 7). The disparity between Aboriginal and non-Aboriginal children in on-time vaccination for the third dose of DTPa-containing vaccine has fallen from 17.4 percentage points in 2010 to 9.8 percentage points in 2020 (Figure 7).
- On-time vaccination for the third dose of DTPa-containing vaccine in 2020 varied by LHD, ranging from 80.8% in South Western Sydney to 88.1% in Northern Sydney

for non-Aboriginal children and from 67.6% in Northern NSW to 82.4% in Northern Sydney for Aboriginal children (Table 7).

- In 2020, 80.9% of children in NSW were vaccinated on time with the first dose of MMR-containing vaccine, an increase of 2.4 percentage points from 2019, with the proportion higher for non-Aboriginal (81.5%) than Aboriginal (73.0%) children (Figure 8). Compared to 2019, on-time vaccination for the first dose of MMR-containing vaccine increased in 2020 by 2.5 percentage points for non-Aboriginal children and by 3.0 percentage points for Aboriginal children.
- In 2020, 73.2% of children in NSW were vaccinated on time with the second dose of MMR-containing vaccine, almost 2 percentage points higher than in 2019, with

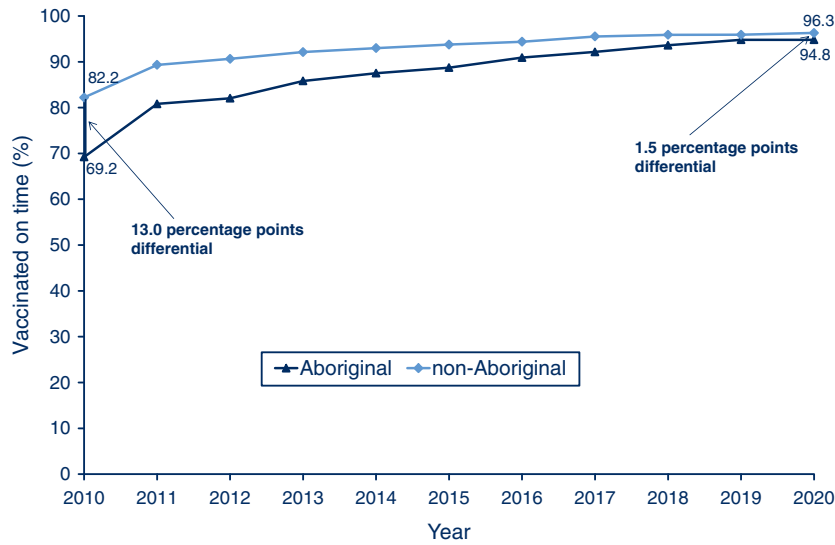


Figure 5. Trends in on-time^a vaccination for the first dose of DTPa-containing vaccine, NSW, 2010–2020.

^aOn-time vaccination defined as receipt of scheduled vaccine dose within 30 days of the recommended age of administration. Percentage vaccinated on time=number of children who received first dose of DTPa-containing vaccine before 10 weeks of age divided by the total number of children who received the dose in each year of interest. DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Source: Australian Immunisation Register, data as at 31 March 2021.

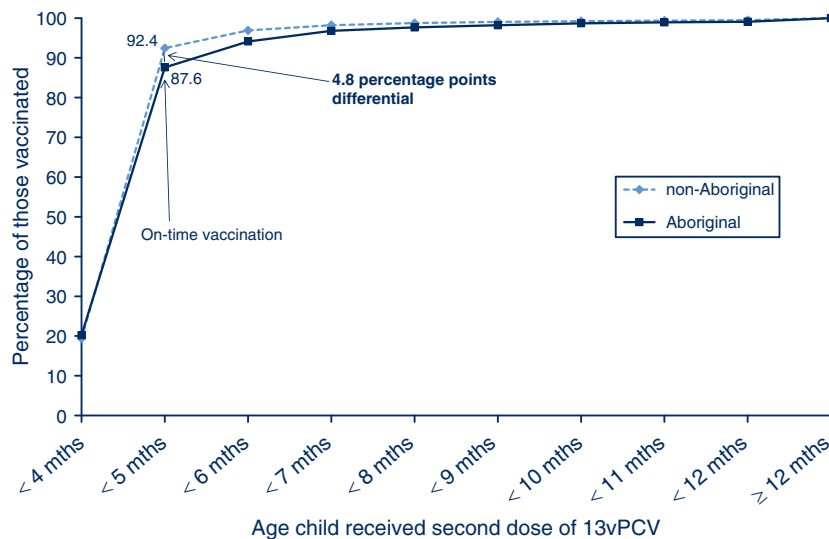


Figure 6. Cumulative percentage of children^a vaccinated with the second dose of 13vPCV^b by age in months and Aboriginal status, NSW, 2020.

^aCohort born 1 January 2018–31 December 2018. ^bShown as cumulative percentage of children vaccinated (number of children who received vaccine dose at particular age divided by the total number of children who received the vaccine dose, expressed as a percentage). 13vPCV: 13-valent pneumococcal conjugate vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

the proportion 11.3 percentage points higher in non-Aboriginal (74.0%) than Aboriginal (62.7%) children (Figure 9, Table 8). On-time vaccination for the second dose of MMR-containing vaccine increased in 2020 by 2 percentage points for non-Aboriginal children and 1.1 percentage points for Aboriginal children.

- On-time vaccination for the second dose of MMR-containing vaccine varied by LHD in 2020, ranging from 68.4% in South Western Sydney to 78.5% in Northern Sydney for non-Aboriginal children and from 48.6% in Northern NSW to 73.1% in Far West for Aboriginal children (Table 8).

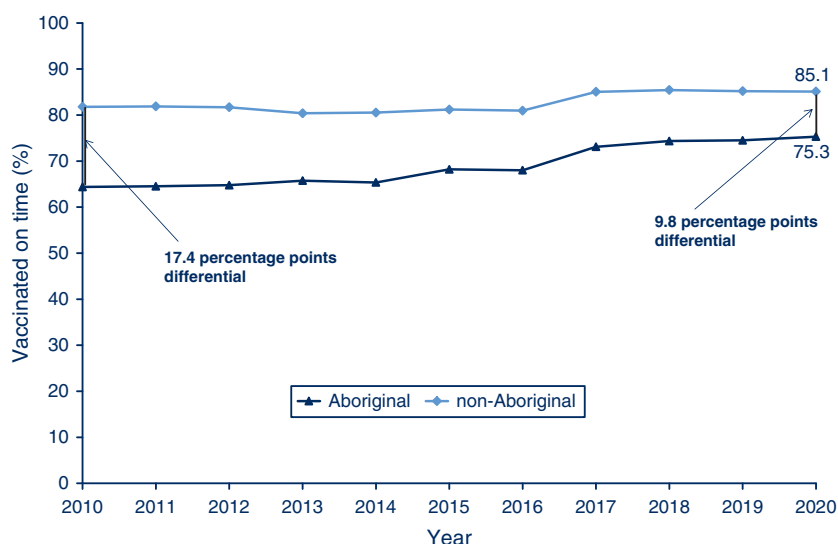


Figure 7. Trends in on-time^a vaccination for the third dose of DTPa-containing vaccine, NSW, 2010–2020.

^aOn-time vaccination defined as receipt of scheduled vaccine dose within 30 days of the recommended age of administration. Percentage vaccinated on time=number of children who received third dose of DTPa-containing vaccine before 7 months of age divided by the total number of children who received the dose in each year of interest. DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Source: Australian Immunisation Register, data as at 31 March 2021.

Table 7. Coverage for the third dose of DTPa-containing vaccine due at 6 months of age^a by vaccination delay category, Aboriginal status and local health district, NSW, compared with NSW overall and Australia, 2020

Vaccination delay/ Aboriginal status	Local Health District ^b																NSW	AUS	
	CC	FW	HNE	IS	MN	MM	NBM	NV	NN	NS	SES	SWS	SN	SYD	WN	WS			
No delay^c																			
Aboriginal (%)	75.7	78.3	78.1	78.2	74.0	73.4	77.1	81.0	67.6	82.4	75.6	74.9	76.3	73.2	72.4	73.2	75.3	67.3	
Non-Aboriginal (%)	83.0	83.2	87.4	85.7	84.8	83.8	83.9	83.8	81.8	88.1	87.6	80.8	86.0	86.5	87.4	85.0	85.1	81.8	
One to <3 months late																			
Aboriginal (%)	18.5	10.1	14.1	12.9	17.1	18.5	14.1	10.7	19.2	11.7	16.3	15.7	16.6	14.4	17.3	17.8	15.8	20.4	
Non-Aboriginal (%)	12.7	13.7	9.4	10.6	10.8	12.0	11.9	13.5	12.5	8.9	9.3	13.5	10.6	10.1	9.2	10.8	10.9	13.7	
Three to <7 months late																			
Aboriginal (%)	4.0	8.7	5.7	5.6	5.7	5.9	5.8	7.1	7.8	5.9	5.7	7.1	5.5	8.3	7.3	5.8	6.1	8.5	
Non-Aboriginal (%)	3.3	1.9	2.3	2.6	2.9	2.7	2.9	2.0	3.4	2.0	2.2	4.1	2.1	2.4	2.3	2.8	2.8	3.2	
≥7 months late																			
Aboriginal (%)	1.9	2.9	2.1	3.4	3.2	2.2	3.1	1.2	5.4	0.0	2.4	2.4	1.7	4.1	3.0	3.3	2.8	3.8	
Non-Aboriginal (%)	1.0	1.2	0.9	1.1	1.5	1.5	1.3	0.8	2.4	1.0	1.0	1.6	1.3	1.0	1.1	1.3	1.2	1.3	

^aCohort born 1 January 2018–31 December 2018.

^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

^cNo delay=third dose of DTPa-containing vaccine given before 7 months of age.

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Source: Australian Immunisation Register, data as at 31 March 2021.

- For both the third dose of DTPa-containing vaccine and second dose of MMR-containing vaccine, there were greater delays in vaccination for Aboriginal children than non-Aboriginal children in 2019 (Tables 7 and 8). Whilst the majority of delayed vaccination was in the 1 to <3 months delay category across all LHDs for both non-Aboriginal and Aboriginal children, 2.2%–8.8% of Aboriginal children had a delay of 3 to <7 months,

compared to 1.9%–4.2% of non-Aboriginal children (Tables 7 and 8).

Small area coverage

- Coverage for rotavirus vaccine by SA3 in 2020 (Figure 10) ranged from 76.3% in Richmond Valley-Coastal to 97.5% in Broken Hill and Far West. Sixteen SA3s had rotavirus coverage above 95% in 2020

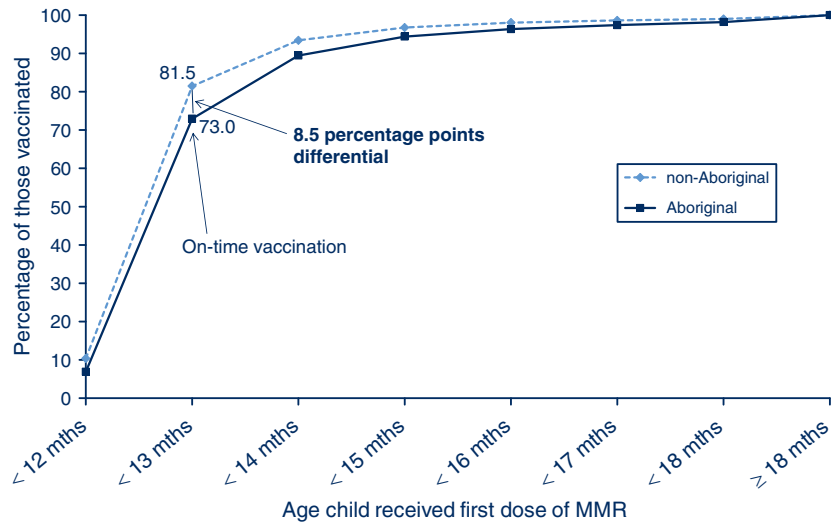


Figure 8. Cumulative percentage of children^a vaccinated with the first dose of MMR-containing vaccine^b by age in months and Aboriginal status, NSW, 2020.

^aCohort born 1 January 2018–31 December 2018.

^bShown as cumulative percentage of children vaccinated (number of children who received vaccine dose at particular age divided by the total number of children who received the vaccine dose, expressed as a percentage).

MMR: measles–mumps–rubella.

Source: Australian Immunisation Register, data as at 31 March 2021.

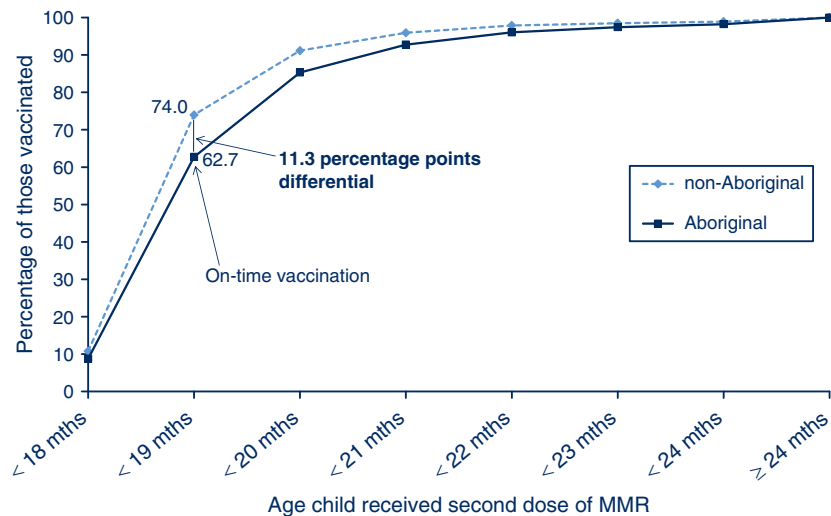


Figure 9. Cumulative percentage of children^a vaccinated with the second dose of MMR-containing vaccine^b by age in months and Aboriginal status, NSW, 2020.

^aCohort born 1 January 2018–31 December 2018.

^bShown as cumulative percentage of children vaccinated (number of children who received vaccine dose at particular age divided by the total number of children who received the vaccine dose, expressed as a percentage).

MMR: measles–mumps–rubella.

Source: Australian Immunisation Register, data as at 31 March 2021.

compared to eight in 2019. A further 63 SA3s had rotavirus coverage of 90 to <95% and seven had rotavirus coverage of 85 to <90%. Richmond Valley-Coastal and Tweed Valley were the only SA3s with rotavirus vaccine coverage below 85%.

- Coverage for the fourth dose of DTPa-containing vaccine measured at the 24-month milestone by SA3 in

2020 (Figure 11) ranged from 80.8% in Richmond Valley-Coastal to 97.4% in Bathurst. Five SA3s had coverage below 90% in 2020, compared to seven in 2019, whilst 29 SA3s had coverage above 95% in 2020, compared to 21 in 2019. Richmond Valley-Coastal was the only SA3 with coverage for the fourth dose of DTPa-containing vaccine below 85%.

Table 8. Coverage for the second dose of MMR-containing vaccine due at 18 months of age^a by vaccination delay category, Aboriginal status and local health district, NSW, compared with NSW overall and Australia, 2020

Vaccination delay/Aboriginal status	Local Health District ^b																	
	CC	FW	HNE	IS	MN	MM	NBM	NV	NN	NS	SES	SWS	SN	SYD	WN	WS	NSW	AUS
No delay^c																		
Aboriginal (%)	60.1	73.1	66.6	64.7	59.6	63.1	65.9	64.3	48.6	67.7	50.0	62.7	60.1	72.8	58.3	69.8	62.7	55.2
Non-Aboriginal (%)	71.0	73.1	75.7	73.7	73.3	72.5	71.1	72.6	69.4	78.5	76.8	68.4	74.9	77.9	75.1	74.7	74.0	71.7
One to <3 months late																		
Aboriginal (%)	31.5	20.9	26.5	28.4	33.4	31.4	29.1	33.3	40.7	26.5	42.6	31.0	30.9	21.7	32.9	23.5	30.0	35.1
Non-Aboriginal (%)	24.8	23.7	21.0	22.6	22.3	23.3	24.8	23.2	25.5	18.4	19.5	26.5	21.2	18.7	21.4	20.8	22.0	24.2
Three to <7 months late																		
Aboriginal (%)	7.8	4.5	5.3	5.9	6.3	4.0	4.4	2.4	8.8	5.9	7.4	5.5	8.4	2.2	7.7	5.1	6.0	8.1
Non-Aboriginal (%)	3.7	3.2	2.8	3.2	3.4	3.4	3.4	3.7	4.2	2.6	3.0	4.1	3.4	2.7	3.1	3.5	3.3	3.4
≥7 months late																		
Aboriginal (%)	0.6	1.5	1.7	1.0	0.8	1.4	0.6	0.0	1.8	0.0	0.0	0.9	0.6	3.3	1.1	1.7	1.3	1.6
Non-Aboriginal (%)	0.6	0.0	0.4	0.6	0.9	0.8	0.7	0.5	0.9	0.5	0.7	1.0	0.5	0.8	0.5	1.0	0.7	0.7

^aCohort born 1 January 2018–31 December 2018.

^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

^cNo delay=second dose of MMR-containing vaccine given before 19 months of age.

MMR: measles–mumps–rubella.

Source: Australian Immunisation Register, data as at 31 March 2021.

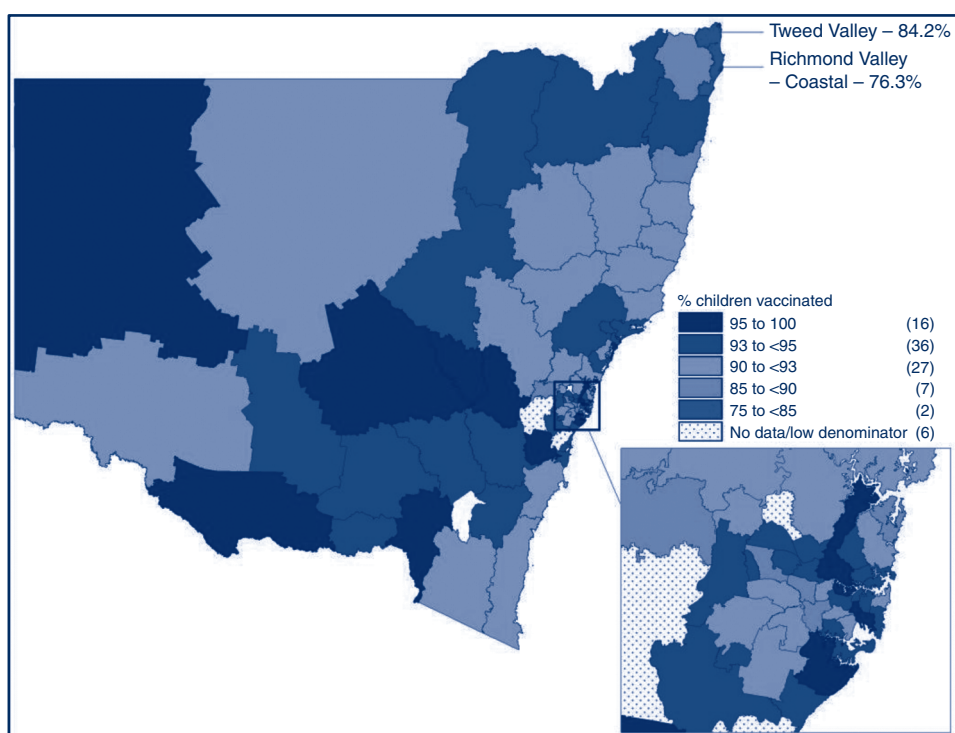


Figure 10. Coverage for second dose of rotavirus vaccine at 12 months of age^a by Statistical Area level 3^b, NSW, 2020.

^aCohort born 1 January 2019–31 December 2019.

^bNumbers in brackets=number of Statistical Area 3s in each coverage category.

Source: Australian Immunisation Register, data as at 31 March 2021.

- Coverage for the second dose of MMR-containing vaccine measured at the 24-month milestone by SA3 in 2019 (Figure 12) ranged from 82.1% in Richmond Valley-Coastal to 97.8% in Bathurst. Four SA3s had coverage

below 90% in 2020, compared to 6 in 2019, whilst 40 SA3s were above 95% in 2020, compared to 19 in 2019. Richmond Valley-Coastal was the only SA3 with coverage for the second dose of MMR-containing vaccine below 85%.

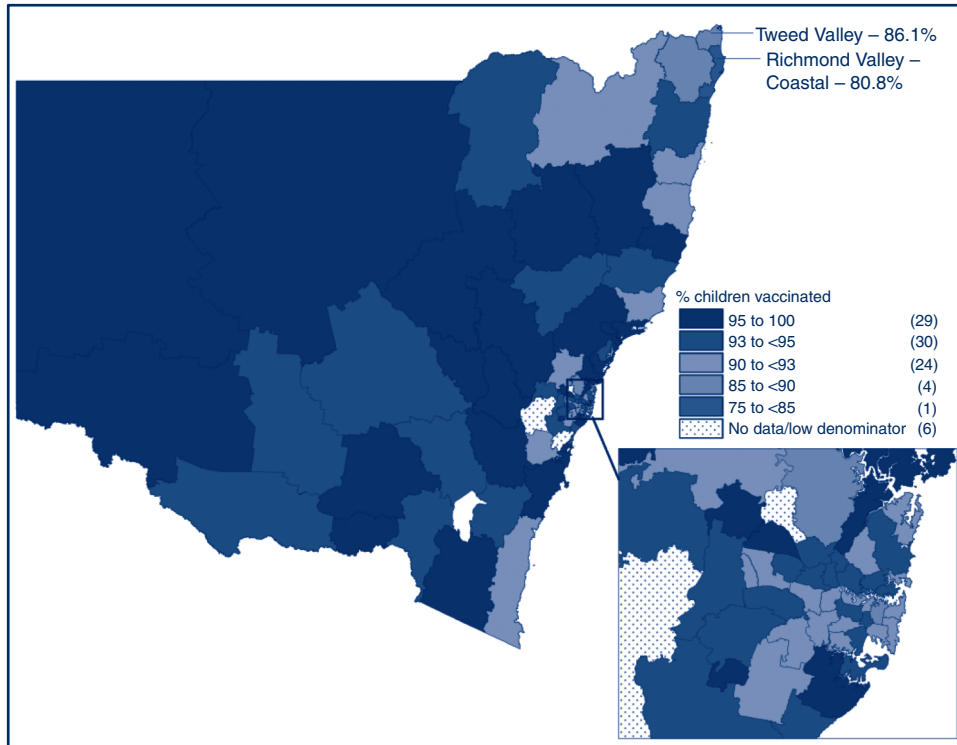


Figure 11. Coverage for the fourth dose of DTPa-containing vaccine at 24 months of age^a by Statistical Area level 3^b, NSW, 2020.

^aCohort born 1 January 2018–31 December 2018.

^bNumbers in brackets=number of Statistical Area 3s in each coverage category.

DTPa: diphtheria–tetanus–pertussis (acellular) – paediatric formulation.

Source: Australian Immunisation Register, data as at 31 March 2021.

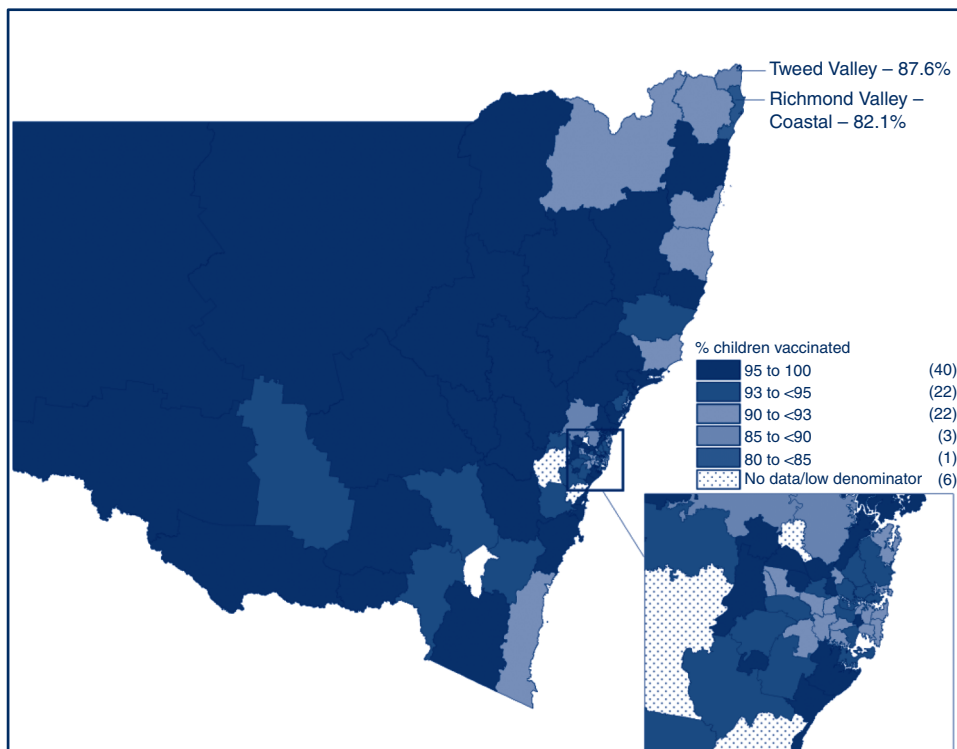


Figure 12. Coverage for the second dose of MMR-containing vaccine at 24 months of age^a by Statistical Area level 3^b, NSW, 2020.

^aCohort born 1 January 2018–31 December 2018.

^bNumbers in brackets=number of Statistical Area 3s in each coverage category.

MMR: measles–mumps–rubella.

Source: Australian Immunisation Register, data as at 31 March 2021.

Adolescent coverage

School-based program data

- Coverage of the first dose of HPV vaccine delivered through the NSW school-based vaccination program in 2020 to Year 7 students was 82% for girls and 79% for boys (Table 9). Both these figures were 3 percentage points lower than 2019.
- Only 57% of Year 7 girls and 54% of Year 7 boys completed the two-dose HPV vaccination schedule delivered through the NSW school-based vaccination program in 2020 (Table 9). These were substantially lower than the percentage of students recorded as completing the two-dose schedule in 2019, before catch-up vaccinations administered in 2020 were included (75% for girls and 71% for boys).
- Coverage of the adolescent dTpa booster vaccine given in 2020 to Year 7 students was 81% (Table 9), a decrease of 2 percentage points from 83% in 2019 (prior to including catch-up vaccinations administered in 2020).
- Coverage of the meningococcal ACWY conjugate vaccine in NSW Year 10 students was 73% in 2020

(Table 9), a 1 percentage point decrease from 74% in 2019 (prior to including catch-up vaccinations administered in 2020).

Australian Immunisation Register data

- AIR data (i.e. vaccinations in all settings not just schools) showed that 41,100 female and 41,870 male adolescents aged less than 15 years had the first dose of HPV vaccine recorded as administered in 2020. Of these, 71.6% of girls and 69.1% of boys also had the second dose recorded as administered in 2020 (Table 10). Whilst the number of dose 1 HPV vaccinations administered in 2020 was only marginally lower than in 2019, by 3.0 and 3.7 percentage points for girls and boys, respectively, the proportion of adolescents completing the two-dose schedule within the calendar year was substantially reduced in 2020 – by 15.8 and 16.3 percentage points for girls and boys, respectively.
- The proportion of adolescents both commencing and completing the two-dose schedule in 2020 varied by LHD – ranging from 55.2% in Far West to 89.7% in Murrumbidgee for girls and from 55.4% in

Table 9. Adolescent vaccination coverage estimates, and doses given, for individual vaccines, NSW, 2016–2020^a

Gender	Vaccine	2020 Coverage ^b (%)	2020 Doses given	2019 Coverage (%)	2019 Doses given	2018 Coverage (%)	2018 Doses given	2017 Coverage (%)	2017 Doses given	2016 Coverage (%)	2016 Doses given
Female	HPV schedule initiated ^{c,d}	82	39,508	85	40,185	85	38,961	86	37,692	86	37,061
	HPV schedule completed ^{c,e}	57	27,720	81	38,377	82	37,421	82	35,941	82	35,291
Male	HPV schedule initiated ^{c,d}	79	40,436	82	40,880	83	39,983	84	38,610	83	38,505
	HPV schedule completed ^{c,e}	54	27,531	79	39,249	80	38,575	79	36,657	80	36,878
Both sexes	dTpa ^c	81	80,274	84	81,218	85	79,333	85	76,531	86	76,342
	Varicella ^c	na	na	na	na	na	na	66	59,721	70	62,429
	Men ACWY ^f	73	66,082	75	67,157	70	61,797	na	na	na	na
	Men ACWY ^{f,g}	na	na	na	na	70	58,114	73	58,615	na	na
	Men ACWY ^{f,h}	na	na	na	na	na	na	76	55,638	na	na

^aAdolescent coverage estimates presented in this table are for school attendees only who were vaccinated through the NSW School Vaccination Program and do not include doses administered by other immunisation providers in non-school settings (e.g. general practice). Doses and coverage for 2016–2019 include catch-up vaccinations given through the NSW School Vaccination Program in the following year.

^bVaccination coverage estimates in 2020 are provisional and do not include catch-up vaccinations offered in 2021. Due to the COVID-19 pandemic, schools were closed for part of 2020 leading to a substantial disruption of the NSW School Vaccination Program with significant catch-up expected in 2021.

^cYear 7 school attendees.

^dSchedule initiated—the percentage of Year 7 students receiving their first dose of HPV vaccine.

^eSchedule completed—the percentage of Year 7 students completing the HPV vaccine schedule. Completion of HPV vaccination schedule required 3 doses up to end of 2016. In 2017 NSW adopted a two-dose HPV schedule in line with the World Health Organization recommendations. HPV vaccination coverage includes the students who received the HPV vaccine in Year 7 in the year of interest, as well catch-up vaccination offered to students in Year 8 in Terms 1–4 of the following year.

^fYear 10 school attendees.

^gYear 11 school attendees.

^hYear 12 school attendees.

dTpa: diphtheria–tetanus–pertussis (acellular) – adolescent and adult formulation.

HPV: human papillomavirus.

Men ACWY: meningococcal ACWY vaccine.

na: not applicable.

Source: NSW School Vaccination Program. Data as at 5 August 2021.

- Western Sydney to 91.9% in Murrumbidgee for boys (Table 10).
- At the state level, 2,346 Aboriginal and 38,754 non-Aboriginal girls aged less than 15 years had the first dose of HPV vaccine recorded in 2020. Of these, 67.2% and 71.9%, respectively, also had the second dose of HPV vaccine recorded by 31 December 2020 (Table 11). The proportion of Aboriginal and non-Aboriginal girls completing the two-dose schedule within the calendar year of 2020 was substantially lower than in 2019, by 14.7 and 15.8 percentage points, respectively.
 - At the state level, 2,186 Aboriginal and 39,684 non-Aboriginal boys aged less than 15 years had the first dose of HPV vaccine recorded in 2020. Of these, the 64.8% and 69.4%, respectively, also had the second dose of HPV vaccine recorded by 31 December 2020 (Table 11). The proportion of Aboriginal and non-Aboriginal boys completing the two-dose schedule within the calendar year of 2020 was substantially lower than in 2019, by 11.9 and 16.4 percentage points, respectively.
 - At the state level, HPV vaccination coverage for girls and boys by 15 years of age in 2020 was 87.7% and 85.8% for dose 1 and 83.8% and 81.0% for dose 2, respectively (Table 12). Compared to 2019, dose 1 coverage estimates for girls and boys by 15 years of age was 1.0 and 1.8 percentage points higher, respectively, whilst dose 2 coverage estimates were 0.3 and 0.4 of a percentage point higher, respectively.
 - HPV vaccination coverage for both dose 1 and dose 2 varied by LHD in 2020 and was higher for NSW than Australia for both girls and boys (Table 12).
 - In 2020, dTpa vaccination coverage at the state level for girls and boys by 15 years of age was 89.0% and 87.1%, respectively, varied by LHD, and was higher for NSW than Australia for both sexes (Table 12)
 - Meningococcal ACWY vaccination coverage at the state level in 2020 for girls and boys by 17 years of age was 78.7% and 71.5%, respectively, with coverage varying by LHD (Table 12). Coverage was higher for NSW than Australia for girls, but slightly lower for boys (Table 12).
 - Coverage for HPV dose 1 and 2 and dTpa vaccinations by 15 years of age in 2020 were 0.5–4.6 percentage points higher for Aboriginal girls than non-Aboriginal, whereas meningococcal ACWY vaccination coverage by 17 years of age was 8.7 percentage points lower (Figure 13).
 - Coverage for HPV dose 1 by 15 years of age in 2020 was 2.5 percentage points higher for Aboriginal boys compared to non-Aboriginal, but coverage for HPV dose 2 and dTpa vaccinations by 15 years of age, as well as meningococcal ACWY vaccination coverage by 17 years of age, was 0.9–9.2 percentage points lower (Figure 13).

Influenza vaccination coverage

Australian Immunisation Register data

- Recorded uptake of influenza vaccination on the AIR in children aged 6 months to <5 years at the state level continued to improve in 2020, increasing by 6.9 percentage points from 34.4% in 2019 to 41.3% in 2020 (Figure 14).

Table 10. HPV vaccinations given to adolescents aged less than 15 years, by gender, local health district, NSW and Australia, 2020

Gender	Vaccine dose	Local Health District ^a																	
		CC	FW	HNE	IS	MN	MM	NBM	NV	NN	NS	SES	SWS	SN	SYD	WN	WS	NSW	AUS
Female	HPV Dose 1 (n)	1,956	116	3,796	2,202	980	1,364	2,171	276	1,121	5,324	4,100	6,317	812	2,548	1,533	6,082	41,100	134,869
	HPV Dose 2 (% of 2020 Dose 1 recipients)	73.9	55.2	86.4	62.2	81.8	89.7	61.4	88.4	86.3	79.4	81.2	59.9	82.6	56.8	88.8	59.1	71.6	74.7
Male	HPV Dose 1 (n)	2,101	99	3,768	2,360	949	1,304	2,191	266	1,117	5,532	4,149	6,417	863	2,602	1,591	6,183	41,870	137,938
	HPV Dose 2 (% of 2020 Dose 1 recipients)	75.0	56.6	85.1	57.5	77.4	91.9	58.1	84.2	83.4	72.5	77.4	57.3	83.8	65.2	88.1	55.4	69.1	72.6

^aCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.
 HPV: human papillomavirus.
 Source: Australian Immunisation Register, data as at 31 March 2021.

Table 11. HPV vaccinations given to NSW adolescents aged less than 15 years, by gender and Aboriginal status, NSW 2020

	Female		Male	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
HPV Dose 1 (n)	2,346	38,754	2,186	39,684
HPV Dose 2 (% of adolescents who received dose 1 in 2020)	67.2	71.9	64.8	69.4

HPV: human papillomavirus
 Source: Australian Immunisation Register, data as at 31 March 2021.

Table 12. Coverage for the first and second dose of HPV vaccine and the booster dose of dTpa by 15 years^a and the adolescent dose of Meningococcal ACWY vaccine by 17 years^b by gender, local health district, NSW and Australia, 2020

Gender	Vaccine	Local Health District ^c																	
		CC	FW	HNE	IS	MN	MM	NBM	NV	NN	NS	SES	SWS	SN	SYD	WN	WS	NSW	AUS
Female	HPV Dose 1	89.5	92.1	90.6	90.1	86.7	91.9	89.5	90.3	79.5	84.5	85.1	88.7	88.5	84.3	90.8	88.4	87.7	86.6
	HPV Dose 2	85.5	80.1	85.9	85.1	82.5	87.6	86.1	86.0	74.8	81.7	82.7	84.2	83.4	81.9	85.8	84.8	83.8	81.2
	dTpa	91.5	90.1	92.3	91.8	86.9	92.3	90.7	90.7	81.9	85.9	86.9	90.1	86.9	85.3	90.0	90.2	89.0	87.7
	Men ACWY	80.4	68.9	79.5	79.0	71.6	82.3	74.8	77.9	68.1	80.2	81.8	77.7	80.3	79.8	78.7	79.7	78.7	76.6
Male	HPV Dose 1	88.0	85.1	88.5	87.3	84.1	89.7	86.1	91.4	78.8	84.4	84.9	85.6	87.4	83.5	87.0	85.7	85.8	84.9
	HPV Dose 2	83.6	73.9	82.4	81.7	77.9	84.1	80.8	83.8	73.4	81.2	81.6	80.3	81.6	80.0	81.0	82.0	81.0	78.4
	dTpa	90.8	82.4	89.7	88.4	83.0	90.4	87.8	92.0	80.2	86.5	86.4	86.8	86.7	84.9	86.6	87.7	87.1	85.9
	Men ACWY	75.9	65.5	72.3	72.0	65.1	78.2	66.2	62.0	63.2	75.0	74.1	70.2	69.9	72.5	69.0	72.0	71.5	72.1

^aHPV and dTpa vaccine coverage by 15 years of age based on vaccinations given in the first year of high school, usually at 12–13 years of age.

^bMen ACWY vaccine coverage by 17 years of age based on vaccinations given in Year 10 of high school, usually at 15–16 years of age.

^cCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

HPV: human papillomavirus; dTpa: diphtheria–tetanus–pertussis (acellular) – adolescent and adult formulation; Men ACWY: meningococcal ACWY vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

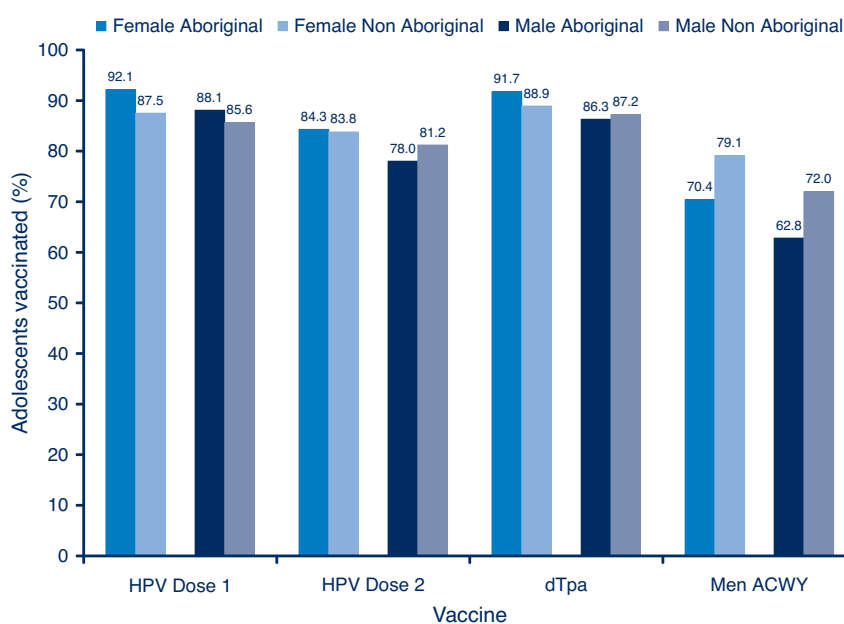


Figure 13. Coverage for the first and second dose of HPV vaccine and the booster dose of dTpa at age 15 years^a and the adolescent dose of Men ACWY vaccine by 17 years^b by gender and Aboriginal status, NSW, 2020.

^aHPV and dTpa vaccine coverage by 15 years of age based on vaccinations given in the first year of high school, usually at 12–13 years of age.

^bMen ACWY vaccine coverage by 17 years of age based on vaccinations given in Year 10 of high school, usually at 15–16 years of age.

HPV: human papillomavirus; dTpa: diphtheria–tetanus–pertussis (acellular) – adolescent and adult formulation; Men ACWY: meningococcal ACWY vaccine.

Source: Australian Immunisation Register, data as at 31 March 2021.

- Recorded influenza vaccine uptake at the state level in children aged 6 months to <5 years was higher in 2020 in non-Aboriginal than Aboriginal children (41.4% versus 38.7%) (Table 13).
- Influenza vaccine uptake for children aged 6 months to <5 years in 2020 varied by LHD, ranging from 28.6% in South Western Sydney to 53.9% in Northern Sydney for Aboriginal children, and from 28.3% in Northern NSW to 52.9% in Far West for non-Aboriginal children (Table 13).
- In 2020, recorded influenza vaccine uptake was higher in Aboriginal and non-Aboriginal people aged 6 months to <5 years than those aged 5 to <15 years and 15 to <50 years (Figure 15). In these latter two age groups

- recorded influenza vaccine uptake was higher in Aboriginal than non-Aboriginal people.
- Recorded influenza vaccine uptake at the state level in 2020 was 23.5 percentage points higher in Aboriginal adults aged 50 to <65 years than non-Aboriginal, and 18.1 percentage points higher in Aboriginal adults aged 65 years and over (Figure 15).
- Recorded influenza uptake at the state level in adults aged 65 years and over was 62.8% in 2020, 7.1 percentage points higher than in 2019 (Table 14).
- Recorded influenza vaccine uptake for adults aged 65 years and over was higher in 2020 than 2019, with uptake in 2020 ranging from 46.8% in Sydney to 75.0% in Hunter New England (Table 14).

NSW Population Health Survey data

- The 2020 adult influenza vaccination coverage estimates are based on 6,333 NSW Population Health Survey respondents aged 65 years and over.

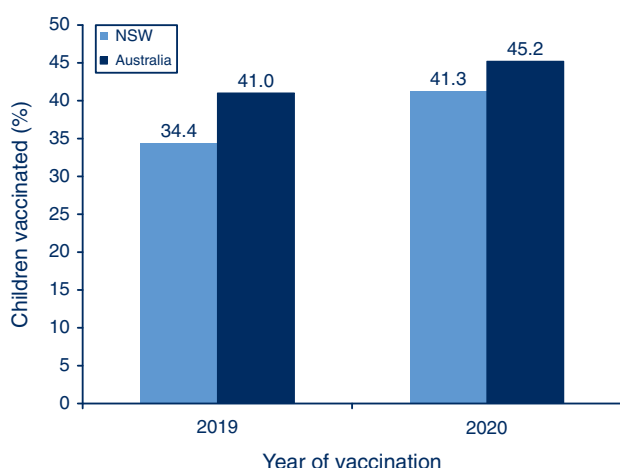


Figure 14. Percentage of children aged 6 months to <5 years with at least one dose of influenza vaccine recorded on the AIR, NSW and Australia, 2019 versus 2020.

Source: Australian Immunisation Register, data as at 31 March 2021.

- In 2020, the proportion of surveyed adults reporting vaccination for influenza in the previous 12 months at the state level was 83.1%, compared to 75.1% in 2019.
- Self-reported influenza vaccination coverage in adults aged 65 years and over by LHD for the 2019–2020 period ranged from 73.8% in Northern NSW to 83.6% in Illawarra Shoalhaven (Table 15).
- Compared to the 2018–2019 period, self-reported coverage in the 2019–2020 period was higher in the majority of LHDs (ranging from 1.5 percentage points lower in Nepean Blue Mountains LHD to 10.9 percentage points higher in Western NSW) (Table 15).

Conclusions

Successful delivery of the NSW Immunisation Program continues with ‘fully vaccinated’ coverage at 12, 24 and 60 months of age reaching 94.8%, 91.7% and 95.3%, respectively by the end of 2020, 0.3–0.9 of a percentage point higher than at the end of 2019. ‘Fully vaccinated coverage at the 24-month milestone remains several percentage points below ‘fully vaccinated’ coverage at 12 and 60 months of age, most likely due to the higher number of antigens required to be classified as ‘fully vaccinated’ at 24 months of age, including some due only 6 months before the assessment time point. Whilst these data predominantly reflect vaccinations due in 2019, given the use of standard assessment time points 6–12 months after vaccines are due, recent reports have indicated lack of impact of the COVID-19 pandemic on routine childhood vaccination in Australia.

The NSW Aboriginal Immunisation Health Worker Program, funded by NSW Health since July 2012,²⁵ continues to help improve the immunisation status of Aboriginal children across NSW. ‘Fully vaccinated’ coverage of Aboriginal children in NSW was 0.5 of a percentage point higher at 24 months of age in 2020 than 2019, but 0.1 of a percentage point lower at 12 and 60 months of age. However, ‘fully vaccinated’ coverage for Aboriginal children was higher than non-Aboriginal at 24 and 60 months

Table 13. Percentage of children aged 6 months to <5 years with at least one dose of influenza vaccine recorded on the AIR by Aboriginal status and local health district, NSW, compared with NSW overall and Australia, 2019 versus 2020

Aboriginal status and year	Local Health District ^a																	NSW	Australia
	CC	FW	HNE	IS	MN	MM	NBM	NV	NN	NS	SES	SWS	SN	SYD	WN	WS			
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Aboriginal																			
2019	30.8	41.4	39.3	29.1	33.4	38.8	28.3	45.2	31.0	37.1	30.2	23.6	31.6	33.3	38.4	25.0	34.9	43.6	
2020	40.2	52.0	42.5	31.4	38.8	43.1	33.5	48.4	28.7	53.9	41.2	28.6	37.4	37.6	45.1	31.0	38.7	43.6	
Non-Aboriginal																			
2019	36.3	44.8	45.7	35.3	24.1	39.1	30.1	46.8	26.0	44.0	37.4	22.0	39.5	38.8	43.5	31.2	35.0	41.6	
2020	41.1	52.9	49.9	39.2	28.7	46.1	36.1	49.7	28.3	50.3	46.0	29.5	44.6	48.6	51.2	38.3	41.4	45.3	

^aCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SN: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.

Source: Australian Immunisation Register, data as at 31 March 2021.

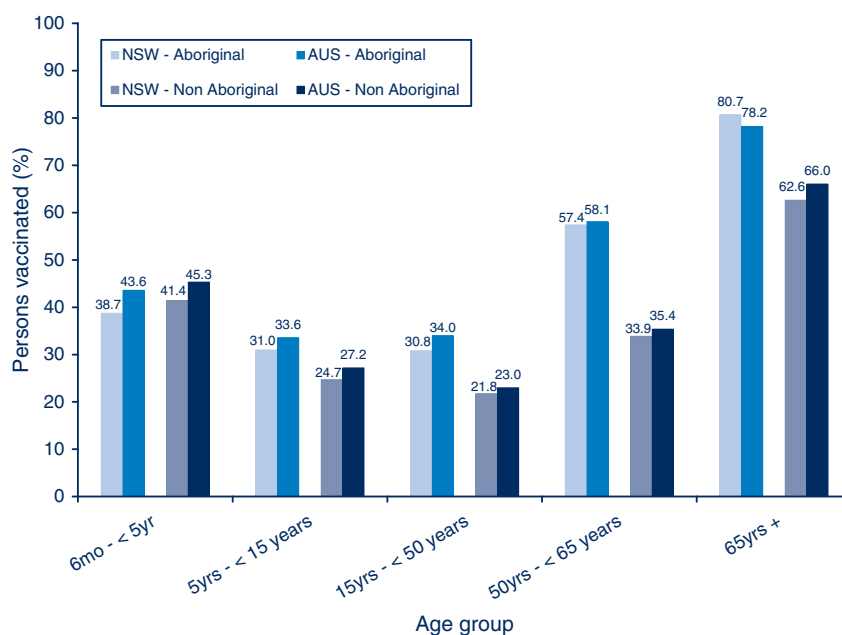


Figure 15. Percentage of all persons aged ≥ 6 months with at least one dose of influenza vaccine recorded on the AIR by age group and Aboriginal status, NSW versus Australia, 2020.
Source: Australian Immunisation Register, data as at 31 March 2021.

Table 14. Percentage of adults aged ≥ 65 years with at least one dose of influenza vaccine recorded on the AIR by local health district, compared with NSW overall and Australia, 2019 versus 2020

Year	Local Health District ^a																	
	CC	FW	HNE	IS	MNC	MM	NBM	NV	NNSW	NS	SES	SWS	SNSW	SYD	WNSW	WS	NSW	AUS
2019	67.7	59.1	67.0	64.4	63.9	62.6	58.3	71.0	60.5	53.7	45.7	44.7	65.2	39.4	63.4	49.3	55.7	60.2
2020	72.9	71.1	75.0	68.7	70.5	74.7	64.3	73.3	69.1	60.0	52.0	53.6	70.1	46.8	71.4	57.0	62.8	66.2

^aCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MN: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NV: Network with Victoria; NN: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SNSW: Southern NSW; SYD: Sydney; WN: Western NSW; WS: Western Sydney; NSW: New South Wales.
Source: Australian Immunisation Register, data as at 31 March 2021.

Table 15. Percentage of older adults self-reporting influenza vaccination^a by local health district, 2018–2019 versus 2019–2020

Year reporting influenza vaccination	Local Health District ^b																
	CC	FW	HNE	IS	MNC	MM	NBM	NNSW	NS	SES	SWS	SNSW	SYD	WNSW	WS	NSW	AUS
2018–2019	77.8	78.2	81.7	77.2	76.1	78.5	77.5	71.8	76.7	74.3	75.1	73.2	71.7	71.3	76.6		
2019–2020	80.8	79.9	82.8	83.6	76.5	81.6	76.0	73.8	79.8	78.8	76.3	78.6	76.8	82.2	77.9		

^aInfluenza vaccination coverage based on survey respondents aged 65 years and over who reported having been vaccinated against influenza in the previous 12 months.
^bCC: Central Coast; FW: Far West; HNE: Hunter New England; IS: Illawarra Shoalhaven; MNC: Mid North Coast; MM: Murrumbidgee; NBM: Nepean Blue Mountains; NNSW: Northern NSW; NS: Northern Sydney; SES: South Eastern Sydney; SWS: South Western Sydney; SNSW: Southern NSW; SYD: Sydney; WNSW: Western NSW; WS: Western Sydney; NSW: New South Wales.
Source: New South Wales Population Health Survey (SAPHaRI). Centre for Epidemiology and Evidence, NSW Ministry of Health. Data as at 5 August 2021.

of age in 2020, although slightly lower at 12 months of age. Despite the improvements in ‘fully vaccinated’ coverage in recent years, the disparity in on-time vaccination between Aboriginal and non-Aboriginal children remains

a concern. The percentage of Aboriginal children vaccinated on time was lower in 2020 than in non-Aboriginal children for all vaccines/antigens assessed. As Aboriginal children are more vulnerable to severe disease at a young

age, achieving timely vaccination for Aboriginal children is an essential public health goal.

Adolescent vaccination coverage through the NSW School Vaccination Program was lower in 2020 than 2019, with 82% of girls and 79% of boys in Year 7 receiving the first dose of HPV vaccine (compared to 85% and 82%, respectively in 2019), 81% of Year 7 students receiving an adolescent dTpa vaccine dose (compared to 83% in 2019), and 73% of Year 10 students receiving a meningococcal ACWY conjugate vaccine dose (compared to 74% in 2019). This likely reflects impacts of COVID-19 pandemic response measures, including school closures between mid-March and mid-May, which led to substantial disruption of the school program. The greatest impact was seen in the percentage of Year 7 students receiving the second dose of HPV vaccine (approximately 17%–18% percentage points lower than in previous years). This likely reflects a flow-on effect of delayed dose 1 vaccinations, given the minimum 6-month interval required between the two doses, so it will be important to monitor the level of catch-up vaccination that occurs.

Adolescent vaccination coverage of HPV, dTpa and meningococcal ACWY vaccines are also presented in this report using data from the AIR, therefore including doses given both in and outside of the school-based vaccination program. Similar to the NSW school-based program data, HPV vaccination in 2020, as recorded on the AIR, was also lower than in 2019. Of NSW adolescents aged less than 15 years recorded on AIR to have commenced HPV vaccination in 2020, approximately 70% completed the two-dose schedule, down from 85% in 2019. The proportion completing the course remained slightly lower in boys than girls, and in Aboriginal than non-Aboriginal adolescents. Coverage estimates of the first and second dose of HPV vaccine by 15 years of age, which predominantly reflects vaccination prior to the pandemic, were higher in 2020 than 2019 for both sexes. For the first time, coverage estimates of adolescent dTpa and meningococcal ACWY vaccines are presented in this report. In 2020, over 86% of adolescents had received a dose of dTpa vaccine by 15 years of age and over 71% had received an adolescent dose of meningococcal ACWY by 17 years of age.

Influenza vaccine coverage, as recorded on the AIR, continued to improve in 2020 for children aged 6 months to <5 years, both Aboriginal and non-Aboriginal, with coverage approximately 6 percentage points higher than 2019. For the first time, influenza vaccine coverage estimates across the life-span are presented in this report. Recorded influenza vaccine coverage was higher for Aboriginal people than non-Aboriginal across all age groups other than children aged 6 months to <5 years. This may reflect the eligibility of all Aboriginal people aged 6 months and over for annual influenza vaccination

under the NIP, whereas for non-Aboriginal persons, it is only funded for children aged 6 months to <5 years, adults aged 65 years and older, and individuals with specific medical conditions. Influenza vaccine coverage estimates presented in this report may underestimate the true coverage, due to incomplete reporting to the AIR. Whilst a 2017 NSW study estimated true ‘fully vaccinated’ coverage at 12 months of age to be 2.1% higher than that recorded in the AIR²⁶ (data entry, data transfer and duplicate record issues contribute to this under-reporting^{26,27}), the level of under-reporting may be higher for influenza vaccine as, unlike most other childhood vaccines, immunisation providers do not receive payment for influenza vaccination notifications to the AIR and it is not included in immunisation requirements for federal and state government ‘No Jab No Pay’ and ‘No Jab No Play’ policies.^{7,28} The level of under-reporting is likely greater in adults due to the settings in which influenza vaccination often occurs (i.e. workplaces, pharmacies and aged-care facilities).²⁹ The proportion of adults aged 65 years and over self-reporting influenza vaccination in the NSW Adult Health Survey increased from 75.1% in 2019 to 83.1% in 2020, compared to AIR coverage of 55.7% and 62.8%, respectively, in the same years. However self-reporting of vaccination tends to overestimate coverage.³⁰ The introduction of mandatory reporting to the AIR for all influenza and COVID-19 vaccines, and all NIP vaccines, should improve completeness of reporting.³¹

This report demonstrates continuing improvements across a range of immunisation indicators in NSW in 2020. Improved vaccination coverage over the past decade has been achieved through a number of strategies including the Save the Date to Vaccinate campaign and smartphone app, the Aboriginal Immunisation Health Worker Program, the introduction of early childhood education and care enrolment requirements in 2014 (further strengthened in 2018), and other strategies which have been implemented in low coverage areas. Now that high levels of vaccine coverage at the standard childhood milestone ages have been achieved, on-time vaccination, particularly for Aboriginal children, is an essential public health goal. NSW adolescent coverage reflects a successful school-based vaccination program. There is however evidence that the COVID-19 pandemic impacted delivery of this program, particularly completion of the two-dose HPV vaccination schedule within 2020, so it will be important to monitor catch-up vaccination of this cohort. As more vaccinations given across the entire life course are reported to the AIR, it will become an increasingly valuable tool for monitoring delivery of the vaccination program across the age spectrum in NSW.

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