COVID-19 Vaccine – mRNA
Moderna Spikevax Original (Non-Bivalent) - Frozen Vaccine (SpikeVax)

Children 6 months to 5 years of age

Revision Date: April 21, 2023

Rationale for Update:
- Updated indications section to reflect unavailability of Moderna Original vaccine products for children 6 years of age and older.

This policy is evergreen and will be updated as new information becomes available.

Please consult the Product Monograph\(^1\) for further information about the vaccine.

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Moderna</th>
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<tbody>
<tr>
<td>Licensed use</td>
<td>6 months to 5 years of age</td>
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</table>
| Composition/Platform Vaccine Type | • Nucleoside-modified messenger RNA (modRNA) encoding the viral spike glycoprotein\(^1\)  
• Formulated in lipid nanoparticles (LNPs)\(^1f\)  
• No adjuvants, preservatives, antibiotics or human- or animal-derived materials\(^1\) |
| Indications for use of vaccine | Children 6 months to 5 years of age  
• Vaccine type/dosage is based on age at presentation.  
• The same mRNA COVID-19 vaccine product should be offered for the complete primary vaccine series\(^2\). However, in the event that the vaccine used to initiate the primary series is unavailable, the primary series can be completed using either the Pfizer or Moderna product in any combination as long as the required number of doses are provided as per the following schedule:\(^2\)  
  - **For Immunocompetent children:**  
    - Dose 1: day 0  
    - Dose 2: at least 8 weeks after dose 1  
    - Dose 3: at least 8 weeks after dose 2  
  - **For Immunocompromised children:**  
    - Dose 1: day 0  
    - Dose 2: at least 28 days after dose 1  
    - Dose 3: at least 8 weeks after dose 2  
    - Dose 4: at least 8 weeks after dose 3 |

Note:
For children beginning their COVID-19 vaccine primary series at 5 years of age, Pfizer-BioNTech pediatric vaccine is preferred to SpikeVax (6m-5yr) vaccine.

<table>
<thead>
<tr>
<th>Dose</th>
<th>0.25 mL (25 mcg)</th>
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<tr>
<td>Route</td>
<td>Intramuscular injection</td>
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### Schedule for Individuals with certain Immunocompromising conditions

#### Primary series 2 doses, if using Moderna for both doses:¹

- Dose 1: day 0
- Dose 2: at least 8 weeks after dose 1²

**Note:**

- Recommended spacing between dose 1 and dose 2 is at least 8 weeks.²
- Currently, there is no direct evidence to establish an optimal interval between doses in the 6 months to 5 years of age population. However, evidence on COVID-19 mRNA vaccines in adolescents and adults shows that extending the interval between the first and second dose by several weeks leads to even higher immune responses and better protection against COVID-19 infection that is also expected to last longer.
- A shortened interval between dose 1 and dose 2 (no less than 28 days) may be considered in certain situations: required for travel, increased risk of infection based on local transmission or the degree of individual risk of exposure.
- Minimum spacing between dose 1 and 2 is 28 days and is required for a dose to be considered valid.
- Currently, no data on a maximum interval between doses is available. In general, regardless of the time between doses, interruption of a vaccine series does not require restarting the series.²
- While there is no preferential recommendation between Moderna and Pfizer for children 6 months to 4 years of age without eligible immunocompromising conditions, when advising the parent/guardian of a child, immunizers should review the number of doses, the timeline required to complete a primary series and the risk associated with incomplete protection during this timeline.
  - The total length of time it takes to complete a two-dose Moderna primary series is 8 weeks, compared to a three-dose Pfizer primary series at the recommended intervals is 16 weeks.

#### Primary series 3 doses, if using Moderna for all doses:¹

- Dose 1: day 0
- Dose 2: 28 days after dose 1
- Dose 3: 8 weeks after dose 2

- A primary series of three doses of the Moderna original (non-bivalent) vaccine (6m-5yr) is preferentially recommended over the four dose primary series of the Pfizer original (non-bivalent) vaccine (6m-4yr) for children with eligible immunocompromising conditions.²
  - The total length of time it takes to complete a four-dose Pfizer primary series at the recommended intervals is 20 weeks, compared to a three-dose Moderna primary series that takes 12 weeks to complete.
  - When advising the parent/guardian of a child, immunizers should consider the number of doses, the timeline required to complete a primary series and the risk associated with incomplete protection during this timeline.
If Moderna and Pfizer products are used to complete a primary series, the schedule found in the “Indications for Use” section is to be used.

- It is recommended that the interval between dose 1 and dose 2 be 28 days and the interval between dose 2 and dose 3 be 8 weeks.
- The interval between dose 2 and dose 3 is recommended to be 8 weeks because emerging evidence from the older general population indicates that a longer interval will likely result in a better immune response and longer duration of protection.
- However, there is heterogeneity among those who are moderately to severely immunocompromised, and risks from COVID-19, as well as the likelihood of a reduced response to vaccines, will vary depending on the immunocompromising condition. Thus, a shortened interval no less than 28 days between dose 2 and 3 may be considered for those with increased risk for exposure and greater severity of immunodeficiency, based on their clinician’s recommendation.
- There are currently no data on the safety, immunogenicity, or efficacy of an additional dose of a COVID-19 vaccine in children 6 months to 5 years of age who are immunocompromised; studies have shown that a third dose of an mRNA vaccine leads to increased immune response in some adults who are immunocompromised. The additional dose provides another opportunity for those who are immunocompromised to develop a better immune response and in turn better protection against COVID-19.
- Specific immunocompromising conditions that make an individual eligible:
  - solid organ transplant recipients — pre-transplant and post-transplant
  - hematopoietic stem cell transplant recipients — pre-transplant and post-transplant while in immunosuppressed state (post-HSCT individuals are generally considered to be immunocompetent after 3 years as long as they are not on immunosuppressive drugs)
  - individuals with malignant hematologic disorders and non-hematologic malignant solid tumors prior to receiving or receiving active treatment which includes chemotherapy, targeted therapies, and immunotherapy or having received previous COVID-19 vaccines while on active treatment (does not include individuals receiving solely hormonal therapy, radiation therapy or a surgical intervention).
  - individuals with chronic kidney disease on peritoneal dialysis or hemodialysis.
  - individuals receiving chimeric antigen receptor (CAR) T-cell therapy.
  - individuals on:
    - long term high-dose systemic steroid treatment (prednisone equivalent of ≥ 2 mg/kg/day or 20 mg/day if weight > 10 kg, for ≥ 14 days), or
    - alkylating agents, or
    - anti-B-cell therapies – including anti-CD19, anti-CD20, anti-CD22 and anti-CD52 monoclonal antibodies (such as rituximab, ocrelizumab, and ofatumumab), or
    - antimetabolites (e.g. methotrexate, azathioprine, mycophenolate), or
    - tumor-necrosis factor (TNF) inhibitors (e.g., adalimumab, certolizumab, etanercept, golimumab, infliximab), or
    - other agents that are significantly immunosuppressive at clinicians’ discretion.
<table>
<thead>
<tr>
<th>HIV-infected individuals without viral suppression or those with acquired immunodeficiency syndrome (AIDS).</th>
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<tbody>
<tr>
<td>individuals with moderate to severe primary immunodeficiency (e.g., DiGeorge syndrome, Wiskott-Aldrich syndrome).</td>
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</table>

**Note:**
- Documentation of immunocompromising conditions is not required. Individuals who identify themselves as meeting at least one of the criteria above should be offered the 3 dose primary series.
- Immunization for immunocompromised individuals should occur at a time when the individual is most likely to mount an immune response. Physician consultation is recommended regarding the timing of immunization (initiation and interval) based on the individual's treatment and unique circumstances.
- Hematopoietic stem cell transplant (HSCT) recipients who received COVID-19 vaccine pre-transplant are eligible to restart their COVID-19 vaccine series beginning at least 3 months post-transplant. Consultation with their HSCT physician is not necessary as long as the initial clearance letter has been received to proceed with inactivated vaccines.
- CAR T-cell therapy recipients (who are not HSCT recipients) who received COVID-19 vaccine pre-CAR T-cell therapy are eligible to restart their COVID-19 vaccine series beginning at least 3 months post CAR T-cell therapy. Consultation with their physician is not necessary as long as a clearance letter has been received to proceed with inactivated vaccines.
- For individuals who receive both HSCT and CAR T-cell therapy, see the HSCT guidance:
  - Principles of Immunization in Hematopoietic Stem Cell Transplant Recipients and Solid Organ Transplant Recipients
  - Child HSCT Recipients.

**Interval between previous COVID-19 infection and COVID-19 immunization**

For individuals with a history of COVID-19 infection the following guidance is provided on suggested intervals between infection and COVID-19 immunization.2

**Note:**
- These suggested intervals are based on immunological principles and expert opinion, and may change as evidence on COVID-19, variants of concern (VOCs), and COVID-19 vaccines emerge. When considering whether or not to administer vaccine doses following the suggested intervals outlined in this table, biological and social risk factors for exposure (e.g., local epidemiology, circulation of VOCs, living settings) and risk of severe disease should also be taken into account. These intervals are a guide and clinical discretion is advised. Individuals can be immunized at less than the recommended intervals from infection upon request.
- For individuals who have not had any previous doses, they may receive their first dose after acute symptoms of COVID-19 have resolved and they are no longer considered infectious, or they may follow these suggested intervals (with the exception of those with MIS-C who should wait at least 90 days).

**Interval between previous COVID-19 infection and COVID-19 immunization (cont.)**

<p>| Infection prior to initiation or completion of a primary COVID-19 immunization series | Individuals without certain immunocompromising conditions AND no history of multisystem inflammatory syndrome in children (MIS-C), | 8 weeks after a positive test. |</p>
<table>
<thead>
<tr>
<th>Condition</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals with certain immunocompromising conditions (as listed above) AND no history of MIS-C,</td>
<td>4 to 8 weeks after a positive test.</td>
</tr>
<tr>
<td>History of MIS-C (regardless of immunocompromised status),</td>
<td>Receive the vaccine when clinical recovery has been achieved or at least 90 days since the onset of MIS-C, whichever is longer.</td>
</tr>
</tbody>
</table>

### Contraindications
- Known severe hypersensitivity to any component of the vaccine.¹
- Two non-medicinal ingredients in the vaccine that have been associated with allergic reactions in other products
  - Polyethylene glycol (PEG). The potential allergen may be found in bowel preparation products for colonoscopy, laxatives, cough syrup, cosmetics, contact lens care solutions, skin products and some food and drinks.²,³
  - Tromethamine (trometamol or Tris) – component found in contrast media, oral and parenteral medications.²
- Anaphylaxis to a previous dose of SpikeVax (6m-5yr) vaccine.

### Precautions
- Individuals who have had a serious allergic reaction to another vaccine, drug or food should talk to their health care provider before receiving the vaccine.²,³
- Individuals receiving anticoagulant therapy or those with a bleeding disorder that would contraindicate intramuscular injection should not be given the vaccine unless the potential benefit clearly outweighs the risk of administration.¹
- Administration should be postponed in individuals suffering from acute severe febrile illness.¹,²
- Immunization of children with a previous history of MIS-C should be postponed until clinical recovery has been achieved or until it has been 90 days or greater since diagnosis, whichever is longer.

### Myocarditis
- The clinical trials for children 6 months to 5 years of age did not identify any cases of myocarditis following immunization with Moderna vaccine; however, rare, or very rare adverse events that occur at the frequency of less than 6 in 10,000 would not be detected with that trial size.²
- At this time, the risk of myocarditis/pericarditis after receiving SpikeVax (6m-5yr) vaccine including after the second dose when using an extended interval of at least 8 weeks and after a third dose in individuals aged 6 months to 5 years of age are unknown. More information is needed.
- Canadian and international post-market safety surveillance data for other mRNA COVID-19 vaccines in older populations have reported the rare risk of myocarditis and/or pericarditis with mRNA vaccines, which varies by sex, age, interval between doses, vaccine dose, and vaccine product. Current data suggests the risk of myocarditis and/or pericarditis in children 5 to 11 years of age is lower than that of adolescents or young adults.²
- Available information on myocarditis and/or pericarditis following mRNA vaccines (from individuals twelve years of age and older) indicates that cases of myocarditis and pericarditis:
  - occur more commonly after the second dose;
  - more often in adolescents and young adults (12 to 29 years of age);
  - more often in males;
• more frequently following Moderna COVID-19 vaccines than Pfizer-BioNTech COVID-19 vaccine;
• typically have onset of symptoms within a week after the receipt of an mRNA COVID-19 vaccine; and
• the majority of cases were mild, individuals recovered quickly and the investigation into long-term outcomes is ongoing.

• It is unknown if individuals with a history of previous myocarditis and/or pericarditis are at higher risk of vaccine associated myocarditis and/or pericarditis.
• Generally, deferral of COVID-19 immunization is not required for those with a prior history of myocarditis or pericarditis that is unrelated to COVID-19 mRNA vaccines if they are no longer followed clinically for cardiac issues.
• If there are questions or concerns about prior history of myocarditis or pericarditis and immunization, it is recommended that the child’s clinician be consulted. However, consultation with a clinician is not required to receive COVID-19 vaccines.

• In general, individuals who experienced myocarditis (with or without pericarditis) within 6 weeks after receiving a first dose of mRNA COVID-19 vaccine, are advised to defer receiving additional doses until more data is available as per NACI’s recommendation. If there is a preference not to wait, decisions around the second dose should be discussed with the child’s clinician.²
• Individuals with a history compatible with pericarditis within 6 weeks of receiving a dose of an mRNA COVID-19 vaccine, who either had no cardiac workup or who had normal cardiac investigations, can receive the next dose of vaccine when they are symptom free and at least 90 days have passed since previous immunization.²
• Healthcare professionals are advised to consider the possibility of myocarditis and/or pericarditis in their differential diagnosis if individuals present with chest pain, shortness of breath, palpitations or other signs and symptoms of myocarditis and/or pericarditis following immunization with an mRNA COVID-19 vaccine.

Immunocompromised and Auto-Immune Disorders
• At this time, there is no data on the use of SpikeVax (6m-5yr) vaccine in immunocompromised children aged 6 months to 5 years and those with auto-immune disorders.
• Individuals who are immunocompromised and those with auto-immune disorders who are receiving immunosuppressive therapy may have a diminished immune response.
• COVID-19 vaccine may be offered to individuals in the eligible group who are immunosuppressed due to disease or treatment and those with an auto-immune disorder if an informed consent is given by the parents/guardians after a discussion on benefits and potential risks.
• It is recommended that individuals consult with their primary health care provider or medical specialist for any vaccine related questions, especially regarding the timing of immunization based on the individual's treatment.
  o However, consultation with a primary health care provider or medical specialist is not required to receive COVID-19 vaccine.

  Exceptions:
  • SOT clients require consultation with their primary health care provider or medical specialist prior to receiving COVID-19 vaccine.
### Other Considerations

- Individuals presenting for immunization do not need to be tested for previous COVID-19 infection.
- It is not recommended that serology testing be completed to determine if an immune response to the COVID-19 vaccine has been mounted in immunocompromised individuals and serology testing should not be used as evidence to inform whether vaccine doses have been effective.
- Immunization of individuals who may be currently infected with SARS-CoV-2 is not known to have a detrimental effect on the illness.
- Individuals with COVID-19-like symptoms should not go to an immunization venue in order to minimize the risk of COVID-19 transmission.

### Administration with Other Products

- COVID-19 vaccines may be co-administered with, or at any time before or after other vaccines (including, live, inactivated, adjuvanted, or unadjuvanted vaccines) to individuals 6 months of age or older. Concurrent administration will reduce barriers to the provision of routine childhood immunizations and seasonal influenza immunization.²
- No safety signal has emerged from ongoing post-market safety surveillance for mRNA COVID-19 vaccine products in children 6 months to 5 years of age, and there is no evidence of safety concerns for concurrent administration based on data from adult populations.²
- Currently there is no data on the impact of the COVID-19 mRNA vaccines on tuberculin skin testing or IGRA (QFT) test results. There is a theoretical risk that COVID-19 vaccines may temporarily affect cell-mediated immunity, resulting in false-negative tuberculin skin testing or IGRA (QFT) test results.²
  - In the absence of data, and acknowledging the importance of both timely tuberculosis testing and immunization, immunization with COVID-19 vaccines can take place at any time before, after or at the same visit as the TST or IGRA test.²
  - However, repeat tuberculin skin testing or IGRA (at least 4 weeks post-COVID-19 immunization) of individuals with negative TST or IGRA results for whom there is high suspicion of latent tuberculosis infection may be considered in order to avoid missing persons with TB infection.²
- Deferral of COVID-19 immunization is not recommended for individuals who have received anti-SARS-CoV-2 monoclonal antibodies or convalescent plasma provided for treatment or prophylaxis of COVID-19 just because they received these pharmacological interventions. This applies to people who received these before receiving any COVID-19 vaccine dose or between doses.
  - A study among nursing home residents and staff demonstrated that recipients of a SARS-CoV-2 monoclonal antibody (bamlanivimab), mounted a robust immune response to mRNA immunization, regardless of age, risk category or vaccine type.⁹
  - Although antibody response was numerically lower in people who received monoclonal antibodies, they were still considered to be high and the clinical significance of the reduction is unknown.⁹
  - There was no correlation between interval to COVID-19 immunization and neutralizing titres in recent monoclonal antibody recipients.⁹
Intervals between previous COVID-19 infection and COVID-19 immunization outlined in this document would still apply to individuals who got the monoclonal antibodies or convalescent plasma for their infection.

- Timing of administration and potential interference between COVID-19 vaccine and monoclonal products not used for treatment of COVID-19 infection are currently unknown and the primary health care provider or medical specialist should be consulted on a case-by-case basis.
- mRNA COVID-19 vaccines may be given at any time before or after an immunoglobulin preparation (including RhIg) or blood product not specific to COVID-19 treatment has been administered. There is no recommended minimum interval between these products and COVID-19 vaccine.

**Program Notes**

- July 14, 2022 - licensed for use in Canada
- August 2, 2022 - implemented in Alberta
- November 14, 2022 – updated to include preferential recommendation for Moderna Monovalent mRNA vaccine over Pfizer Monovalent mRNA vaccine for children 6 months to 4 years of age with eligible immunocompromising conditions. Also updated recommendations on timing of tuberculin skin testing/interferon gamma release assay and COVID-19 immunization and removed sections noted above.
- December 22, 2022 - updated to include new co-administration recommendations.
- March 01, 2023 – Updated language to align with other COVID-19 vaccine biological pages. Updated to include schedule if two products are used in completing a series.
- April 21, 2023 - Updated indications section to reflect unavailability of Moderna Original vaccine products for children 6 years of age and older.
References

1 Moderna (2022 July 14) SpikeVax™ Elasomeran mRNA vaccine, Dispersion for intramuscular injection: Product Monograph. 

2 National Advisory Committee on Immunization (2022 July 14). Recommendations on the use of Moderna Spikevax COVID-19 vaccine in children 6 months to 5 years of age. 


National Advisory Committee on Immunization. (2021 December 3). Rapid response: Updated recommendation on the use of authorized COVID-19 vaccines in individuals aged 12 years and older in the context of myocarditis and pericarditis reported following mRNA COVID-19 vaccines. 

National Advisory Committee on Immunization. (2022 January 14). Re-vaccination with COVID-19 vaccines following myocarditis and/or pericarditis. 

National Advisory Committee on Immunization. (2022 February 4) NACI rapid response: Updated guidance on COVID-19 vaccination timing for individuals previously infected with SARS-CoV-2. 


3 Centers for Disease Control and Prevention. (2021, September). Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States. 
https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#CoV-19-vaccination