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Contact Hours: **1.5**

Respiratory Viruses: 2024–2025 Vaccine Update
Influenza, COVID-19, Pneumonia, and RSV

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LEARNING OUTCOME AND OBJECTIVES: Upon completion of this continuing education course, you will be able to discuss vaccine updates for respiratory viruses currently in circulation. Specific learning objectives to address potential knowledge gaps include:

- Identify changes made to the vaccine-related recommendations for influenza.
- Discuss the most current recommendations for COVID-19 vaccination.
- Explain the recommendations for pneumococcal vaccination.
- Discuss the most current guidelines for respiratory syncytial virus (RSV) vaccines.

INTRODUCTION

The only certainty about any respiratory virus season is that it is unpredictable. Viruses continue to mutate, necessitating updated vaccines and boosters. It is therefore important for clinicians to receive information about the latest vaccine-related recommendations for influenza, COVID-19, pneumonia, and respiratory syncytial virus (RSV) infection.

INFLUENZA (FLU)

Flu viruses are continually changing. The composition of U.S. flu vaccines is reviewed annually by the U.S. Food and Drug Administration (FDA) Vaccines and Related Biological Products Advisory Committee and updated as needed to best match the flu viruses that research indicates will be most common during the upcoming season. Routine vaccination is recommended for all

persons 6 months of age and older who do not have contraindications (CDC, 2024j; CDC, 2024k).

Primary Changes and Updates

Primary changes for the 2024–2025 influenza (flu) vaccine recommendations include two topics:

- Updated composition of vaccines
- Updated recommendations for vaccination of adult solid organ transplant recipients

The **composition** of this season's influenza vaccines includes an update to the influenza A (H3N2) component. For the 2024–2025 season, U.S.-licensed trivalent influenza vaccines will contain hemagglutinin (HA) derived from:

- Influenza A/Victoria/4897/2022 (H1N1)pdm09-like virus (for egg-based vaccines) **or** Influenza A/Wisconsin/67/2022 (H1N1)pdm09-like virus (for cell- and recombinant-based vaccines)
- Influenza A/Thailand/8/2022 (H3N2)-like virus (for egg-based vaccines) **or** an influenza A/Massachusetts/18/2022 (H3N2)-like virus (for cell- and recombinant-based vaccines)
- Influenza B/Austria/1359417/2021 (Victoria lineage)-like virus (for egg-, cell-, and recombinant-based vaccines)

The FDA has recommended that this season's vaccine composition no longer include influenza B/Yamagata, as there have been no confirmed detections of influenza B/Yamagata viruses in global influenza surveillance since March 2020 (CDC, 2024j; CDC, 2024k).

Recommendations for vaccination of **adult solid organ transplant recipients** have been updated to include HD-IIV3 and aIIV3 as acceptable options for recipients ages 18–64 years who are receiving immunosuppressive medication regimens (without a preference over other age-appropriate IIVs or RIV3) (CDC, 2024j; CDC, 2024k).

Vaccination Timing

For most groups, vaccination should ideally be offered during September or October and continue being offered as long as influenza viruses are circulating.

Timing considerations for **specific groups** include:

- For most adults (particularly those ages ≥65 years) and pregnant persons in the first or second trimester, vaccination during July and August should be avoided unless there is concern that later vaccination might not be possible.
- Children 6 months through 8 years who need two doses should receive one dose as soon as the vaccine is available.

- Vaccination during July and August can be considered for children of any age who require only one dose, particularly if there is concern that later vaccination might not be possible.
- July and August vaccination can be considered for pregnant persons who are in the third trimester during those months.
(CDC, 2024j; CDC, 2024k)

More detailed information for influenza vaccines is included in the table below.

U.S. 2024–2025 INFLUENZA VACCINES		
IIV3 (Inactivated Influenza Vaccine) or RIV3 (Recombinant Influenza Vaccine)		
Vaccine (Manufacturer)	**Age/Dosing/Administration**	**Comments**
Afluria (Seqirus)	• 6–35 months: 0.25 mL MDV* • ≥3 years: 0.5 mL via PFS* • ≥3 years: 0.5 mL via MDV	Dose from MDV can be given by jet injector for 18–64 years only; egg-based
Fluarix (GlaxoSmithKline)	≥6 months: 0.5 mL	Egg-based
Flucelvax (Seqirus)	≥6 months: 0.5 mL via PFS or MDV	Cell-cultured
FluLaval (GlaxoSmithKline)	≥6 months: 0.5 mL	Egg-based
Fluzone (Sanofi Pasteur)	• 6–35 months: 0.25 mL or 0.5 mL via MDV • ≥3 yrs: 0.5 mL via PFS	Egg-based
Fluzone High-Dose (Sanofi Pasteur)	≥65 years: 0.5 mL	1 of 3 options preferred for ≥65 years; egg-based
Fluad (Seqirus)	≥65 years: 0.5 mL	1 of 3 options preferred for ≥65 years; egg-based
Flublok (Sanofi Pasteur)	≥18 years: 0.5 mL	1 of 3 options preferred for ≥65 years; not egg-based
LAIV (Live Attenuated Influenza Vaccine)		
FluMist (AstraZeneca)	2–49 years: 0.1 mL each nostril (0.2 mL total) administered intranasally	• If vaccine recipient sneezes immediately after administration, dose should not be repeated. • If nasal congestion is present that might interfere with delivery of the vaccine to the nasopharyngeal mucosa, deferral should be

		considered or another age-appropriate vaccine should be administered.
* MDV (multidose vial) or PFS (prefilled syringe) (CDC, 2024j; CDC, 2024k)		

Contraindications and Precautions

The table below describes contraindications and precautions for administering an influenza vaccine. When a contraindication is present, a vaccine should not be administered. When a precaution is present, vaccination should generally be deferred but might be indicated if the benefit of protection from the vaccine outweighs the risk for an adverse reaction.

Providers can consider using vaccines for which there is a precaution; however, vaccination should occur in an inpatient or outpatient medical setting with supervision by a healthcare provider who is able to recognize and manage severe allergic reactions. Providers can also consider consulting with an allergist to help determine what vaccine component is responsible for the allergic reaction (CDC, 2024k).

INFLUENZA VACCINE CONTRAINDICATIONS AND PRECAUTIONS	
Vaccine Type	**Contraindications/Precautions**
Egg-based IIV3	Contraindications: • History of severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine (other than egg), or to a previous dose of any egg-based IIV, ccIIV, RIV, or LAIV influenza vaccine of any valency Precautions: • Moderate or severe acute illness with or without fever • History of Guillan-Barré syndrome within six weeks of receipt of influenza vaccine
Cell-cultured IIV3	Contraindications: • History of severe allergic reaction (e.g., anaphylaxis) to any cell-cultured IIV3 vaccine or vaccine component Precautions: • Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within six weeks of receipt of influenza vaccine • History of severe allergic reaction to a previous dose of any other influenza vaccine (any egg-based IIV, RIV, or LAIV) of any valency
RIV3	Contraindications:

	• History of severe allergic reaction (e.g., anaphylaxis) to RIV of any valency, or to any component of RIV3 Precautions: • Moderate or severe acute illness with or without fever • History of Guillain-Barré syndrome within six weeks of receipt of influenza vaccine • History of severe allergic reaction to a previous dose of any other influenza vaccine (any egg-based IIV, ccIIV, or LAIV) of any valency
LAIV3	Contraindications: • History of severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine (other than egg) or to a previous dose of any influenza vaccine (i.e, any egg-based IIV, ccIIV, RIV, or LAIV of any valency) • Concomitant aspirin or salicylate-containing therapy in children and adolescents • Children ages 2–4 years who have received a diagnosis of asthma or whose parents or caregivers report that a healthcare provider has told them during the preceding 12 months that their child had wheezing or asthma or whose medical record indicates a wheezing episode has occurred during the preceding 12 months • Children and adults who are immunocompromised due to any cause, including but not limited to medications, congenital or acquired immunodeficiency states, HIV infection, anatomic asplenia, or functional asplenia (e.g., due to sickle-cell anemia) • Close contacts and caregivers of severely immunosuppressed persons who require a protected environment • Pregnancy • Persons with active communication between the CSF and the oropharynx, nasopharynx, nose, ear, or any other cranial CSF leak • Persons with cochlear implants (due to potential for CSF leak, which might exist for some period of time after implantation. Providers might consider consultation with a specialist concerning risk of persistent CSF leak if an age-appropriate inactivated or recombinant vaccine cannot be used) • Receipt of influenza antiviral medication within the previous 48 hours for oseltamivir and zanamivir, five days for peramivir, and 17 days for baloxavir (see vaccination and influenza antiviral medications, page two, for additional guidance) Precautions: • Moderate or severe acute illness with or without fever

	• History of Guillain-Barré syndrome within six weeks of receipt of influenza vaccine • Asthma in persons ages ≥5 years • Other underlying medical conditions that might predispose to complications from influenza (e.g., chronic pulmonary, cardiovascular [except isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders [including diabetes mellitus])

Impact of Flu Vaccination on General Health

The best way to prevent flu and its potentially life-threatening complications is by receiving a yearly flu vaccine. Research shows the positive impact flu vaccines have on the health of the population. While effectiveness can vary, flu vaccination reduces the risk of flu illness by 40%–60% among the overall population during seasons when most circulating flu viruses are well-matched to those used to make flu vaccines. In people who get vaccinated but still get sick, flu vaccine has been shown to reduce severity of illness, taking flu from "wild to mild."

CDC estimates that during the 2022–2023 season, flu vaccination prevented about 6 million flu-related illnesses, 3 million medical visits, 65,000 hospitalizations, and 3,700 deaths. CDC recommends everyone 6 months and older get an annual flu vaccine (CDC, 2024l).

FLU AND COVID-19 VACCINE COADMINISTRATION

The coadministration of COVID-19 and influenza vaccines is approved and recommended by public health authorities. This coadministration is intended to improve both uptake and convenience (Harris et al., 2024).

The CDC notes that the flu vaccine and COVID-19 vaccine may be given at the same healthcare visit if someone is due for both vaccines. Both vaccines may be given in the same arm at least an inch apart, or the vaccines may be given in different arms or different parts of the body. If people choose to receive the flu and COVID-19 vaccines at different times, there is no recommended waiting time between receiving a flu vaccine and a COVID-19 vaccine (CDC, 2023a).

Some research findings show that people who received a flu vaccine and COVID-19 monovalent vaccine at the same time were slightly more likely to have reactions including fatigue, headache, and muscle ache than people who got only one of the vaccines (CDC, 2023a).

COVID-19

The impact of SARS-CoV-2, the virus responsible for development of COVID-19 infection, has undergone drastic changes since 2020. Hospitalizations and deaths from infection are decreasing even though COVID-19 community transmission continues to periodically surge (CDC, 2024m).

Highlights of changes in the threat of COVID-19 include the following:

- Although COVID-19 remains common, when compared to 2020, individual infections are less likely to result in severe illness for most people in the United States. COVID-19 poses the highest risk for older adults, infants, and people with pre-existing medical conditions.
- COVID-19 community transmission continues to surge periodically. For the past four years, there have been at least two and sometimes three periods of high community transmission of the virus that causes COVID-19.
- Severe outcomes from COVID-19 have substantially decreased since 2020 and 2021. Hospital admissions in the United States for COVID-19 have decreased by more than 60% from their peak in 2021, dropping from over 2.5 million that year to around 900,000 in 2023.
- The decline in deaths associated with COVID-19 is even more dramatic than the drop in hospitalizations. In 2021, over 450,000 deaths among Americans were associated with COVID-19, while in 2023, that number fell to roughly 75,000. This represents an 83% decrease since early in the pandemic. That said, the number of COVID-19-related deaths is still substantial, impacting families across the country. Based on preliminary data, COVID-19 still ranks as the 10th most common cause of death for 2023, a drop from 3rd in 2020 and 2021 and 4th in 2022.
  (CDC, 2024m)

The SARS-CoV-2 virus that causes COVID-19 is constantly mutating. In the majority of cases, when mutations take place, they are inconsequential because the protein configuration of the virus does not change. These are small changes (referred to as *drift*), and the immune system is able to recognize and respond to such changes. However, there may also be abrupt, significant changes in the structure of a virus (referred to as *shift*). If the configuration of a virus mutates enough, the virus may respond differently to treatments, or the antibodies of the immune system may not recognize the new mutation, resulting in infection (Nightengale, 2021).

Although antibodies created after COVID-19 vaccination will recognize and respond to many mutations of the virus, the immune system may not recognize and respond to all mutations, which necessitates the development of updated booster vaccines (Nightengale, 2021).

2024–2025 COVID-19 Vaccine Updates

Because the virus that causes COVID-19 is always changing, receiving an updated COVID-19 vaccine can restore and provide enhanced protection against the variants currently responsible

for most infections and hospitalizations in the United States. Therefore, the **CDC recommends that most people ages 6 months and older receive the 2024–2025 COVID-19 vaccine**. This includes people who have received a COVID-19 vaccine before as well as people who have contracted COVID-19 (CDC, 2024n, 2024p).

Two **types** of COVID-19 vaccines are recommended for use in the United States:

- mRNA vaccines/monovalent based on KP.2 strain
    - Moderna COVID-19 vaccine (2024–2025 formula for children ages 6 months–11 years and Spikevax for people ages 12 years and older)
    - Pfizer-BioNTech COVID-19 Vaccine (2024–2025 formula for children ages 6 months–11 years and Comirnaty for people ages 12 years and older)
- Protein subunit vaccine/monovalent based on JN.1 strain
    - Novavax COVID-19 vaccine, adjuvanted (2024–2025 formula for people ages 12 years and older)

(CDC, 2024n)

There is no preferential recommendation for the use of any one COVID-19 vaccine over another when more than one recommended and age-appropriate vaccine is available.

The 2023–2024 Moderna, Novavax, and Pfizer-BioNTech COVID-19 vaccines are no longer recommended and should not be used (CDC, 2024n).

There are **different vaccine recommendations** for:

- People who are moderately or severely immunocompromised (CDC, 2024q)
- People who recently had COVID-19
- People who recently received the 2023–2024 COVID-19 vaccine

(CDC, 2024n, 2024p)

Below is a summary of the recommendations (as of September 2024) for administration of the 2024–2025 vaccines from Moderna, Pfizer-BioNTech, and Novavax in people who are **not** moderately or severely immunocompromised.

CHILDREN AGES 6 MONTHS–4 YEARS

Children in this age range are considered up to date when they have received all recommended doses, including at least one dose of the 2024–2025 vaccine, according to the table below:

Previous Vaccination	2024–2025 Recommended Doses
0 doses (never vaccinated)	2 doses of 2024–2025 Moderna vaccine or 3 doses of 2024–2025 Pfizer-BioNTech vaccine
1 or more doses of Moderna vaccine	1 dose of 2024–2025 Moderna vaccine
1 dose of Pfizer-BioNTech vaccine	2 doses of 2024–2025 Pfizer-BioNTech vaccine
2 or more doses of Pfizer-BioNTech vaccine	1 dose of 2024–2025 Pfizer-BioNTech vaccine
(CDC, 2024p)	

CHILDREN AGES 5–11 YEARS

Children ages 5–11 years are up to date when they have received:

- 1 dose of 2024–2025 Moderna vaccine or
- 1 dose of 2024–2025 Pfizer-BioNTech vaccine

PEOPLE AGES 12 YEARS AND OLDER

People ages 12 and older are up to date when they have received:

- 1 dose of 2024–2025 Moderna vaccine or
- 1 dose of 2024–2025 Pfizer-BioNTech vaccine or
- 1 dose of 2024–2025 Novavax vaccine, except people receiving a vaccine for the first time, who require 2 doses of 2024–2025 Novavax vaccine

Impact of COVID-19 Vaccination on General Health

People who received the previous COVID-19 vaccine were 54% less likely to get COVID-19 during the four-month period from mid-September 2023 to January 2024. Data show that the updated COVID-19 vaccines were effective against the different circulating virus variants such as JN.1 and XBB (CDC, 2024r).

The World Health Organization (WHO) has stated that COVID-19 vaccines have saved millions of lives and provide strong protection against serious illness, hospitalization, and death. To ensure that protection is maximized, the WHO encourages people to receive COVID-19 vaccine doses and boosters as recommended by medical authorities (WHO, 2023).

PNEUMONIA

Pneumonia is a common respiratory infection that causes more than one million hospitalizations and more than 50,000 deaths annually (ALA, 2024a). Anyone can get pneumonia, but two age groups are at higher risk of developing pneumonia and having a more serious form of the disease:

- **Babies and children** (2 years of age or younger) are at higher risk because their immune systems are not yet mature. This risk is especially high for premature babies.
- **Older adults** (65 years of age or older) are also at higher risk because immune systems typically weaken with age. Older adults are also more likely to have other chronic health issues that increase the risk of pneumonia.

Babies, children, and older adults who do not receive the recommended vaccines to prevent pneumonia have an even higher risk (NHLBI, 2022).

Pneumonia Vaccine Updates

In June 2024, the CDC posted updated pneumococcal disease vaccine information. U.S. health authorities have approved the use of two types of pneumococcal vaccines, each of which helps to protect against different serotypes (distinguishable strain of a microorganism) of pneumococcal bacteria. These are (CDC, 2024a):

- Pneumococcal conjugate vaccines (PCVs): PCV15 and PCV20
- Pneumococcal polysaccharide vaccine: PPSV23

The CDC recommends routine pneumococcal vaccination for all **children younger than 5 years** with a four-dose PCV series (PCV15 or PCV20). One dose is indicated at each of the following ages:

- 2 months
- 4 months
- 6 months
- 12–15 months
  (CDC, 2024b)

Children younger than 5 years who miss their injections or start the series later than recommended should also be vaccinated. The number of doses recommended and the intervals between doses will depend on the child's age when vaccination begins. In certain situations, **children 2–18 years** may need additional pneumococcal vaccine doses.

Adults younger than 65 years may be recommended to receive pneumococcal vaccines. Risk-based indications for pneumococcal vaccination and the type of vaccine and number of doses vary by age and vaccination history (CDC, 2024b).

For **adults 65 years or older**, recommendations include:

- PCV15 or PCV20 for those who have never received any pneumococcal conjugate vaccine or whose previous vaccination history is unknown:
    - If PCV15 is given, administer a dose of PPSV23 one year later if needed. The minimum interval is eight weeks and can be considered in adults with: an immunocompromising condition, a cochlear implant, or a cerebrospinal fluid leak.
    - If PCV20 is given, additional vaccination is not recommended.
- Based on shared clinical decision-making, PCV20 is given if the individual has received both PCV13 (but not PCV15 or PCV20) at any age and PPSV23 at or after the age of 65. (CDC, 2024b)

In June 2024, the FDA granted accelerated approval for PCV21 under the brand name Capvaxive. This single-dose vaccine is recommended for multiple groups including:

- Adults 65 years and older who had not previously received a pneumococcal conjugate vaccine or whose previous vaccination history is unknown
- Adults 19–64 years with certain risk factors who have not previously received a conjugate vaccine or whose vaccine history is unknown
- Adults 19 years and older who have begun their pneumococcal vaccine series with PCV13 but have not yet received all recommended PPSV23 doses
- Adults 65 years and older who completed their vaccine series with both PCV13 and PPSV23 based on shared clinical decision-making with a treatment provider (FDA, 2024a; Halpern, 2024)

Impact of Pneumonia Vaccination on General Health

Pneumococcal pneumonia is the most common form of bacterial pneumonia, causing 150,000 hospitalizations each year and killing about 5%–7%, or about 1 in 20, of those who are infected. Research shows that pneumococcal vaccines are underutilized in eligible adults ages 18–64 years who are at increased risk and in adults ages 65 years or older (ALA, 2023).

The pneumococcal vaccine protects people who are most at risk for serious pneumococcal infections that can lead to serious complications, hospitalization, or even death. It is important to be aware that the vaccine helps protects against the most common types of bacterial pneumonia, but not all of them. There are many different types of bacterial pneumonia, but the vaccine will significantly reduce the risk of the common forms of the disease (Cleveland Clinic, 2021). Side effects of pneumonia vaccines are typically mild and last for one to two days. Side effects

include feeling drowsy, loss of appetite, sore or swollen arm at the injection site, fever, and headache (CDC, 2023b).

Receiving an influenza vaccine also helps to prevent pneumonia, since influenza is a fairly common trigger of pneumonia. Thus, preventing influenza is a good way to reduce the risk of developing pneumonia (ALA, 2024b).

The CDC has published the following research findings regarding the effectiveness of the pneumococcal vaccines:

- Compared to unvaccinated children, children who received PCV7 had 20% fewer episodes of chest X-ray confirmed pneumonia, 7% fewer episodes of acute otitis media, and 20% fewer tympanostomy tube placements.
- More than 80% of healthy adults who received the PPSV23 vaccine developed antibodies against the serotypes contained in the vaccine. Older adults and persons with some chronic illnesses or immunodeficiency may not respond as well. Children younger than 2 years typically have a poor antibody response to PPSV23.
- The PPSV23 vaccine is 60%–70% effective in preventing invasive disease caused by serotypes in the vaccine.
  (CDC, 2023a)

RESPIRATORY SYNCYTIAL VIRUS INFECTION (RSV)

RSV is one of the most common respiratory viruses in circulation and is the most common cause of hospitalization in infants. Older adults and infants are at greater risk for its development and for experiencing serious disease. Fortunately, both of these groups can now be protected from the disease via vaccination.

RSV causes annual outbreaks of respiratory illnesses in all age groups. In most regions of the United States, RSV season begins in the fall and peaks in the winter. The timing and severity of the RSV season can vary from year to year (CDC, 2024c).

Older adults, especially those with underlying health conditions (e.g., cardiac or respiratory disease), are at high risk for severe disease caused by RSV (FDA, 2023). RSV leads to 60,000–160,000 hospitalizations and 6,000–10,000 deaths among adults ages 65 and older on an annual basis (CDC, 2023b).

2024 RSV Vaccine Recommendations

The 2024 CDC recommendations for RSV vaccine are as follows.

- Everyone 75 years and older

- Adults 60–74 years at increased risk of severe RSV (includes those with chronic heart or lung disease, certain other chronic medical conditions, and those who are residents of nursing homes or other long-term care facilities)
- Pregnant people (one dose of maternal RSV vaccine [Pfizer Abrysvo] during weeks 32–36 of pregnancy, administered September through January)
- Infants and young children:
    - 1 dose of nirsevimab for infants younger than 8 months who were born shortly before or are entering their first RSV season (typically fall through spring)
    - 1 dose of nirsevimab for infants and children 8–19 months who are at increased risk for severe RSV disease and entering their second RSV season
    - Monoclonal antibody palivizumab for children 24 months and younger with certain conditions that place them at high risk for severe RSV disease, given monthly during RSV season

  (CDC, 2024d)

The best time to get vaccinated is in late summer and early fall, just before RSV usually starts to spread. Currently, CDC recommends a single dose of RSV vaccine. Based on clinical trial data, one dose of RSV vaccine can provide protection for at least two years. Studies are ongoing to determine whether people ages 60 and older would benefit from receiving additional RSV vaccine doses in the future (CDC, 2024h).

RSV Vaccines

RSV vaccines include:

- Arexvy
- mResvia
- Abrysvo
- Nirsevimab (Beyfortus)

  (CDC, 2024e)

Side effects are typically mild. According to the CDC (2024f), a small number of participants in clinical trials developed serious neurological conditions, including Guillain-Barré syndrome (GBS), after RSV vaccination. Adults age 60 and older are at increased risk for GBS from vaccination (CDC, 2024e).

AREXVY

Initially approved for use in **adults 60 years and older**, Arexvy was also approved in June 2024 for people ages 50–59 who are at increased risk for RSV lower respiratory tract disease (Drugs.com, 2024a). During 2023–2024 Arexvy was 77%–88% effective in preventing RSV-

associated hospitalization or emergency department encounters in adults 60 and older (CDC, 2024e).

Arexvy is not a live vaccine. It is a recombinant subunit vaccine that does not contain any living virus. Arexvy is generally well tolerated. **Side effects** are typically temporary and of brief duration. The most commonly reported side effects include:

- Injection site pain
- Fatigue
- Muscle aches
- Headache
- Joint pain

  (CDC, 2024g; Drugs.com, 2024a; Mayo Clinic, 2023)

mRESVIA

Approved by the FDA in 2024, mResvia is an intramuscular vaccine used to immunize **adults 60 years and older** against RSV infection. Given as a single injection, it is usually injected into the deltoid muscle of the upper arm (Drugs.com, 2024b).

The most common side effects associated with mResvia that affect 10% or more of the people who receive it include:

- Injection-site pain
- Fatigue
- Headache
- Muscle pain
- Joint pain
- Underarm swelling or tenderness
- Chills

  (Drugs.com, 2024b)

Less common side effects include nausea, vomiting, fever, hives, and facial paralysis. Syncope may also occur (Drugs.com, 2024b).

NIRSEVIMAB (BEYFORTUS)

In July 2023, the FDA approved nirsevimab, a long-acting monoclonal antibody product, for use in **neonates and infants** to protect against RSV. Protection from disease is expected to last at least five months (about the length of a typical RSV season). Nirsevimab has been shown to be

77% effective at preventing RSV-associated emergency department encounters and 98% effective at preventing RSV-associated hospitalization (AAP, 2024a; CDC, 2024i).

Nirsevimab comes in a prefilled syringe. The AAP recommendations for nirsevimab use are consistent with ACIP guidelines. These include:

- For use in infants <8 months born during or entering their first RSV season whose pregnant parent did not receive RSVpreF vaccine or who were born <14 days after the pregnant parent's RSVpreF vaccination
- Not needed for most infants >8 months whose pregnant parent received RSVpreF vaccine >14 days before giving birth
- May be considered for infants born to a vaccinated pregnant patient in rare circumstances when the potential incremental benefit of administration is warranted, including, but not limited to:
    - Infants born to pregnant people who might not have mounted an adequate immune response to vaccination or who have conditions that are linked to reduced transplacental antibody transfer (e.g., someone with HIV infection)
    - Infants who might have experienced loss of transplacentally acquired antibodies, such as those who have undergone cardiopulmonary bypass
    - Infants with substantially increased risk for severe RSV disease
- For infants/children 8–19 years who are at increased risk of severe RSV disease and entering their second RSV season, including those recommended by the AAP to receive palivizumab, regardless of RSV vaccination status of the pregnant parent, including:
    - Infants and children with chronic lung disease of prematurity who required medical support at any time during the 6-month period before the start of the second RSV season
    - Infants and children who are severely immunocompromised
    - Infants and children with cystic fibrosis who have manifestations of severe lung disease or have weight-for-length that is less than the 10th percentile
    - American Indian and Alaska Native children

(AAP, 2024a)

The most common **side effects** include rash and pain, swelling, or hardness at the injection site. Other possible side effects include:

- Swelling of the face, mouth, or tongue
- Respiratory distress
- Difficulty swallowing
- Unresponsiveness
- Cyanosis of the skin, lips, or underneath the fingernails

- Muscle weakness
- Severe rash, hives, or itching

(McGovern, 2023)

PALIVIZUMAB FOR HIGH-RISK PATIENTS

Both nirsevimab and palivizumab (Synagis) are used to prevent serious lung infection in children and babies caused by RSV infection (Mayo Clinic, 2024). All infants eligible for nirsevimab should receive nirsevimab. Palivizumab should be given to eligible high-risk patients if nirsevimab is not available (AAP, 2024b).

ABRYSVO

The CDC and the ACIP recommend RSV vaccination for **pregnant people** during 32–36 weeks of gestation using seasonal administration to protect infants against RSV-associated lower respiratory tract disease (LRTD) after birth. In most of the continental United States, the RSV vaccine should be given to pregnant people from September 1 through January 31, regardless of year-to-year circulation, when infants would be born during increased RSV activity, and the vaccination would provide the most benefits to the infant against RSV-associated LRTD after birth (CDC, 2024i).

Additional important recommendations include:

- In jurisdictions where seasonality differs from most of the continental United States, such as Alaska, southern Florida, and Guam, healthcare providers should follow state, local, or territorial guidance on timing of administering Abrysvo for pregnant people.
- CDC recommends protecting all infants against RSV-associated LRTD through either the RSV vaccine for pregnant people (Abrysvo) or infant vaccination (nirsevimab). Administration of both products is not needed for most infants.
- For infants <8 months born to unvaccinated mothers, healthcare providers should administer nirsevimab from October 1 through March 31; however, healthcare providers can administer nirsevimab outside of this timeframe based on local epidemiology. (CDC, 2024i)

COADMINISTRATION OF FLU AND RSV VACCINES

There are limited data on coadministration of flu and RSV vaccines since RSV vaccines are new. However, in clinical trials, coadministration of RSV and flu vaccines was safe. Reactions at the injection site might be more common than with one vaccine alone, but vaccination with RSV vaccine and flu vaccine during the same visit is acceptable. Safety monitoring of co-administered RSV vaccine and flu vaccine is ongoing (CDC, 2023a).

Impact of RSV Vaccination on General Health

RSV vaccination offers protection from RSV. This is especially important for older adults and infants who may get quite sick from the infection, need hospitalization, or even die (CDC, 2023b).

Researchers at the Yale School of Public Health found that:

- If 66% of adults 60 years and older received an RSV vaccine, outpatient care was reduced by as much as 53.6% and hospitalizations by up to 60.5%.
- 66% vaccination coverage reduced RSV-related deaths by as much as 60.4%.
- Increasing vaccination coverage to 100% reduced outpatient care by up to 81.2%, hospitalizations by up to 91.7%, and deaths by up to 91.3%.
- It is believed that vaccination will offer protection over two RSV seasons. Researchers await efficacy data to more definitively make conclusions about length of protection. (Scully, 2024)

CONCLUSION

The 2024–2025 respiratory virus season has begun. Updated vaccines offer enhanced protection against respiratory infections and illnesses. Of particular note, RSV vaccination is a fairly newly developed agent that offers protection to older adults and infants and is approved for use in pregnant individuals to prevent lower respiratory tract disease in infants through 6 months of age. Healthcare professionals are obligated to be knowledgeable about current guidelines and updates in order to provide the best possible patient care.

RESOURCES

Influenza information for professionals (CDC)
https://www.cdc.gov/flu/professionals/index.htm

Overview of COVID-19 vaccination (CDC)

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/interim-considerations-us.html

RSV immunizations (CDC)
https://www.cdc.gov/vaccines/vpd/rsv/index.html

Top 5 reasons for adults to get vaccinated for pneumococcal disease (NFID)
https://www.nfid.org/resource/top-5-reasons-for-adults-to-get-vaccinated-for-pneumococcal-disease/

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1. Which statement is **accurate** regarding administration of influenza vaccines?

a. Coadministration of flu and COVID-19 vaccines is contraindicated in all individuals ages 65 and older.
b. The Flublok vaccine is administered intranasally.
c. For most groups, vaccination ideally should be offered during September or October.
d. Vaccination should never be administered during July and August for patients who are pregnant in their third trimester.

2. Which statement is **accurate** about 2024–2025 COVID-19 vaccination?

a. Only people 5 years of age and older should receive a COVID-19 vaccine.
b. Immunocompromised people should not receive a COVID-19 vaccine.
c. New vaccines have been developed in response to mutations in the COVID-19 virus.
d. The new Novavax vaccine is recommended for children ages 5–11 years.

3. Which statement **accurately** describes current pneumonia vaccine recommendations?

a. The CDC recommends routine pneumococcal vaccination for all children younger than five years of age.
b. The FDA recently approved PCV21 as a 3-dose series for adults 65 years of age and older.
c. Adults 65 years of age and older should not receive PCV20.
d. Pneumococcal vaccines are never recommended in adults ages 19–64.

4. Which statement is **accurate** about the respiratory syncytial virus (RSV) vaccine?

a. The CDC recommends that RSV and a flu vaccination not be given at the same time.
b. The Arexvy RSV vaccine is a live vaccine that contains living virus.
c. RSV mutates in ways similar to COVID, so an annual vaccination is necessary.
d. Trials showed that one dose of RSV vaccine provides protection for two RSV seasons.