

Updated Recommendation: Co-Administration of COVID-19 Vaccines

1st Revision: March 15, 2023

Overview

Recommendations on the co-administration of COVID-19 vaccines with other vaccines have evolved over time based on general immunological principles, extensive clinical experience with co-administration of non-COVID-19 vaccines, indirect evidence from studies of co-administration of COVID-19 vaccines with influenza vaccines in adults, and accumulating vaccine safety data.

In March 2022, the Ontario Advisory Committee on Immunization (OIAC) reviewed the National Advisory Committee on Immunization's (NACI) precautionary recommendation against routine co-administration of vaccines in children 5 to 11 years. OIAC likewise recommended a waiting period of at least 14 days between the administration of COVID-19 vaccine and other vaccines for children ages 5 to 11 years, but with the addition of limited exceptions including simultaneous administration of influenza vaccines for this age group.¹ In June 2022, NACI extended its recommendation permitting co-administration of COVID-19 vaccines with other vaccines for adolescents and adults to include children 5 to 11 years old,² which was subsequently adopted by the Ontario Ministry of Health in its COVID-19 vaccine guidance for health care providers.³

OIAC met on December 6, 2022 to review its previous recommendation on co-administration of COVID-19 vaccines in light of updated NACI guidance.² This document provides a summary of the evidence, considerations, and the OIAC's updated recommendation.

Recommendation

COVID-19 vaccines may be given concurrently with (i.e., same day), or at any time before or after, non-COVID-19 vaccines (including live and non-live vaccines) to individuals 6 months of age and older.

Background

As COVID-19 vaccines were authorized for each age group, NACI took a precautionary approach, initially recommending a 14-day waiting period between COVID-19 vaccine and other vaccines. With accumulating evidence, NACI recommended that COVID-19 vaccines may be given to persons 12 years and older at the same time as, or any time before or after, other vaccines in September 2021.⁴ Following Health Canada authorization of Pfizer-BioNTech pediatric (10 mcg) COVID-19 vaccine in November 2021, NACI initially recommended that COVID-19 vaccines should not be routinely co-administered with other live or non-live vaccines to children 5 to 11 years of age. This recommendation was based on the need for more post-market safety surveillance data in this age group and to prevent erroneous attribution of adverse events following immunization (AEFIs) to one particular vaccine or the other.⁵ In June 2022, following a review of available evidence on the risks and benefits of co-administration of COVID-19 vaccines with non-COVID-19 vaccines, NACI updated its overarching recommendation to allow for co-administration in children 5 to 11 years.⁶ On December 9, 2022, NACI also extended its recommendation for co-administration of COVID-19 vaccines with non-COVID-19 vaccines to include children 6 months to 4 years of age.⁷ As the NACI statement was released following the OIAC meeting, it was not available for members' review during deliberations.

A jurisdictional scan as of November 21, 2022 showed that clinical guidance from all provinces and territories were in alignment with NACI's permissive recommendation for co-administration for children 5 to 11 years, with the provinces of British Columbia and Saskatchewan additionally permitting co-administration for children 6 months to 4 years. The Canadian Paediatric Society recommends that COVID-19 vaccine be offered to children 5 to 11 years of age at the same time as other required vaccines unless there is assurance that timely administration of the other vaccines will not be compromised.⁸

Internationally, the World Health Organization Strategic Advisory Group of Experts (WHO SAGE) has recommended co-administration of COVID-19 vaccines with influenza vaccines for all eligible age groups since October 2021.⁹ WHO SAGE's initial recommendation against co-administration of COVID-19 vaccines with other vaccines for all ages was updated in August 2022, applying a 14-day waiting period between vaccines only to children under 9 years of age.¹⁰ Several international jurisdictions that offer COVID-19 vaccine to children 5 to 11 years (e.g., Austria, Belgium, Germany, Ireland, Italy, New Zealand, United Kingdom) currently recommend co-administration of COVID-19 vaccines with non-COVID-19 vaccines. France permits co-administration of COVID-19 vaccine with diphtheria, tetanus, polio, and pertussis for individuals aged 6 to 11 years,¹¹ co-administration with HPV vaccine at 11 years,¹¹ and co-administration with influenza vaccine is encouraged for persons at risk of severe illness from SARS-CoV-2 and influenza regardless of age.¹² In the United States, where COVID-19 vaccines are available for children 6 months and older, both the US Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics (AAP) recommend co-administration of COVID-19 vaccine and non-COVID-19 vaccines for all eligible children.^{13,14}

Evidence Summary and Considerations

Studies of Immunogenicity

- Two systematic reviews summarized results from three clinical trials of co-administration of COVID-19 and influenza vaccines in adults. Overall, influenza hemagglutinin and SARS-CoV-2 spike protein immune responses in co-administration groups were generally non-inferior to groups receiving either vaccine alone.¹⁵⁻¹⁹
- Observational studies of co-administration of influenza vaccines and mRNA vaccine booster doses in health care workers (HCWs) had mixed findings for immune responses against SARS-CoV-2 antigens.²⁰⁻²² For example, in a study of 64 HCWs in Italy, there were no statistically significant differences in anti-SARS-CoV-2 spike IgG levels or anti-receptor binding domain neutralizing antibodies observed between those who received a COVID-19 vaccine booster dose alone and those who received it concurrently with influenza vaccine, assessed 14 days after immunization.²⁰ In contrast, in a cohort study of 1,231 HCWs in Germany, the median anti-SARS-CoV-2 spike IgG levels were significantly higher in the booster alone group compared with the co-administration group after 14 to 90 days ($p < 0.05$); however, the authors noted that the clinical impact of this reduction in antibody levels is unclear.²¹

Vaccine Safety

- In two systematic reviews, adults in three clinical trials who received influenza and COVID-19 vaccines simultaneously had reactogenicity profiles similar to those of participants receiving COVID-19 vaccine administered alone, but higher than those of participants who received influenza vaccine alone.¹⁵⁻¹⁹
- In a cross-sectional survey of 564 HCWs in England, study participants who reported receiving influenza vaccine within 7 days of a Pfizer-BioNTech COVID-19 vaccine booster dose had similar rates of adverse events compared to those who received an influenza vaccine and mRNA booster dose more than 7 days apart.²³
- Among 981,099 persons 12 years and older receiving a COVID-19 mRNA booster dose and enrolled in v-safe, a smartphone-based voluntary vaccine safety surveillance system in the US, 92,023 (9.4%) reported simultaneously receiving their booster dose with influenza vaccine. Persons in the co-administration group were 8 to 11% more likely to report any injection site or systemic reaction compared to those who received either a Pfizer-BioNTech or Moderna booster dose alone. Most reactions were either mild or moderate. Less than 1% of persons with simultaneous administration required medical care, including 22 (0.02%) requiring hospitalization.²⁴
- Among children in Ontario, 373,796 (40.1%) aged 5 to 11 years and 24,529 (3.4%) aged 6 months to 4 years have completed their primary series of COVID-19 vaccine as of December 4, 2022.²⁵ There have been no new vaccine safety signals following receipt of COVID-19 mRNA vaccines identified in pediatric age groups.^{26,27}

- As of November 21, 2022, there were 21 AEFI reports following the co-administration of either Pfizer-BioNTech or Moderna COVID-19 vaccine and a non-COVID-19 vaccine among individuals of all ages (range 9 to 96 years) in Ontario. Adverse event reports most commonly involved co-administration of an mRNA vaccine with a seasonal influenza vaccine, which is likely related to the frequency with which these vaccines are given simultaneously compared to COVID-19 and routine vaccines. Three AEFIs occurring among older adults were classified as serious, requiring hospitalization. It is important to note that all AEFIs reported through passive surveillance are temporally related to receipt of vaccine and do not necessarily have a causal relationship with the vaccine.

Additional Considerations

- In the context of co-administration, the term acceptability refers to the willingness to receive two or more vaccines concurrently, measured before the immunization event. Systematic reviews have shown that the majority (two-thirds to greater than 98%) of surveyed adults express at least some willingness to receive COVID-19 and influenza vaccines simultaneously.^{15,16} Similarly, more than half of surveyed Canadian parents intending to vaccinate their 5-to-11 year old child against COVID-19 indicated willingness for the vaccine to be administered at the same time as influenza vaccine or routine vaccines.²⁸ In general, however, real-life acceptance, as measured by vaccine uptake, tends to be lower than measures of acceptability.^{15,16} The full extent of frequency of co-administration in Ontario is not known, due to the use of separate data systems for documentation of COVID-19 vaccines and other immunizations.
- Co-administration may offer important opportunities to improve timely vaccine coverage, for example in the current context of co-circulating influenza virus, and to facilitate catch-up of routine immunizations.¹ The informed consent process should include a discussion of risks and benefits of co-administration of COVID-19 vaccine with other vaccines given limited data.

References

1. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Ontario Immunization Advisory Committee. Recommendations: co-administration of COVID-19 vaccines in children 5-11 years [Internet]. Toronto, ON: King's Printer for Ontario; 2022 [cited 2022 Dec 16]. Available from: https://www.publichealthontario.ca/-/media/Documents/nCoV/Vaccines/2022/05/oiac-recommendations-co-covid-19-vaccines-children.pdf?rev=9496e2af27184483a26cb3df0dbda201&sc_lang=en
2. Public Health Agency of Canada; National Advisory Committee on Immunization. Canadian immunization guide: table of updates [Internet]. Ottawa, ON: Government of Canada; 2022 [modified 2022 Dec 09; cited 2022 Dec 16]. Available from: <https://www.canada.ca/en/public-health/services/canadian-immunization-guide/updates.html>
3. Ontario. Ministry of Health. COVID-19 vaccine guidance [Internet]. Toronto, ON: Queen's Printer for Ontario; 2022 [cited 2022 Dec 09]. Available from: https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_administration.pdf
4. Public Health Agency of Canada; National Advisory Committee on Immunization. Archived 17: recommendations on the use of COVID-19 vaccines [Internet]. Ottawa, ON: Government of Canada; 2021 [archived; cited 2022 Mar 22]. Available from: <https://www.canada.ca/en/publichealth/services/immunization/national-advisory-committee-on-immunizationnaci/recommendations-use-covid-19-vaccines/september-28-2>
5. Public Health Agency of Canada; National Advisory Committee on Immunization. Archived 24: recommendation on the use of the Pfizer-BioNTech COVID-19 vaccine (10 mcg) in children 5 to 11 years of age [Internet]. Ottawa, ON: Government of Canada; 2021 [cited 2022 Mar 22]. Available from: <https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/recommendations-use-covid-19-vaccines/pfizer-biontech-10-mcg-children-5-11-years-age.html>
6. Public Health Agency of Canada; National Advisory Committee on Immunization. Canadian immunization guide [Internet]. Evergreen ed. Ottawa, ON: Government of Canada; 2020 [modified 2022 Dec 09; cited 2022 Dec 16]. Part 4 - active vaccines; concurrent administration with other vaccines. Available from: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-26-covid-19-vaccine.html#a8.3>

7. Public Health Agency of Canada; National Advisory Committee on Immunization. An Advisory Committee Statement (ACS) National Advisory Committee on Immunization (NACI): updated recommendations on the use of COVID-19 vaccine booster doses in children 5 to 11 years of age and concurrent vaccine administration [Internet]. Ottawa, ON: Government of Canada; 2022 [cited 2022 Dec 16]. Available from: <https://www.canada.ca/content/dam/phac-aspc/documents/services/immunization/national-advisory-committee-on-immunization-naci/updated-recommendations-use-covid-19-vaccine-booster-doses-children-5-11-years-concurrent-administration.pdf>
8. Moore DL; Canadian Paediatric Society, Infectious Diseases and Immunization Committee. Position statement: COVID-19 vaccine for children and adolescents [Internet]. Ottawa, ON: Canadian Pediatric Society; 2022 [cited 2022 Dec 16]. Available from: <https://cps.ca/en/documents/position/covid-19-vaccine-for-children-and-adolescents>
9. World Health Organization (WHO). Coadministration of seasonal inactivated influenza and COVID-19 vaccines [Internet]. Geneva: WHO; 2021 [modified 2021 Oct 21; cited 2022 Dec 16]. Available from: https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines-SAGE_recommendation-coadministration-influenza-vaccines
10. World Health Organization (WHO), Strategic Advisory Group of Experts. Updates to product specific interim recommendations: interim recommendations for use of the mRNA vaccines BioNTech/Pfizer and Moderna against COVID-19 [Internet]. Geneva: WHO; 2022 [cited 2022 Dec 16]. Available from: [https://cdn.who.int/media/docs/default-source/immunization/sage/2022/august/11_mrnaupdates_nohynek .pdf?sfvrsn=7e05192f_3](https://cdn.who.int/media/docs/default-source/immunization/sage/2022/august/11_mrnaupdates_nohynek.pdf?sfvrsn=7e05192f_3)
11. France. Ministère de la Santé et de la Prévention. Vaccination contre le Covid-19 des 5-11 ans: Répondre aux questions des parents [Internet]. Paris, FR: Gouvernement français; 2021 [modified 2022 Aug 16; cited 2022 Dec 16]. Available from: <https://solidarites-sante.gouv.fr/grands-dossiers/vaccin-covid-19/je-suis-un-professionnel-de-sante-du-medico-social-et-du-social/article/vaccination-contre-le-covid-19-des-5-11-ans>
12. Santé publique France. COVID-19 [Internet]. Paris, FR: Gouvernement français; 2022 [modified 2022 Dec 13; cited 2022 Dec 16]. Available from: <https://vaccination-info-service.fr/Les-maladies-et-leurs-vaccins/Covid-19>
13. Centers for Disease Control and Prevention (CDC). Interim clinical considerations for use of COVID-19 vaccines currently authorized in the United States [Internet]. Atlanta, GA: CDC; 2022 [modified 2022 Dec 09; cited 2022 Dec 16]. Available from: <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html#timing-spacing-interchangeability>
14. American Academy of Pediatrics, Committee on Infectious Diseases. Policy statement: COVID-19 vaccines in infants, children, and adolescents. Pediatrics. 2022;150(3):e2022058700. Available from: <https://doi.org/10.1542/peds.2022-058700>

15. Domnich A, Orsi A, Trombetta C-S, Guarona G, Panatto D, Icardi G. COVID-19 and seasonal influenza vaccination: cross-protection, co-administration, combination vaccines, and hesitancy. *Pharmaceuticals*. 2022;15(3):322. Available from: <https://doi.org/10.3390/ph15030322>
16. Janssen C, Mosnier A, Gavazzi G, Combadière B, Crépey P, Gaillat J, et al. Coadministration of seasonal influenza and COVID-19 vaccines: a systematic review of clinical studies. *Hum Vaccin Immunother*. 2022;18(6). Available from: <https://doi.org/10.1080/21645515.2022.2131166>
17. Lazarus R, Baos S, Cappel-Porter H, Carson-Stevens A, Clout M, Culliford L, et al. Safety and immunogenicity of concomitant administration of COVID-19 vaccines (ChAdOx1 or BNT162b2) with seasonal influenza vaccines in adults in the UK (ComFluCOV): a multicentre, randomised, controlled, phase 4 trial. *Lancet*. 2021;398(10318):2277-87. Available from: [https://doi.org/10.1016/S0140-6736\(21\)02329-1](https://doi.org/10.1016/S0140-6736(21)02329-1)
18. Izikson R, Brune D, Bolduc JS, Bourron P, Fournier M, Moore TM, et al. Safety and immunogenicity of a high-dose quadrivalent influenza vaccine administered concomitantly with a third dose of the mRNA-1273 SARS-CoV-2 vaccine in adults aged ≥ 65 years: a phase 2, randomised, open-label study. *Lancet Respir Med*. 2022;10(4):392-402. Available from: [https://doi.org/10.1016/S2213-2600\(21\)00557-9](https://doi.org/10.1016/S2213-2600(21)00557-9)
19. Toback S, Galiza E, Cosgrove C, Galloway J, Goodman AL, Swift PA, et al. Safety, immunogenicity, and efficacy of a COVID-19 vaccine (NVX-CoV2373) co-administered with seasonal influenza vaccines: an exploratory substudy of a randomised, observer-blinded, placebo-controlled, phase 3 trial. *Lancet Respir Med*. 2022;10(2):167-79. Available from: [https://doi.org/10.1016/S2213-2600\(21\)00409-4](https://doi.org/10.1016/S2213-2600(21)00409-4)
20. Baj A, Gasperina DD, Focosi D, Forlani G, Ferrante FD, Novazzi F, et al. Safety and immunogenicity of synchronous COVID19 and influenza vaccination. *J Clin Virol Plus*. 2022;2(3):100082. Available from: <https://doi.org/10.1016/j.jcvp.2022.100082>
21. Wagenhäuser I, Reusch J, Gabel A, Höhn A, Lâm T, Almanzar G, et al. Immunogenicity and safety of coadministration of COVID-19 and influenza vaccination. *Eur Respir J*. 2022;61(1):2201390. Available from: <https://doi.org/10.1183/13993003.01390-2022>
22. Stefanizzi P, Tafuri S, Bianchi FP. Immunogenicity of third dose of anti-SARS-CoV-2 vaccine co-administered with influenza vaccine: an open question. *Hum Vaccin Immunother*. 2022;18(6). Available from: <https://doi.org/10.1080/21645515.2022.2094653>
23. Raw RK, Rees J, Chadwick DR. Increased adverse events following third dose of BNT162b2/Pfizer vaccine in those with previous COVID-19, but not with concurrent influenza vaccine [Internet]. medRxiv 22278986 [Preprint]. 2022 Aug 22 [cited 2022 Dec 16]. Available from: <https://doi.org/10.1101/2022.08.19.22278986>
24. Hause AM, Zhang B, Yue X, Marquez P, Myers TR, Parker C, et al. Reactogenicity of simultaneous COVID-19 mRNA booster and influenza vaccination in the US. *JAMA Netw Open*. 2022;5(7). Available from: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2794318>

25. Ontario Agency for Health Protection and Promotion (Public Health Ontario). COVID-19 vaccine uptake in Ontario: December 14, 2020 to December 4, 2022 [Internet]. Toronto, ON: King's Printer for Ontario; 2022. [cited 2022 Dec 16]. Available from: https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/covid-19-vaccine-uptake-ontario-epi-summary.pdf?rev=339c58df03b443d584555e444ab55897&sc_lang=en
26. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Adverse events following immunization (AEFIs) for COVID-19 in Ontario: December 13, 2020 to December 4, 2022 [Internet]. Toronto, ON: King's Printer for Ontario; 2022 [cited 2022 Dec 16]. Available from: https://www.publichealthontario.ca/-/media/Documents/nCoV/epi/covid-19-aei-report.pdf?rev=d5e061176fea485ea316a25e7c1c7ee9&sc_lang=en
27. Public Health Agency of Canada; National Advisory Committee on Immunization. Canadian immunization guide [Internet]. Evergreen ed. Ottawa, ON: Government of Canada; 2020 [modified 2022 Dec 09; cited 2022 Dec 16]. Part 4 - active vaccines. <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-26-covid-19-vaccine.html>
28. Humble RM, Sell H, Wilson S, Sadarangani M, Bettinger JA, Meyer SB, et al. Parents' perceptions on COVID-19 vaccination as the new routine for their children ≤ 11 years old. *Prev Med*. 2022;161:107125. Available from: <https://doi.org/10.1016/j.yjmed.2022.107125>

About the Ontario Immunization Advisory Committee

The OIAC is a multidisciplinary scientific advisory body that provides evidence-based advice to Public Health Ontario (PHO) on vaccines and immunization matters including vaccine program implementation in Ontario, priority populations and clinical guidance. The focus of the OIAC's work is on publicly-funded vaccines and immunization programs in Ontario, including COVID-19 and those under consideration for new programming. For more information about the OIAC and its members contact secretariat@oahpp.ca

Acknowledgements

This statement was prepared by the OIAC Secretariat on behalf of the OIAC. OIAC acknowledges the contribution of PHO staff within Communications Services, Library Services and Product Development and Publishing.

OIAC Members

Dr. Jessica Hopkins, co-chair
Chief Health Protection and
Emergency Preparedness Officer
Public Health Ontario

Dr. Jeffrey Pernica, co-chair
Head, Division of Infectious Disease
Department of Pediatrics
McMaster University

Dr. Juthaporn Cowan
Associate Scientist
The Ottawa Hospital Research Institute

Dr. Vinita Dubey
Associate Medical Officer of Health
Toronto Public Health

Dr. Julie Emili
Associate Medical Officer of Health
Region of Waterloo

Susie Jin
Pharmacist

Dr. Allison McGeer
Professor, Laboratory Medicine and
Pathobiology
University of Toronto
Dalla Lana School of Public Health

Dr. Justin Presseau
Scientist
The Ottawa Hospital Research Institute

Dr. Maurianne Reade
Family Physician; Associate Professor
Northern Ontario School of Medicine

Richard San Cartier
Clinical Team Lead
N'Mninoeyaa Aboriginal Health Access
Centre

Fairleigh Seaton
Director, Infectious Disease Prevention
and Environmental Health
Kingston, Frontenac and Lennox &
Addington Public Health

OIAC Ex-Officio Members

Tara Harris
Manager
Immunization and Emergency Preparedness
Public Health Ontario

Robert Lerch
Director (Acting)
Health Protection and Surveillance Policy
and Programs Branch
Ministry of Health

Dr. Fareen Karachiwalla
Associate Chief Medical Officer of
Health (Acting)
Office of Chief Medical Officer of Health,
Public Health
Ministry of Health

Dr. Sarah Wilson
Public Health Physician
Public Health Ontario

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario), Ontario Immunization Advisory Committee. Updated recommendation: co-administration of COVID-19 vaccines. Toronto, ON: King's Printer for Ontario; 2023.

Disclaimer

This document was prepared by the Ontario Immunization Advisory Committee (OIAC) for Public Health Ontario. The OIAC provides evidence-based advice to Public Health Ontario on vaccines and immunization matters. OIAC work is guided by the evidence available at the time this document was prepared. The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use. This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes may be made to this document without prior and expressed written permission from PHO.

Questions about the information in this document can be sent to secretariat@oahpp.ca.

Revision History

The following table shows the revision history of this document

Date	Version	Section	Summary of changes
March 2023	Version 2	OIAC Ex-Officio Members	Updating Dr. Daniel Warshafsky's name with Dr. Fareen Karachiwalla's name

Publication History

Published: February 2023

1st revision: March 2023

Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca

