

# COVID-19 Monitor

## COVID-19 vaccines and cases

22 April 2021

---

### Background

- March 2021: Despite vaccine rollout, a [third wave](#) of the COVID-19 pandemic is starting in different parts of the world such as [Europe](#), with predictions of third and even fourth waves in countries including [Canada](#), the [UK](#) and [USA](#), respectively.(1-5)
- Despite large numbers of vaccinations, the [US](#), [India](#), [Chile](#) and [Europe](#) have experienced a surge in cases. Relaxation of other public health measures, as well as the [new variants](#) are suspected to be contributing to this as they may be more transmissible and less susceptible to antibodies produced by vaccines or previous infection. For some new variants, particularly B.1.351, there is evidence of significant [reduction in neutralisation](#).(2, 6-10)
- March 2021: While preliminary research from Israel suggests that [vaccination reduces transmission](#), vaccination alone is [insufficient to contain](#) COVID-19. However, a gradual easing of restrictions and high uptake of vaccines could minimise future waves.(9, 11)
- March 2021: Pandemic fatigue alongside the [vaccine rollout](#) may be causing people to ignore other public health measures such as masks and physical distancing. Additionally, temporary suspension of the [Oxford/AstraZeneca vaccine](#) by several European countries due to concerns over blood clots may have increased vaccine hesitancy.(9, 12)

### Evidence

- Vaccinated individuals may remain vulnerable to infection:
  - 16 April 2021: The Centers for Disease Control and Prevention report around 5,800 [“breakthrough” infections](#) of SARS-CoV-2 among approximately 77 million people in the country who have been vaccinated.(13)
  - 24 March 2021: A cross-sectional audit of [COVID-19 swab positive patients](#) at one hospital in the UK showed 27 of 174 (16%) patients had received a COVID-19 vaccine.(14)
  - 23 March 2021: In a US cohort study of vaccinated healthcare workers at two sites, the risk of testing [positive for COVID-19](#) after vaccination was 1.19% at one site and 0.97% at the other. These rates are higher than the risks reported from vaccine trials. Positive infection results were at least 1 day after vaccination with the majority (71%) testing positive within the first two weeks after the first dose. Positive infection rates were rare 14 days after the second dose.(15)
  - 31 January 2021: The Israeli Health Ministry released results showing 317 out of 715,425 (0.04%) of patients became [infected with COVID-19](#) a week after becoming fully vaccinated.(16)
  - 31 January 2021: A study by a domestic healthcare provider in Israel found [31 infections](#) out of 163,000 fully vaccinated individuals compared with nearly 6,500 infections in an unvaccinated control group.(16)

**Table:** Vaccination rates, select countries, as at 22 April 2021

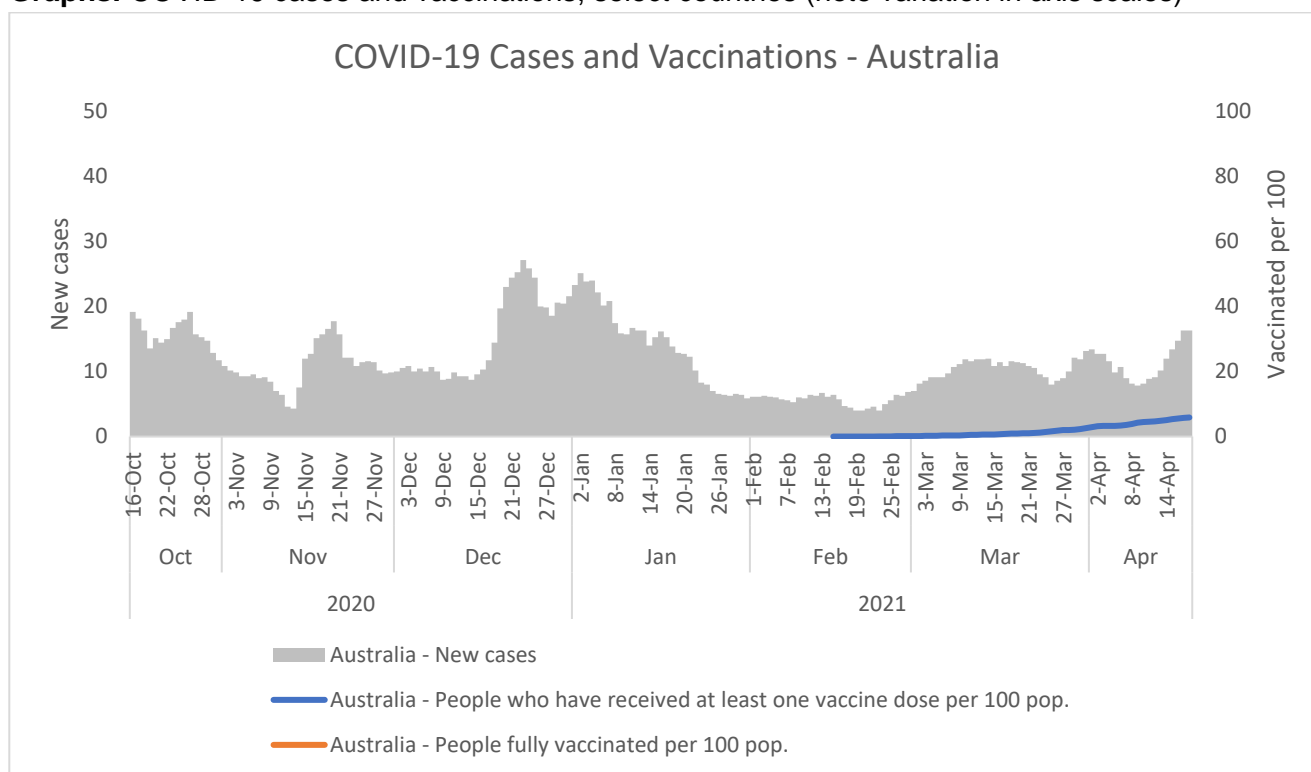
Country	Average daily vaccine doses*	People covered (%)**	Time to cover 75% of the population***
Australia	60,348	3.4%	20 months
United Kingdom	488,411	32.9%	4 months
United States	3,020,805	33.7%	3 months
Canada	272,147	14.3%	6 months
Israel	9,299	57.3%	11 months
India	2,560,271	4.8%	2.1 years

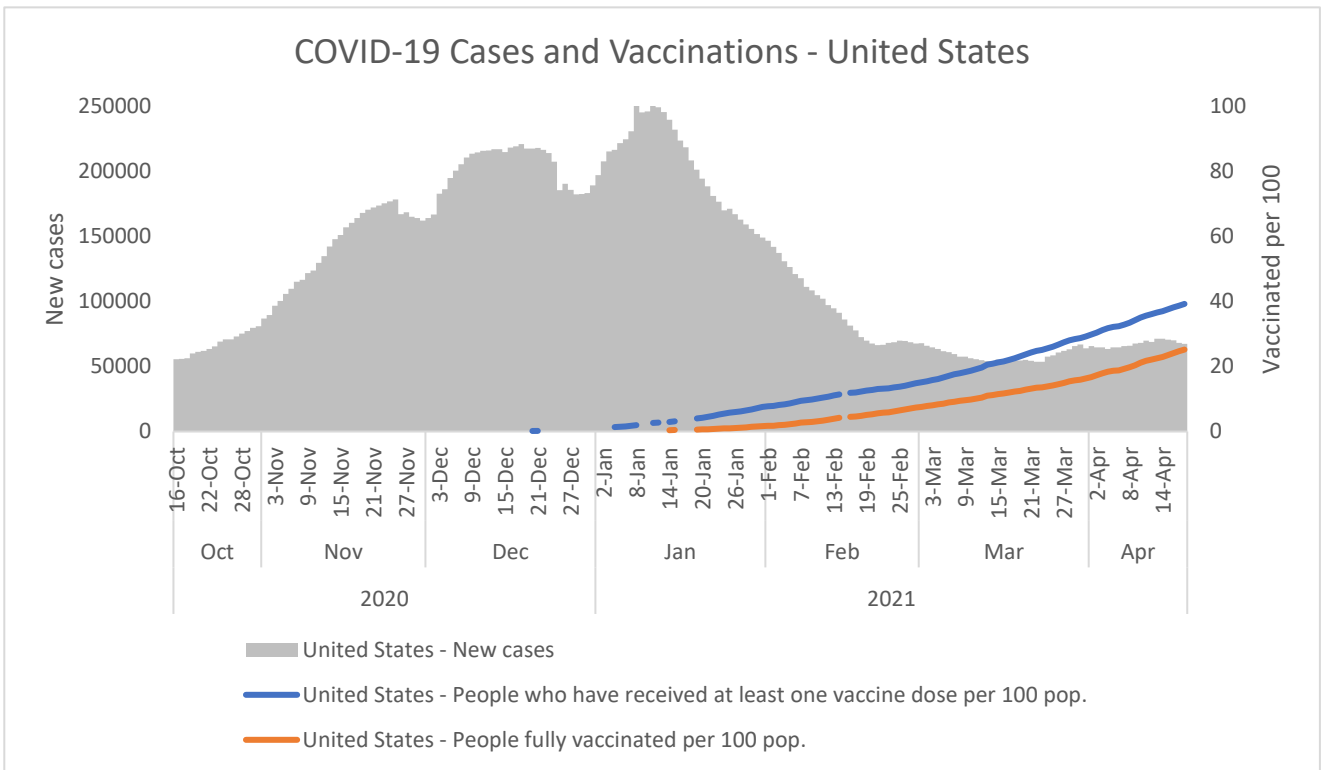
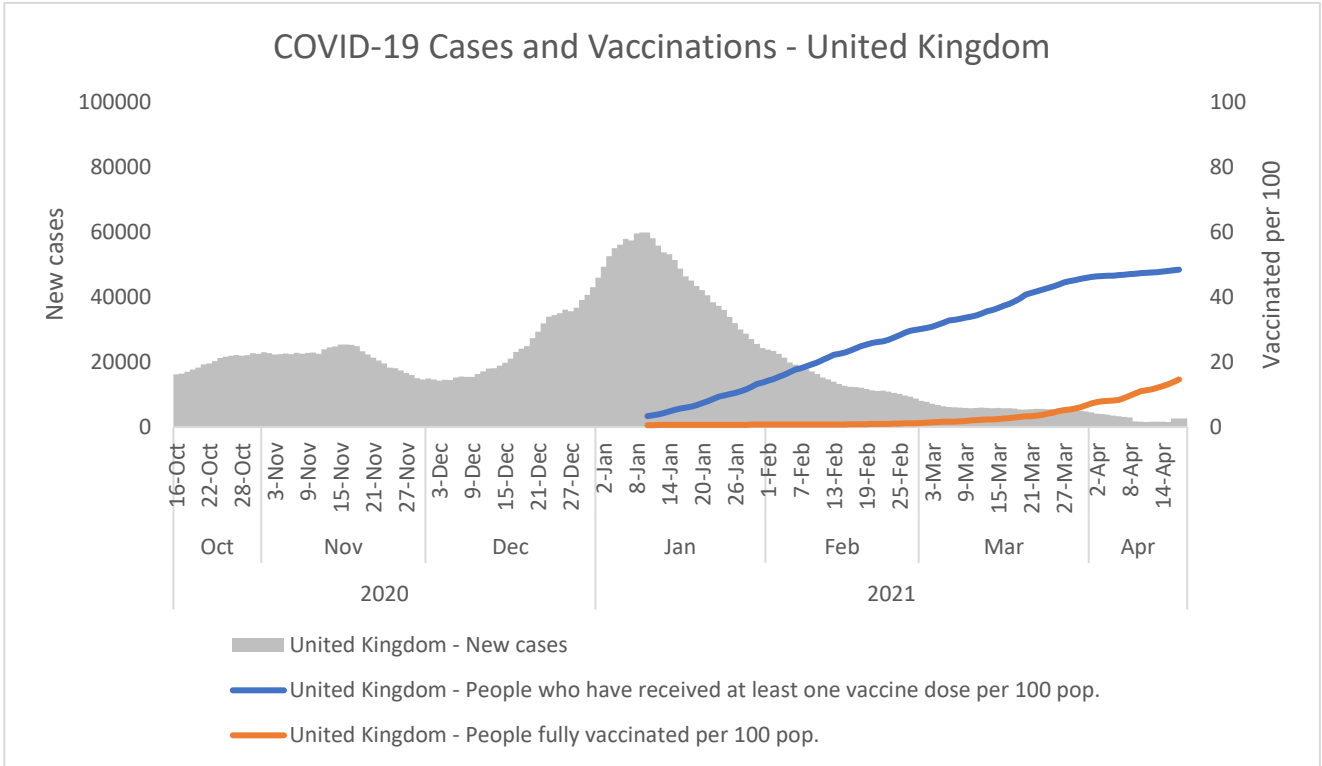
\*Average daily vaccine doses based on the last seven days. \*\*People covered divides the doses administered for each vaccine type by the number of doses required for full vaccination. \*\*\*Time to cover 75% of the population based on the current average daily vaccine doses. More than 944 million doses have been administered across 170 countries.

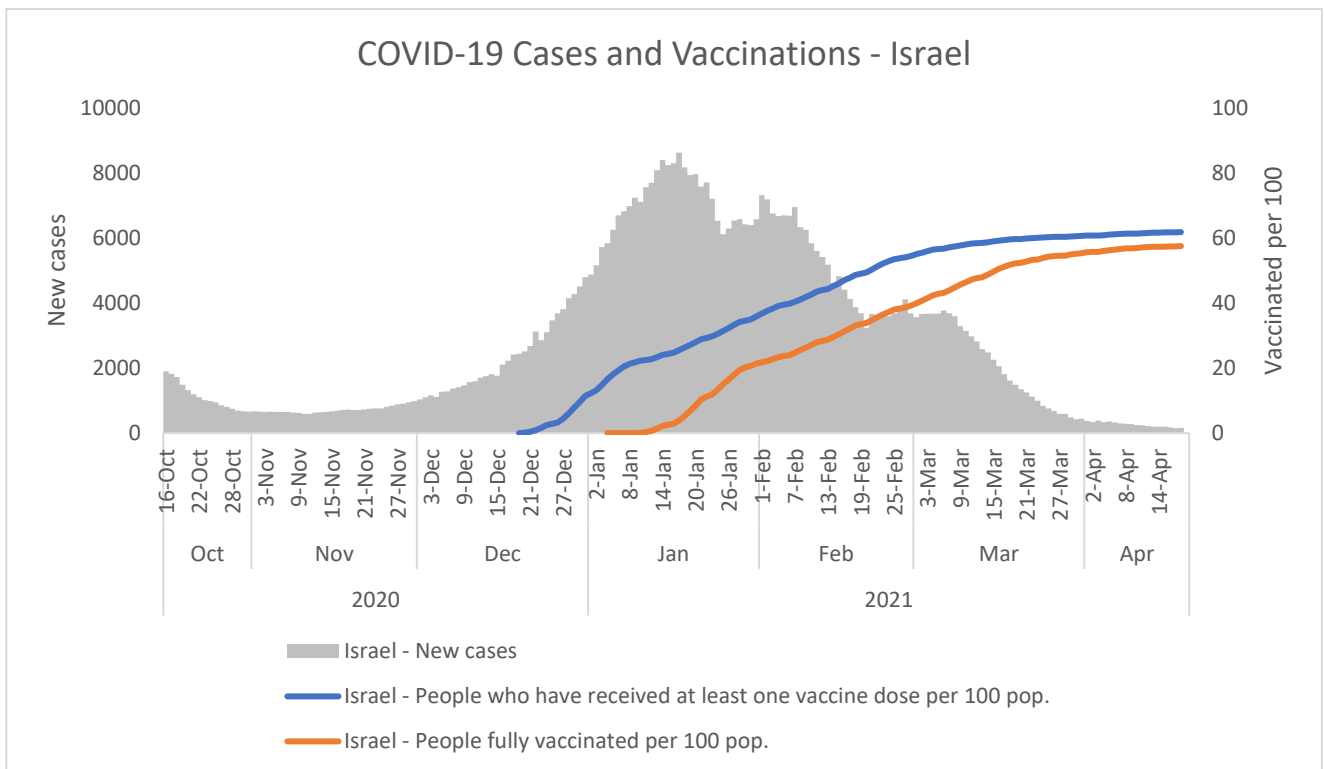
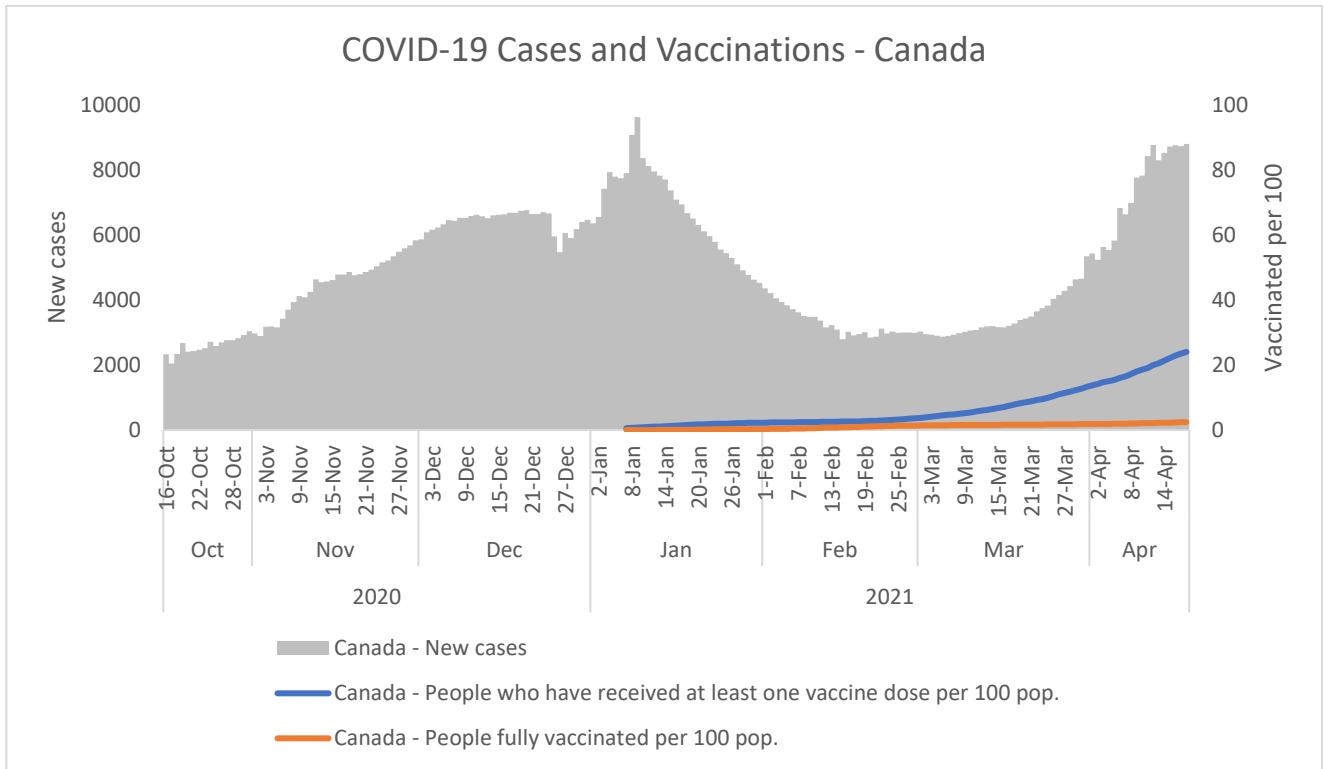
Source: Bloomberg COVID-19 Vaccine Tracker. Accessed 22 April 2021.

<https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>

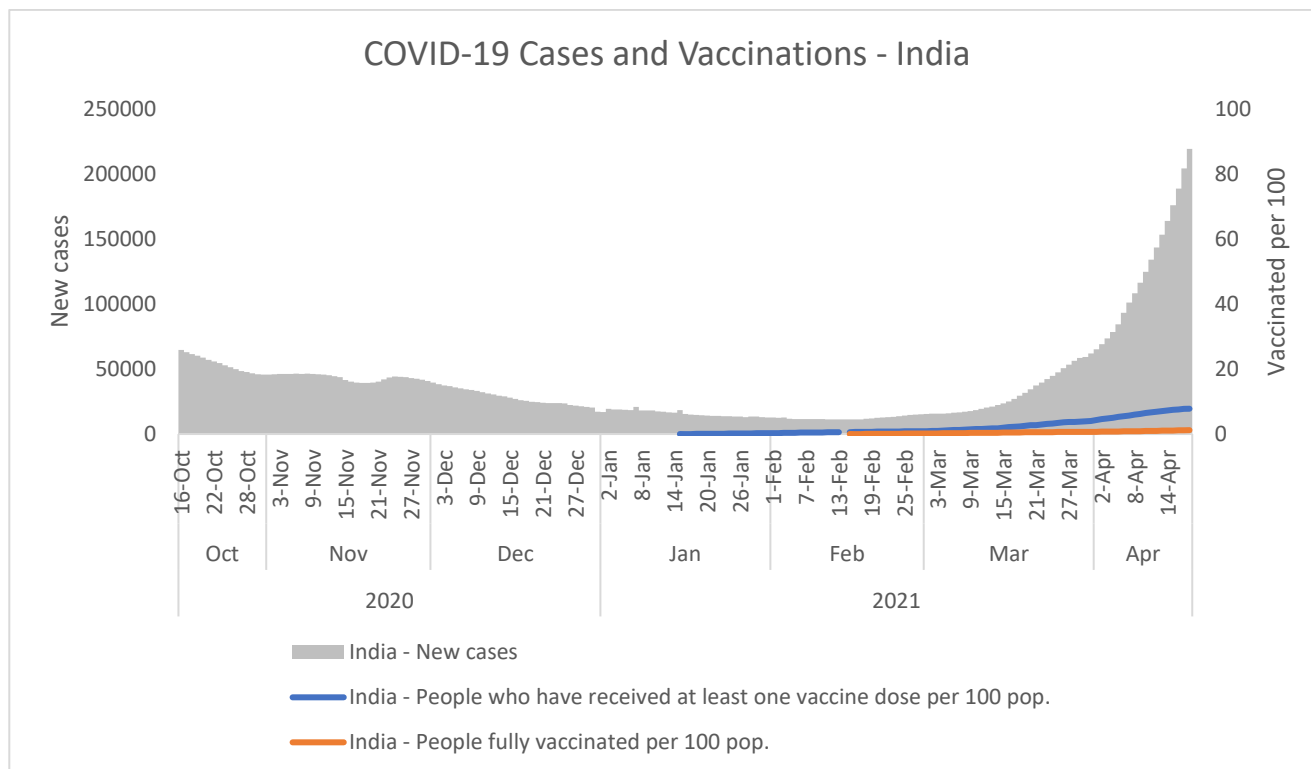
**Graphs:** COVID-19 cases and vaccinations, select countries (note variation in axis scales)







In brief documents are not an exhaustive list of publications but aim to provide an overview of what is already known about a specific topic. This brief has not been peer-reviewed and should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.



Note: For select countries (Australia, United Kingdom, United States, Canada, Israel, and India), these graphs show the number of confirmed COVID-19 cases and the cumulative number of people who have received at least one vaccine dose per 100 population and the cumulative number of people fully vaccinated per 100 population, since mid-October 2020 to mid-April 2021. These graphs should be interpreted with caution as there are other factors that may influence the number of cases in addition to vaccine rates, including the level of social restrictions. The new cases in Australia are almost exclusively among returned travellers in hotel quarantine. The number of people fully vaccinated in Australia is not yet available.

Source: Our World in Data. Accessed 20 April 2021. <https://ourworldindata.org/covid-vaccinations>

The Critical Intelligence Unit maintains living evidence tables on [COVID-19 vaccines](#) and [SARS-CoV-2 variants](#). To inform this brief, a review of the evidence included in the living tables was undertaken. Supplementary google searches using the terms COVID-19 vaccines, surges and variants were also undertaken.

## References

1. Luo R, Delaunay-Moisan A, Timmis K, Danchin A. SARS-CoV-2 biology and variants: anticipation of viral evolution and what needs to be done. *Environmental microbiology*. 2021.
2. McKie R. Third Covid wave sweeps across EU and forces new restrictions. *The Guardian* [Internet]. 2021 March 14. [cited 2021 April 8]. Available from: <https://www.theguardian.com/world/2021/mar/14/third-covid-wave-sweeps-across-eu-and-forces-new-restrictions>.
3. Brown N. UK will 'definitely' have third wave of COVID-19, expert warns. *News.com.au* [Internet]. 2021 March 25. [cited: 2021 April 8]. Available from: <https://www.news.com.au/world/coronavirus/global/uk-will-definitely-have-third-wave-of-covid19-expert-warns/news-story/e70bb04cac3f7d5c0ed0ebc5e442e5d9>
4. Diss K, McLennan B. Coronavirus variants lurk in US amid fears 'fourth wave' will hit before nation vaccinated. *ABC News* [Internet]. 2021 March 17. [cited 2021 April 8]. Available from: <https://www.abc.net.au/news/2021-03-17/us-prepares-for-fourth-wave-as-covid-19-strains-emerge/13238680>.
5. Su Y. With COVID-19's third wave, we're far from 'all in this together'. *The Conversation*. [Internet]. 21 April 20. [cited 2021 April 22]. Available from: <https://theconversation.com/with-covid-19s-third-wave-were-far-from-all-in-this-together-159178>.
6. Tanne JH. Covid-19: US cases rise while vaccinations increase. *BMJ*. 2021;372:n850.
7. Bhuyan A. Covid-19: India sees new spike in cases despite vaccine rollout. *BMJ*. 2021;372:n854.
8. Sample I, Holmes O. Israel and Chile both led on Covid jabs, so why is one back in lockdown? *The Guardian* [Internet]. 21 April 7. [cited 2021 April 8]. Available from: [https://www.theguardian.com/world/2021/apr/06/israel-and-chile-both-led-on-covid-jabs-so-why-is-one-back-in-lockdown?CMP=Share\\_iOSApp\\_Other](https://www.theguardian.com/world/2021/apr/06/israel-and-chile-both-led-on-covid-jabs-so-why-is-one-back-in-lockdown?CMP=Share_iOSApp_Other)
9. Khan A. Has COVID-19 fatigue caused a third wave in Europe? *Aljazeera* [Internet]. [cited 2021 April 8]. Available at: <https://www.aljazeera.com/features/2021/3/28/has-covid-19-fatigue-caused-a-third-wave-in-europe>
10. Liu Y, Liu J, Xia H, Zhang X, Fontes-Garfias CR, Swanson KA, et al. Neutralizing Activity of BNT162b2-Elicited Serum. *The New England journal of medicine*. 2021.
11. Moore S, Hill EM, Tildesley MJ, Dyson L, Keeling MJ. Vaccination and non-pharmaceutical interventions for COVID-19: a mathematical modelling study. *The Lancet Infectious Diseases*. 2021.
12. Liverpool L. Europeans get cold feet over covid-19 vaccines as third wave hits. *New Scientist* [Internet]. [cited 2021 April 8]. Available at: <https://www.newscientist.com/article/2272162-europeans-get-cold-feet-over-covid-19-vaccines-as-third-wave-hits/>
13. Dyer O. Covid-19: US reports low rate of new infections in people already vaccinated. *BMJ*. 2021;373:n1000.
14. Robbins T, Baitule S, Kyrou I, Ray P, Morgan N, Berry L, et al. SARS-CoV-2 infection despite vaccination: an under-reported COVID-19 cohort. *Clinical Medicine*. 2021;21(2):e243.
15. Keehner J, Horton LE, Pfeiffer MA, Longhurst CA, Schooley RT, Currier JS, et al. SARS-CoV-2 Infection after Vaccination in Health Care Workers in California. *The New England journal of medicine*. 2021.
16. Holmes O. Israel Covid vaccine data shows extremely low rate of infections. *The Guardian* [Internet]. [cited 2021 April 8]. Available at: <https://www.theguardian.com/world/2021/jan/31/israel-covid-vaccination-data-offers-hope-exit-pandemic>.

SHPN: (ACI) 210361 | ISBN: 978-1-76081-732-9 | TRIM: ACI/D21/856-01