

April 2022 ~ Resource #380429

**COVID-19 Vaccines**

(Updated July 14, 2022)

The chart below provides dosing, storage, adverse effects, and efficacy information for COVID-19 vaccines available or submitted for approval in the US and/or Canada. The American Society of Health System Pharmacists has resources related to COVID-19 vaccines at <https://www.ashp.org/COVID-19/Vaccines?loginreturnUrl=SSOCheckOnly>. See end of the chart for links to the **fact sheets** and **product labeling**.

VACCINE <sup>c</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<p><b>BNT162b2</b> (Pfizer-BioNTech)/ mRNA (Comirnaty)<sup>c</sup></p> <p><b>PURPLE cap</b><sup>17-19</sup> (NOT for ages &lt;12 years<sup>a</sup>)</p> <p><b>US: approved</b> for ages ≥12 years;<sup>19</sup> <b>EUA</b> for ages ≥12 years; <b>third dose</b> for immunocompromised<sup>f</sup>; and <b>boosters</b> (see comments)<sup>17</sup></p> <p><b>Canada:</b> approved<sup>18</sup></p> <p><b>Dilution needed:</b> 1.8 mL NS/vial.<sup>17-19</sup></p>	<p><b>Primary vaccination for ≥12 years:</b> Two 0.3 mL (30 mcg) IM doses 3 weeks apart (Canada: 8-week interval preferred).<sup>*17-20</sup></p> <p><b>Immunocompromised<sup>f</sup>:</b> As above, plus 3<sup>rd</sup> dose ≥28 days after the 2<sup>nd</sup> dose (Canada: 4 to 8 weeks after the second dose).<sup>17,20</sup></p> <p>*CDC: An 8-week interval between the first two doses may increase efficacy, but stick with labeled interval for those who need rapid protection (e.g., age ≥65 years, immunocompromised).<sup>25</sup></p>	<p><b>First booster, ≥12 years:</b> 0.3 mL (30 mcg) IM ≥5 months (Canada: ≥6 months) after last primary dose.<sup>7,17,18</sup></p> <p><b>Second booster (US), ≥50 years:</b> 0.3 mL (30 mcg) IM ≥4 months after the first booster.<sup>17</sup> <b>Canada:</b> see footnote j.</p> <p><b>Immunocompromised, ≥12 years<sup>f</sup>:</b> 0.3 mL (30 mcg) IM ≥3 months (Canada ≥6 months) after last primary series dose (first booster). Second booster (US) ≥4 months after first booster.<sup>17,20</sup></p>	<p><b>Shipping/long-term storage (ultra-low temp freezer, freezer):</b> See footnote d.</p> <p><b>Refrigerator (2°C to 8°C):</b> 1 month thawed/undiluted vials (includes transport [up to 12 hours]); 6 hours once diluted (vial or pre-drawn syringe)<sup>10,17-19</sup></p> <p><b>Room Temp (up to 25°C):</b> 2 hours, thawed/undiluted, 6 hours once diluted (vial or pre-drawn syringe)<sup>10,17-19</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> <li>• Lymphadenopathy (16%) may interfere with imaging (e.g., mammography) for four to six weeks after vaccination.<sup>28</sup></li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> <li>• EUA also for use as a heterologous first booster for adults (≥18 years), and as a heterologous second booster.<sup>17</sup></li> </ul>

VACCINE <sup>e</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<p><b>BNT162b2</b> (Pfizer-BioNTech)/ mRNA (Comirnaty)<sup>c</sup> <b>GRAY</b> cap<sup>13,18,27</sup> (NOT for ages &lt;12 years<sup>a</sup>)</p> <p><b>US: approved</b> for ages ≥12 years;<sup>27</sup> <b>EUA</b> for ages ≥12 years; <b>third dose</b> for immunocompromised<sup>f</sup>; and <b>boosters</b> (homologous or heterologous)<sup>13</sup></p> <p><b>Canada:</b> approved<sup>18</sup> Do NOT dilute.<sup>13,18,27</sup></p>	See above.	See above.	<p><b>Shipping/long-term storage</b> (ultra-low temp freezer, freezer): See footnote d.</p> <p><b>Refrigerator</b> (2°C to 8°C): 10 weeks (unpunctured vial).<sup>13,18,27</sup></p> <p><b>Room Temp</b> (up to 25°C): 12 hours (unpunctured vial).<sup>13,18,27</sup></p> <p>Discard vials 12 hours after first puncture.<sup>13,18,27</sup></p> <p>Vaccine should not be used after 12 months from date of manufacture.<sup>13,18</sup></p>	See above.
<p><b>BNT162b2 for 5 through 11 years of age</b> (Pfizer-BioNTech)/ mRNA</p> <p><b>ORANGE</b> cap and label with orange border<sup>18,30</sup></p> <p><b>US: EUA</b></p> <p><b>Canada (Comirnaty): approved</b></p> <p>Requires dilution with <b>1.3 mL</b> of NS per vial.<sup>18,30</sup></p>	<p><b>Primary vaccination for 5 to 11 years:</b> Two <b>0.2 mL (10 mcg)</b> IM doses 3 weeks apart (Canada: ≥8-week interval preferred).<sup>18,20,30</sup></p> <p><b>Immunocompromised:</b> as above, plus 3<sup>rd</sup> dose ≥28 days after the second dose.<sup>30</sup> (Canada: 4- to 8-week interval preferred between each of the three doses.<sup>20</sup>)</p>	<p><b>First Booster (US):</b> 0.2 mL (10 mcg) IM ≥5 months after last primary dose.<sup>30</sup></p>	<p><b>Shipping/long-term storage</b> (ultra-low temp freezer, freezer): See footnote d.</p> <p><b>Refrigerator</b> (2°C to 8°C) (option if vials arrive frozen or refrigerated): 10 weeks undiluted; 12 hours once diluted (vial).<sup>18,30</sup></p> <p><b>Room Temp</b> (up to 25°C): 12 hours undiluted, 12 hours once diluted (vial).<sup>18,30</sup></p> <p>Stable in <b>pre-drawn syringe</b> for 24 hours, with no more than 12 hours at room temperature (up to 30°C).<sup>10</sup></p> <p>Vaccine should not be used after 12 months from date of manufacture.<sup>18,30</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> </ul>

VACCINE <sup>e</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<p><b>BNT162b2 for 6 months through 4 years of age (Pfizer-BioNTech)/ mRNA</b></p> <p><b>MAROON</b> cap and label with maroon border<sup>32</sup></p> <p><b>US: EUA</b></p> <p>Requires dilution with <b>2.2 mL</b> of NS per vial<sup>32</sup></p>	<p><b>Primary vaccination for 6 months to through 4 years:</b> Three <b>0.2 mL (3 mcg)</b> IM doses. The initial two doses are given 3 weeks apart, followed by a third dose <math>\geq 8</math> weeks after the second dose.<sup>32</sup></p>	N/A	<p><b>Shipping/long-term storage (ultra-low temp freezer, freezer):</b> See footnote d.</p> <p><b>Refrigerator</b> (2°C to 8°C) (option if vials arrive frozen or refrigerated): 10 weeks undiluted; 12 hours once diluted.<sup>32</sup></p> <p><b>Room Temp</b> (up to 25°C): 12 hours undiluted; 12 hours once diluted.<sup>32</sup></p> <p>Vaccine should not be used after 12 months from date of manufacture.<sup>32</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: immune response in this age group is similar to that of people 16 through 25 years of age.<sup>32</sup></li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> </ul>
<p><b>mRNA-1273 (Moderna)/ mRNA (Spikevax)<sup>g</sup></b></p> <p><b>US:</b> approved (<i>Spikevax</i>) for primary two-dose series in adults<sup>21</sup></p> <p><b>US:</b> EUA for primary series (<math>\geq 12</math> years of age) and boosters (adult; homologous or heterologous)<sup>2</sup></p> <p><b>Canada:</b> approved<sup>22</sup></p> <p><i>Continued...</i></p>	<p><b>Primary vaccination for <math>\geq 12</math> years:</b> Two <b>0.5 mL (100 mcg)</b> IM doses 1 month (4 weeks) apart (Canada: 8-week interval preferred)*<sup>2,20,21,22,25</sup></p> <p><b>6 to 11 years (Canada):</b> Two <b>0.25 mL (50 mcg)</b> IM doses 4 weeks apart (<math>\geq 8</math>-week interval preferred).<sup>1,22</sup></p> <p><b>Immunocompromised:</b> as above plus 3<sup>rd</sup> dose <math>\geq 1</math> month (<math>\geq 4</math> weeks) (Canada: 4 to 8 weeks)</p>	<p><b>First Booster, <math>\geq 18</math> years (Canada, <math>\geq 12</math> years<sup>b</sup>):</b> <b>0.25 mL (50 mcg)</b>, <math>\geq 5</math> months (Canada: <math>\geq 6</math> months) after last primary dose<sup>2,7,22</sup></p> <p><b>Second Booster (US), <math>\geq 50</math> years:</b> <b>0.25 mL (50 mcg)</b>, <math>\geq 4</math> months after first booster.<sup>2</sup></p> <p><b>Canada:</b> see footnote j.</p> <p><b>Immunocompromised:</b> as above, but in <b>Canada</b>, 100 mcg (0.5 mL) instead of 50 mcg (0.25 mL) can be used if <math>\geq 18</math> years.<sup>20</sup></p> <p><b>US:</b> immunocompromised adults <math>\geq 18</math> years can get a first booster 3 months after the last</p>	<p><b>Shipping/long-term storage (freezer):</b> See footnote d.</p> <p><b>Refrigerator</b> (2°C to 8°C): 30 days after thawing (prior to first use).<sup>2,21,22</sup> After 30 days, contact manufacturer for guidance before discarding.<sup>6</sup></p> <p>In-use vial/pre-drawn syringe: 12 hours.<sup>2,10,21</sup> (Canada In-use vial: 24 hours.)<sup>22</sup></p> <p><b>Room temperature</b> (8°C to 25°C): Unused vial: 24 hours.<sup>2,21,22</sup> In-use vial/pre-drawn syringe: 12 hours.<sup>2,10,21</sup></p> <p>Total room temperature storage time must not exceed</p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i. In children 12 through 17 years of age, 93.3% effective in preventing symptomatic COVID-19 (pre-Omicron data).<sup>2</sup></li> <li>• Lymphadenopathy (16%) may interfere with imaging (e.g., mammography) for four to six weeks after vaccination.<sup>28</sup></li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> <li>• Delayed-type hypersensitivity reaction</li> </ul>

VACCINE <sup>e</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<b>mRNA-1273 (Moderna)/ mRNA (Spikevax),<sup>g</sup></b> continued	after the second dose. <sup>2,20,22,25</sup>  *CDC: An 8-week interval between the first two doses may increase efficacy, but stick with labeled interval for those who need rapid protection (e.g., age $\geq 65$ years, immunocompromised). <sup>25</sup>	primary dose, and a second booster 4 months after the first booster. <sup>25</sup>	24 hours. <sup>2,21</sup> (Canada In-use vial: 24 hours.) <sup>22</sup>	(e.g., large, red area near injection site) reported most often about a week after first shot. May be itchy, painful, warm, or swollen, and can also involve fingers, elbow, or palm. Not a contraindication to subsequent vaccination. <sup>15</sup>
<b>mRNA-1273 (Moderna)/ mRNA “Booster presentation” 50 mcg in 0.5 mL</b>  Dark <b>BLUE</b> cap and a label with a purple border <sup>4</sup>  <b>US: EUA for primary series (6 through 11 years) and boosters (adults) (homologous or heterologous)<sup>4,34</sup></b>	<b>Primary vaccination for 6 through 11 years: Two 0.5 mL (50 mcg) IM doses one month apart.<sup>34</sup></b>  <b>Immunocompromised:</b> as above plus 3 <sup>rd</sup> dose $\geq 1$ month after the second. <sup>34</sup>	<b>First Booster (US)</b> ( $\geq 18$ years): <b>0.5 mL (50 mcg), <math>\geq 5</math> months</b> after last primary dose <sup>4</sup>  <b>Second Booster (US),</b> $\geq 50$ years: <b>0.5 mL (50 mcg), <math>\geq 4</math> months</b> after first booster. <sup>4</sup>  <b>Immunocompromised:</b> as above, but immunocompromised adults can get first booster 3 months after the last primary dose. <sup>25</sup>	<b>Shipping/long-term storage (freezer):</b> See footnote d.  <b>Refrigerator (2°C to 8°C):</b> 30 days after thawing (prior to first use). <sup>4</sup> After 30 days, contact manufacturer for guidance before discarding. <sup>6</sup> In-use vial: 12 hours. <sup>4</sup>  <b>Room temperature (8°C to 25°C):</b> 24 hours total. <sup>4</sup> Discard 12 hours after first puncture. <sup>4</sup>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i. Immune response in children 6 through 11 years of age is similar to that of adults 18 to 25 years of age.<sup>34</sup></li> <li>• Lymphadenopathy (16%) may interfere with imaging (e.g., mammography) for four to six weeks after vaccination.<sup>28</sup></li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> </ul>

VACCINE <sup>e</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<p><b>mRNA-1273 for 6 months through 5 years of age (Moderna)/ mRNA</b></p> <p>Dark blue cap and label with a <b>MAGENTA</b> border<sup>33</sup></p> <p>US: EUA</p>	<p><b>Primary vaccination for 6 months through 5 years:</b> Two <b>0.25 mL (25 mcg)</b> IM doses one month apart.<sup>33</sup></p> <p><b>Immunocompromised:</b> as above, plus 3<sup>rd</sup> dose one month after the second dose.<sup>33</sup></p>	N/A	<p><b>Shipping/long-term storage (freezer):</b> See footnote d.</p> <p><b>Refrigerator (2°C to 8°C):</b> 30 days after thawing (prior to first use). After 30 days, contact manufacturer for guidance before discarding.<sup>6</sup> In-use vial: 12 hours.<sup>33</sup></p> <p><b>Room temperature (8°C to 25°C):</b> 24 hours total. Discard 12 hours after first puncture.<sup>33</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy 36.8% (2 through 5 years of age) to 50.6% (6 through 23 months of age) against symptomatic, test (PCR) confirmed COVID-19 when Omicron B.1.1.529 was the predominant variant.<sup>33</sup></li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about myocarditis/pericarditis.</li> </ul>
<p><b>Ad26.COV2.S Janssen (J&amp;J)/ Viral vector (non-replicating)</b></p> <p>US: EUA for adults for whom other vaccines are not available or appropriate, or if they refuse other vaccines.<sup>9</sup></p> <p>Canada: approved. mRNA vaccine preferred for primary series and booster.<sup>20</sup></p>	<p><b>Primary vaccination for ≥18 years:</b> One 0.5 mL IM dose<sup>9,24</sup></p> <p><b>Immunocompromised:</b> as above, plus 2<sup>nd</sup> dose, (mRNA vaccine) ≥28 days later<sup>20,25</sup></p>	<p><b>First Booster<sup>h</sup> (mRNA vaccine):</b> ≥2 months (Canada: ≥6 months) after the first dose.<sup>9,20</sup></p> <p><b>Second Booster (US), ≥50 years, or people 18 to 49 years who received Janssen as both their primary and booster: mRNA booster</b> ≥4 months after first booster.<sup>25</sup></p> <p>Canada: see footnote j.</p> <p><b>Immunocompromised:</b> as above, but if Moderna is chosen for first booster, use a dose of 100 mcg if Moderna 50 mcg was used in the primary series.<sup>25</sup></p>	<p><b>Shipping/long-term storage (freezer):</b> See footnote d.</p> <p><b>Refrigerator (2°C to 8°C):</b> Up to 11 months (Canada: up to 6 months), not to exceed mfr expiration date (unused vial).<sup>24,31</sup> In-use vial/pre-drawn syringe: 6 hrs.<sup>9,10,24</sup></p> <p><b>Room temperature (9°C to 25°C):</b> Unused vial: 12 hours.<sup>9,24</sup> In-use vial/pre-drawn syringe: 2 hours (Canada: 3 hours).<sup>9,10,24</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about thrombosis with thrombocytopenia syndrome (TTS) and other rare side effects of viral vector COVID-19 vaccines.</li> </ul>

VACCINE <sup>e</sup>	DOSE (Primary Series)	DOSE (Booster)	STORAGE/STABILITY	COMMENTS
<p><b>ChAdOx1-S (AstraZeneca)/Viral vector (non-replicating) (Vaxzevria)</b> Phase III data published.</p> <p><b>Canada:</b> approved</p> <p><b>mRNA vaccine preferred</b><sup>20</sup></p>	<p><b>Primary vaccination for ≥18 years of age:</b> Two 0.5 mL IM doses 4 to 12 weeks apart (≥8-week interval preferred)<sup>16,20</sup></p> <p><b>Immunocompromised:</b> As above plus 3<sup>rd</sup> dose (mRNA vaccine) ≥28 days later<sup>20</sup></p>	<p><b>Booster:</b> mRNA vaccine ≥6 months after last primary dose.<sup>20</sup></p> <p><b>Second booster:</b> see footnote j.</p>	<p><b>Refrigerator (2°C to 8°C):</b> Mfr expiration date (unused vial); 48 hours (punctured vial)<sup>16</sup></p> <p><b>Room temperature (≤30°C):</b> 6 hours (punctured vial). Vial can be re-refrigerated, but the cumulative storage at room temperature cannot exceed 6 hours, and the total cumulative storage time cannot exceed 48 hours<sup>16</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> <li>• See our FAQ, <i>Communicating About COVID-19 Vaccination</i>, for information about thrombosis with thrombocytopenia syndrome (TTS) and other rare side effects of viral vector COVID-19 vaccines.</li> </ul>
<p><b>NVX-CoV2373 (Novavax)/</b> Recombinant protein subunit, adjuvanted (<i>Nuvaxovid</i>- [Canada])</p> <p><b>US:</b> EUA<sup>14</sup></p> <p><b>Canada:</b> approved</p> <p><b>mRNA vaccine preferred (Canada)</b><sup>20</sup></p>	<p><b>Primary vaccination for ≥18 years of age:</b> Two 0.5 mL IM doses three weeks apart (Canada: 8-week interval preferred)<sup>8,14,20</sup></p> <p><b>Immunocompromised:</b> safety and efficacy not established.<sup>20</sup> Response may be diminished.<sup>14</sup></p>	<p><b>Booster (Canada):</b> mRNA vaccine (preferred) ≥6 months after last primary dose.<sup>20</sup></p> <p><i>Nuvaxovid</i> (Canada) can be used off-label as a booster for adults unable or unwilling to receive an mRNA vaccine.<sup>20</sup></p> <p><b>Second booster (Canada):</b> see footnote j.</p>	<p><b>Refrigerator (2°C to 8°C):</b> 6 hours (punctured vial).<sup>8,14</sup></p> <p><b>Room temperature (≤25°C):</b> 6 hours (punctured vial).<sup>8,14</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> </ul>
<p><b>Covifenz (Medicago)/</b> Recombinant spike protein in plant-based virus-like particles, adjuvanted</p> <p><b>Canada:</b> approved</p>	<p><b>Primary vaccination for 18 to 64 years of age:</b> Two 0.5 mL IM doses 21 days apart (8-week interval preferred)<sup>11,26</sup></p>	<p><b>Booster:</b> mRNA vaccine ≥6 months after last primary dose.<sup>11</sup></p> <p><b>Second booster:</b> see footnote j.</p>	<p><b>Refrigerator (2°C to 8°C):</b> Until expiration date on vaccine and adjuvant vials (unpunctured).<sup>26</sup></p> <p><b>In-use vial (mixed):</b> 20°C to 30°C for 6 hours (do not refrigerate once mixed).<sup>26</sup></p>	<ul style="list-style-type: none"> <li>• Efficacy: see footnote i.</li> <li>• Requires mixing of adjuvant and antigen before use (see product labeling for instructions).<sup>26</sup></li> <li>• Produced using the genomic sequence of the spike protein of the original strain.<sup>26</sup></li> <li>• May contain trace amounts of kanamycin or carbenicillin.<sup>26</sup></li> </ul>

- a. The adult formulation of the Pfizer-BioNTech vaccine **CANNOT** be used for children 5 to 11 years of age by using a dose-adjusted volume. This is because this volume (10 mcg = 0.1 mL) is too small for an intramuscular injection. The pediatric formulation delivers 10 mcg in 0.2 mL.<sup>29</sup>
- b. **Canada:** For Moderna, 100 mcg (0.5 mL) instead of 50 mcg can be used as the booster in high-risk adults.<sup>20</sup>
- c. **Comirnaty** and the Pfizer-BioNTech COVID-19 vaccine authorized (EUA) for ages  $\geq 12$  years of age can be used interchangeably when prepared according to their respective instructions for use.<sup>25</sup>
- d. See product labeling for storage in ultra-low freezer, freezer, and thawing before use, if applicable. Pfizer vaccine storage and dry ice safety handling resources at <https://www.cvdvaccine-us.com>.
- e. Tips to **minimize vaccine waste** include:<sup>10,23</sup>
  - Maintain the cold chain to prevent waste due to inappropriate storage conditions.
  - Maximize doses drawn from multidose vials using:
    - low dead-volume syringes/needles.
    - techniques to minimize leakage (e.g., multiple puncture locations in the rubber stopper, instead of the same location over and over [this can create a larger hole]).
  - Draw up an appropriate number of syringes based on expected vaccination appointments for the day.
    - Monitor appointment cancellations and no shows throughout the day. Then draw up afternoon doses based on the revised appointment list.
  - Use syringes in order of expiration time, starting with the earliest expiration date.
  - Maintain a waiting list to contact people at the end of the day if there are extra doses available.
- f. **US:** Immunocompromise= solid organ transplant patients or similar level of immunocompromise. For a full list of CDC-recommended conditions, see <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/immuno.html>.  
**Canada:** See a full list of **immunocompromising conditions**, see the Canadian Immunization Guide: <https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-3-vaccination-specific-populations/page-8-immunization-immunocompromised-persons.html>. **Ontario** Ministry of Health recommendations for the third dose are available at [https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19\\_vaccine\\_third\\_dose\\_recommendations.pdf](https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_third_dose_recommendations.pdf).
- g. **Spikevax** and the authorized (EUA) **RED** cap Moderna COVID-19 vaccine with a label with a light blue border can be used interchangeably to provide primary series doses or booster doses.<sup>2</sup>
- h. **Janssen (US):** has EUA for booster, but mRNA is preferred.<sup>9,25</sup>
- i. **Efficacy:** Clinical trials were conducted prior to the emergence of Omicron.<sup>20</sup> Evidence suggests lower efficacy against symptomatic infection by Omicron and its variants due to immune escape.<sup>20</sup> **mRNA** vaccines are still highly effective at protecting boosted adults against hospitalization, need for mechanical ventilation, or death.<sup>5,12</sup>
- j. In **Canada**, check local guidance for administration of a second booster. NACI recommends that in general, jurisdictions provide a second booster six months after the previous booster when appropriate based on local epidemiology.<sup>3</sup> A shorter interval may be indicated in older adults. Also consider timing in regard to recent COVID-19 infection.<sup>3</sup> Targeted populations include people  $\geq 70$  years and Indigenous Peoples.<sup>3</sup> Use Pfizer, Moderna 50 mcg (or 100 mcg per clinical judgment [e.g., age  $\geq 70$  years of age; age  $\geq 30$  years in congregate settings]), or *Nuvaxovid* (for adults unable or unwilling to receive an mRNA vaccine).<sup>3,20</sup>

**Abbreviations:** EUA = Emergency Use Authorization; IM = intramuscular; NS = normal saline; UK = United Kingdom

The CDC has interim recommendations for **COVID-19 vaccine administration errors and deviations** available at <https://www.cdc.gov/vaccines/covid-19/downloads/covid19-vaccine-errors-deviations-poster.pdf>.

### Fact Sheets and Product Labeling

- *Comirnaty* (PURPLE cap) prescribing information (US): <https://www.fda.gov/vaccines-blood-biologics/comirnaty>
- *Comirnaty* (GRAY cap) prescribing information (US): <https://www.fda.gov/vaccines-blood-biologics/comirnaty>
- Pfizer-BioNTech vaccine EUA fact sheet (**12 years of age and older**) for healthcare professionals (US): <https://www.fda.gov/media/153713/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**12 years of age and older**) for patients (US): <https://www.fda.gov/media/153716/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**12 years of age and older-Do Not Dilute**) for healthcare professionals (US): <https://www.fda.gov/media/153715/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**5 through 11 years of age**) for healthcare professionals (US): <https://www.fda.gov/media/153714/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**5 through 11 years of age**) for patients (US): <https://www.fda.gov/media/153717/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**6 months through 4 years of age**) for healthcare professionals (US): <https://www.fda.gov/media/159312/download>
- Pfizer-BioNTech vaccine EUA fact sheet (**6 months through 4 years of age**) for patients (US): <https://www.fda.gov/media/159313/download>
- *Spikevax* prescribing information (US): <https://www.fda.gov/vaccines-blood-biologics/spikevax>
- Moderna vaccine EUA fact sheet for healthcare professionals (US) (**Primary series [≥12 years of age] and booster dose [adults]**): <https://www.fda.gov/media/157233/download>
- Moderna vaccine EUA fact sheet for healthcare professionals (US) (**Booster dose only presentation [adults]**): <https://www.fda.gov/media/157232/download>
- Moderna vaccine EUA fact sheet for healthcare professionals (US) (**6 months through 5 years of age**): <https://www.fda.gov/media/159307/download>
- Moderna vaccine EUA fact sheet for patients (US) (**6 months through 5 years of age**): <https://www.fda.gov/media/159309/download>
- Moderna vaccine EUA fact sheet for patients (US) (**≥12 years of age**): <https://www.fda.gov/media/144638/download>
- Moderna vaccine EUA fact sheet for healthcare professionals (US) (**6 through 11 years of age**): <https://www.fda.gov/media/159308/download>
- Moderna vaccine EUA fact sheet for patients (US) (**6 through 11 years of age**): <https://www.fda.gov/media/159310/download>
- Janssen (J&J) vaccine EUA fact sheet for healthcare professionals (US): <https://www.fda.gov/media/146304/download>
- Janssen (J&J) vaccine fact sheet for patients (US): <https://www.fda.gov/media/146305/download>
- Novavax vaccine EUA fact sheet for healthcare professionals (US): <https://www.fda.gov/media/159897/download>
- Novavax vaccine fact sheet for patients (US): <https://www.fda.gov/media/159898/download>
- Current Canadian product monographs for Covid-19 vaccines available in Canada can be found at Health Canada's Drug Product Database (<https://health-products.canada.ca/dpd-bdpp/index-eng.jsp>).

*Users of this resource are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and internet links in this article were current as of the date of publication.*



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