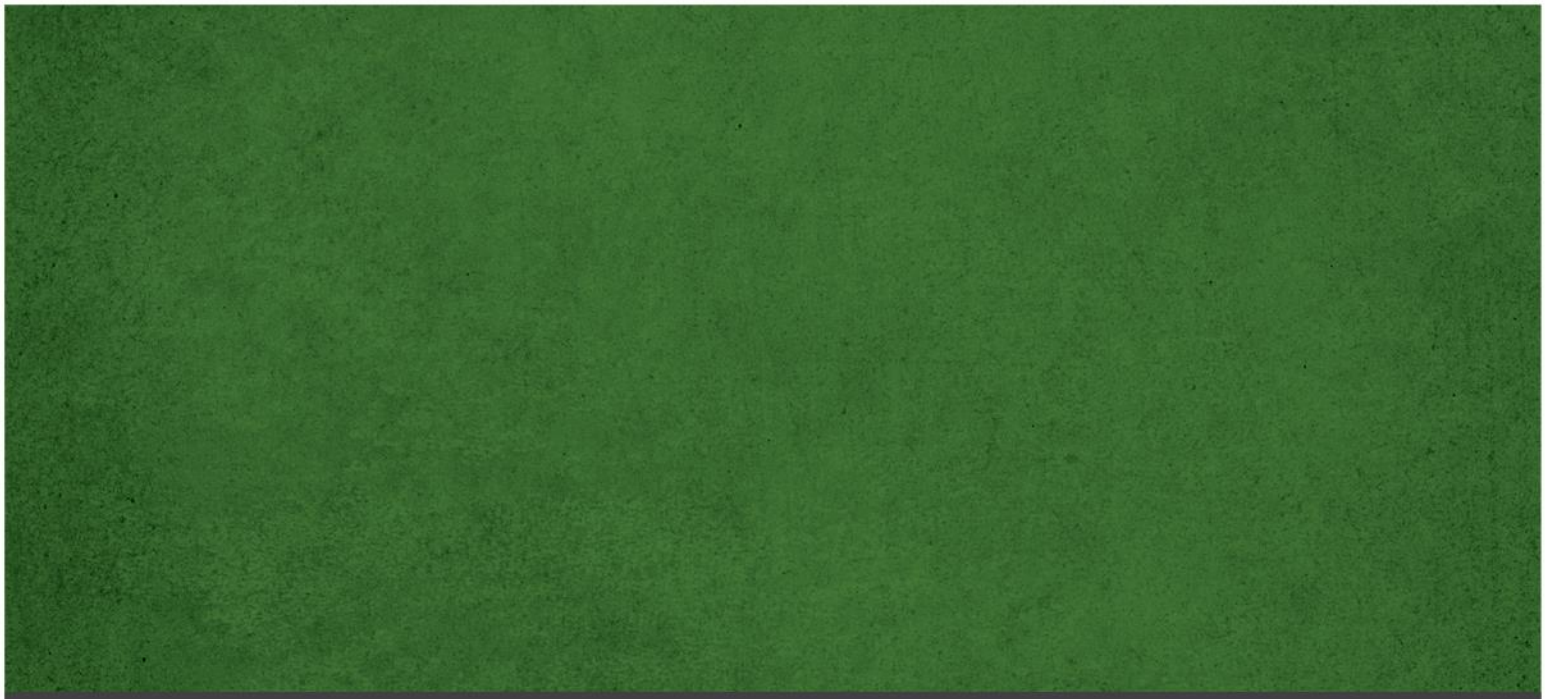
An Advisory Committee Statement (ACS) National Advisory Committee on Immunization (NACI)

Guidance on the use of COVID-19 vaccines for 2025 to summer 2026



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Également disponible en français sous le titre :

Directives sur l'utilisation des vaccins contre la COVID-19 pour la période allant de 2025 à l'été 2026

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Publication date: January 10, 2025

Cat.: HP40-376/2025E-PDF ISBN: 978-0-660-74983-9 Pub.: 240716

Preamble

The National Advisory Committee on Immunization (NACI) is an External Advisory Body that provides the Public Health Agency of Canada (PHAC) with independent, ongoing and timely medical, scientific, and public health advice in response to questions from PHAC relating to immunization.

In addition to burden of disease and vaccine characteristics, PHAC has expanded the mandate of NACI to include the systematic consideration of programmatic factors in developing evidence based recommendations to facilitate timely decision-making for publicly funded vaccine programs at provincial and territorial levels.

The additional factors to be systematically considered by NACI include: economics, ethics, equity, feasibility, and acceptability. Not all NACI statements will require in-depth analyses of all programmatic factors. While systematic consideration of programmatic factors will be conducted using evidence-informed tools to identify distinct issues that could impact decision-making for recommendation development, only distinct issues identified as being specific to the vaccine or vaccine-preventable disease will be included.

This statement contains NACI's independent advice and recommendations, which are based upon the best current available scientific knowledge. This document is being disseminated for information purposes. People administering the vaccine should also be aware of the contents of the relevant product monograph. Recommendations for use and other information set out herein may differ from that set out in the product monographs of the Canadian manufacturers of the vaccines. Manufacturer(s) have sought approval of the vaccines and provided evidence as to its safety and efficacy only when it is used in accordance with the product monographs. NACI members and liaison members conduct themselves within the context of PHAC's Policy on Conflict of Interest, including yearly declaration of potential conflict of interest.

Background

The endemic circulation of SARS-CoV-2 has allowed public health programs to shift toward longer-term planning for a more sustainable approach to managing COVID-19 disease. Internationally, strain selection assessments for COVID-19 vaccines have been occurring on a regular basis, with the COVID-19 vaccines being updated once a year, prior to the fall/winter respiratory season. Surveillance activities and programs for SARS-CoV-2 are evolving to meet information needs within the context of the ongoing circulation of the virus. At the national level, Canadian SARS-CoV-2 surveillance has been integrated into the longstanding Respiratory Virus Detection Surveillance System (RVDSS). However, there continue to be uncertainties around ongoing disease epidemiology to which immunization programs will have to adapt.

Canadian provinces and territories have been accessing supply of COVID-19 vaccines that were procured and paid for by the federal government since they first became available in December 2020. Compared to other routine immunization programs which are paid for by provinces and territories, this has been unique to the COVID-19 pandemic. A significant anticipated change is that jurisdictions will be responsible for the costs of buying COVID-19 vaccines for implementation starting in the fall of 2025. The KP.2 mRNA COVID-19 vaccines used in the 2024 to 2025 respiratory season are the last COVID-19 vaccines covered under the advance purchase agreements put in place by the federal government during the pandemic. This change has provided an opportunity for NACI to reassess key COVID-19 immunization program considerations, as well as the overall framing and approach to advice for COVID-19 vaccines going forward.

There have been several COVID-19 vaccine products authorized for use in Canada, and NACI has previously issued guidance to recommend that either mRNA or protein subunit COVID-19 vaccines can be used in the authorized age groups for protection from SARS-CoV-2. This statement is intended to assist with COVID-19 vaccine program planning for 2025 and until the summer of 2026. It is uncertain what products will be available during this period of time; the COVID-19 Chapter of the Canadian Immunization Guide will be updated to reflect the available products as appropriate. NACI will continue to monitor the evolving COVID-19 epidemiology and vaccine information and will provide updated guidance if necessary.

Methods

The NACI COVID-19 Working Group (COVID-19 WG) reviewed the available information pertaining to XBB.1.5 vaccines including vaccine effectiveness and duration of protection. The NACI COVID-19 WG also reviewed available evidence on SARS-COV-2 epidemiology as well additional considerations related to COVID-19 immunization programs, including cost-effectiveness and the timing and feasibility of COVID-19 vaccine administration.

On September 19 and November 19, 2024, NACI reviewed the evidence presented to the COVID-19 WG. Following a thorough review of the evidence and consultation at NACI meetings, the committee voted on specific recommendations. The statement was approved on December 6, 2024.

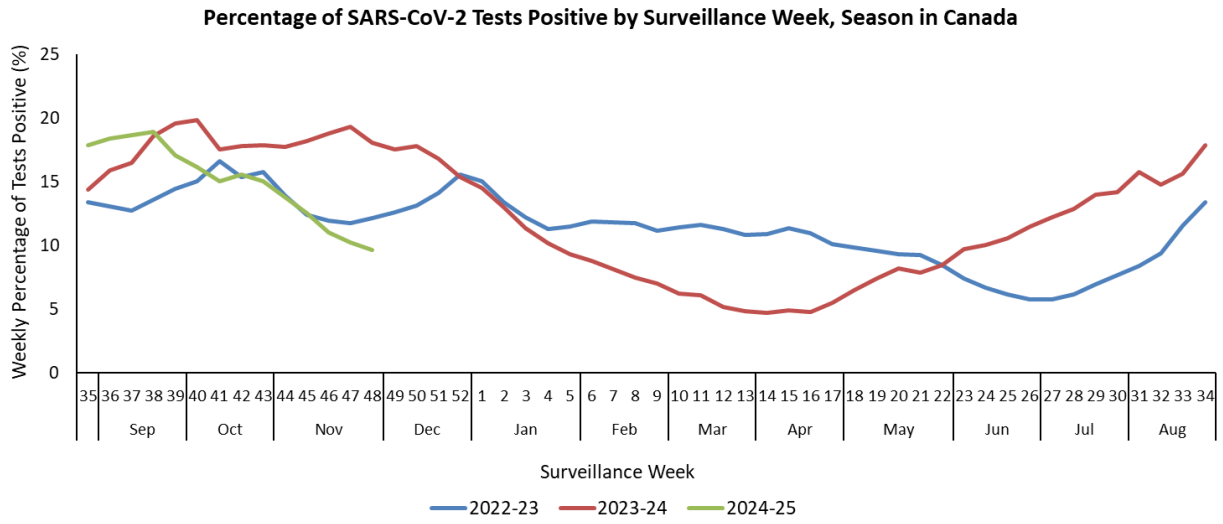
Further information on NACI's process and procedures is available elsewhere[1,2].

Overview of evidence and considerations

Epidemiology

- COVID-19 is a respiratory infection caused by SARS-CoV-2 and can cause mild to severe illness, including hospitalization and death. Certain populations, such as young infants, older adults, and those with chronic health conditions are at higher risk for serious illness.
- The evolutionary trajectory of SARS-CoV-2 is uncertain, but the virus undergoes antigenic changes over time, resulting in distinct variants or subvariants that are not as well neutralized by antibodies induced by vaccines made based on previously circulating variant or subvariants. Antigenic changes have resulted in regular reassessments of the strain(s) selected for the COVID-19 vaccines internationally.
- The seasonality of SARS-CoV-2 has not been established; however, surveillance data from the RVDSS on SARS-CoV-2 from the past few years have provided some general indications of COVID-19 epidemiology in Canada [3]. Unlike other respiratory viruses, such as influenza, respiratory syncytial virus (RSV) or other human coronaviruses, SARS-CoV-2 has been circulating year-round, with periodic surges in disease activity. As determined by percent positivity less than 10%, in 2023 COVID-19 disease activity was lowest in June and July, and in 2024 it was lowest in February, March, April and May (see Figure 1). Percent positivity increased during the summer and was consistently high during the fall months in 2022, 2023, and 2024 to date.
- Since the emergence of the Omicron variant, infection-acquired seroprevalence in the Canadian population has been high. It was previously observed among adults that infection-acquired seroprevalence decreases with increased age, with older individuals having higher levels of immunity derived from vaccination alone compared to younger age groups [4].

Figure 1. Percentage of SARS-CoV-2 tests positive by surveillance week, season in Canada (from 2022 Week 35 to 2024 week 48, RVDSS)



Vaccine effectiveness and duration of vaccine protection

- Measures of COVID-19 vaccine effectiveness are influenced by: time since the last dose of COVID-19 vaccine; the circulating strains of the virus and their relatedness to the vaccine strain; the infection pressures in the community (which can result in underestimation of VE as the unvaccinated group becomes immune from recent infection); the population being studied (impacted by factors such as age and immunocompromising conditions); and the outcomes being measured (e.g., infection, symptomatic disease, hospitalization or critical outcomes such as intensive care unit [ICU] admission or death, as well the vaccine's impact on post-COVID-19 condition).
- The comparison group for VE studies can also potentially influence the VE estimates and result in different types of VE estimates as follows: absolute VE (where the comparison group is unvaccinated), relative VE (where the comparison group has been previously vaccinated) and an incremental VE (where the comparison group is anyone, regardless of past vaccination or infection history, who did not receive the vaccine for which VE is being measured).
- While it was possible to estimate absolute VE early in the pandemic, with increasing vaccine coverage, absolute VE is now more challenging to determine. For XBB.1.5 vaccines, a number of studies measured the incremental protection of the vaccine in those who received the XBB.1.5 vaccine compared to those who did not (regardless of their past vaccination or infection history). The VE estimates are therefore incremental VE estimates, describing the added benefit of the vaccine in populations that have immunity from high rates of previous vaccinations and infections.
- Data on VE and duration of protection for the XBB.1.5 vaccine is available from several sources including Ontario, Quebec and the United States.

- **Ontario** researchers reported on a test-negative design involving people 50 years of age and over who received 2 or more mRNA vaccines and were tested by polymerase chain reaction (PCR) from September 24, 2023 to June 1, 2024 [5]. The study included 4,895 cases who tested positive for SARS-CoV-2 and were hospitalized or died and 23,223 symptomatic controls who tested negative. The study assessed the incremental VE of those who did and did not receive an XBB.1.5 vaccine against severe outcomes (hospitalization and death).
    - In the XBB-predominant period, covariate-adjusted VE was 64% up to under 3 months from vaccination, with 95% confidence intervals (CIs) that exclude zero.
    - In the JN/KP-predominant period, adjusted VE was 57% up to under 3 months from vaccination, 44% within 3 to less than 6 months from vaccination and 21% from 6 to less than 9 months from vaccination. 95% CIs excluded zero for estimates within 6 months of vaccination and included zero for estimates from 6 to less than 9 months of vaccination.
- **Quebec** researchers reported on hospitalization using a test-negative study that linked records based on laboratory test results (with cases being those with COVID-19 symptoms who tested positive by nucleic acid amplification test in an acute care hospital and were admitted with COVID-19 as the main reason, and controls being those with COVID-19 compatible symptoms who tested negative in an acute care hospital) [6]. Study participants were 60 years of age and over and the study took place between October 29, 2023 and August 17, 2024. The XBB.1.5 VE results below are the incremental VE among those who received an XBB.1.5 vaccine in the study period relative to those who did not receive the XBB.1.5 vaccine but received a monovalent or bivalent vaccine between July and December 2022. The first 7 days after vaccination were excluded from the analysis:
    - In the XBB period, VE ranged from 53.2% (95% confidence interval [CI]: 43.5 to 61.3%) at month 1 to 60.4% (95% CI: 46.0 to 70.9%) at month 2 after vaccination. There were no estimates beyond 2 months for the XBB period.
    - In the JN period, VE ranged from 27.8% (95% CI: 3.4 to 46.0%) at month 1 to 19.8% (95% CI: 0.2 to 35.5%) at month 4. In months 5 to 7, there was likely no additional vaccine protection.
    - In the KP period, VE was 67.4% (95% CI: 34.7 to 83.7%) at month 1 and 57.2% (95% CI: 29.3 to 74.1%) at month 2. VE results from months 3 to 10 suggested there was likely no additional vaccine protection.
- The **US Centers for Disease Control and Prevention (US CDC)** monitors vaccine effectiveness from a number of networks using the test-negative design assessing incremental VE in those who received an XBB.1.5 vaccine relative to those who did not (regardless of past vaccination or infection history):
    - The ICATT network of community pharmacies with data from September 2023 to May 2024 demonstrated VE of the XBB.1.5 against symptomatic disease in those 18 year of age and older of: 53% (95% CI: 44 to 61%) within 7 to 59 days of vaccination; 34% (95% CI: 22 to 44%) within 60 to 119 days of vaccination; and 47% (95% CI: 28 to 60%) within 120 to 179 days of

vaccination [7]. Looking at the 60 to 119 day interval from vaccination, results were higher for strains that were likely non-JN.1 (i.e., likely XBB) (58%, 95 CI: 33 to 73%) than for those that were likely JN.1 (37%, 95% CI: 13 to 51%).

- In the VISION network of hospitals, VE against emergency department/urgent care encounters from September 2023 to August 2024 in immunocompetent adults 18 years of age and over was: 48% (95% CI: 45 to 52%) within 7 to 59 days of vaccination; 28% (95% CI: 23 to 32%) within 60 to 119 days of vaccination; 17% (95% CI: 10 to 23%) within 120 to 179 days of vaccination and -5% (95% CI: -11 to 1%) within 180 to 299 days after vaccination [8].
- VE estimates against hospitalization in the VISION network among immunocompetent adults 18 year of age and over from September 2023 to August 2024 were as follows: 50% (95% CI: 44 to 55%) within 7 to 59 days of vaccination; 38% (95% CI: 31 to 44%) within 60 to 119 days of vaccination; 21% (95% CI: 10 to 31%) within 120 to 179 days of vaccination and -8% (95% CI: -19 to 3%) within 180 to 299 days after vaccination [8]. Estimates for those who were immunocompromised were somewhat lower than for those who were immunocompetent, with a similar pattern of waning over time.
- VE estimates against critical illness (such as intensive care admissions and deaths) in the VISION network among those 18 years of age and over from September 2023 to August 2024 were as follows: 67% (95% CI: 55 to 75%) within 7 to 59 days of vaccination; 56% (95% CI: 42 to 67%) within 60 to 119 days of vaccination; 40% (95% CI: 16 to 58%) within 120 to 179 days of vaccination and 21% (95% CI: -3 to 40%) within 180 to 299 days after vaccination [8].

- Overall, VE estimates for XBB.1.5 vaccines have demonstrated that vaccination increases protection against symptomatic disease, hospitalization and critical illness, even in populations with immunity from high rates of past infections and/or vaccinations, similar to findings from previous COVID-19 vaccines (original and bivalent vaccines). With the XBB.1.5 vaccine, VE against critical illness was somewhat higher than against hospitalization [8]**.** Protection from the XBB.1.5 vaccine against hospitalization appears to be highest in the first two months after vaccination, and declines to that of the group that did not receive the XBB.1.5 vaccine by 4 to 6 months. Protection against strains more closely related to the vaccine strain generally appear to be somewhat higher than against more distant JN.1/KP.2 strains when controlling for time since vaccination, with some unexpectedly high VE in the study by Carazo et al. in the KP period where the VE shortly after vaccination was similar in the XBB and JN periods [6].
- The mechanism of increased protection from an updated COVID-19 vaccine is likely a combination of both providing a recent vaccination that boosts the immune response and providing a vaccine that is more closely related to the circulating strain. The relative contribution of each of these factors is uncertain.
- It is expected that, similar to the experience with previous COVID-19 vaccines, the KP.2 mRNA vaccines will increase protection against a range of outcomes, with subsequent declines over time. Estimates of VE for the KP.2 vaccines are expected to become available with increased use of these vaccines.

- Hybrid immunity offers greater protection against infection and severe disease than prior infection or vaccination alone, particularly when hybrid immunity is in the context of a recent infection; however, this protection also wanes over time [9-17].

Vaccine safety

- Evidence on vaccine safety is available from COVID-19 clinical trials and ongoing national and international COVID-19 vaccine safety monitoring. No new adverse events have been identified to date with the use of any updated COVID-19 vaccines.

For more information, please see the section on Safety and adverse events in the COVID-19 Chapter of the CIG.

Economics

- An environmental scan of economic evaluations considered by other National Immunization Technical Advisory Groups (NITAGs) to inform their most recent COVID-19 vaccination program guidance was conducted. An economic evaluation using a de novo Canadian cost-utility model was also conducted.
- Two relevant economic evaluations from other NITAGs were identified:
    - Economic evaluations conducted to inform fall 2025 and spring 2026 COVID-19 vaccination recommendations by the Joint Committee on Vaccination and Immunization (JCVI) of the United Kingdom supported universal age-based vaccination in older adults, vaccination of all residents in a care home for older adults, and vaccination for all individuals aged 6 months and older who are immunosuppressed [18]. The final age cut-off for age-based vaccination was determined by the vaccine price, which is currently unknown. Using a cost-effectiveness threshold of $35,226 CAD (£20,000) per quality-adjusted life year (QALY), vaccination for all adults aged 75 years and older was recommended in the primary analysis, which assumed a combined vaccine and delivery cost of $44 CAD [19]. At lower vaccine costs (e.g., lower than a combined cost of $44), it was recommended that the program be expanded to include adults aged 70 to 74 years. If considering a higher vaccine cost, then the recommended age threshold would be higher than 75 years.
    - An economic evaluation presented to the Advisory Committee on Immunization Practices (ACIP) in the United States estimated incremental cost-effectiveness ratios (ICERs) for zero, one, or two doses per year of updated COVID-19 vaccine from the societal perspective for the various age groups [20]. Among adults aged 65 years and older, the ICER for one dose per year was $80,443 CAD per QALY and the ICER for two doses per year was $487,311 CAD per QALY. Among individuals aged 5 years to 64 years, ICERs ranged from $284,068 CAD per QALY to $457,892 CAD per QALY for one annual dose and greater than $1,000,000 CAD per QALY gained for two doses per year.
- Two de novo cost-effectiveness analyses were used to support decision-making for the use of COVID-19 vaccines in Canada.
    - The first was an evaluation of a vaccination program with features similar to NACI recommendations at the time of the analysis [21].

    - The second was a sequential analysis that evaluated the cost-effectiveness of programs with increasingly expansive age and medical-risk group eligibility to identify optimal program features. The purpose of this second analysis was to identify cost-effectiveness of different program options as procurement for COVID-19 vaccines shifts from federal to provincial and territorial procurement [22].

- The de novo static individual-based cost-utility model using the health system and societal perspectives and Canadian data showed that a vaccination strategy with key features of the currently recommended vaccination program was likely cost-effective compared to a strategy of not vaccinating [21]. These key features consisted of biannual vaccination for all adults aged 65 years and older and annual COVID-19 vaccination for people aged less than 65 years with one or more chronic medical condition (CMC). This analysis looked at the overall cost-effectiveness of the vaccination program and did not explore cost-effectiveness in different age- and medical-risk groups.
- The shift from federal to provincial and territorial procurement of vaccines provided an opportunity to assess the cost-effectiveness of the currently recommended program relative to other options and identify optimal vaccination strategies. To achieve this, an additional cost-utility analysis, using the same Canadian model, was used to examine the cost-effectiveness of vaccinating different age- and medical-risk groups in an additive fashion (i.e., starting with no vaccine program and adding in population groups sequentially) in order to identify the population groups for whom vaccination provided best value for money [22]. This analysis showed that economic benefit was dependent on the risk of experiencing severe outcomes. As such, vaccination of age groups less than 65 years was unlikely to be cost-effective using common thresholds. Results of the sequential comparisons are provided for all strategies that were not excluded due to dominance.
    - Compared to no vaccination, annual vaccination of adults aged 65 years and older was most efficient, with an ICER of $7,830 per QALY in the primary analysis, which assumed a vaccine price of $43 per dose and 10% vaccine wastage. ICERs remained less than $46,000 per QALY in scenarios assuming increased vaccine prices (up to $107 per dose) or higher vaccine wastage (up to 30%).
    - Compared to limiting annual vaccination to adults aged 65 years and older, the ICER for annual vaccination for adults aged 50 to 64 years with CMCs was $69,400.
    - Compared to annual vaccination for adults aged 50 to 64 years with CMCs along with all adults aged 65 years and older, the ICER for adding a second dose at a 6-month interval for adults aged 65 years and older was $137,505 per QALY.
    - Compared to annual vaccination for adults aged 50 to 64 years with CMCs along with biannual vaccination for all adults aged 65 years and older, the ICER for adding annual vaccination for the population aged less than 50 years with one or more CMCs was $279,975 per QALY.
    - Results were sensitive to assumptions about the seasonal distribution of cases and timing of vaccination relative to peak COVID-19 activity. If more cases occur in spring and summer than assumed in the primary analysis or there is an earlier program start date and a second dose is given at a four-month interval to better align with short-term trends in COVID-19 incidence, biannual vaccination for

adults aged 65 years and older would be the optimal strategy, using a $50,000 per QALY cost-effectiveness threshold.

- Limitations of this analysis include the exclusion of indirect effects, which may underestimate cost-effectiveness estimates, and lack of modelling for other groups recommended for vaccination the 2023 to 2024 respiratory virus season, including: individuals in or from First Nations, Inuit and Métis communities, members of racialized and other equity-denied communities, pregnant women and pregnant people, people who provide essential community services, and residents of long-term care homes and other congregate living settings, as well as average risk individuals 6 months to less than 65 years of age for whom there is a discretionary NACI recommendation. In addition, immunocompromised individuals were excluded from the model for biannual vaccination.
- In the absence of Canadian COVID-19 vaccine list prices, the primary analysis used a vaccine price of $43 per dose, or 40% of the US CDC public list price, which was informed by an unpublished analysis of relative price differential between US CDC public list prices and Canadian negotiated vaccine prices across all vaccines. Given the use of newer vaccine technologies and the shift from federal to provincial/territorial funding, higher vaccine prices are possible and were assessed in supplementary analyses. When jurisdictions are planning for program scale and budget impact, it may be prudent to use higher estimated prices to avoid underestimating program cost.
- Since rates of severe illness increase with age, the cost-effectiveness of COVID-19 vaccination programs becomes more favourable with older age thresholds. If a smaller program is desired for budgetary reasons, increasing the age threshold for the older adult population could be considered for a more efficient use of resources, recognizing that fewer cases of severe illness will be prevented with older age thresholds.

Ethics, equity, feasibility, and acceptability

- NACI continues to aim to simplify COVID-19 recommendations where possible, balancing available scientific evidence, expert advice, and programmatic considerations. While broad recommendations support access to those who want to be vaccinated, risk-based recommendations highlight those for whom vaccination is particularly important and can facilitate more tailored communication of guidance to individuals at high-risk. Complexity of vaccine recommendations may impact uptake by making it challenging for providers and the public to determine who is recommended to receive updated COVID-19 vaccines.
- Vaccine uptake has declined over time and with each update to the COVID-19 vaccine, but continues to be highest in older adults (particularly those 80 years of age and older).
- Individuals in or from First Nations, Inuit or Métis communities in Canada have a younger age distribution compared to the general Canadian population but have also been observed to have increased risk for severe COVID-19 illness due to a variety of intersecting factors including medical conditions resulting from intersecting health determinants. These intersecting health determinants include social, environmental, and economic factors, rooted in historic and ongoing colonization and systemic racism (i.e., structural inequity). Therefore, these demographic and intersecting health determinants should be considered when making age-based recommendations for immunization programs to offer optimal protection to individuals in or from these communities. Autonomous decisions should be made by Indigenous Peoples with the support of

culturally safe healthcare and public health partners in accordance with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

- Social inequities have contributed to increased risk of exposure to and severe disease from SARS-CoV-2. Throughout the pandemic, NACI has acknowledged that racialized, marginalized and other equity-denied populations in Canada were disproportionately affected by COVID-19. Systemic barriers to accessing necessary supportive care for COVID-19 included factors such as poverty, systemic racism, and being unhoused.

Timing of immunization programs and vaccination

- To date, COVID-19 vaccination programs initiated in the fall have relied on the longstanding infrastructure for influenza vaccination campaigns, with both vaccines being offered during the same period. While this approach is advantageous operationally, it is ultimately timed around offering the influenza vaccine (starting October/November) prior to the increase in influenza activity which typically begins in November. COVID-19 vaccination programs offered in the spring have also varied across jurisdictions, with different eligibility, timing, and extent of program promotion.
- In both 2023 and 2024, COVID-19 vaccine programs were not optimally timed for maximum benefits for either the fall or spring doses. Based on epidemiology in the past two years as represented by percentage of positive tests in Figure 1, SARS-CoV-2 activity appears to be lowest in the spring with increases in activity starting in early to late summer. It is uncertain if the trend towards lower SARS-CoV-2 activity in the spring will also be present in the upcoming years, and whether this can be used to plan the timing of upcoming COVID-19 vaccination.
- Since late August 2022, increases in SARS-CoV-2 percent positivity have been consistently observed from late summer through to early January. The surge in COVID-19 disease that takes place when other fall and winter respiratory viruses are also circulating can compound the impact on the health system.
- As discussed in the previous section, the cost-effectiveness of the COVID-19 immunization program, particularly for those recommended two doses per year, is impacted by program timing.
- Optimally, the timing of vaccination programs could be based on the evolving epidemiology; however, the lead time required to plan, communicate and implement vaccination programs likely make this approach to program delivery challenging. If observations based on percent positivity from the previous two years continue (which is uncertain) and based on approximately 4 to 6 months of added protection against severe disease from a recent vaccination (which is highest within the first 2 months after vaccination), optimal timing of vaccines could be in July and November. However, there are number of significant feasibility and acceptability considerations with this possible approach, particularly if the updated COVID-19 vaccine is authorized in September/October (which has been the case in preceding years) which limits its potential utility including:
    - The need to offer the July dose with the preceding year's formulation that could result in lower vaccine effectiveness and less public acceptance than using an updated vaccine.
    - A July dose would require an immunization program separate from the influenza program, while the November dose may not be optimally timed for concurrent

administration with influenza vaccine in some jurisdictions/programs. Separating COVID-19 vaccination from influenza vaccination results in more resources and costs required for these vaccination programs and more patient visits for vaccinations.

    - It is possible that the epidemiologic picture based on the past few years may not persist. Additional years of epidemiological data will allow for a better understanding of patterns of endemic SARS-CoV-2 disease activity.

- Should ongoing SARS-CoV-2 epidemiology indicate that activity is lowest in the spring and increases during the summer and remains high into early January, advancing the timing of strain selection, authorization and availability to support availability of an updated COVID-19 vaccine in the early summer would be optimal.

Other considerations

- With the uncertainty regarding the optimal timing of COVID-19 immunization programs, there is a move away from referring to the doses as “spring and fall doses” for those who were previously vaccinated, and instead referring to one or two doses per year, with a minimum interval of 3 months between doses to allow for maximum flexibility around timing.
- NACI is currently providing advice for all of 2025 and the first half of 2026, and will continue to assess the timing of vaccine advice on an as needed basis, considering factors such as the epidemiology of the disease and any newly authorized COVID-19 vaccine products.
- The COVID-19 vaccine landscape continues to evolve with the development of COVID-19 and influenza combination vaccines. Factors that will be considered with regard to combination products include: the epidemiology of both diseases, including the timing of virus circulation; the immunogenicity and/or efficacy/effectiveness and safety of the combination vaccines relative to each of its components given separately; the cost of the combination product relative to the sum of its components; and feasibility considerations, including the ease of administering only one product instead of two, and storage and handling considerations. In addition, it is anticipated there will be opportunity to review risk factors for COVID-19 again, including in pregnant women and pregnant people.

For further information on NACI's recommendations on the use of COVID-19 vaccines, please refer to NACI: Statements and publications and the COVID-19 vaccine chapter of the CIG.

Choice of COVID-19 vaccine

- The decision to include specific vaccines as part of provincial and territorial programs depends on several factors, including availability, vaccine characteristics, cost-effectiveness evaluation, and other programmatic and operational factors, such as implementation strategies.
- Unique to the COVID-19 vaccine context is that acceptability and access to COVID-19 vaccines have been influenced by earlier preferential recommendations for mRNA vaccines. The preferential recommendation is no longer in place (see NACI Updated guidance on the use of protein subunit COVID19 vaccine [Novavax Nuvaxovid]). Product preferences may continue to exist within the population because of the past products they received, and considerable public awareness that developed during the pandemic

around specific COVID-19 vaccine products. Public health programs should consider the impact of limiting access to only one COVID-19 vaccine platform on vaccine acceptance and uptake.

Recommendations

Please see Table 1 for an explanation of strong versus discretionary NACI recommendations.

The following recommendations apply for all of 2025 and up to the summer of 2026.

Recommendations 1A and 1B pertain to both those previously vaccinated and unvaccinated, while Recommendations 2A and 2B pertain only to those previously vaccinated.

For those previously vaccinated:

- Recommendations 1A and 1B indicate who should or may, respectively, receive at least one dose per year; and
- Recommendations 2A and 2B indicate who should and may, respectively, receive two doses per year.

Recommendation 1A. NACI recommends a COVID-19 vaccine for previously vaccinated and unvaccinated individuals at increased risk of SARS-CoV-2 exposure or severe COVID-19 disease, which includes the following individuals:

- **All adults 65 years of age or older**
- **Those 6 months of age and older who are:**
    - **Residents of long-term care homes and other congregate living settings**
    - **Individuals with underlying medical conditions that place them at higher risk of severe COVID-19, including children* with complex health needs**
    - **Pregnant women and individuals who are pregnant**
    - **Individuals in or from First Nations, Inuit and Métis communities****
    - **Health care workers and other care providers in facilities and community settings*****
    - **Members of racialized and other equity-denied communities******

* There is limited evidence on clinical risk factors for severe COVID-19 disease in pediatric populations. Children at increased risk for severe outcomes may include children who are medically fragile/have medical complexities, children with more than one comorbidity, children with neurological disorders, children with chronic lung disease, and children with Down syndrome (Trisomy 21), and other immunocompromising conditions.

** Autonomous decisions should be made by Indigenous Peoples with the support of healthcare and public health partners in accordance with UNDRIP.

*** For the purposes of this statement, health care workers (HCWs) and other care providers in facilities and community settings refers to HCWs, care providers, emergency response workers (i.e., first responders including fire, police, and ambulance), those who work in continuing care or long-term care facilities or residences, those who provide home care for people at high risk, and students of related health care services. HCWs include any person, paid or unpaid, who provides services, works, volunteers, or trains in a hospital, clinic, or other health care facility.

**** Social inequities have contributed to increased risk of exposure to and severe disease from SARS-CoV-2. Throughout the pandemic, NACI has acknowledged that racialized, marginalized and other equity-denied populations in Canada were disproportionately affected by COVID-19. Systemic barriers to accessing necessary supportive care for COVID-19 included factors such as poverty, systemic racism and being unhoused. These groups remain populations recommended for vaccination to recognize the health inequities these individuals may continue to face in the post-pandemic context.

(*Strong NACI recommendation*)

Recommendation 1B. NACI recommends that all other previously vaccinated and unvaccinated individuals (6 months of age and older) who are not at increased risk for SARS-CoV-2 exposure or severe COVID-19 disease (i.e., not on the list above in Recommendation 1A) may receive a COVID-19 vaccine.

(*Discretionary NACI recommendation*)

Considerations:

- Unvaccinated individuals can be offered COVID-19 vaccination at any time as SARS-CoV-2 circulates year-round. Unvaccinated individuals would receive COVID-19 vaccine according to the recommended schedule based on age, with one or two additional doses for those who are moderately to severely immunocompromised.
    - New recipients of hematopoietic stem cell transplantation (HSCT) and chimeric antigen receptor (CAR) T-cell therapy are considered immunologically naïve and should be vaccinated beginning at 3 to 6 months post-HSCT/CAR T-cell therapy, regardless of previous vaccination history. These individuals should receive a 3-dose series of COVID-19 vaccine, 4 to 8 weeks apart.
    - Please see the COVID-19 Chapter of the CIG for vaccine schedules for unvaccinated individuals.
- Previously vaccinated individuals would receive one dose of COVID-19 vaccine per year, except for those specified in Recommendations 2A and 2B, who should or may, respectively, receive two doses in a given year.
- For those previously vaccinated, provinces and territories will determine the timing of the annual dose considering factors such as the increased feasibility of concurrent administration with influenza vaccine, the timing of availability of updated COVID-19 vaccines, and the previous years' COVID-19 epidemiologic patterns and emerging epidemiologic information, if applicable, available and feasible. The minimum interval from the previous dose is 3 months.
- The most recently updated COVID-19 vaccines available should be used for the annual dose for those previously vaccinated and for vaccination of previously unvaccinated individuals.
- Recognizing that vaccine protection is higher shortly after vaccination, people may make individual decisions regard the optimal time for their COVID-19 vaccine dose considering factors such as time since their last COVID-19 vaccine dose or test-confirmed SARS-CoV-2 infection, extent of circulation in SARS-CoV-2 in the community, and upcoming major events such as travel, significant medical procedures or large gatherings.

- In the current epidemiologic context, NACI has focused its recommendations for occupational groups on health care workers (HCWs) and other care providers as these individuals may be required to care for those who have COVID-19 and/or work in environments where patients with COVID-19 are being treated. These workers may be placed at risk of exposure due to their work, and under the ethical principal of reciprocity should have access to measures to protect themselves from infection and subsequent complications, including personal protective equipment and vaccination.

In addition to Recommendation 1A, some previously vaccinated individuals at increased risk of severe COVID-19 disease are recommended a second dose of COVID-19 vaccine per year.

Recommendation 2A. NACI recommends the following individuals should receive a second dose of COVID-19 vaccine per year:

- **Adults 80 years of age or older**
- **Adult residents of long-term care homes and other congregate living settings for seniors**
- **Individuals 6 months of age and older who are moderately to severely immunocompromised (due to an underlying condition or treatment)**

(*Strong NACI recommendation*)

Recommendation 2B. NACI recommends the following individuals may receive a second dose of COVID-19 vaccine per year:

- **Adults 65 to 79 years of age**

(*Discretionary NACI recommendation*)

Considerations:

- Certain individuals at increased risk of severe COVID-19 disease would benefit from two doses of COVID-19 vaccine per year, given the year-round circulation of SARS-CoV-2 and the anticipated duration of vaccine protection.
- Provinces and territories will determine the timing of the two doses for previously vaccinated individuals at increased risk of severe COVID-19 disease, and should consider the previous years' COVID-19 epidemiologic patterns and emerging epidemiologic information if applicable, available and feasible. The minimum interval between doses is 3 months.
- In the first half of 2025, the JN.1/KP.2 vaccine that became available in fall 2024 will be used in immunization programs. The availability of an updated COVID-19 vaccine product in 2025 will determine the product used later in 2025 (i.e., in fall of 2025) and for the first half of 2026.

- Age and living setting continue to be used as proxies for frailty in older adults, as they are easier to measure and operationalize. The risk of severe illness from COVID-19 is highest in adults 80 years of age and older, and is also higher among those who are more frail at any age. As the risk of severe illness from COVID-19 follows an age-related gradient of risk in older adults, it continues to be important that adults 65 to 79 years of age are able to access biannual COVID-19 vaccination.

Summary of evidence and rationale:

- The use of the terms “annual dose” or “two doses per year” rather than a fall/spring dose provide flexibility for programs to determine the best time to offer immunization programs based on factors such has local/regional epidemiology and feasibility, although it is possible that the vaccines may continue to be offered during the fall and spring time periods.
- NACI is now referring to a minimum interval between vaccine dose (of 3 months) to support flexibility in timing of vaccination programs by provinces and territories. As well, individuals/immunizers may consider delaying COVID-19 vaccination for previously vaccinated individuals by 3 months if they have a recent test-confirmed SARS-CoV-2 infection.
- Based on age and vaccine availability, either an mRNA (for those 6 months of age and older) or protein subunit COVID-19 vaccine (for those 12 years of age and older) can be used in unvaccinated or previously vaccinated individuals who do not have contraindications to the vaccine.
- Consistent with previous guidance, COVID-19 vaccines may be given concurrently (i.e., same day), or at any time before or after non-COVID-19 vaccines (including live and non-live vaccines).
- COVID-19 vaccination programs may be cost-effective when focused on groups at higher risk of severe disease. If a smaller program is desired for budgetary reasons, increasing the age threshold for the older adult population could be considered for a more efficient use of resources, recognizing that fewer cases of severe illness will be prevented with older age thresholds.
- Jurisdictions may consider using a higher estimated vaccine price for program planning purposes than used in the economic models in this statement to avoid underestimating budget requirements in the face of uncertain vaccine prices.
- SARS-CoV-2 strains may continue to mutate, with different variants or sublineages emerging that are not as closely related to available vaccines. Regulatory bodies may recommend one (or more) updates to the antigenic target of COVID-19 vaccines in 2025. Using an updated vaccine is expected to provide better immune responses against circulating SARS-CoV-2 strains compared to earlier vaccines. However, a certain degree of cross-reactive immune response and associated cross-protection from recent vaccination, regardless of the strain in the vaccine, can be expected based on evidence with COVID-19 vaccines to date.
- In the post-pandemic context, and as with any immunization program, efforts should continue to be made to ensure consideration of the needs of diverse population groups, based on health status, ethnicity or culture, ability, and other socioeconomic and demographic factors that may place individuals in vulnerable circumstances (e.g., occupational, social, economic or biological vulnerabilities). These efforts should include

integrating the values and preferences of these populations in vaccine program planning and building capacity to ensure access, convenience, and acceptability of immunization services.

Research priorities

- Continuous monitoring of data on the safety, immunogenicity, efficacy, and effectiveness of COVID-19 vaccines, including with updated vaccine products, through clinical trials and studies in real-world settings, including the degree and duration of protection conferred against circulating variants/sublineages. The research should also consider the clinical implications of previous SARS-CoV-2 infection and repeated immunization. Studies to assess vaccine effectiveness against a range of outcomes, including asymptomatic infection, transmission, symptomatic disease, severe disease, and the potential long-term consequences of infection with SARS-CoV-2 such as post-COVID-19 condition and persistent functional decline.. The impact of the updated strain compared to receiving a recent vaccine (regardless of strain) on raising vaccine effectiveness should be assessed if possible.
- Continuous monitoring VE in special populations at high risk of severe outcomes. This would include further evaluations of the optimal vaccine schedule and vaccine dosage for individuals who are moderately to severely immunocompromised to provide optimal vaccine effectiveness and duration of protection.
- Continuous monitoring of the epidemiology of COVID-19, including SARS-CoV-2 variants/sublineages and seasonal trends, to inform future programs and the optimal timing for vaccination programs.
- The impact on short-term and long-term immunity, as well as long-term implications (i.e., risk of post-COVID-19 condition, links to other health outcomes [e.g., development of autoimmune or metabolic disease]) when the first immunological exposure is infection compared to vaccination, and vice-versa.
- Further evaluations on the safety, immunogenicity, and effectiveness on the concurrent administration of COVID-19 vaccines with other vaccines across different age groups.
- Continuous monitoring of vaccine acceptance and coverage in Canada, for COVID-19 vaccines and other routine vaccines, including consideration of measures that may reduce the risk of disparities in vaccine confidence and uptake across different sub-populations (including individuals in racialized and other equity-denied communities who may be disproportionately affected due to intersecting equity factors).

Table 1. Strength of NACI recommendations

Strength of NACI recommendation *based on factors not isolated to strength of evidence* (e.g., public health need)	**Strong**	**Discretionary**
Wording	"*should/should not be* offered"	"*may/may not be* offered"
Rationale	Known/anticipated advantages outweigh known/anticipated disadvantages ("should"), OR Known/Anticipated disadvantages outweigh known/anticipated advantages ("should not")	Known/anticipated advantages are closely balanced with known/anticipated disadvantages, OR uncertainty in the evidence of advantages and disadvantages exists
Implication	A strong recommendation applies to most populations/individuals and should be followed unless a clear and compelling rationale for an alternative approach is present.	A discretionary recommendation may be considered for some populations/individuals in some circumstances. Alternative approaches may be reasonable.

Abbreviations

ACIP	Advisory Committee on Immunization Practices (United States)
CAR	Chimeric antigen receptor
CI	Confidence interval
CIG	Canadian Immunization Guide
CMC	Chronic medical condition
COVID-19 WG	COVID-19 Working Group
HCW	Health care worker
HSCT	Hematopoietic stem cell transplantation
ICER	Incremental cost-effectiveness ratio
ICU	Intensive care unit
JCVI	Joint Committee on Immunisation (United Kingdom)
NACI	National Advisory Committee on Immunization
NITAG	National Immunization Technical Advisory Group
PCR	Polymerase chain reaction
PHAC	Public Health Agency of Canada
QALY	Quality-adjusted life year
RSV	Respiratory syncytial virus
RVDSS	Respiratory virus detection surveillance system
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
US CDC	United States Centres for Disease Control and Prevention
VE	Vaccine effectiveness

Acknowledgments

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NACI gratefully acknowledges the contribution of: J Daniel, R Miranda, M Salvadori, A Howarth, and the NACI Secretariat.

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