Massachusetts Department of Public Health

ACIP Updates in Adult Immunizations

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Respiratory virus season

There have been many ACIP updates this summer.

We have more tools than ever!

This is the first fall and winter virus season where vaccines are available for the three viruses responsible for most hospitalizations – COVID-19, RSV, and flu

ACIP Updates in Adult Immunizations Outline

RSV

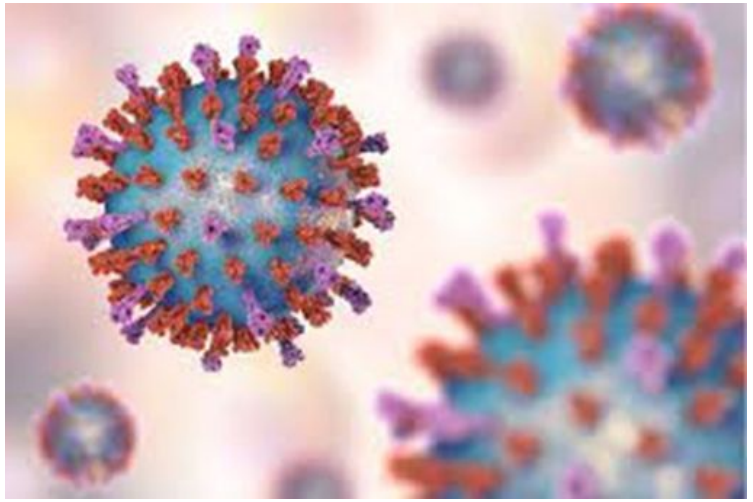
COVID-19

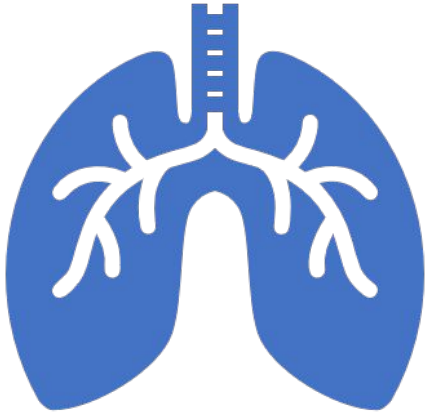
Influenza

RSV

Respiratory syncytial virus (RSV)

- Causes annual outbreaks of respiratory illnesses in all age groups
- RSV season starts in the fall and peaks in the winter
- RSV often causes mild disease, but can cause severe disease – lower respiratory tract disease and hospitalization - particularly in very young infants (and in older adults)



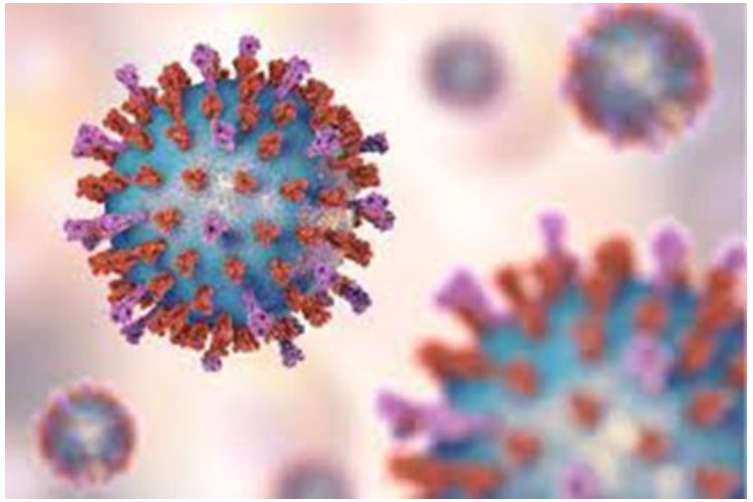


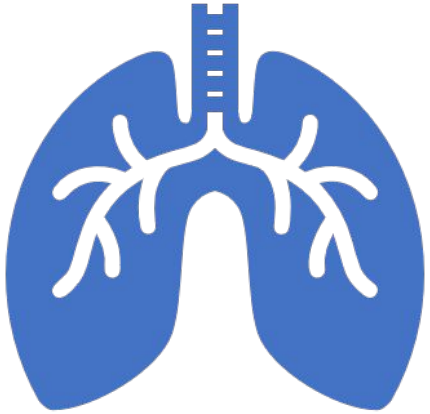
Respiratory syncytial virus (RSV)

- Typically infected with RSV for the first time as an infant or toddler and nearly all children are infected before their second birthday. (Causes the most hospitalizations for children under two years of age.) However, repeat infections may occur throughout life - people of any age can be infected.

- Those at high risk for severe illness from RSV include:
  - Older adults, especially those 65 years and older
  - Adults with chronic lung or heart disease
  - Adults with weakened immune systems

- RSV can sometimes also lead to exacerbation of serious conditions such as:
  - Asthma
  - Chronic obstructive pulmonary disease (COPD)
  - Congestive heart failure





Annual RSV Burden Among Adults Ages 65 Years and Older

900,000–1,400,000 medical encounters

60,000–160,000 hospitalizations

6,000–10,000 deaths

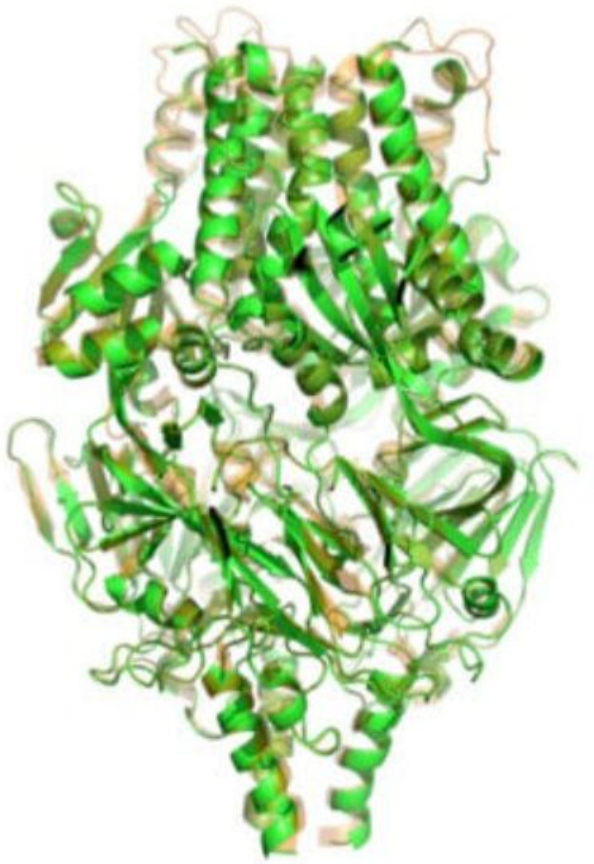
Evidence to Recommendations Framework

Respiratory syncytial virus (RSV) Vaccine

- A vaccine to help prevent RSV had been an elusive public health quest for more than half a century
- A formalin-inactivated virus, FI-RSV, the earliest vaccine for RSV, was tested in the 1960s in clinical trials, but it resulted in vaccine-enhanced disease (VED)
- Virus uses a special protein called a fusion (F) glycoprotein to pass through the cell membrane.
- When the F protein is in the prefusion form, it is unstable — it has a strong tendency to snap into the postfusion form. That prefusion F instability made it hard for researchers to lock F into the prefusion form.

Respiratory syncytial virus (RSV) Vaccine

- In 2013, the NIH made a breakthrough discovery by figuring out the detailed crystal structure of prefusion RSV F.
- Also showed that the RSV-neutralizing antibodies in humans are directed toward this prefusion form.
- The identification of the prefusion crystal structure made it possible for researchers to develop methods to modify the sequence of F to prevent it from switching to the postfusion form development of vaccines that produces antibodies that can neutralize the prefusion F protein.



McLellan JS, Chen M, Leung S, Graepel KW, Du X, Yang Y, Zhou T, Baxa U, Yasuda E, Beaumont T, Kumar A, Modjarrad K, Zheng Z, Zhao M, Xia N, Kwong PD, Graham BS. Structure of RSV fusion glycoprotein trimer bound to a prefusion-specific neutralizing antibody. Science. 2013 May 31;340(6136):1113-7. doi: 10.1126/science.1234914.

Respiratory syncytial virus (RSV) Vaccine

- Two new RSV vaccines recommended for use in adults 60 years of age and older with shared decision making

- Both vaccines have F protein stabilized in its prefusion conformation to trigger antibodies produced against the F protein to interfere with the virus' ability to fuse and infect cells.

In June 2023, CDC's Advisory Committee on Immunization Practices (ACIP) recommended the first two RSV vaccines for older adults.

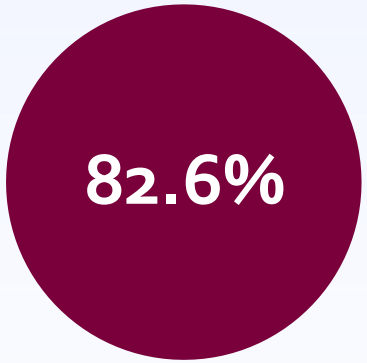
- RSVPreF3 (**Arexvy, GSK**) is a 1-dose adjuvanted ($AS01_E$) recombinant prefusion F protein (preF) vaccine.

- RSVpreF (**Abrysvo, Pfizer**) is a 1-dose recombinant preF vaccine.

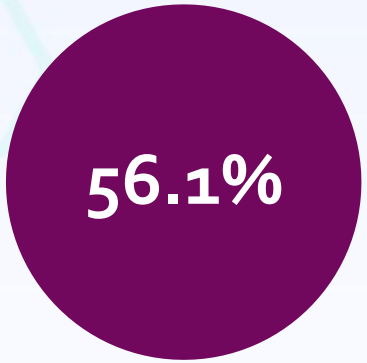
Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Vaccine Efficacy (VE): GSK

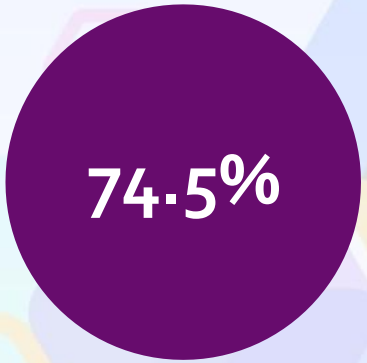
- Randomized, double-blinded, placebo-controlled phase 3 clinical trial
  - 17 countries
  - 24,973 participants
- VE against RSV-associated lower respiratory tract disease (LRTD):



Season 1



Season 2

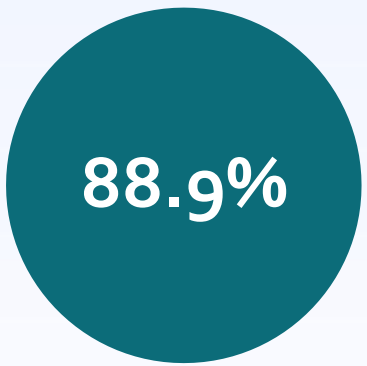


Combined Season 1 & 2 (Interim)

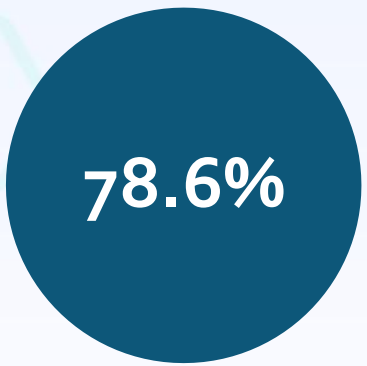
Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Vaccine Efficacy (VE): Pfizer

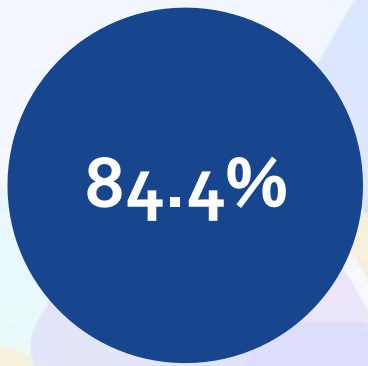
- Randomized, double-blinded, placebo-controlled phase 3 clinical trial
  - 7 countries
  - 36,862 participants
- VE against RSV-associated lower respiratory tract disease (LRTD)*:



Season 1



Season 2 (Interim)



Combined Season 1 & 2 (Interim)

*Based on trial efficacy against RSV LRTI with at least **three** lower respiratory **signs/symptoms**

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Vaccine Safety: GSK & Pfizer

- Generally well-tolerated with an acceptable safety profile
- Most common side effects are similar to those of other vaccines
- Six cases of inflammatory neurologic events reported in clinical trials.
- It is unknown at this time whether these events occurred by chance, or whether RSV vaccination increases the risk of these events.
- Imbalance in the small number of atrial fibrillation events; more cases among vaccine recipients, compared with placebo recipients.

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

RSV Vaccination Recommendations

- ACIP and CDC recommend that adults ages 60 years and older may receive a **single dose** of RSV vaccine using **shared clinical decision making**.

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Shared Clinical Decision-making

- There is no **default decision** to vaccinate.
- Recommendations are **individually based** and informed by a decision process between the **health care provider and patient**.

Best available evidence

Patients' risk for disease, characteristics, values, preferences

Clinical discretion

Characteristics of the vaccine

ACIP Shared Clinical Decision-Making Recommendations

Chronic Underlying Medical Conditions Associated with Increased Risk of Severe RSV Disease

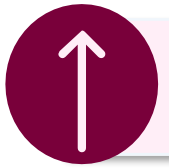
- Lung disease
- Cardiovascular disease
- Moderate or severe immune compromise
- Diabetes Mellitus
- Neurologic or neuromuscular conditions
- Kidney disorders
- Liver disorders
- Hematologic disorders
- Other conditions that might increase the risk for severe disease

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Other Factors Associated with Increased Risk of Severe RSV Disease

Residence in a nursing home or other long-term care facility (LTCF)

Frailty



Advanced age

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

Vaccination Timing: 2023-2024 Season

<u>Summer</u>: Offer RSV vaccination as early as vaccine is available

Continue to offer vaccination throughout the RSV season to eligible adults who remain unvaccinated

Use of Respiratory Syncytial Virus Vaccines in Older Adults: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023

In September 2023, CDC's Advisory Committee on Immunization Practices (ACIP) recommended the first Maternal RSV vaccines to protect infants from RSV - Abrysvo.

- Maternal vaccine recommended for pregnant people during 32 through 36 weeks gestation, with seasonal administration (during September through January in most of the continental United States) to prevent lower respiratory track infection from RSV in infants.

- Same formulation of the vaccine recommended for adults 60 years and older with shared decision making

Abrysvo – Maternal vaccine

Time period after birth	Trial dosing interval (24–36 weeks gestation) Vaccine efficacy[1] (99.5% or 97.58% CI)	Approved dosing interval (32–36 weeks gestation) Vaccine efficacy[2] (95% CI)
0–90 days after birth	81.8% (40.6, 96.3)	91.1% (38.8, 99.8)
0–180 days after birth	69.4% (44.3, 84.1)	76.5% (41.3, 92.1)

Concerns: 6.8 percent receiving the treatment had preterm births, compared to 5 percent in the placebo group – not statistically significant

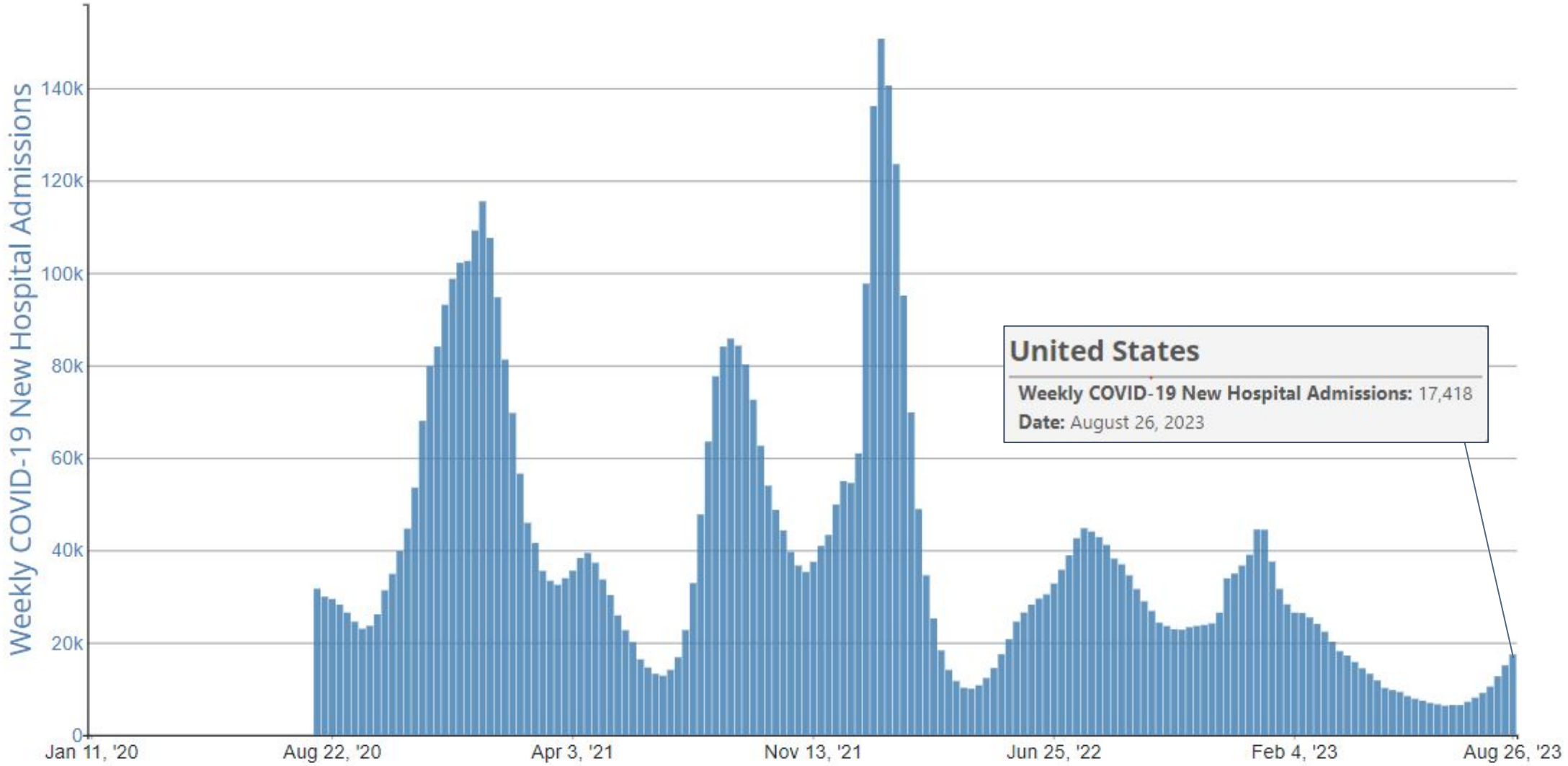
1. Kampmann et al. Bivalent Prefusion F Vaccine in Pregnancy to Prevent RSV Illness in Infants - PubMed (nih.gov)
2. Vaccines and Related Biological Products Advisory Committee May 18, 2023 Meeting Briefing Document-

Covid-19

Covid-19

- The clinical presentation of COVID-19 varies from asymptomatic infection to critical illness; symptoms can change during the course of illness.
- Not a clear seasonal pattern
- The burden of COVID-19 varies by age and underlying condition status with those ages ≥65 years and those with multiple underlying conditions having the highest risk of severe outcomes due to COVID-19
- COVID-19 burden is currently lower than at previous points in the pandemic, however there are still thousands of hospitalizations and hundreds of deaths each week - anticipate further increases as we enter respiratory virus season
- Monovalent XBB containing COVID-19 vaccines increase the immune response against the currently circulating variants

COVID-19 new hospital admissions, by week, in the United States National Healthcare Safety Network (NHSN), August 2020 – August 2023



Source: COVID-19–associated hospitalization data reported to CDC's National Healthcare Safety Network (NHSN).
COVID Data Tracker

COVID-19 Available Vaccines in the US

mRNA vaccines

- Moderna COVID-19 Vaccine
- Pfizer-BioNTech COVID-19 Vaccine

Protein subunit vaccine

- Novavax COVID-19 Vaccine, Adjuvanted – currently under review by the FDA

Janssen (J&J) COVID-19 Vaccine is no longer available in the United States.

In September 2023, CDC's Advisory Committee on Immunization Practices (ACIP) recommended Universal COVID-19 vaccination.

CDC recommends that people ages 6 months and older receive an updated 2023-2024 COVID-19 vaccine.

Monovalent XBB.1.5 composition

The committee considered the option of a targeted vaccination strategy, but decided to recommend universal vaccination for reasons that include:

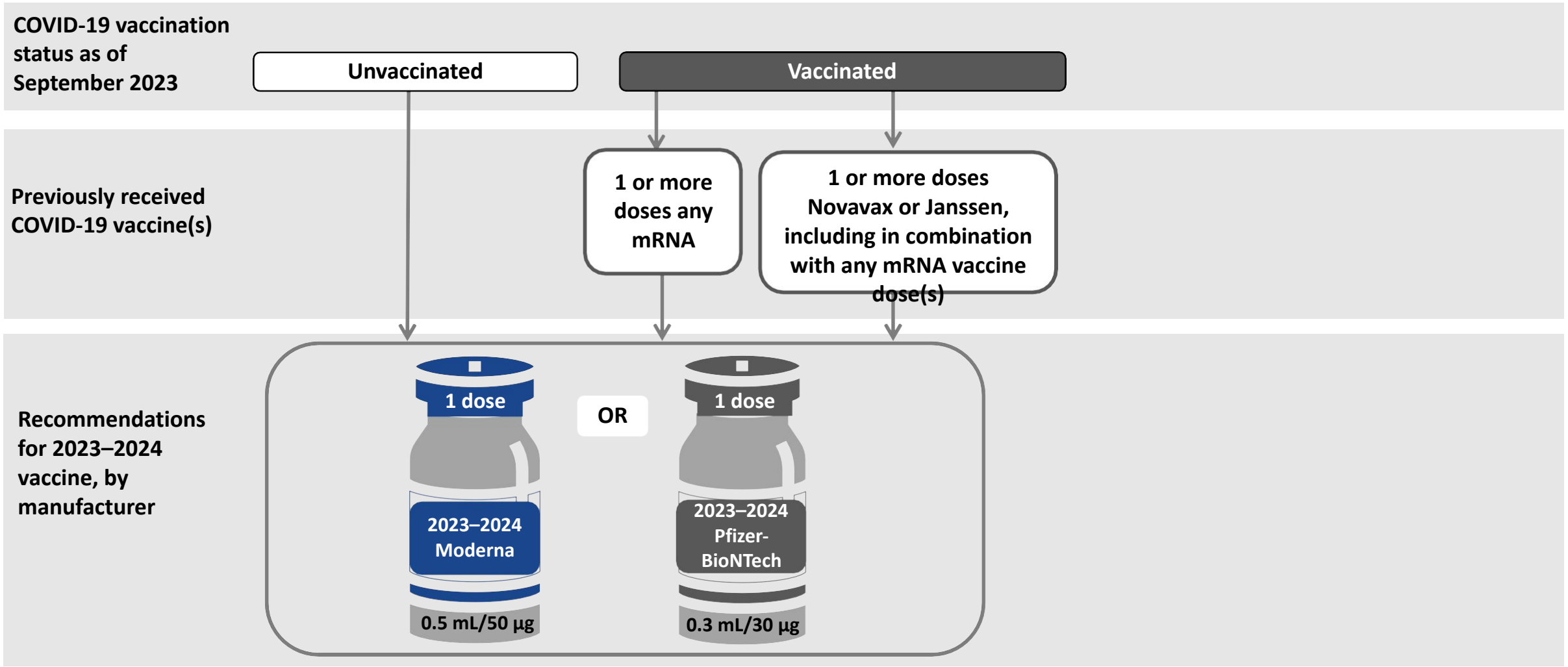
- While certain populations benefit most from vaccination (eg adults 65 years and older) - cannot predict on the level of the individual who will get severe COVID-19 disease. There is no population with zero risk of severe COVID-19. Severe outcomes do occur in people who have no underlying conditions. Thus, a targeted vaccination strategy may not adequately protect the population.
- A majority of the US population has an underlying condition that would qualify under a risk-based recommendation (eg. 70% of adult population is overweight or obese).
- The committee presented scenario modeling data that predicted that a universal vaccination strategy would be projected to prevent about 200,000 more hospitalizations and 15,000 more deaths over the subsequent 2 years, compared with a strategy of only vaccinating those 65+ years.
- Although the rates of hospitalization for COVID-19 are relatively low at this time, rates are ticking up. There is still substantial COVID-19 disease burden – continue to see thousands of hospitalizations and hundreds of deaths each week nationwide.
- Simple and stable recommendations may increase vaccine coverage over time – shared decision making can be a barrier to optimal vaccine implementation.
- Hospitalization rates and mortality from other vaccine preventable infections prior to universal vaccine recommendations (i.e measles, chickenpox, influenza) were similar or lower than that for COVID-19.
- Majority of U.S. population has some level of immunity – but data presented showed that immunity/vaccine effectiveness wanes with time. The new 2023-24 vaccines increase the immune response against the currently circulating variants.
- Risk of serious vaccine side effects are low.

Recommendations for people aged 5 years and older without immunocompromise

Doses recommended:

- **1 dose of 2023–2024 COVID-19 vaccine**, regardless of prior vaccination history

Recommended 2023–2024 COVID-19 mRNA vaccines for people who are NOT immunocompromised, aged ≥12 years*



***For information about administration intervals, see Table 1 in the Interim Clinical Considerations for Use of COVID-19 vaccines.**

Recommendations for people aged ≥6 months who are moderately or severely immunocompromised

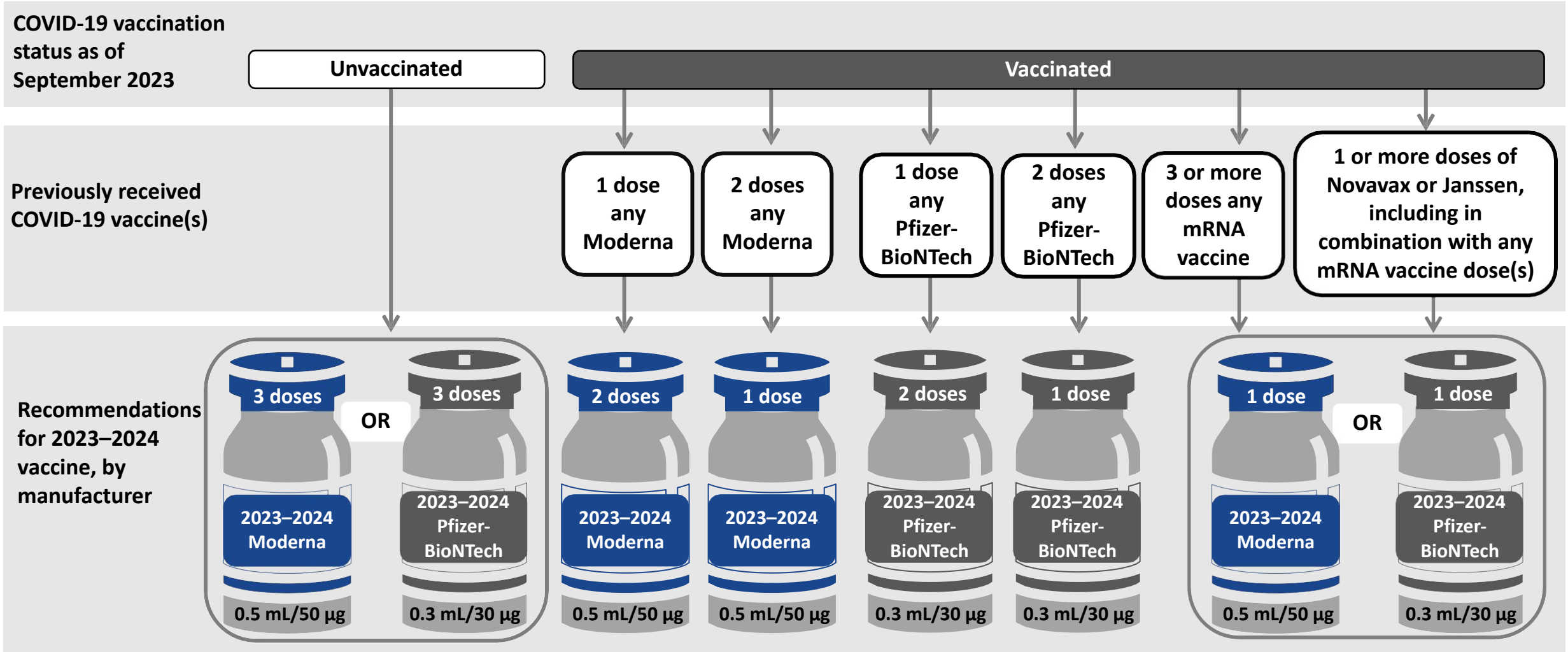
Doses recommended:

- Initial COVID-19 vaccine series*
- **At least 1 2023–2024 COVID-19 vaccine dose**
- May receive 1 or more additional 2023-2024 mRNA COVID-19 vaccine doses**

*Series of 3 homologous mRNA COVID-19 vaccine doses at time of initial vaccination. This could also include a history of receipt of 1 or more doses of Novavax or Janssen, including in combination with mRNA vaccine dose(s).

**Further additional dose(s) may be administered, informed by the clinical judgement of a healthcare provider and personal preference and circumstances. Further additional doses should be administered at least 2 months after the last 2023-2024 COVID-19 vaccine dose.

Recommended 2023–2024 COVID-19 vaccines for people who ARE moderately or severely immunocompromised, aged ≥12 years*



***For information about administration intervals, people who transition from age 11 years to age 12 years during an mRNA vaccination series, and administration of additional dose(s), see Table 2 in Interim Clinical Considerations for Use of COVID-19 Vaccines.**

Updates to COVID-19 Vaccine Administration

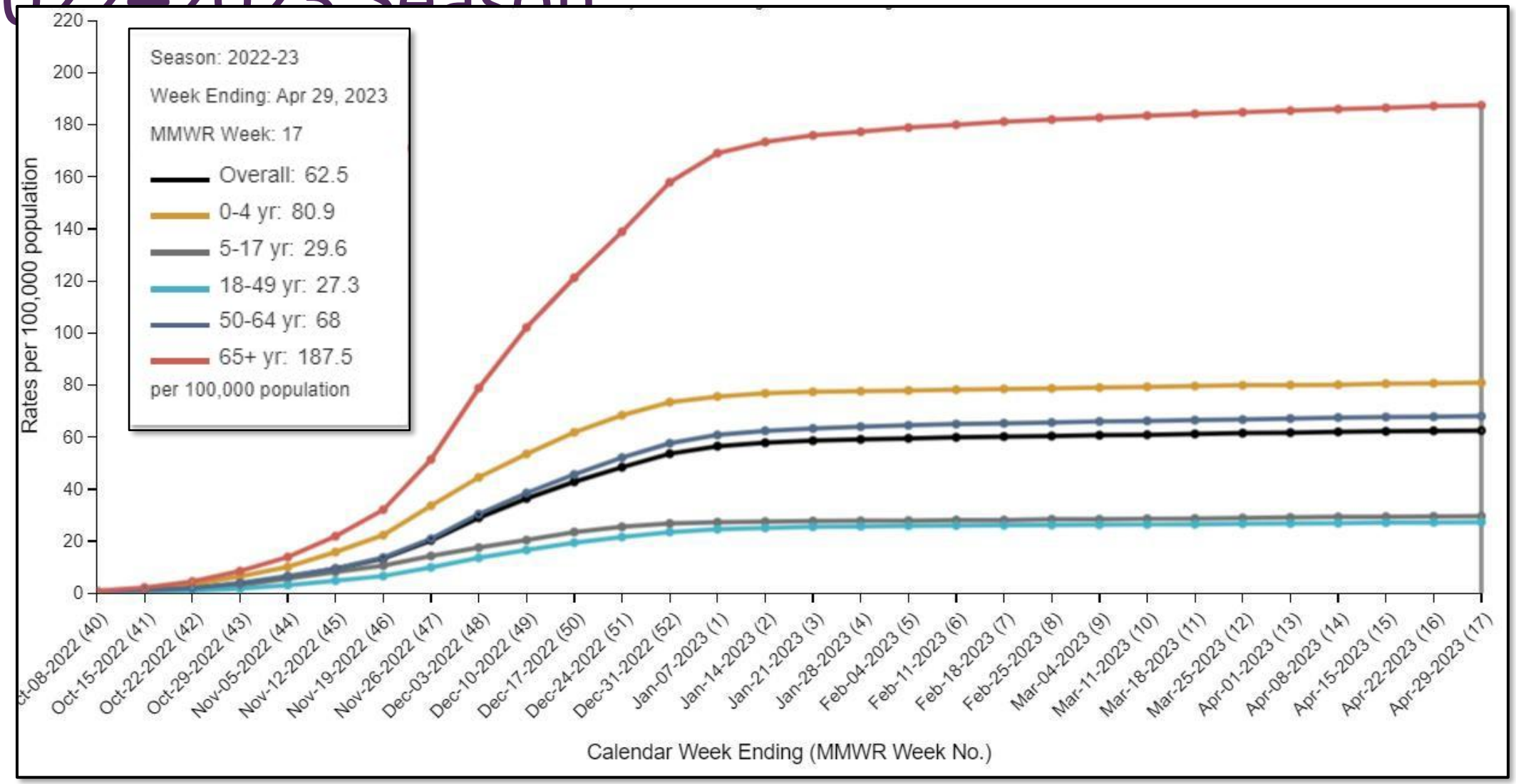
- Previously, adults 65 years and older were eligible to receive an additional bivalent dose.
- In updated recommendations, adults 65 years and older are recommended to receive one updated 2023-2024 COVID-19 vaccine dose.
- The updated 2023-2024 COVID-19 vaccines will be the first COVID-19 vaccines to be available directly from the manufacturers as part of the commercial market, rather than through the United States Government.
  - Available at no cost to no cost for most
  - Covered by most insurance
  - Bridge Access program

Influenza

Influenza

- Causes annual outbreaks of respiratory illnesses in all age groups
- Influenza (flu) can cause mild to severe illness, and at times can lead to death. Flu symptoms usually come on suddenly.
- About 8 percent of the U.S. population gets sick from flu each season, with a range of between 3 percent and 11 percent, depending on the season.

Cumulative Influenza Hospitalizations—FluSurv-NET, All Ages, 2022–2023 Season



Weekly U.S. Influenza Surveillance Report

FluView Interactive

In June 2023, CDC's Advisory Committee on Immunization Practices (ACIP) made recommendations about 2023-2024 Influenza vaccines.

Routine annual influenza vaccination for all persons aged ≥6 months who do not have contraindications has been recommended by CDC and the Advisory Committee on Immunization Practices (ACIP) since 2010.

September and October are the best times for most people to get vaccinated. Vaccination should continue after October and throughout the influenza season as long as influenza viruses are circulating, and unexpired vaccine is available. In New England, flu activity usually lasts through April.

In June 2023, CDC's Advisory Committee on Immunization Practices (ACIP) made recommendations about 2023-2024 Influenza vaccines.

Primary updates to the ACIP report for the 2023-24 influenza season include:

•The composition of the 2023–24 U.S. seasonal influenza vaccines includes an update to the influenza A(H1N1)pdm09 component. The influenza A (H3N2), influenza B Yamagata lineage and influenza B Victoria lineage components remain the same as last season.

•People with egg allergy may receive any vaccine (egg-based or non-egg-based) that is otherwise appropriate for their age and health status. Beginning with the 2023-2024 season, additional safety measures are no longer recommended for flu vaccination of people who are allergic to eggs beyond those recommended for receipt of any vaccine, regardless of the severity of previous reaction to egg. All vaccines should be administered in settings in which personnel and equipment needed for rapid recognition and treatment of acute hypersensitivity reactions are available.

Influenza Vaccines by Age Indication, United States, 2023–2024 Influenza Season

Vaccine type		0 through 6 months	6 through 23 months	2 through 17 years	18 through 49 years	50 through 64 years	≥65 years
IIV4s	Standard-dose unadjuvanted inactivated (IIV4)		Afluria Quadrivalent Fluarix Quadrivalent FluLaval Quadrivalent Fluzone Quadrivalent				
	Standard-dose Cell culture-based inactivated (ccIIV4)		Flucelvax Quadrivalent				
	Standard-dose adjuvanted inactivated (aIIV4)						Fluad Quadrivalent*
	High-dose inactivated (HD-IIV4)						Fluzone High-Dose Quadrivalent*
RIV4	Recombinant (RIV4)				Flublok Quadrivalent*		
LAIV4	Live attenuated (LAIV4)			FluMist Quadrivalent			

IIV4=quadrivalent inactivated influenza vaccine **RIV4**=quadrivalent recombinant influenza vaccine **LAIV4**=quadrivalent live attenuated influenza vaccine

Not approved for age group *Egg-based* *Not egg-based*

* Preferred for those aged ≥65 years

Influenza Vaccine Selection

ACIP recommends that adults aged ≥65 years preferentially receive any one of the following higher dose or adjuvanted influenza vaccines:

- quadrivalent high-dose inactivated influenza vaccine (HD-IIV4)
- quadrivalent recombinant influenza vaccine (RIV4)
- quadrivalent adjuvanted inactivated influenza vaccine (aIIV4)

- If none of these three vaccines is available at an opportunity for vaccine administration, then any other age- appropriate influenza vaccine should be used.

- There is no preferential influenza vaccine recommendation for people younger than 65 years.

Influenza Vaccine Selection

- Immunocompromised persons should receive an age-appropriate IIV4 or RIV4. Intranasal LAIV4 should not be used.

- Vaccination is especially important for people who are at higher of developing serious flu complications, for example, people of any age with a chronic condition, like a breathing or lung problem, heart disease, or a weakened immune system.

- Pregnant people are at increased risk for severe illness related to influenza and influenza infection can present a threat to the pregnancy. Persons who are or who might be pregnant during the influenza season should receive intramuscular influenza vaccine. Any age-appropriate IIV4 or RIV4 may be given in any trimester. Intranasal LAIV4 should not be used during pregnancy but can be used postpartum.

Pneumococcus

Streptococcus pneumoniae

Gram positive cocci

Classified into “serotypes” based on capsular polysaccharide, which are used as vaccine antigens

Simultaneous administration of vaccines

- According to CDC's Practice Guidelines for Immunization, routine administration of all age-appropriate doses of vaccines simultaneously (i.e., administering more than one vaccine on the same clinic day or "coadministration") is recommended for children, adolescents, and adults if there are no contraindications at the time of the healthcare visit.

  - Providers may simultaneously administer COVID-19, influenza, and respiratory syncytial virus (RSV) vaccines to eligible patients

Summary of Key Points

Influenza	• Vaccination of all persons aged ≥6 months who do not have contraindications is recommended.
	• **Changes**: Updated U.S. influenza vaccine composition for 2023–2024
	  • Adults 65+ should get a high-dose or adjuvated flu vaccine
	  • Persons with egg allergy: Should receive influenza vaccine, no additional safety measures required

COVID-19	• Updated COVID-19 vaccines recommended for everyone aged ≥6 • The vaccines are **covered by insurance**. Uninsured and underinsured children and adults have access to vaccines through **VFC** or **Bridge Program**. • Everyone ages **5 years** and older recommended for a single 2023 – 2024 dose • No additional dose for age 65+ recommended **at this time**
RSV	• RSV can cause serious illness in older adults. Certain underlying medical conditions and advanced age are associated with increased risk of severe RSV. • Adults 60+ may receive an RSV vaccine based on shared clinical decision- making with a healthcare provider.

Thank you!!