Influenza

Where is it and what can we expect in 2022?

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In Australia, 2021 was a record-low season for influenza, most likely a result of reduced international travel due to the COVID-19 pandemic. With travel to and from Australia resuming and social interactions increasing, there is concern that 2022 could be a much worse season for influenza than 2020 or 2021. Influenza vaccination is therefore highly recommended for 2022, with a range of formulations available. GPs should encourage vaccination, particularly among vulnerable patient groups.

Key points

- **2021 was a record-low season for influenza in Australia, most likely because of reduced international travel due to the COVID-19 pandemic.**
- **Influenza is expected to re-emerge in Australia in 2022 with the resumption of international travel.**
- **Influenza vaccination is recommended annually for all people aged six months and over and should ideally be administered before the onset of the influenza season.**
- **Adults aged 65 years and over are at higher risk of serious disease from influenza and should preferably receive an adjuvanted or high-dose influenza vaccine, which offer better protection than the standard influenza vaccine.**
- **All vaccinations must be recorded on the Australian Immunisation Register.**
- **Influenza vaccines can be administered on the same day as a COVID-19 vaccine.**

Before the emergence of coronavirus disease 2019 (COVID-19), influenza was historically the most common vaccine-preventable disease in Australia.[1] It has the potential to cause very serious illness in otherwise healthy people, and especially in people with conditions that make them more vulnerable to severe infection. The severity of the influenza season in Australia can vary significantly from year to year, as the influenza virus continually changes and new strains circulate. The impact of influenza in Australia depends on the subtypes of influenza circulating and the susceptibility of the population.[2] 2021 was a record-low season for influenza in Australia, most likely the result of reduced international travel during the COVID-19 pandemic. Public health measures brought in during the pandemic, including mask wearing, social distancing, school closures and working from home, may have also contributed, more so in early 2020 rather than later on.

Surveillance systems in Australia and internationally monitor influenza activity year-round, including which particular influenza viruses are circulating and which populations might be more affected, as well as the severity of influenza infections that occur and the effectiveness of the influenza vaccine. With international travel resuming globally, these data can help inform predictions for what the coming influenza season could be like in Australia.

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The 2020–2021 influenza season in Australia

2021 was a record-low season for influenza in Australia, with only 598 notifications of laboratory-confirmed influenza, compared with 313,033 in 2019.[2,3] Only a single hospital admission was recorded in the Influenza Complications Alert Network (FluCAN) data, and this patient did not need treatment in an intensive care unit. According to the National Notifiable Diseases Surveillance System, no deaths from influenza were reported during 2021, compared with 37 deaths in 2020 and 902 in 2019.[2] The Australian Bureau of Statistics reported that the mortality rate in Australia declined in the first year of the pandemic (2020) and noted a record 24% decrease in people dying from respiratory diseases, including chronic obstructive pulmonary disease and influenza.[4]

The influenza notification rate in 2021 was highest in the Northern Territory, with 23.6 per 100,000 population, largely due to returning international travellers placed in the Howard Springs COVID-19 quarantine facility. One of these influenza cases provided the virus (A/Darwin/9/2021) that has been used as the basis of the A(H3N2) component of the 2022 Australian influenza vaccine.

Along with reduced numbers in 2021, the genetic diversity of influenza has also reduced. Most cases of influenza detected in 2021 were influenza A of the A(H3N2) subtype, with very few influenza A(H1N1)pdm09 viruses (which continue to circulate from the 2009 Mexican influenza pandemic) and only occasional B viruses (of the B-Victoria lineage) detected.[2] Interestingly, no B-Yamagata lineage viruses have been detected since April 2020, which could indicate this strain may now be extinct, but only time will tell if this is true.[2]

Other respiratory viruses

Not all respiratory diseases in Australia were as suppressed as influenza during the COVID-19 pandemic. Adenovirus, respiratory syncytial virus, rhinovirus and enterovirus circulated in 2020 and 2021, in some states at even higher levels than in pre-pandemic times. Parainfluenza and human metapneumovirus also circulated in 2021. This begs the question: what is different about influenza? It seems that introductions from overseas, or the lack thereof, has had the biggest impact on the circulation of influenza in Australia during the pandemic and that some of these other respiratory viruses are more endemic than influenza and can circulate when conditions are favourable.

Worldwide influenza situation in 2021 and 2022

Globally, influenza activity in 2021 and so far in 2022 has been variable.[5] Some countries in the Southern Hemisphere had summer outbreaks of influenza, for example, South Africa, Chile and Brazil, which is unusual. Influenza activity during the 2021–2022 winter in the Northern Hemisphere has been variable, with some countries (e.g. Japan) having virtually no influenza circulating, and other countries (e.g. USA, UK, Norway and Portugal) experiencing influenza outbreaks, albeit with less than half of the usual number of cases seen at the same time in pre-pandemic years. Closer to home, Fiji, New Caledonia and Timor Leste have seen recent influenza activity.

Influenza vaccine uptake in Australia in 2021

Influenza vaccine coverage in Australia was lower in 2021 compared with 2020, especially in children.[6] The Australian Immunisation Register (AIR) reported a 40% reduction in vaccinations in children aged six months to five years and a 20% reduction in children and adolescents aged five to 14 years. The coverage rates in Aboriginal and Torres Strait Islander people were also similarly lower for these age groups across all jurisdictions. The combination of lower influenza vaccine coverage in 2021 and less circulating influenza virus in 2020–2021 increases the risk of complications from influenza in children less than five years old who have potentially not yet been exposed to the virus.[6] High vaccination rates were still seen in those aged 65 years and over in 2021.

Overall, a record number 20.5 million vaccine doses (which could cover more than 80% of the Australian population) were supplied to the market in 2021; however, according to AIR data, only around 8.8 million vaccines were administered (35.3% of the eligible population and only 43% of the available vaccines). Most influenza vaccines were given in general practice.[7]

Predictions and recommendations for influenza in 2022

As international borders reopen, a resurgence of influenza is expected in 2022.[8] Influenza cases may also occur outside of the usual peak influenza season, which, in most parts of Australia, is typically from June to September, in the context of COVID-19 and the recommencing of international travel.[6,8]

The World Health Organization (WHO) recommends countries prepare for the co-circulation of influenza and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viruses.[5] The WHO encourages integrated surveillance to monitor both influenza and SARS-CoV-2, and stepping up influenza vaccination campaigns to prevent serious disease and hospitalisations associated with influenza.

Clinicians should be alert to the possibility of influenza in patients presenting with respiratory symptoms, especially in those who have recently returned from overseas and those in high-risk groups for influenza, such as people aged over 65 years or with chronic lung disease, and should consider testing for influenza as well as COVID-19. A respiratory multiplex test is available from many laboratories now and this will test for a range of other common respiratory viruses as well as COVID-19 and influenza. To date, cases of coinfections of influenza and SARS-CoV-2 – so called 'flurona' – have been relatively low (mostly less than 1%); however, these rates may rise with increased cases of influenza and the new variants of SARS-CoV-2 that are likely to emerge.[9]

Influenza vaccination recommendations for 2022

Annual influenza vaccination is recommended for all people aged six months and over to prevent influenza and its complications.[6] In particular, vaccination is strongly recommended for vulnerable groups, including adults aged 65 years and over, children aged between six months and five years, pregnant women, people with

1. Individuals for whom influenza vaccination is particularly recommended[1,8]

- Children aged 6 months to <5 years*
- Adults aged 65 years and over*
- Aboriginal and Torres Strait Islander people aged six months and over*
- Homeless people
- Pregnant women*
- Individuals (and their household contacts) aged six months and over with medical conditions that increase their risk of influenza, including those with:
  - cardiac disease* (e.g. cyanotic congenital heart disease, congestive heart failure, coronary artery disease)
  - chronic respiratory conditions* (e.g. severe asthma, chronic obstructive pulmonary disease, cystic fibrosis, bronchiectasis, suppurative lung disease and chronic emphysema)
  - chronic neurological conditions* (e.g. neuromuscular disorders, spinal cord injuries, seizure disorders, and hereditary and degenerative central nervous system diseases)
  - immunocompromising conditions* (e.g. HIV infection, malignancy, functional or anatomical asplenia, chronic steroid use, patients receiving immuno-oncology therapy or patients who have received a haematopoietic stem cell or solid organ transplant)
  - chronic liver disease
  - Down syndrome
  - obesity
  - other chronic illnesses that require medical care or follow-up (e.g. kidney disease,* type 1 or 2 diabetes,* chronic metabolic disorders,* haemoglobinopathies*)
  - children aged 6 months to 10 years receiving long-term aspirin therapy*
  - preterm infants (<37 weeks' gestation)
- Residents of and visitors to aged-care and long-term residential facilities
- People in certain occupations:
  - healthcare workers
  - carers
  - aged-care workers
  - commercial poultry and pork industry workers
  - people who provide essential community services
- People who are travelling during influenza season

* Patients eligible for free vaccination under the National Immunisation Program.

2. Recommendations regarding the timing of influenza vaccination[1,6,8]

- Annual influenza vaccination is recommended for all people aged 6 months and over
- Protection from the influenza vaccine is generally expected to last throughout the year but the highest level of protection occurs in the first three to four months after vaccination
- Individuals planning international travel are recommended to have an influenza vaccination before departure
- Individuals returning to Australia from the Northern Hemisphere in early 2022 are recommended to have a seasonal influenza vaccine in the country from which they are leaving before departure (where possible)
- If a person received a 2021 influenza vaccine in late 2021 or early 2022, they are still recommended to receive a 2022 formulation of influenza vaccine when it becomes available
- Influenza vaccines can be administered on the same day as COVID-19 vaccines
- Children aged between six months and nine years receiving the influenza vaccine for the first time, and people of any age receiving an influenza vaccine for the first time after haematopoietic stem cell or solid organ transplant, should receive two doses at least four weeks apart
- Influenza vaccination is recommended in every pregnancy and at any stage of pregnancy, and can be administered at the same time as a pertussis vaccine or COVID-19 vaccine. Pregnant women who received an influenza vaccine before becoming pregnant should be revaccinated with influenza vaccine during pregnancy to protect their unborn infants

an increased risk of complications from influenza and those with underlying medical conditions. Box 1 lists the individuals for whom influenza vaccination is particularly recommended and indicates those who are eligible for free vaccination under the National Immunisation Program (NIP). Influenza vaccination is also especially important for any patients planning to travel internationally or returning to Australia after international travel. Recommendations regarding the timing of influenza vaccination are listed in Box 2. All immunisations must be recorded on the AIR.

Influenza vaccines available in 2022

The influenza vaccines available in Australia in 2022 are listed in the Table. These vaccines are prepared from purified inactivated influenza virus that has been cultivated in embryonated hens' eggs (standard influenza vaccines and adjuvanted influenza vaccine) or propagated in Madin-Darby canine kidney (MDCK) cells (cell-based influenza vaccine).[1] All of the influenza vaccines available in Australia are quadrivalent as they contain four influenza virus strains – two influenza A subtypes and two influenza B lineages. The influenza virus strains included in the 2022 Australian seasonal influenza vaccines are listed in Box 3. Protection from the influenza vaccine is expected to last for the whole season; however, optimal protection is within the first three to four months after vaccination.[1] Generally, the best time to vaccinate is before influenza cases rise to significant numbers, so the months of April and May are ideal to give the maximum protection over the peak of the influenza season.

Enhanced influenza vaccines for adults aged 65 years and over

Adults aged 65 years and over have the highest rates of influenza-associated mortality. Vaccination against influenza in this age group reduces hospitalisations from influenza and pneumonia, and

Table. The influenza vaccines available in Australia in 2022*

Age group	Vaccine†							
	Fluarix Tetra (0.5mL)	Vaxigrip Tetra (0.5mL)	Afluria Quad (0.5mL)	FluQuadri (0.5mL)	Influvac Tetra (0.5mL)	Flucelvax Quad (0.5mL)	Fluad Quad (0.5mL)	Fluzone High-Dose Quad (0.7mL)
6 months to <2 years	✓	✓	✗	✓	✓	✗	✗	✗
≥2 to <5 years	✓	✓	✗	✓	✓	✓	✗	✗
≥5 to <60 years	✓‡	✓‡	✓‡	✓	✓	✓	✗	✗
≥60 to <65 years	✓‡	✓‡	✓‡	✓	✓	✓	✗	✓
≥65 years	✓	✓	✓	✓	✓	✓	✓	✓

*Adapted from Australian Technical Advisory Group on Immunisation (ATAGI) Clinical Advice: Statement on the administration of seasonal influenza vaccines in 2022 – issue date: March 2022.[8]
†Ticks indicate vaccine is registered and available for these age groups. Crosses indicate vaccines not to be used in these age groups. Blue boxes indicate the vaccine is available for free under the National Immunisation Program (NIP).
‡NIP funding is only available for Aboriginal and Torres Strait Islander people, pregnant women and people with certain medical conditions (see Box 1).

3. The influenza virus strains included in the 2022 Australian seasonal influenza vaccines[8]

Egg-based influenza vaccines

- A/Victoria/2570/2019 (H1N1)pdm09-like virus
- A/Darwin/9/2021 (H3N2)-like virus
- B/Austria/1359417/2021-like (B/Victoria lineage) virus
- B/Phuket/3073/2013-like (B/Yamagata lineage) virus

Cell-based influenza vaccines

- A/Wisconsin/588/2019 (H1N1)pdm09-like virus
- A/Darwin/6/2021 (H3N2)-like virus
- B/Austria/1359417/2021-like (B/Victoria lineage) virus
- B/Phuket/3073/2013-like (B/Yamagata lineage) virus

all-cause mortality.[1] 'Enhanced' influenza vaccines were developed to induce a greater immune response than standard influenza vaccines,especially against influenza A (H3N2), which is more common and severe in older people, and are recommended in preference to standard influenza vaccines for adults aged 65 years and over.[1]

Two higher-immunogenicity vaccines are available in Australia for older people in 2022: an adjuvanted vaccine and a high-dose quadrivalent vaccine. The adjuvanted vaccine is available and funded through the NIP for people aged 65 years and older but the alternative high-dose quadrivalent vaccine, which is available for people aged 60 years and over, is not funded by the NIP.[7] The Australian Technical Advisory Group on Immunisation (ATAGI) advises that the adjuvanted influenza vaccine is preferentially recommended over standard influenza vaccine for adults aged 65 years and over, and that there is no preference for use between the adjuvanted or high-dose quadrivalent vaccines in this age group.[8] If the adjuvanted influenza vaccine is not available, adults aged 65 years and over may receive a standard influenza vaccine.

Coadministration of influenza vaccine with COVID-19 vaccines

The March 2022 ATAGI guidelines recommend that influenza vaccines can be administered on the same day as COVID-19 vaccines.[8] Subject to availability of influenza vaccines, an ideal time to vaccinate could be on the same day as a COVID-19 booster vaccine if this happens to coincide but in many cases these two vaccinations are likely to occur at different times.

Conclusion

As international travel resumes and pandemic restrictions ease, influenza is expected to re-emerge in Australia in 2022, and it may occur at times outside the usual 'peak influenza period' (June to September). Patients should be encouraged to receive their annual influenza vaccination to help protect them against influenza and its potentially serious consequences, especially those who are at increased risk from influenza infections. Vaccination is still the most effective measure to prevent infection and, although public health measures (such as mask wearing, staying home when sick, social distancing and the use of air purifiers) that have been developed for COVID-19 may also mitigate the spread of influenza, they will not prevent it. Clinicians should consider the possibility of influenza in patients presenting with respiratory symptoms, in addition to COVID-19 and other respiratory virus infections. **RMT**

References

A list of references is included in the online version of this article (www.respiratorymedicinetoday.com.au).

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References

1. Australian Technical Advisory Group on Immunisation. Australian immunisation handbook. Canberra: Australian Government Department of Health; 2021. Vaccine preventable diseases: influenza (flu). Available online at: https://immunisationhandbook.health.gov.au/vaccine-preventable-diseases/influenza-flu (accessed March 2022).
2. Australian Government Department of Health. Australian influenza surveillance report number 16. Canberra: Department of Health; 2021. Available online at: https://www1.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-ozflu-flucurr.htm (accessed March 2022).
3. Australian Government Department of Health. 2019 Influenza season in Australia: a summary from the National Influenza Surveillance Committee. Canberra: Department of Health; 2021. Available online at: https://www1.health.gov.au/internet/main/publishing.nsf/Content/7610377A5BEB1D25CA25874B007D9DD2/$File/2019-Influenza-Season-Summary.pdf (accessed March 2022).
4. Australian Bureau of Statistics (ABS). Mortality rate declines during the first year of the pandemic. Canberra: ABS; 2021. Available online at: https://www.abs.gov.au/media-centre/media-releases/mortality-rate-declines-during-first-year-pandemic (accessed March 2022).
5. World Health Organization (WHO). Influenza update number 412: 07 February 2022, based on data up to 23 January 2022. Geneva: WHO; 2022. Available online at: https://cdn.who.int/media/docs/default-source/influenza/influenza-updates/2022/2022_02_07_surveillance_update_412.pdf?sfvrsn=f9e49c6_7&download=true (accessed March 2022).
6. Australian Government Department of Health. Australian Technical Advisory Group on Immunisation (ATAGI) clinical advice: statement on the administration of seasonal influenza vaccines in 2021 – updated December 2021. Canberra: Department of Health; 2021. Available online at: https://www.health.gov.au/sites/default/files/documents/2021/12/atagi-advice-on-seasonal-influenza-vaccines-in-2021-december-2021-update.pdf (accessed March 2022).
7. Australian Government Department of Health. Influenza (flu) immunisation data – 1 November 2021: Influenza (flu) vaccines reported to the Australian Immunisation Register (AIR) as at close of business 31 October 2021. Canberra: Department of Health; 2021. Available online at: https://www.health.gov.au/sites/default/files/documents/2021/11/influenza-flu-immunisation-data-influenza-flu-immunisation-data-1-november-2021.pdf (accessed March 2022).
8. Australian Government Department of Health. Australian Technical Advisory Group on Immunisation (ATAGI) clinical advice: statement on the administration of seasonal influenza vaccines in 2022 – issue date: March 2022. Canberra: Department of Health; 2022. Available online at: https://www.health.gov.au/sites/default/files/documents/2022/02/atagi-advice-on-seasonal-influenza-vaccines-in-2022.pdf (accessed March 2022).
9. Dadashi M, Khaleghnejad S, Elkhichi PA, et al. COVID-19 and influenza co-infection: a systematic review and meta-analysis. Front Med (Lausanne) 2021; 8: 681469.