Next-generation COVID-19 vaccines: What pharmacists need to know

Introduction

COVID-19 remains a serious public health threat with estimates of up to 20 million infections, 530,000 hospitalizations, and 61,000 deaths in the 2024–2025 season.[1,2] COVID-19 vaccines are an essential tool to protect individuals and communities against severe illness, hospitalization, and death from infections caused by the SARS-CoV-2 virus. For the 2025–2026 season, FDA has approved updated vaccines, including Spikevax, mNEXSPIKE, Comirnaty, and Nuvaxovid.[3] Among these, Spikevax and mNEXSPIKE (both developed by Moderna) are of particular importance for pharmacists to understand, as these vaccines differ in their design, dose, age indications, and storage. This handout provides an overview of these vaccines and the current recommendations to guide pharmacists in counseling patients and supporting informed vaccination decisions.

Moderna's COVID-19 vaccines

What is Spikevax (COVID-19 vaccine, mRNA)?

Spikevax is a vaccine indicated for active immunization to prevent coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Spikevax is approved for use in individuals who are:

- 65 years and older, or
- 6 months through 64 years old with at least one underlying condition that puts them at high risk for severe out comes from COVID-19[4]

What is mNEXSPIKE (COVID-19 vaccine, mRNA)?

mNEXSPIKE is a vaccine indicated for active immunization to prevent COVID-19 caused by SARS-CoV-2.

mNEXSPIKE is approved for use in individuals who are:

- 65 years and older, or
- 12 years through 64 years old with at least one underlying condition that puts them at high risk for severe outcomes from COVID-19[5]

What is the difference between Spikevax and mNEXSPIKE?

Both Spikevax and mNEXSPIKE are mRNA COVID-19 vaccines that are available for the 2025–2026 season. mNEXSPIKE is the second-generation mRNA vaccine from Moderna that uses a one-fifth lower dose and targets the spike protein more precisely compared with Spikevax, the first-generation mRNA vaccine from Moderna, which may enhance immune response and have lower reactogenicity.

Both mNEXSPIKE and Spikevax are authorized for use in the 2025–2026 season. The key similarities and differences are highlighted in Table 1.

Table 1. Key similarities and differences between Spikevax and mNEXSPIKE

	Spikevax4	mNEXSPIKE5
Vaccine type	mRNA	mRNA
Age indications	≥6 months	≥12 years
Antigen (spike protein)	Whole spike protein of SARS-CoV-2	N-terminal domain and receptor-binding domain of the spike protein
Composition	Monovalent	Monovalent
Dose	25 µg (6 months to 11 years) 50 µg(≥12 years)	10 µg
Administration	0.25 mL IM (6 months to 11 years) 0.5 mL IM (≥12 years)	0.2 mL IM
Number of doses	Two-dose primary series at 0 and 1 month or single dose booster for ages 6–23 months Single dose for ages ≥2 years; should not be given within 2 months of another COVID-19 vaccine	Single dose for ages ≥12 years; should not be given within 3 months of another COVID-19 vaccine
Storage	Store frozen; after thawing can be kept in the refrigerator for **60 days**; can be kept at room temperature for **12 hours**	Store frozen; after thawing can be kept in the refrigerator for **90 days**; can be kept at room temperature for **24 hours**

Clinical trial

The approval of mNEXSPIKE (mRNA-1283) was based on the results of NextCOVE, a randomized, observer-blind, active-controlled, phase 3 noninferiority trial in about 11,400 persons aged ≥12 years. Participants were randomized and received either mNEXSPIKE or Spikevax (mRNA-1273). The results showed that mNEXSPIKE was well tolerated, was noninferior for immunogenicity and relative vaccine efficacy, and had higher seroresponse rates and geometric mean neutralizing antibody titer levels than Spikevax.[6]

COVID-19 vaccine recommendations

In 2025, organizations released differing recommendations or guidance for the use of the COVID-19 vaccines. The recommendations or guidance that should be used will depend on the state in which the pharmacist or health care provider practices. Pharmacists should check with their state (e.g., board of pharmacy, licensing agency, other laws/regulations) to determine which recommendations or guidance should be followed.

Table 2 shows some national organizations and their issued recommendations for the use of COVID-19 vaccines.

Table 2. COVID-19 vaccination recommendations

Organization	COVID-19 vaccine recommendation
Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP)[7,8]	Recommended for all adults aged 65 years and older based on SCDM* Recommended for all individuals ages 6 months to 64 years based on SCDM*
American Academy of Family Physicians (AAFP)[9]	Routine recommendation for all adults aged 18 years and older
American Academy of Pediatrics (AAP)[10]	Routine recommendation for all children aged 6–23 months Recommended for children aged 2–18 years who are high risk of severe COVID-19, residents of long-term care facilities or other congregate settings, persons who have never been vaccinated against COVID-19, persons whose household contacts are at high risk for severe COVID-19, and persons whose parent or guardian desires their protection from COVID-19
American College of Obstetricians and Gynecologists (ACOG)[11]	Routine recommendation for all individuals who are pregnant or lactating

* SCDM = shared clinical decision making. Includes an emphasis that the risk–benefit of vaccination is most favorable for individuals who are at an increased risk for severe COVID-19 disease and lowest for individuals who are not at an increased risk according to the CDC list of COVID-19 risk factors.

For the 2025–2026 season, the following COVID-19 vaccines have been approved by the FDA: Spikevax, mNEXSPIKE, Nuvaxovid, and Comirnaty. When indicated, any age-appropriate COVID-19 vaccine can be recommended.

Additional doses may also be recommended for individuals with immunocompromised conditions or who are aged 65 years and older.[7,8]

High-risk groups[12–14]

People with the following conditions or situations are at high risk for severe COVID-19 and are in a group of emphasis for vaccination:

- Older adults (aged ≥65 years)
- Certain racial or ethnic minority groups
- People with disabilities
- Cancer
- Cerebrovascular disease
- Chronic kidney disease
- Chronic liver disease
- Chronic lung disease
- Cystic fibrosis
- Dementia or other neurological conditions
- Diabetes
- Heart conditions
- Hemoglobin blood disorders
- HIV infection
- Immunocompromised condition
- Mental health or mood disorders
- Overweight and obesity
- Physical inactivity
- Pregnancy
- Smoking (current or former)
- Solid organ or blood stem cell transplant
- Substance use disorders
- Tuberculosis
- Residents of long-term care facilities or other congregate settings
- Persons who have never been vaccinated against COVID-19
- Persons whose household contacts are at high risk for severe COVID-19
- Other underlying conditions or situations that increase the risk of severe disease

What is shared clinical decision making?

Shared clinical decision making (SCDM) is an individualized process in which health care providers and patients work together to make informed decisions about vaccination. For SCDM recommendations, there is no default decision. The decision to vaccinate should be informed by the best available evidence of who may benefit from vaccination; the patient's characteristics, risk factors, values, and preferences; the provider's clinical discretion; and the characteristics of the vaccine being considered.[15]

For COVID-19 vaccines, SCDM recognizes that while most people benefit from vaccination, the timing, product selection, and personal circumstances (e.g., age, prior infection, underlying health conditions) may influence the choice. Pharmacists are recognized as one of the health care providers who can participate in SCDM with patients.[15] Pharmacists should review each patient's medical history, explain vaccine options, and ensure the patient feels informed about the benefits and risks of vaccinations.

What are the benefits and risks of COVID-19 vaccination that pharmacists should discuss with patients?

Pharmacists should balance the small risk of adverse events against the much higher risks associated with COVID-19 infection (Table 3), especially in older adults and those with chronic conditions.

Table 3. Benefits and risks of Moderna COVID-19 vaccines

Benefits[16–19]	Risks[4,5]
Prior observational studies, including a CDC analysis of vaccine effectiveness of the 2023–2024 and 2024–2025 seasons found that COVID-19 vaccines provided protection against: ☐ Emergency department visits ☐ Urgent care visits ☐ Hospitalizations ☐ Critical illness Additionally, COVID-19 vaccines have been shown to reduce: ☐ Lost productivity due to illness ☐ Medical costs ☐ Long-term complications from infection such as Long COVID ☐ Death from severe COVID-19 It is estimated that 7,600–8,900 deaths could be prevented for every 100,000 adults vaccinated.	Most adverse events are mild to moderate and resolve within a few days. ☐ Common adverse events include: ○ Injection site reactions: pain, tenderness, swelling of the lymph nodes, swelling, and redness ○ Generalized reactions: fatigue, headache, muscle pain, joint pain, chills, nausea, vomiting, and fever ☐ Rare but serious effects include: ○ Allergic reactions ○ Myocarditis or pericarditis (highest risk in males aged 12–24 years) ○ Syncope The vaccine is contraindicated in individuals with a history of severe allergic reaction after a previous dose of mNEXSPIKE, Spikevax, or any Moderna COVID-19 vaccines or to any ingredients in these vaccines.

There were no cases of myocarditis or pericarditis identified in the NextCOVE study.[6] However, observational studies in post-marketing surveillance of mRNA COVID-19 vaccines identified a potential increased risk of myocarditis or pericarditis following a second dose of a primary series. A CDC analysis using the Vaccine Safety Datalink found that the incidence of myocarditis following an mRNA COVID-19 vaccination for people ages 12–39 years was below the background rate of <2 cases per million for the 2022–2023 and 2024–2025 vaccines but higher than the background rate for the 2020–2021, 2021–2022, and 2023–2024 vaccines. The analysis noted that rates peak at age 16–17 years, are higher in males, and that >90% of cases were fully recovered at least 1 year after onset of myocarditis.[20]

What considerations are there for coadministration of COVID-19 vaccines and other vaccines?

COVID-19 vaccines may be administered at the same visit as other recommended vaccines, including influenza and RSV vaccines, using different injection sites. Coadministration helps maximize protection while reducing the need for multiple appointments, which can improve vaccine uptake.[21]

Take-home message

Updated COVID-19 vaccines for 2025–2026 target current variants and remain one of the best ways to prevent severe illness, hospitalization, and death. Vaccination in 2024–2025 cut the risk of COVID-19–related emergency department and urgent care visits by 33% in adults aged ≥18 years and reduced hospitalizations by 40% to 46% in adults aged ≥65 years.[18] Pharmacists are trusted, accessible health care providers who can guide patients in making informed decisions about vaccines, answering questions, and ensuring safe and convenient access.

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