

In brief

COVID-19 vaccines in Australia – AstraZeneca and Pfizer

24 August 2021

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- Internationally, 21 vaccines have been approved for use and [more than 4.96 billion](#) vaccine doses have been administered.¹
- All vaccines that are approved for use have strong safety profiles and benefit to risk ratios.¹
- [In Australia](#), three vaccines have been approved for use and a further two have provisional determinations. To 15 August 2021, approximately 7.2 million doses of Pfizer and 8.1 million doses of AstraZeneca vaccines have been administered.²
- Both [AstraZeneca](#)³ and [Pfizer](#)⁴ vaccines have been shown to:
 - reduce symptomatic disease and mortality^{3,4}
 - reduce the chance of [onward transmission](#) by 40-50%⁵
 - reduce hospitalisation rates in ‘real world’ effectiveness studies, AstraZeneca by [80%](#) to [95%](#) and Pfizer by [71%](#) to [97%](#).⁶⁻⁸
- For all vaccine types, death is an extremely [rare](#) adverse event.⁹
- [In Australia](#) as at 15 August 2021, out of 8.1 m doses of AstraZeneca vaccine, there have been 112 reports of blood clots assessed as thrombosis with thrombocytopenia syndrome (TTS).² There have been seven reported deaths; six cases of TTS and one case of immune thrombocytopenia.²
- [Knowledge](#) about how to [manage](#) TTS has developed swiftly.^{10,11}
- There have also been concerns with Pfizer and myocarditis. To 15 August 2021, there have been 188 cases in Australia of [suspected myocarditis and/or pericarditis](#). There have been no reported deaths.²
- According to the TGA, which monitors vaccine safety, the protective benefits of vaccination against COVID-19 far outweigh the potential risks.²
- For vector vaccines such as AstraZeneca, there is evidence of [long-lasting immune responses](#).¹² Questions remain on the [longevity of immune responses](#) induced by mRNA vaccines, with emerging [evidence](#) of a [decline](#) in antibody titres 3 - 6 months post Pfizer vaccination.¹³⁻¹⁵
- To date, no vaccine has been shown to be entirely effective at preventing transmission.
- There are reports of [breakthrough infections](#) in fully vaccinated individuals. With Delta, vaccinated people – if infected - have a similar viral load to unvaccinated. This suggests that non-pharmaceutical interventions are still required.¹⁶
- There have been some concerns about the politicization of messaging about the different vaccines and manufacturers.

The Critical Intelligence Unit maintains a living evidence table on [COVID-19 vaccines](#) which was used to inform this brief.¹⁷

References

1. Holder J. Tracking Coronavirus Vaccinations Around the World [Internet] United States: The New York Times Company; 12 August 2021 [Cited 24 August 2021]. Available from: <https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html>.
2. Therapeutic Goods Administration. COVID-19 vaccine weekly safety report - 19-08-2021 [Internet] Australia: Therapeutic Goods Administration, Department of Health, Australian Government; 19 August 2021 [Cited 24 August 2021]. Available from: <https://www.tga.gov.au/periodic/covid-19-vaccine-weekly-safety-report-19-08-2021>.
3. Voysey M, Clemens SAC, Madhi SA, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. *The Lancet*. 2021;397(10269):99-111. DOI: 10.1016/S0140-6736(20)32661-1
4. Polack FP, Thomas SJ, Kitchin N, et al. Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *New England Journal of Medicine*. 2020 2020/12/31;383(27):2603-15. DOI: 10.1056/NEJMoa2034577
5. Harris RJ, Hall JA, Zaidi A, et al. Effect of Vaccination on Household Transmission of SARS-CoV-2 in England. *New England Journal of Medicine*. 2021:1-2. DOI: 10.1056/NEJMc2107717
6. Hyams C, Marlow R, Maseko Z, et al. Assessing the Effectiveness of BNT162b2 and ChAdOx1nCoV-19 COVID-19 Vaccination in Prevention of Hospitalisations in Elderly and Frail Adults: A Single Centre Test Negative Case-Control Study. *The Lancet*. 2021.
7. Pramod S, Govindan D, Ramasubramani P, et al. Effectiveness of Covishield vaccine in preventing Covid-19 – A test-negative case-control study. *medRxiv*. 2021:1-11. DOI: 10.1101/2021.07.19.21260693
8. Haas EJ, Angulo FJ, McLaughlin JM, et al. Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data. *The Lancet*. 2021;397(10287):1819-29. DOI: 10.1016/S0140-6736(21)00947-8
9. Centers for Disease Control and Prevention. Selected Adverse Events Reported after COVID-19 Vaccination [Internet] United States: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases , Centres for Disease Control and Prevention; 13 August 2021 [Cited 6 August 2021]. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/adverse-events.html>.
10. United Nations. Guidelines: Diagnosis and Management of Thrombosis with Thrombocytopenia Syndrome (TTS) following Adenovirus Vecteded COVID-19 Vaccinations [Internet] United States: United Nations (UN); 11 August 2021 [Cited 6 August 2021]. Available from: https://www.un.org/sites/un2.un.org/files/coronavirus_vipitguidance.pdf.
11. Tsirtsakis A. DoH releases primary care guidelines for vaccine blood clots [Internet] Australia: NewGP- RACGP; 14 July 2021 [Cited 6 August 2021]. Available from: <https://www1.racgp.org.au/newsgp/clinical/new-doh-guidelines-to-identify-and-manage-vaccine>.
12. Afkhami S, Yao Y, Xing Z. Methods and clinical development of adenovirus-vectored vaccines against mucosal pathogens. *Molecular Therapy - Methods & Clinical Development*. 2016;3:1-10. DOI: 10.1038/mtm.2016.30
13. Jeyanathan M, Afkhami S, Smaill F, et al. Immunological considerations for COVID-19 vaccine strategies. *Nature Reviews Immunology*. 2020 2020/10/01;20(10):615-32. DOI: 10.1038/s41577-020-00434-6
14. Favresse J, Bayart J-L, Mullier F, et al. Antibody titres decline 3-month post-vaccination with BNT162b2. *Emerging Microbes & Infections*. 2021 2021/01/01;10(1):1495-8. DOI: 10.1080/22221751.2021.1953403

15. De-Leon H, Pederiva F. Using a physical model and aggregate data from Israel to estimate the current (July 2021) efficacy of the Pfizer-BioNTech vaccine. medRxiv. 2021:1-29. DOI: 10.1101/2021.08.10.21261856
16. Brown CM, Vostok J, Johnson H, et al. Outbreak of SARS-CoV-2 Infections, Including COVID-19 Vaccine Breakthrough Infections, Associated with Large Public Gatherings — Barnstable County, Massachusetts, July 2021 [Internet] United States: Centers for Disease Control and Prevention; 30 July 2021 [updated 6 August 2021 Cited 6 August 2021]. Available from: <https://www.cdc.gov/mmwr/volumes/70/wr/mm7031e2.htm>.
17. Agency for Clinical Innovation. Living Evidence - COVID-19 vaccines [Internet] Australia: Agency for Clinical Innovation; 13 Aug 2021 [Cited 6 August 2021]. Available from: <https://aci.health.nsw.gov.au/covid-19/critical-intelligence-unit/covid-19-vaccines>.

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