

COVID-19: Impact on routine childhood vaccination uptake in Australia

A report by the National Centre for Immunisation Research and Surveillance using data from the Australian Immunisation Register

10 November 2020

Overview

- The COVID-19 pandemic has resulted in widespread illness and social disruption globally, impacting routine immunisation services in many countries.
- There have been concerns that immunisation rates may have dropped in Australia during the COVID-19 response.
- We monitored vaccination uptake in Australian children through monthly analysis at earlier age-based assessment time points than usual, at all National Immunisation Program schedule points.
- We found no evidence of any substantial impact on vaccination uptake in children at national or state/territory level, for vaccinations due up to July 2020.
- This is a welcome finding, which likely reflects consistent messaging from health authorities that it is important to maintain immunisation through the pandemic and efforts to provide COVID-19 safe vaccination services.
- It will be important to continue to monitor uptake, particularly in populations where timeliness of vaccination is a known issue, such as in Aboriginal and Torres Strait Islander children.
- We are also working closely with Victorian health authorities to monitor any impact on vaccination uptake following the level 4 lockdown imposed in that state during its second epidemic wave.

Background

The coronavirus disease 2019 (COVID-19) pandemic,¹ caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has resulted in widespread illness, deaths and social disruption globally in 2020. The pandemic and the public health and community response measures introduced to reduce the spread of disease have impacted access to and delivery of routine immunisation services in many countries.² Both the World Health Organization and the Australian Technical Advisory Group on Immunisation have provided guidance on maintaining immunisation services during the pandemic.^{3,4}

In Australia, there have been concerns that the strict physical distancing and 'lockdown' measures that were first instituted on 23 March 2020, with subsequent easing in all jurisdictions but then reintroduction in some, particularly Victoria, could have led to parents delaying visiting their usual immunisation provider for their children's routine vaccines (given at 2, 4, 6, 12, 18, and 48 months of age under the National Immunisation Program [NIP]), or that immunisation providers had restricted their provision of immunisation services.

Any impact on immunisation uptake in Australia could result in a build-up of susceptible individuals and a higher likelihood of disease outbreaks. This would be a particular concern when international travel restrictions are eventually eased, given the lower immunisation coverage in many countries globally due to COVID-19.

Aims

To monitor the impact of the COVID-19 pandemic and associated response measures on vaccination uptake in Australian children at the six NIP age-based milestones, through monthly analysis and comparison to baseline pre-

pandemic uptake, to facilitate earlier identification of impacts than usual coverage reporting processes and inform efforts to address any impacts.

Methods

We estimated monthly vaccination uptake for vaccines due in 2020 at all six NIP age-based milestones (refer to Table below), with particular focus on the 2-, 4- and 12-month age milestones, at national/state/territory level and by Aboriginal and Torres Strait Islander (hereafter referred to respectfully as Indigenous) status, using Australian Immunisation Register (AIR) data and one-month-wide birth cohorts.

Vaccination uptake was assessed at 2 months after the specific vaccine was due using AIR data at the end of the relevant month (e.g. 31 March 2020 for children due for vaccination in January 2020). For example, for the first dose of 13-valent pneumococcal conjugate vaccine (13vPCV), due at 2 months of age, uptake estimates were calculated as the number of children with a record on AIR of receipt of 13vPCV by 4 months of age as the numerator, divided by the total number of children registered on AIR in the relevant month-wide age cohort as the denominator..

Table: Vaccines given to all children at the six age-based NIP milestones in 2020

2 months (can be from 6 weeks)	4 months	6 months
<ul style="list-style-type: none"> Diphtheria-tetanus-pertussis-hepatitis B-polio-<i>Haemophilus influenzae</i> type b (Infanrix[®] hexa) dose 1 Pneumococcal (Prevenar 13[®]) dose 1 Rotavirus (Rotarix[®]) dose 1 	<ul style="list-style-type: none"> Diphtheria-tetanus-pertussis-hepatitis B-polio-<i>Haemophilus influenzae</i> type b (Infanrix[®] hexa) dose 2 Pneumococcal (Prevenar 13[®]) dose 2 Rotavirus (Rotarix[®]) dose 2 	<ul style="list-style-type: none"> Diphtheria-tetanus-pertussis-hepatitis B-polio-<i>Haemophilus influenzae</i> type b (Infanrix[®] hexa) dose 3
12 months	18 months	48 months
<ul style="list-style-type: none"> Meningococcal ACWY (Nimenrix[®]) Measles-mumps-rubella (M-M-R[®] II or Priorix[®]) Pneumococcal (Prevenar 13[®]) dose 3 (or dose 4 for children with specified medical conditions and Indigenous children in WA, NT, SA and QLD, in whom dose 3 scheduled at 6 months) 	<ul style="list-style-type: none"> <i>Haemophilus influenzae</i> type b (ActHIB[®]) Measles-mumps-rubella-varicella (Priorix-Tetra[®] or ProQuad[®]) Diphtheria-tetanus-pertussis (Infanrix[®] or Tripacel[®]) 	<ul style="list-style-type: none"> Diphtheria-tetanus-pertussis-polio (Infanrix[®] IPV or Quadracel[®])

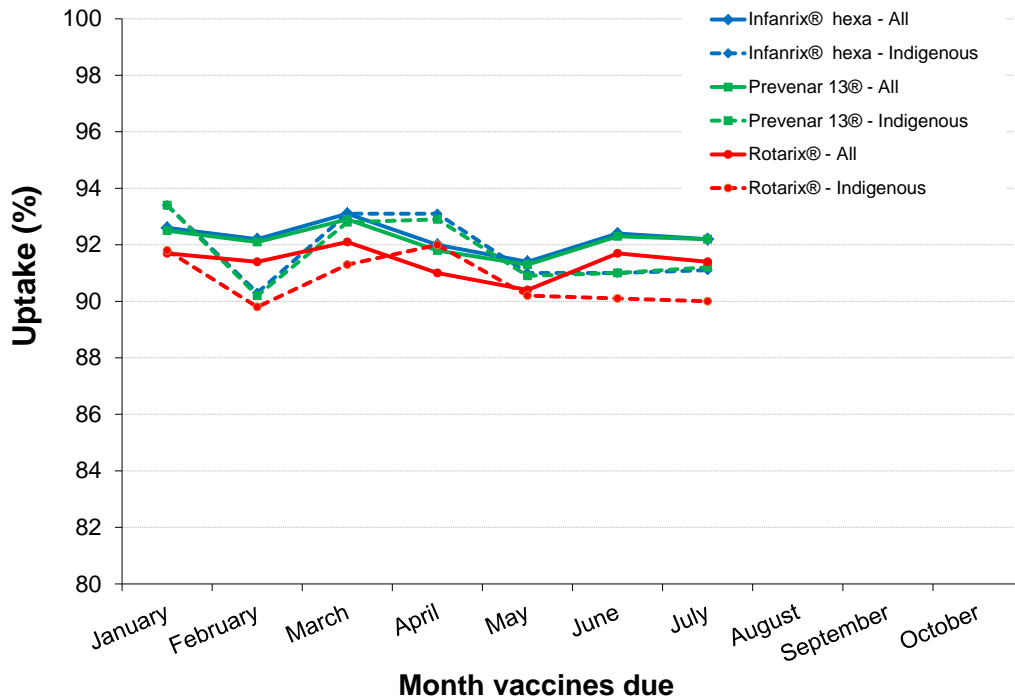
WA: Western Australia; NT: Northern Territory; SA: South Australia; QLD: Queensland

Results

We found no evidence of any substantial impact of the introduction of COVID-19 response measures (in late March 2020) on vaccination uptake at the national level in children due for vaccination from April to July 2020, compared with children due for vaccination earlier in the year, in relation to vaccines due at 2 months of age (refer to Figure 1), 4 months of age (refer to Figure 2) and 12 months of age (refer to Figure 3).

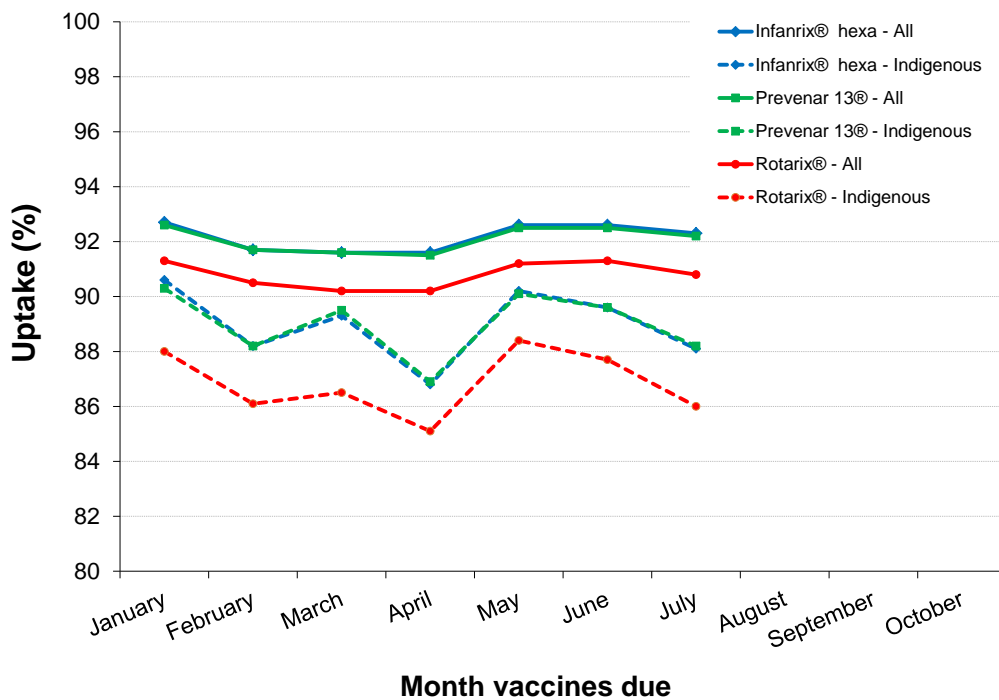
Similarly, there was no evidence of any substantial impact on vaccination uptake at the national level at the 6-, 18- and 48-month age milestones (refer to Appendix), or at state/territory level for any of the milestones (not shown here). Uptake in Indigenous children was generally lower than in non-Indigenous children (both before and after the introduction of COVID-19 response measures), other than at the 2-month age milestone, and fluctuated more due to smaller numbers.

Figure 1: Vaccination uptake at the 2-month age milestone, assessed 2 months after vaccines due for successive 1-month-wide birth cohorts, by Indigenous status, Australia, 2020*



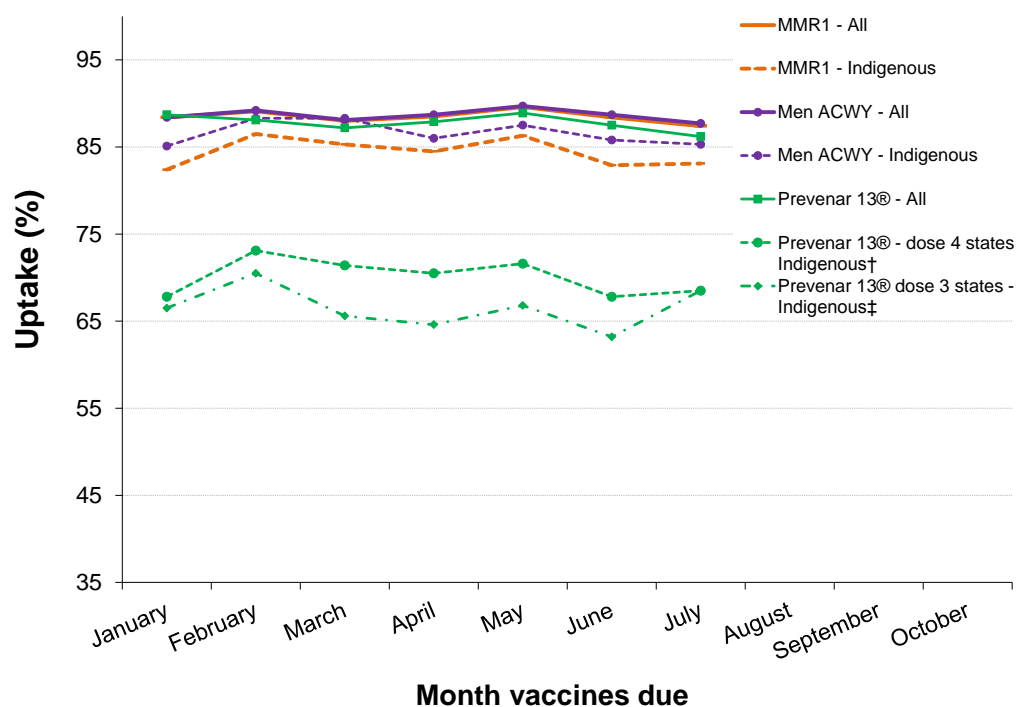
*Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 12 months of age, capturing catch-up vaccinations well beyond the first two months as assessed here.

Figure 2: Vaccination uptake at the 4-month age milestone, assessed 2 months after vaccines due for successive 1-month-wide birth cohorts, by Indigenous status, Australia, 2020*



*Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 12 months of age, capturing catch-up vaccinations well beyond the first two months assessed here.

Figure 3: Vaccination uptake at the 12-month age milestone, assessed 2 months after vaccines due for successive 1-month wide birth cohorts, by Indigenous status, Australia, 2020*



* Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 24 months of age, capturing catch-up vaccinations well beyond the first two months assessed here.

† The Northern Territory, Queensland, South Australia and Western Australia.

‡ The Australian Capital Territory, New South Wales, Tasmania and Victoria.

Conclusions

We found no substantial impact of COVID-19 pandemic response measures such as physical distancing and movement restrictions on vaccination uptake in young Australian children at either national or state/territory level, for vaccinations due up to July 2020. This is a welcome finding which likely reflects:

- sustained and consistent messaging by health authorities that immunisation is an essential health service that it is important to maintain through the pandemic
- efforts by immunisation providers to provide COVID-19 safe vaccination services
- continued public engagement with immunisation.

As our analysis assessed vaccination uptake at earlier time points than usual coverage reporting (two months after vaccination due rather than 6–12 months), it will be important to monitor uptake to make sure that the pandemic does not have any differential impact on vaccination coverage in populations where timeliness of vaccination is a recognised issue, such as in Indigenous children.⁵

We are also working closely with Victorian health authorities to monitor potential impacts on vaccination uptake in that state across a range of age groups, following the level 4 lockdown imposed in response to a second wave of COVID-19 cases.

Acknowledgments

This report was prepared by Brynley Hull, Aditi Dey, Kristine Macartney and Frank Beard, at the National Centre for Immunisation Research and Surveillance.

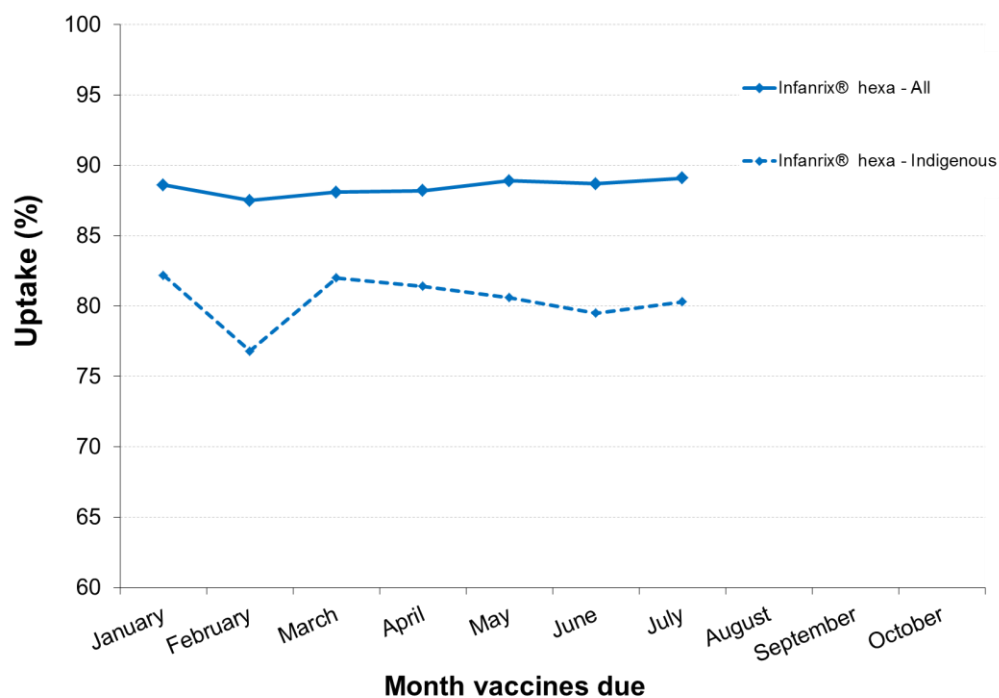
We thank the Australian Government Department of Health and Services Australia for provision of Australian Immunisation Register data, and Jurisdictional Immunisation Committee members for review of the data and report.

References

1. World Health Organization. Coronavirus disease 2019 (COVID-19) Situation Report –72. Geneva: World Health Organization; 2020. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200401-sitrep-72-covid-19.pdf?sfvrsn=3dd8971b_2 (Accessed 02/04/2020).
2. World Health Organization. Special feature: immunization and COVID-19. 2020. Available from: https://www.who.int/immunization/monitoring_surveillance/immunization-and-covid-19/en/ (Accessed 27/10/2020).
3. World Health Organization. Guiding principles for immunization activities during the COVID-19 pandemic. Geneva: World Health Organization; 2020. Available from: https://apps.who.int/iris/bitstream/handle/10665/331590/WHO-2019-nCoV-immunization_services-2020.1-eng.pdf?sequence=1&isAllowed=y (Accessed 02/04/2020).
4. Australian Government Department of Health. ATAGI Guiding Principles for maintaining immunisation services during COVID-19 pandemic Canberra: Australian Government Department of Health; 2020. Available from: https://www.health.gov.au/resources/publications/atagi-guiding-principles-for-maintaining-immunisation-services-during-covid-19-pandemic?utm_source=NCIRS+Master+list&utm_campaign=bbfe457296-EMAIL_CAMPAIGN_2020_05_11_01_07&utm_medium=email&utm_term=0_bc54525c32-bbfe457296-86225283 (Accessed 11/05/2020).
5. Hull B, Hendry A, Dey A, et al. Annual Immunisation Coverage Report 2018. Sydney: National Centre For Immunisation Research and Surveillance; 2019. Available from: <http://ncirs.org.au/sites/default/files/2019-11/NCIRS%20Annual%20Immunisation%20Coverage%20Report%202018.pdf> (Accessed 10/12/2019).

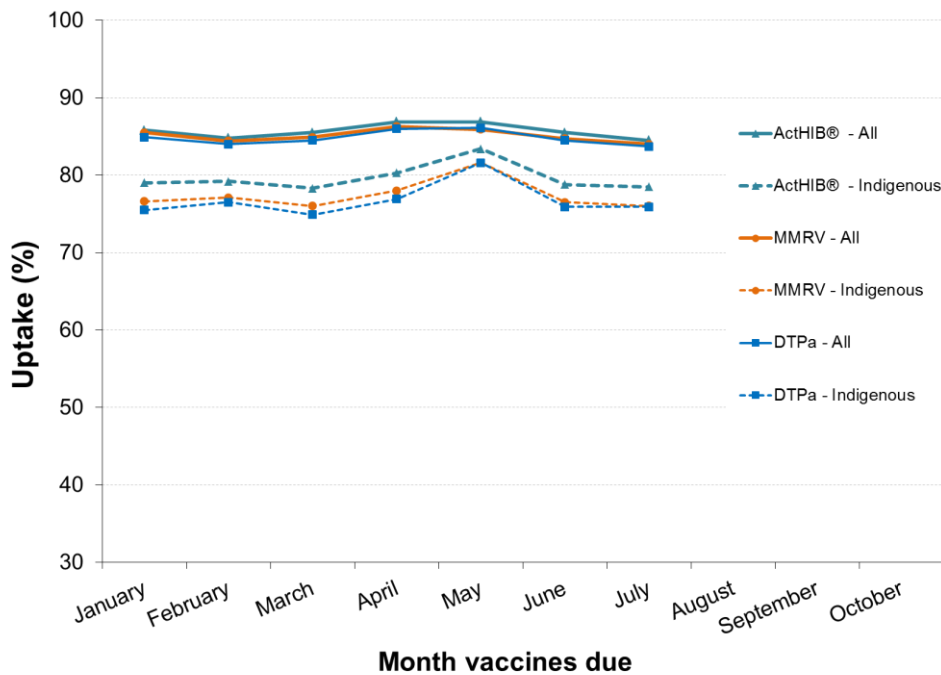
Appendix

Figure A1: Vaccination uptake at the 6-month age milestone, assessed 2 months after vaccines due for successive 1-month-wide birth cohorts, by Indigenous status, Australia, 2020*



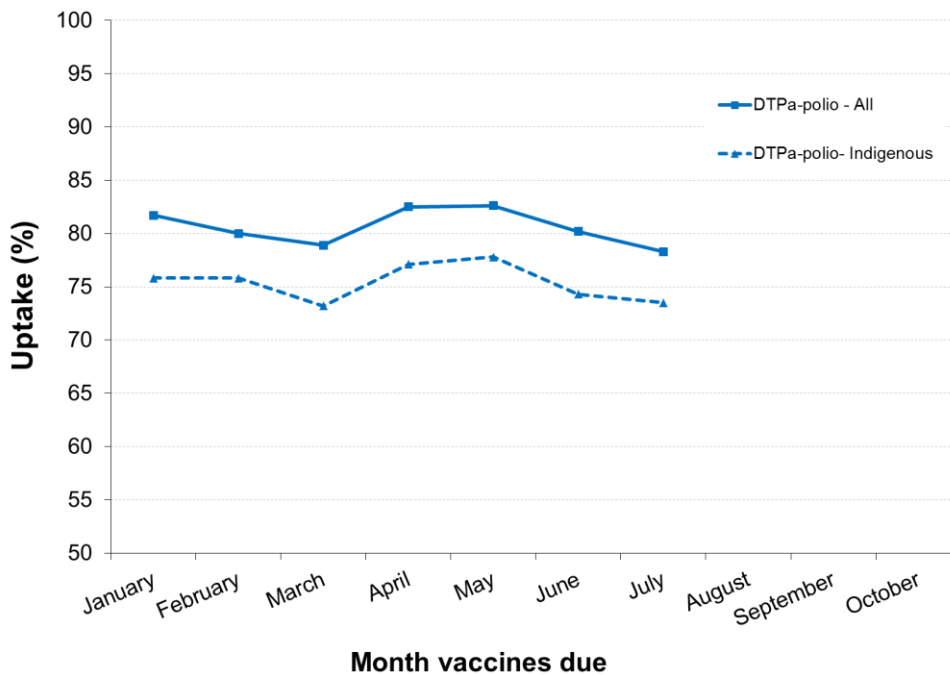
*Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 12 months of age, capturing catch-up vaccinations well beyond the first two months assessed here.

Figure A2: Vaccination uptake at the 18-month age milestone, assessed 2 months after vaccines due for successive 1-month-wide birth cohorts, by Indigenous status, Australia, 2020*



*Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 24 months of age, capturing catch-up vaccinations well beyond the first two months assessed here.

Figure A3: Vaccination uptake at the 48-month age milestone, assessed 2 months after vaccines due for successive 1-month-wide birth cohorts, by Indigenous status, Australia, 2020*



*Vaccination uptake reflected in this figure does not equate to vaccination coverage, which for this age-based milestone would usually be assessed at 24 months of age, capturing catch-up vaccinations well beyond the first two months assessed here.