



National Immunisation Advisory Committee

UPDATED 2024 RECOMMENDATIONS FOR COVID-19 VACCINATION

NIAC | 28.05.2024

About NIAC

NIAC membership includes nominees from the Royal College of Physicians in Ireland, its Faculties and Institutes, the Royal College of Surgeons in Ireland, the Irish College of General Practitioners, the National Immunisation Office, the Nursing and Midwifery Board of Ireland, the Infectious Diseases Society of Ireland, the Travel Medicine Society, the National Virus Reference Laboratory and lay members. Meetings are attended by representatives from the Department of Health and the HSE. Representatives of the Health Products Regulatory Agency attend to provide regulatory advice in relation to vaccines.

[NIAC](#) considers the evidence about vaccines and provides advice to the Chief Medical Officer and the Department of Health. The Department and the Minister for Health make policy decisions on vaccines which are implemented by the Health Service Executive.

2024 AUTUMN COVID-19 VACCINE RECOMMENDATIONS

1. A COVID-19 vaccine, to be administered in the Autumn, is recommended for:
 - those aged 60 years and older
 - those aged 6 months-59 years with [immunocompromise](#) associated with a suboptimal response to vaccination
 - those aged 6 months-59 years with [medical conditions associated with a higher risk](#) of COVID-19 hospitalisation, severe disease or death
 - those aged 18-59 years living in long term care facilities for older adults
 - health and care workers.
2. For those aged 18-59 years who are healthy
 - a COVID-19 vaccine is not routinely recommended this Autumn
 - access to a COVID-19 vaccine should be available this Autumn for those who, following discussion of their reasons with a health care provider (e.g., GP, pharmacist or vaccination centre), request vaccination.
3. For those aged 6 months to 17 years who are healthy a COVID-19 vaccine is not routinely recommended this Autumn.
4. For pregnant adolescents and adults, a COVID-19 vaccine once in pregnancy is recommended, if it is more than six months since their previous COVID-19 vaccine or infection.
 - COVID-19 vaccine can be given at any stage in pregnancy, ideally given between 20-34 weeks' gestation.
5. COVID-19 vaccines may be given irrespective of the number of previous doses or types of COVID-19 vaccines received. The recommended minimum interval following infection or vaccination is 6 months, however shorter intervals down to 3 months are permissible in certain circumstances e.g., planned immunosuppressive therapy or operational reasons.
6. Antigenically updated COVID-19 mRNA vaccines are the preferred vaccine for use.
7. Protein based vaccines may be used as alternatives in those for whom an mRNA vaccine is contraindicated or declined.
 - Nuvaxovid (antigenically updated) is the preferred alternate and can be used for primary and booster vaccination.
8. COVID-19 and influenza vaccines may be administered at the same visit.

Recommendations may be updated when more information becomes available.

1. EXECUTIVE SUMMARY

- SARS-CoV-2 continues to evolve and although seasonality has not yet been established a surge in the virus is expected in the autumn and winter months.
- The severity of COVID-19 has been reducing over time since the beginning of the pandemic and COVID-19 related deaths and hospitalisations were lower in 2024 than previous years.
- However, there was a distinct COVID-19 winter surge during which the rate of COVID-19 related hospitalisations was greatest among infants less than 12 months old and older adults approximately 60 years of age and older, with the highest rates experienced in those 80 years of age and older.
- The COVID-19 winter surge was longer than the influenza or RSV seasons resulting in a greater number of hospitalisations overall. Compared to influenza, rates of hospitalisation for COVID-19 were almost double in those aged 60 to 79 years old and three times higher for those 80 years of age and older.
- Uptake of COVID-19 vaccination in autumn 2023 was relatively low in the 50-69 year age group at 28% but increased with increasing age to 62% in those age 70 and above. Uptake in those living in residential care facilities was 81%. Uptake in health and care workers was low at 19%.
- JN.1 sublineages of the virus continue to be the most prevalent in Ireland and globally as of 11 May 2024.
- In April 2024, both the World Health Organisation (WHO) and the European Medicines Agency (EMA), on review of available evidence on circulating variants and vaccine effectiveness, recommended updating COVID-19 vaccines to target the JN.1 variant for the 2024/2025 vaccination campaign.
- The vaccine effectiveness (VE) of XBB.1.5 mRNA COVID-19 vaccines during the 2023/2024 winter season against infection ranged from 41-57% with slightly higher protection afforded against XBB variants compared to JN1 variants.
- VE against hospitalisation ranged between 43 and 67%, and VE against death in those aged over 65 years was estimated at 66-72%.
- No new adverse events have been identified with the use of XBB.1.5 COVID-19 vaccines and similar reactogenicity profiles to previous versions of COVID-19 vaccines are reported.
- Two randomised studies have reported non-inferiority of immunogenicity of either COVID-19 vaccines or influenza vaccines when the vaccines are co-administered. A retrospective comparative effectiveness found no reduction in effectiveness against hospitalisation with coadministration.
- A US observational study has shown similar vaccine effectiveness against COVID-19 and influenza hospitalisations in those co-administered the vaccines compared to either vaccine alone.
- COVID-19 vaccines continue to be safe in pregnancy and continue to offer protection to mother and infant against severe disease.

- Most countries internationally are recommending an annual autumn vaccination to all adults aged 60 or 65 years and above. Vaccination of pregnant women is also recommended by most countries.
- International recommendations regarding vaccination of healthcare workers vary. In general countries which do not recommend annual vaccination of healthcare workers have an open offer of vaccination to any adult upon request.

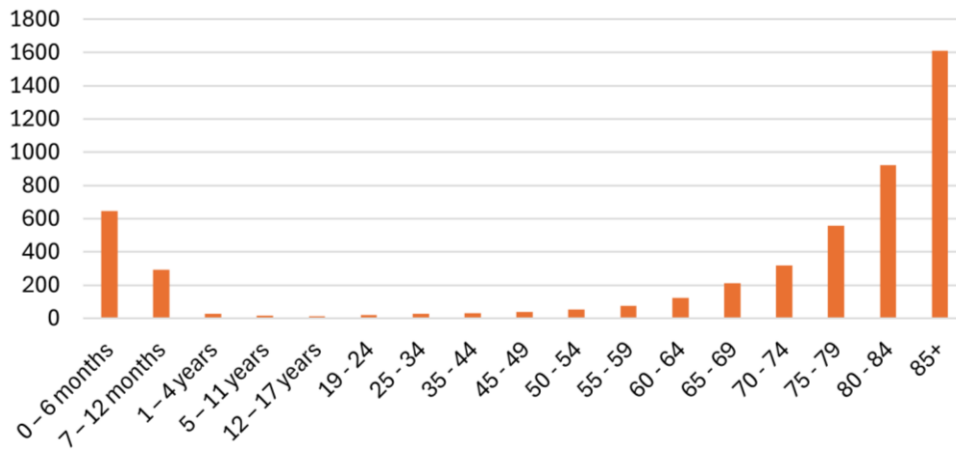
2. INTRODUCTION

SARS-CoV-2 continues to circulate in Ireland. While there was an overall decline in the numbers of COVID-19-related hospitalisations and fatalities compared to preceding years, intermittent surges in hospitalisations continue. Advanced age remains the most important risk factor for COVID-19 related hospitalisation. Unlike many respiratory viruses, SARS-CoV-2 has thus far not exhibited a distinct seasonal pattern. However, surges of infection in winter months have greatest impact due to co-circulation of other winter viruses, exerting increased burden on the health care system when it is under most pressure. Hence, administering vaccines annually, just before the winter season, yields maximal benefits. These recommendations outline which population subgroups should be offered a COVID-19 vaccine in Autumn 2024. The recommendations are based on an updated review of national and international epidemiology and of the safety, immunogenicity, and effectiveness of updated COVID-19 vaccines.

3. EPIDEMIOLOGY IN IRELAND

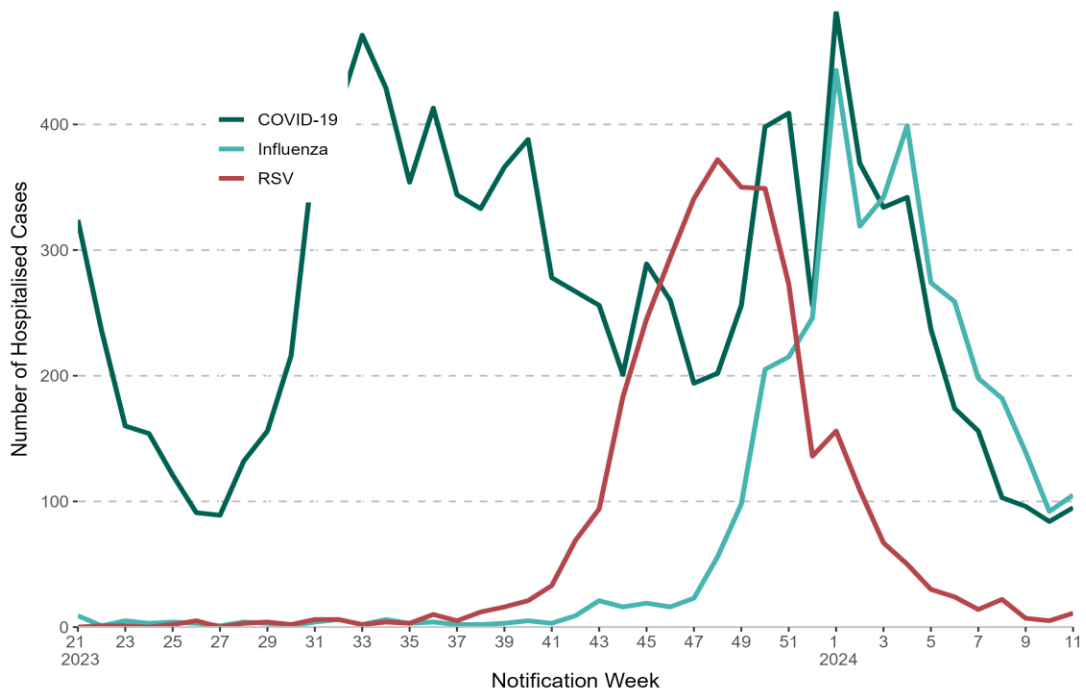
SARS-CoV-2 associated hospitalisations have been reducing each year since the beginning of the pandemic. In the 2023/2024 winter season hospitalisation rates were greatest among infants under 12 months of age and older adults approximately 60 years of age and older. (Figure 1)

Figure 1. Age specific rate of COVID-19 associated hospitalisations per 100,000 population, winter season 2023/2024 (week 40 2023 to week 17 2024). Source: Provided directly to NIAC by HPSC.



In 2023/2024 the COVID-19 winter peak extended for a longer period than either the influenza or RSV seasons and there were a greater number of COVID-19 related hospitalisations overall compared to influenza and RSV. (Figure 2)

Figure 2. COVID-19, Influenza and RSV hospitalised cases, week 21 2023 to week 11 2024. Source: Provided directly to NIAC by HPSC.



Among adults, the rates of hospitalisations per 100,000 population were similar for COVID-19 and influenza in the age groups of 19 to 55 years old. For those aged 60 to 79 years old, the rate of hospitalisation with COVID-19 was double that of influenza, and for those aged 80 years and above the rate of hospitalisation with COVID-19 was almost three times that of influenza. (Table 1)

Table 1. COVID-19 and influenza absolute hospitalisation numbers by age group and age specific rate of hospitalisation per 100,000 population winter 2023/24 (week 40 2023 to week 17 2024). Source: Provided directly to NIAC by HPSC.

Age group (years)	COVID-19		Influenza	
	No of hospitalisations	Age specific rate of hospitalisations (per 100,000)	No of hospitalisations	Age specific rate of hospitalisations (per 100,000)
19-24	79	21	91	24
25-34	172	27	230	37
35-44	244	31	255	32
45-49	139	37	99	27
50-54	177	52	110	32
55-59	238	77	157	51
60-64	342	125	180	66
65-69	507	213	235	99
70-74	644	317	311	153
75-79	861	558	376	244
80-84	891	922	376	389
≥85	1,359	1,609	485	574

COVID-19 related admissions to ICU have also been declining over time since the beginning of the pandemic. (Figure 3)¹

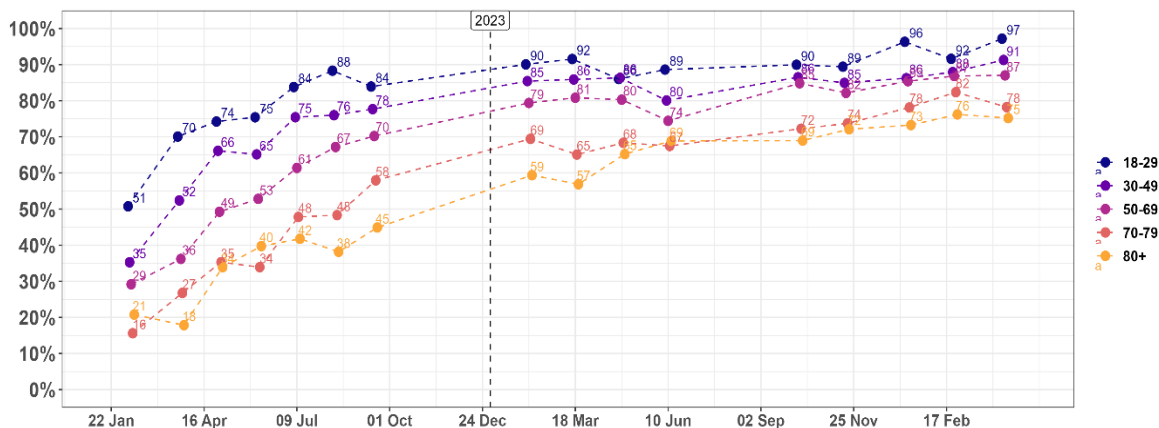
Figure 3. Confirmed cases in ICU since the beginning of the pandemic. Source: Ireland’s COVID-19 Data Hub.¹



During the 2023/2024 COVID-19 winter surge between week 40, 2023 and week 9, 2024 there were 40 COVID-19 related admissions to ICU. Thirty-seven of these patients (92.5%) had one or more underlying condition. No pregnant women or women \leq six weeks postpartum were admitted to ICU in this timeframe.²

Hybrid immunity (immunity from both vaccination and natural infection) is known to provide more robust and durable protection against severe COVID-19 than either vaccination or infection alone.³ The percentage of the population with evidence of previous natural infection continues to increase, albeit at a slower rate than earlier in the pandemic. As of May 2024, three quarters of those aged 80 years and above had evidence of previous infection. This rate increased with decreasing age to 97% in those aged 18-29 years. (Figure 4)

Figure 4. Percentage of people with prior SARS-CoV-2 infection (S+ N+). Source: Lab Surveillance Network. Source: Provided directly to NIAC by the Seroepidemiology Unit.



4. VACCINATION UPTAKE

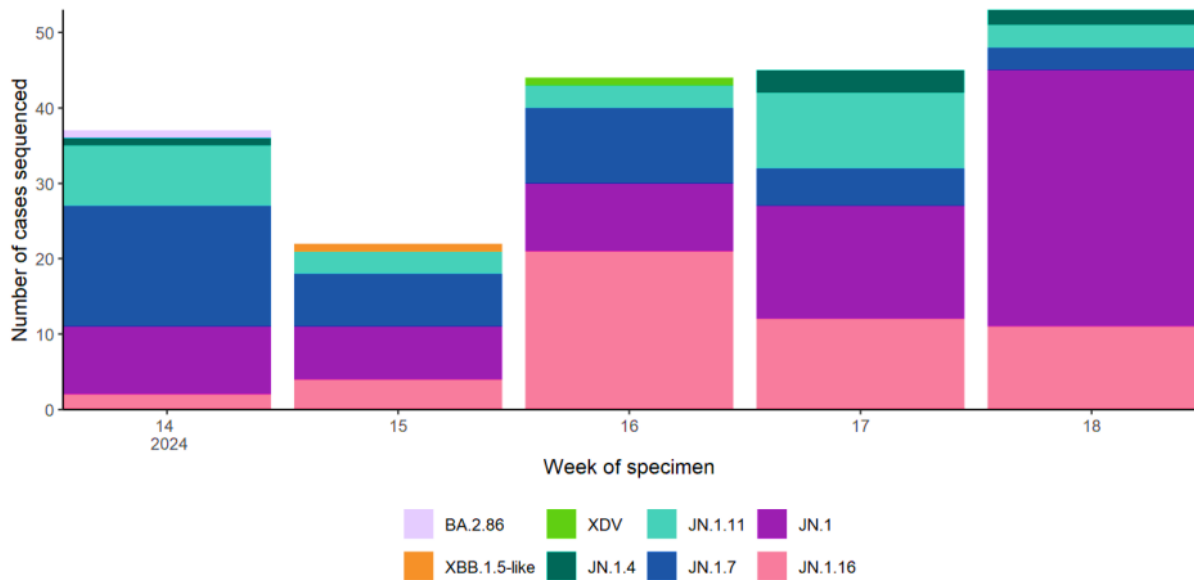
In Autumn 2023 the uptake of COVID-19 vaccines was 38.6% in those aged 50 years and above. However, uptake rates increased with increasing age. Uptake in those aged 70 years and above was 62% and uptake in those living in residential care facilities was 81%.^{4,5} In an analysis of 110,098 HSE Health and Care Workers records, COVID-19 vaccination uptake was 19%, considerably lower than the uptake for influenza vaccine over the same season which was 37%.⁵

The Spring 2024 vaccination campaign is still ongoing. Three weeks into the vaccination campaign, uptake in those aged 70-79 is 6%, again increasing with increasing age to 22% in those aged 80 years and above (as of 12/05/2024).⁶

5. VARIANTS

Since November 2023, the BA.2.86 sublineage JN.1 has rapidly increased globally and has replaced XBB.1.5-like lineages. JN.1 and its sublineages now predominate sequenced cases in Ireland and between week 14 and week 18 2024 JN.1 variants accounted for 98.5% of sequences. (Figure 5)

Figure 5. SARS-CoV-2 whole genome sequencing results in Ireland from week 14 2024 to week 18 2024. Source: HPSC.⁷



6. UPDATED VACCINES-JN1

On April 26 2024, the WHO’s Technical Advisory Group on COVID-19 vaccine composition (TAG-CO-VAC) advised the use of a JN.1 lineage monovalent formulation for winter 2024/25 updated COVID-19 vaccines.⁸ This advice was followed on April 30 2024 by a similar recommendation from the EMA’s Emergency Task Force, to update COVID-19 vaccines to target the JN.1 variant.⁹ The recommendations were made based on the following evidence:¹⁰

- Greater than 94% of SARS-CoV-2 genetic sequences in publicly available databases were derived from JN.1 at the time of review. Indicating a greater fitness in humans of JN.1 than XBB.
- Secondary analysis of immunogenicity data on the three previous updated vaccines shows that an average of 40% increase in neutralising antibodies has been achieved with each antigenic update.
- TAG-CO-VAC modelling estimated a 23-33% increase in VE against severe disease with a JN.1 targeted vaccine.
- Animal and human studies on cross-neutralisation of XBB and JN.1 indicate that they are antigenically distinct.
- Animal studies and one human study of JN.1-adapted vaccine candidates shared confidentially with the EMA by manufacturers show improved performance against JN.1 variant.

7. VACCINE SAFETY

The safety profile of COVID-19 vaccinations has been closely monitored. Adverse events, such as myocarditis and pericarditis were most common after the first dose of vaccine and have decreased with subsequent doses.¹¹ No new safety concerns have arisen since the introduction of the new monovalent XBB.1.5 adapted vaccines in Autumn 2023. A Danish population-based study which included 902,803 individuals who received an XBB.1.5 containing mRNA vaccine as a fifth dose, found no increase in the rate of 28 serious adverse events of interest, including myocarditis, cerebral infarction, deep vein thrombosis and Guillain-Barre syndrome, reported in the 28 days after immunisation.¹²

8. VACCINE EFFECTIVENESS

The effectiveness of XBB.1.5 containing monovalent mRNA vaccines was assessed over the 2023/2024 autumn winter season in many settings. The VE against COVID-19 infection ranged between 41% and 57%.¹³⁻¹⁵ The VE against COVID-19 related hospitalisation ranged between 43% and 67%.¹⁶⁻¹⁸ The protection afforded by these vaccines was higher against XBB than JN1 variants.^{13 15 18}

A prospective study from the Netherlands investigated the effectiveness of XBB.1.5 vaccine in a cohort of 23,895 adults. Estimated VE against infection was 40% in those aged 18-59 and 50% in those aged 60-85 years. These estimates increased to 87% and 85% respectively in those who had had a SARS-CoV-2 infection within the last year. This study demonstrates the increased protection afforded by hybrid immunity, and highlights waning of protection over time. The researchers also reported that vaccine effectiveness estimates were higher with the XBB.1.5 monovalent vaccine in 2023/2024 compared to the BA.4-5 bivalent vaccine in the same cohort in 2022/2023.¹³

A large European study including a population of over 22 million aged 65 years and older, estimated vaccine effectiveness using electronic healthcare record data. Vaccine effectiveness against death was 66% in those age 65-79 years and 72% in those aged 80 years and above, effectiveness against hospitalisation was 67% in both age groups.¹⁷

9. CO-ADMINISTRATION WITH INFLUENZA VACCINES

As detailed in NIAC's [Autumn 2023 COVID-19 booster recommendations](#), early studies of COVID-19 vaccine co-administration with influenza vaccines indicated that the immune response to COVID-19 vaccine may be less following co-administration compared to vaccination with COVID-19 vaccine alone. Two phase III randomised studies have since been published comparing the immune response in individuals who received co-administered COVID-19 mRNA with influenza vaccines, compared to those who received the vaccines sequentially 3-4 weeks apart.^{19 20} One trial

used Comirnaty BA.4-5 bivalent vaccine, the other used Spikevax original. In both trials, immunogenicity of COVID-19 and influenza vaccine was non-inferior when vaccines were co-administered compared to given sequentially. In the trial using Comirnaty, the geometric mean ratio of SARS-CoV-2 IgG levels when co-administered compared to sequentially administered was slightly reduced at 0.83 (95% CI, 0.77-0.89) but still above non-inferiority criteria of 0.67. Similar local and systemic side effects reported between the co-administered and sequentially administered groups.

The clinical significance of this slight decrease in SARS-CoV-2 antibody levels was previously uncertain, however a recent US study found no significant difference in COVID-19 hospitalisations when vaccines were co-administered. The researchers retrospectively reviewed a healthcare record database including over three million adults comparing COVID-19 and influenza related outcomes in those who had been co-administered the vaccines, to those who had only received either one or other vaccine. Among adults aged 65 years and older, COVID-19 related hospitalisations were similar with a reported adjusted hazard ratio (AHR) of 0.92 (95% CI, 0.77-1.10) when comparing co-administered COVID-19 and influenza vaccines to those who received COVID-19 vaccine alone. Similarly, when comparing those who had influenza vaccine co-administered with COVID-19 vaccine compared to influenza vaccine alone the AHR for influenza hospitalisation was 0.86 (95% CI, 0.75-0.98).²¹ These data support the ongoing practice of co-administering COVID-19 and influenza vaccines.

10. COVID-19 VACCINATION IN PREGNANCY

The risk of severe COVID-19 outcomes and pregnancy-related complications for pregnant women and their infants with a SARS-CoV-2 infection in pregnancy has been shown to be reduced in the current Omicron era compared to previous eras of the virus. However, a moderate increased risk of both severe COVID-19 outcomes and perinatal complications has been observed with an Omicron variant, SARS-CoV-2 infection during pregnancy when compared to no infection.^{22 23}

In a recent retrospective study of data on 2.9 million deliveries from a US health database (Premier Healthcare Database) from February 2020 to August 2023, prevalence ratios for pregnant women with COVID-19 at delivery versus no COVID-19 were significantly higher during Omicron predominance for adverse maternal outcomes, such as ICU admission (2.7% vs 1.7%; aPR 1.64, 95% CI, 1.52–1.77) and in-hospital death (0.03% vs 0.01%; aPR 5.00, 95% CI, 2.30–10.90) and pregnancy outcomes, such as stillbirth (0.7% vs 0.6%; aPR 1.17, 95% CI, 1.01–1.36) and preterm delivery (12.3% vs 9.6%; aPR 1.28, 95% CI, 1.24–1.33).²²

COVID-19 vaccines continue to be safe when given in pregnancy for mothers and infants²⁴⁻²⁷ and vaccines have been shown to be effective against severe maternal COVID-19 outcomes.^{22 27 28} There is also some evidence that maternal mRNA COVID-19 vaccination, particularly in the third trimester, offers protection to infants in the first six months of life when they are not yet eligible

for vaccination.^{25 29} Further, in women with previous infection, boosting immunity in pregnancy through vaccination provides a more robust immune response in infants under six months of age.³⁰

In a large prospective study (INTERCOVID-2022) involving 4,618 pregnant women from 41 hospitals across 18 countries, vaccine effectiveness with respect to perinatal outcomes of COVID-19 infection during Omicron predominance were examined. COVID-19 infection at any stage in pregnancy was associated with an increased risk of maternal morbidity and mortality, especially among symptomatic and unvaccinated women. Women with complete or boosted vaccine doses had reduced risk for severe symptoms, pregnancy complications and death for up to 10 months post dose. Overall, women with a diagnosis of COVID-19 infection at any stage during pregnancy had an increased risk for maternal morbidity and mortality (relative risk [RR] 1.16 [95% CI 1.03–1.31]) and severe perinatal morbidity and mortality (RR 1.21 [95% CI 1.00–1.46]). Women with a diagnosis of COVID-19 infection also had an increased risk of severe neonatal morbidity (RR 1.23 [95% CI, 0.88–1.71]), although the lower bounds of the 95% CI crossed unity. Vaccine effectiveness (all vaccines combined: mRNA, viral vector and inactivated virus vaccine) for severe complications of COVID-19 infection for all women with a complete regimen was 48% (95% CI, 22–65) and 76% (95% CI, 47–89) after a booster dose, this rose to 74% (95% CI, 48–87) and 91% (95% CI, 65–98) respectively for women with a diagnosis of COVID-19 infection.²⁸

11. PROTEIN-BASED VACCINES

COVID-19 mRNA vaccines continue to be preferentially recommended, due to extensive safety and effectiveness data. However, protein-based vaccines may be offered to those with a contraindication to an mRNA vaccine, or to those who have chosen not to receive an mRNA vaccine. Two protein-based vaccines are currently licenced in the EU, Nuvaxovid and Bimervax. The updated Bimervax vaccine targeting XBB.1.16 is only licenced for use as a booster vaccine in those aged 16 years and older who have previously been vaccinated with an mRNA vaccine or an original Bimervax vaccine. The updated Nuvaxovid vaccine targeting XBB1.5 was authorised in the EU in October 2023. Nuvaxovid XBB.1.5 is licenced for use as the primary series or as a booster dose in individuals greater than or equal to 12 years of age following a primary series with Nuvaxovid. Nuvaxovid XBB.1.5 vaccine can be given as a booster dose in individuals 18 years of age or older following a primary series comprised of either an mRNA COVID-19 vaccine or adenoviral vector vaccine. An updated vaccine targeting JN.1 in line with WHO and EMA recommendations is in development. Nuvaxovid vaccines remain the preferred choice for protein-based vaccines as they can be administered to those who have not previously received an mRNA vaccine and may be used for both the primary series and booster doses.

12. INTERNATIONAL POSITIONS

Table 2. International recommendations regarding annual COVID-19 vaccination, or autumn 2024 vaccination as of 15 May 2024.

Country	2024 Annual/Autumn recommendations			
	Older adult age cut off	Healthcare workers	Dose in pregnancy	Immunocompromised lower age cut off
France ³¹	65 years	Not referred to specifically but available to all adults on request	Yes	6 months
Germany ³²	60 years	Yes	Not recommended if previously had 3 antigenic exposures	6 months
Netherlands ³³	60 years	Yes	Yes	6 months
Sweden ³⁴	Pending	Pending	Yes	Not specified
UK ³⁵	<i>'2024 campaign would likely be smaller than previous autumn COVID-19 campaigns'</i>	Pending	Yes	6 months
Australia ³⁶	65 years	Not referred to specifically but available to all adults on request	Not routinely recommended, however "can be considered"	5 years
Canada ³⁷	65 years	Yes	Yes	6 months
USA ³⁸	Pending	Not referred to specifically but available to all adults on request	Yes	6 months
WHO ³⁹	≥50 or ≥60 years	Yes	Yes	6 months

13. DISCUSSION

The landscape of COVID-19 continues to evolve. Due to changes in the virulence of the virus, and protection provided by vaccination and natural infection there are now fewer COVID-19 related hospitalisations, ICU admissions and deaths. However, despite this positive trend, certain vulnerable groups continue to face severe outcomes from COVID-19 infection. Hospitalisations are most frequent in older adults and those with co-morbidities. Advanced age remains the most important risk factor for severe outcomes due to COVID-19 infection. COVID-19 vaccines are being updated annually in order to best target the predominant circulating variants. The most recent studies demonstrate that COVID-19 vaccines continue to be safe and are effective at preventing severe disease and hospitalisation. However, as duration of protection wanes over time, those more vulnerable to COVID-19 infection still need to be vaccinated at least once a year to remain protected.

While the SARS-CoV-2 virus is not yet exhibiting a clear seasonal pattern, Autumn is a good time for annual vaccination campaigns against SARS-CoV-2. Timing the campaign in Autumn will provide protection against hospitalisations during the busy winter respiratory virus season when other serious respiratory viruses such as respiratory syncytial virus (RSV) and influenza are also circulating at high levels in the population.

Hospitalisations related to COVID-19 infection start to increase from aged 60 years, and thus all those aged 60 years and above are recommended to receive an COVID-19 vaccination in Autumn this year. While booster doses were previously only recommended in children aged 5 years and above with increased risk, additional doses of vaccines are now licenced down to 6 months of age and thus guidance is being updated to reflect this. In those aged 6 months-59 years, vaccination is recommended this Autumn in those who are immunocompromised and those with medical conditions associated with a higher risk of severe COVID-19 infection. The vaccine should also be available to those aged 18-59 years without associated medical conditions who, following discussion of their reasons with a health care provider, request vaccination.

While a recommendation for annual COVID-19 vaccination in older adults and children and adults with additional risk factors is likely to continue into the future, it is too soon to determine yet whether the need for an additional vaccine in the spring of each year will persist for the smaller cohort of very high-risk individuals who were recommended an additional dose this spring. Unless clear seasonality is established for SARS-CoV2, there may be a small cohort of high-risk individuals who will benefit from vaccination more frequently than once per year, NIAC will keep this question under review.

Protecting the healthcare workforce and their patients from COVID-19 infection through vaccination is important particularly during the busy winter respiratory virus season. The poor

uptake of COVID-19 and influenza vaccines among healthcare workers last season is concerning and reasons for this need to be explored. Removing any logistical barriers to vaccination by making vaccines easily accessible, including in their place of work will likely be critical to achieving good uptake.

Vaccination of pregnant women aims to protect both the woman and her baby. While the magnitude of risk of severe COVID infection in pregnant women has significantly decreased due to changes in the virus and immunity from vaccination and infection, unvaccinated pregnant women remain at higher risk of severe COVID-19 outcomes and perinatal complications than those who have been vaccinated. Moreover, the highest rates of infant hospitalisations are in those aged less than 6 months of age. These infants cannot receive COVID-19 vaccination but can be protected through passive immunity via maternal vaccination. Thus, NIAC continues to recommend COVID-19 vaccination in each pregnancy, with the aim of protecting both pregnant women and their infants.

Co-administration of COVID-19 and influenza vaccines is safe and evidence to date suggests that it does not reduce the effectiveness of either vaccine. Therefore, NIAC continues to recommend co-administration where both vaccines are indicated as this will likely improve uptake.

As the landscape of COVID-19 changes it is important that recommendations adapt accordingly. NIAC is conscious of the potential for vaccine fatigue in the population and all COVID-19 vaccine recommendations are carefully considered in this context. The current evidence supports COVID-19 vaccination this Autumn in adults aged 60 years and above, healthcare workers, children and adults at increased risk of COVID-19 related hospitalisation and vaccination in each pregnancy. NIAC continues to monitor and review emerging evidence, and recommendations may be updated accordingly.

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