IHS Public Health Nursing Virtual Conference

Overview of Fall 2023 Immunizations

HOLLY VAN LEW, PHARMD, BCPS, AAHIVP

ADVANCE PRACTICE PHARMACIST

AUGUST 7, 2023

Objectives

1. Compare the burden of RSV disease in adults and infants and examine the current and potential RSV vaccine indications discussed at the CDC Advisory Committee on Immunization Practices meeting in June 2023.
2. Compare and contrast the two recent FDA approved and CDC endorsed RSV vaccines and define their place in therapy.
3. Select the most appropriate influenza vaccine for various populations based on age and mitigating factors.
4. Examine the anticipated clinical and formulation changes of the COVID-19 vaccines that will be available in the fall of 2023.

Respiratory Syncytial Virus (RSV)

OVERVIEW OF THE DISEASE

RSV – What Could We Do?

Many people are unaware of RSV burden of disease because…

- We had no therapeutic agents to PREVENT it
  - Exception: Palivizumab (Synagis) for high-risk children <2yrs or premature infants was previously available
- It presents with generalized symptoms
- It's rare that we test for it outside of inpatient settings
- We had no therapeutic agents to TREAT it
  - Treatment is supportive only, so little awareness in the practice of pharmacy
- It's commonly mistaken as a pediatric disease

RSV Discovery & Contagion

- Single strand RNA virus discovered in 1956, attempts at a vaccine since 1960
  - Member of the *Pneumoviridae* family
- Common cause of respiratory illness worldwide, seasonal pattern
- Contagious via respiratory droplets, contact (handshake, kiss), or contaminated surfaces
  - The virus may transmit 1-2 days prior to symptom onset
  - Symptoms onset 3-8 days after exposure
- Common symptoms
  - Sneezing
  - Runny Nose
  - Cough
  - Wheezing
  - Decrease Appetite
  - Fever
  - Infants may just have irritability or decreased activity or appetite
- R_0 (measure of infectiousness) = 3
  - Every infected person could infect approximately 3 other people
  - For comparison: influenza R_0 = 1.3-1.7 and COVID R_0 = 2-3

References: RSV (Respiratory Syncytial Virus) | CDC and Complexity of the Basic Reproduction Number (R0) - PMC (nih.gov)

RSV Burden of Disease

Elders (65yrs+)	Infants/Children
Rates of Disease	
• Estimates of 5-7% of respiratory diseases are RSV	• >66% exposed at least once before age 1 • > 90% exposed by age 2 • Sick visits – 2.1 million outpatient visits yearly in children <5 yrs
Rates of Hospitalization	
• 60,000 -160,000 yearly	• Leading cause of hospitalization < 1 year • 75% of hospitalizations have no risk factors • 58,000-80,000 yearly • RSV hospitalization rates 4–10x higher among AI/AN children <24 months than the general population
Deaths	
• Case fatality rate 8-10% • **6,000-10,000** elders yearly	• 100-300 children yearly

References: RSV (Respiratory Syncytial Virus) | CDC , Collins PL, Graham BS (2008) Viral and host factors in human respiratory syncytial virus pathogenesis. ***J Virol* 82**: 2040–2055, J Nguyen-Van-Tam et al. European Respiratory Review 2022 31: 220105; Atwell JE, Hartman RM, Parker D, et al. RSV Among American Indian and Alaska Native Children: 2019 to 2020. *Pediatrics*. 2023;152(2):e2022060435. doi:10.1542/peds.2022-060435

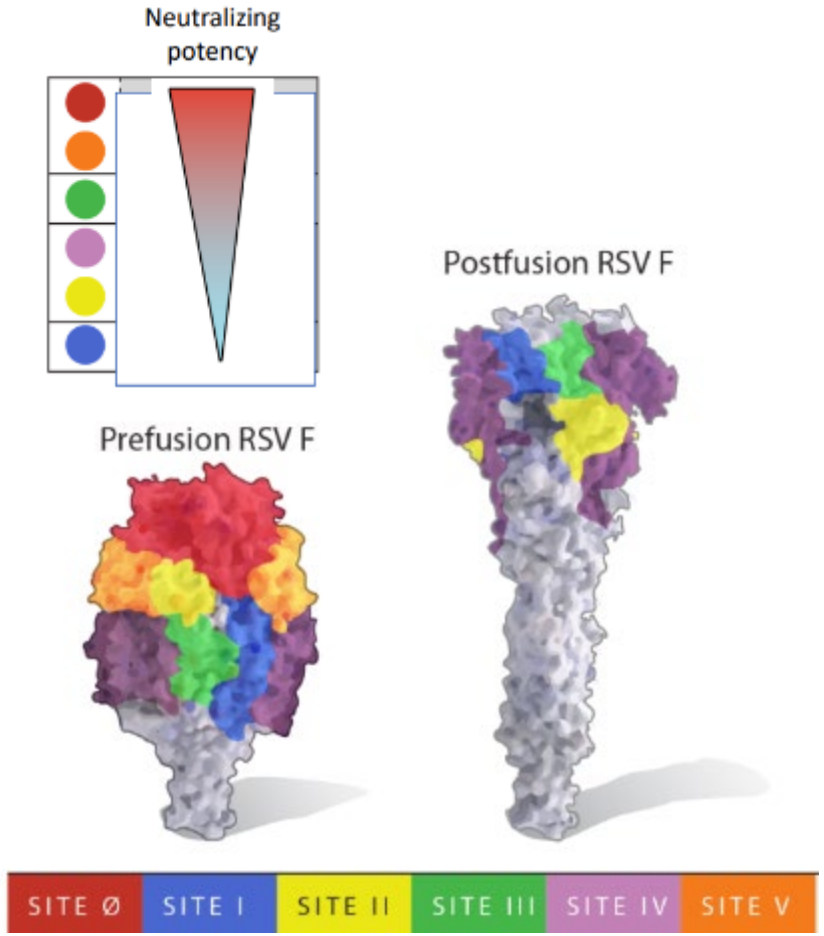
RSV Course & Complications

- Most RSV infections resolve within a week or two
- Supportive care & symptom control
  - Outpatient/Home care: oral fluids, rest, OTCs (decongestants, antihistamines, antipyretics)
  - Inpatient – IV fluids, oxygen, mechanical ventilation
- Complications
  - Most common in infants and young children and adults with chronic heart disease, lung disease, immunocompromise or elders
  - Common complications
    - Bronchiolitis – small airway inflammation
    - Exacerbation of underlying asthma, COPD, or CHF
    - Pneumonia – lower respiratory tract disease (LRTD)
- The only prevention previously available (before July 2023) was Palivizumab (Synagis) for high-risk infants, only 2% of children qualified

RSV Vaccines

REVIEW OF APPROVED VACCINES

Mechanism of RSV Vaccines



- RSV binds to the host cell through a membrane fusion protein, the “F-protein”
  - There are 2 conformations (folding shapes)
    - Pre-F version
      - MORE IMMUNOGENIC - Vaccine Target
    - Post-F version
- The vaccines target the F-protein and keeps the virus in the more immunogenic conformation

Reference: Graphic courtesy of Graham B. Current Opinion in Virology. 23: 107-112. 201, as displayed in the Thornburg ACIP Slides: Respiratory syncytial virus (RSV); virion and vaccine Products. June 23,2022.

RSV Vaccine: Comparisons

AREXVY (GSK)

- FDA Approved May 3, 2023
- AS01 Adjuvant (like zoster vaccine)
  - But at 1/2 the dose
- Proven efficacy against both RSV-A and RSV-B
- Clinical trial: 25,000 patients
- Side effects:
  - Fatigue 34%
  - Headache 27%
  - Injection site pain 61%
  - Muscle pain 29%
  - Joint pain 18%

ABRYSVO™ (PFIZER)

- FDA Approved on May 31, 2023
- No adjuvant
- Bivalent formulation targets both RSV-A and RSV-B
- Clinical trial: ~37,000 patients
- Side Effects:
  - Fatigue 16%
  - Headache 13%
  - Injection site pain 11%
  - Muscle pain 10%

References: Arexvy package insert: Package Insert - AREXVY (fda.gov), Abrysvo package insert: labeling.pfizer.com/ShowLabeling.aspx?id=19589#section-11, Efficacy and Safety of a Bivalent RSV Prefusion F Vaccine in Older Adults |

RSV Vaccine: Serious Adverse Events

AREXVY (GSK)

- Afib – reported in 10 vaccinated participants vs 4 in placebo group
  - Insufficient data to determine a causal relationship to the vaccine
- 1 Case of Guillain-Barre syndrome
- 1 case of Acute Disseminated Encephalomyelitis in Africa (1 case ruled out)

ABRYSVO™ (PFIZER)

- Afib – reported in 10 vaccinated participants vs 4 in placebo group
  - Insufficient data to determine a causal relationship to the vaccine
- 1 Case of Guillain-Barre syndrome
- 1 Case Miller Fisher Syndrome (nerve disease considered to be a GBS variant)

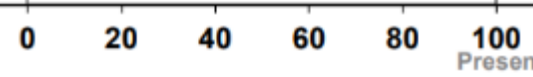
References: Arexvy package insert: Package Insert - AREXVY (fda.gov), Abrysvo package insert: labeling.pfizer.com/ShowLabeling.aspx?id=19589#section-11, GSK clinical consult with Medical Science Liaison 6.24.23

AReSVi-006

CO-6

AREXVY Produces Durable Vaccine Efficacy Against RSV-LRTD Over 2 Full Seasons

	Median Follow-Up (months)	AREXVY Number of events	Placebo Number of events	VE (95% CI) *W/o season as covariate*#	VE (95% CI) *W/ season as covariate*¶
Single Dose					
Season 1* VE 1	**6.7**	**7** / 12,466	**40** / 12,494	**82.6%** (57.9, 94.1)	82.6% (57.9, 94.1)
Mid Season 2 Post dose 1	**14**	**15** / 12,469	**85** / 12,498	**80.9%**# (66.7, 89.8)	77.3%¶ (60.2, 87.9)
Season 2 Only Post dose 2	**6.4**	**20** / 4,991	**91** / 10,031	**56.1%** (28.2, 74.4)	56.1% (28.2, 74.4)
Season 1 + 2**	**18**	**30** / 12,469	**139** / 12,498	**74.5%**# (60.0, 84.5)	67.2%¶ (48.2, 80.0)
Annual (2 doses, ~12 months apart)					
Season 2 Only Post dose 2	**6.4**	**20** / 4,966	**91** / 10,031	**55.9%** (27.9, 74.3)	55.9% (27.9, 74.3)
Seasons 1 + 2**	**18**	**30** / 12,469	**139** / 12,498	**74.5%**# (60.0, 84.4)	67.1%¶ (48.1, 80.0)



Modified exposed set
***96.95% CI for VE 1; ****97.5% CI for Season 1 + 2**

Presentation by GSK at ACIP June 21, 2023

Reference: ACIP Slides June 21, 2023 GSK Manufacturer Presentation - GSK RSV - ACIP Core Presentation_CO (cdc.gov)

AReSVi-006

CO-7

AREXVY Produces Durable Vaccine Efficacy Against RSV-Severe LRTD Over 2 Full Seasons

	Median Follow-Up (months)	AREXVY Number of events	Placebo Number of events	VE (95% CI) *W/o season as covariate#*	VE (95% CI) *W/ season as covariate¶*
Single Dose					
Season 1* VE 1	6.7	1 / 12,466	17 / 12,494	**94.1%** (62.4, 99.9)	94.1% (62.4, 99.9)
Mid Season 2 Post dose 1	14	4 / 12,469	33 / 12,498	**86.8%#** (63.0, 96.6)	84.6%¶ (56.4, 96.1)
Season 2 Only Post dose 2	6.4	5 / 4,991	28 / 10,031	**64.2%** (6.2, 89.2)	64.2% (6.2, 89.2)
Season 1 + 2**	18	7 / 12,469	48 / 12,498	**82.7%#** (61.6, 93.4)	78.8%¶ (52.6, 92.0)
Annual (2 doses, ~12 months apart)					
Season 2 Only Post dose 2	6.4	5 / 4,966	28 / 10,031	**64.1%** (5.9, 89.2)	64.1% (5.9, 89.2)
Seasons 1 + 2**	18	7 /12,469	48 / 12,498	**82.7%#** (61.6, 93.4)	78.8%¶ (52.5, 92.0)

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AReSVi-006

CO-6

AREXVY Produces Durable Vaccine Efficacy Against RSV-LRTD Over 2 Full Seasons

	Median Follow-Up (months)	AREXVY Number of events	Placebo Number of events	VE (95% CI) *W/o season as covariate*#	VE (95% CI) *W/ season as covariate*¶
Single Dose					
Season 1* VE 1	**6.7**	**7** / 12,466	**40** / 12,494	**82.6%** (57.9, 94.1)	82.6% (57.9, 94.1)
Mid Season 2 Post dose 1	**14**	**15** / 12,469	**85** / 12,498	**80.9%**# (66.7, 89.8)	77.3%¶ (60.2, 87.9)
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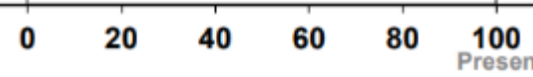

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Reference: ACIP Slides June 21, 2023 GSK Manufacturer Presentation - GSK RSV - ACIP Core Presentation_CO (cdc.gov)

Arexvy (GSK)

- Arexvy was shown to provide durable protection over 2 RSV seasons
- Arexvy provides good protection against LRTD , SEVERE LRTD and maintains high efficacy in participants with comorbidities and in upper age ranges (70-79yrs)
- Arexvy demonstrates comparable efficacy against RSV-A and RSV-B serotypes

Efficacy Over Two RSV Seasons Against LRTD		
Single Dose		
	LRTD	Severe LRTD
Season 1	82.6% (95% CI; 57.9,94.1)	94.1% (95% CI; 62.4,99.9)
Season 2	56.1% (95% CI; 28.2, 74.4)	62.4% (95% CI; 6.2,89.2)
Season 1+2	74.5% (95% CI; 60.0, 84.5)	82.7% (95% CI; 61.6,93.4)
Annual (2 doses, 1yr apart)		
	LRTD	Severe LRTD
Season 2	55.9% (95% CI; 27.9, 74.3)	64.1% (95% CI; 5.9,89.2)
Season 1 + 2	74.5% (95% CI; 60.0, 84.4)	82.7% (95% CI; 61.6,93.4)

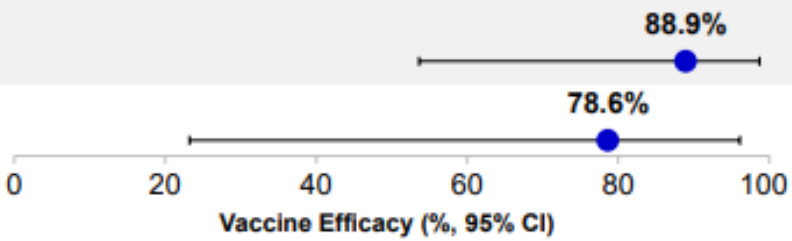
Efficacy Against RSV-A and RSV-B over 1 season

- 84.6% against RSV-A
- 80.9% against RSV-B

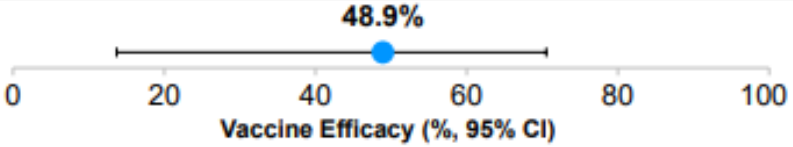
Reference: ACIP Slides June 21, 2023 GSK Manufacturer Presentation - GSK RSV - ACIP Core Presentation_CO (cdc.gov)

Efficacy against RSV-LRTD – Demonstrated through Mid-Season 2 Analysis

RSV-LRTD with ≥ 3 symptoms		Number of Events	
		RSVpreF	Placebo
Season 1 (N = 36,127)	88.9%	2	18
Mid-Season 2 (n = 20,019)	78.6%	3	14



RSV-LRTD with ≥ 2 symptoms		Number of Events	
		RSVpreF	Placebo
Season 1 (N = 36,127)	65.1%	15	43
Mid-Season 2 (n = 20,019)	48.9%	23	45



Mid-Season 2 includes Northern Hemisphere only (US, Canada, Finland) through January 31, 2023

Pfizer WRDM Worldwide Medical & Safety

Reference: ACIP Slides June 21, 2023 Pfizer Manufacturer Presentation - Descriptive Presentation Title (Protocol #, if applicable) (cdc.gov)

Abrysvo (Pfizer)

- Clinical trials are ongoing, but Mid-Season 2 data demonstrates durable protection
- The clinical trials differentiate between ≥ 2 or ≥ 3 symptoms to indicate case severity
- Data reviewed from Pfizer presentation
  - Efficacy data from a Pfizer graph, so CI numbers are approximate

Efficacy Mid-Season 2 Against LRTD	
RSV-LRTD with ≥ **2** Symptoms	
Season 2	65.1% (95% CI; ~37, ~84)
Mid Season 2	48.9% (95% CI; ~14, ~70)
RSV-LRTD with ≥ **3** Symptoms	
Season 1	88.9% (95% CI; ~53,~99)
Mid Season 2	78.6% (95% CI; ~24,~96)

Reference: Pfizer Clinical Development Program Updates presentation to ACIP, June 21,2023. RSVpreF Older Adults
https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-06-21-23/02-RSV-Adults-Gurtman-508.pdf

ACIP RSV Vaccine Review & Discussion

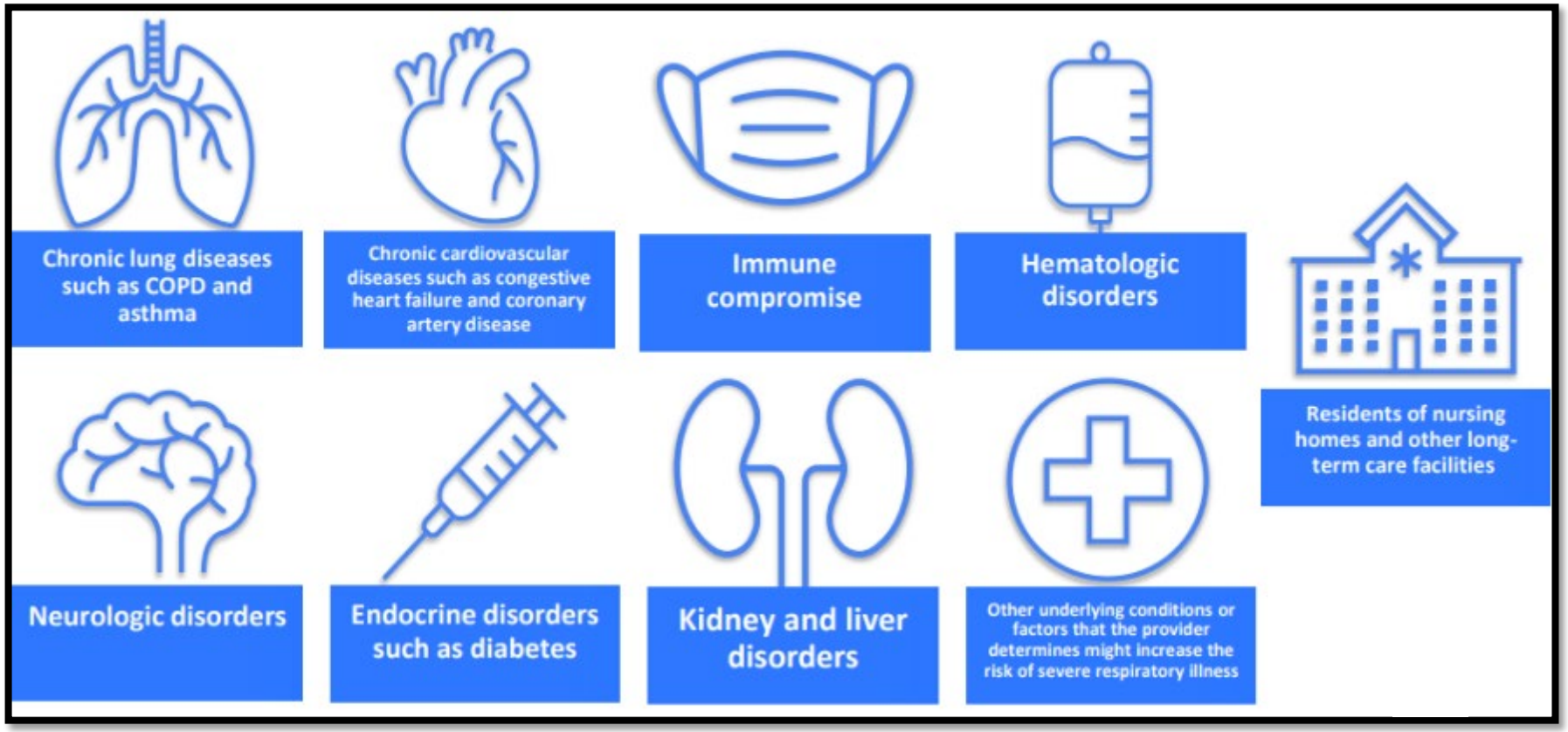
- The clinical trials were designed differently, not directly comparable
  - Pfizer
    - ≥ 2 or ≥ 3 lower respiratory signs/symptoms
    - Sputum, cough, shortness of breath, wheezing, tachypnea
  - GSK
    - ≥ 2 lower respiratory symptoms or signs, including ≥ 1 sign, OR
    - ≥ 3 lower respiratory symptoms
      - Symptoms: sputum, cough, dyspnea
      - Signs: wheezing, crackles/rhonchi, tachypnea, hypoxemia, O2 supplementation
- Cost was **estimated** in the Cost Effectiveness Models
  - Model determination before costs were finalized:
    - RSV vaccination for older adults **COULD BE** a cost-effective intervention
  - Cost effectiveness models were not very helpful at the time, but now models will now have solid costs to assess

Reference: ACIP Slides June 21, 2023 Britton & Melgar - *Summary of Proposed Clinical Considerations for RSV Vaccines*

ACIP Vote - RSV Vaccines in Elders

Shared Clinical Decision Making for elders 60 yrs +

- Consider in adults who may be at a higher risk of RSV disease

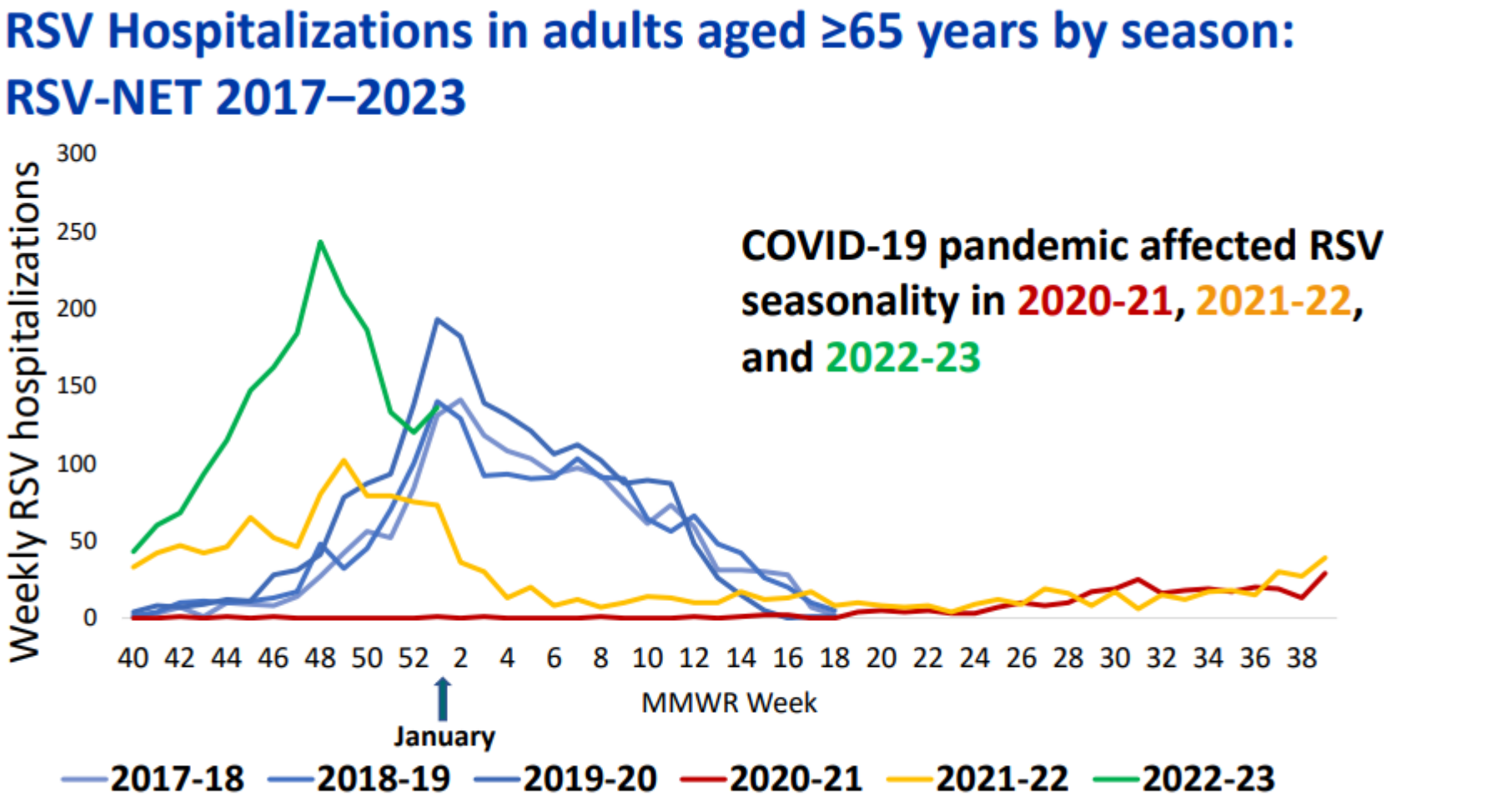


Reference: ACIP Slides June 21, 2023 Britton & Melgar - *Summary of Proposed Clinical Considerations for RSV Vaccines*

ACIP Review and Discussion

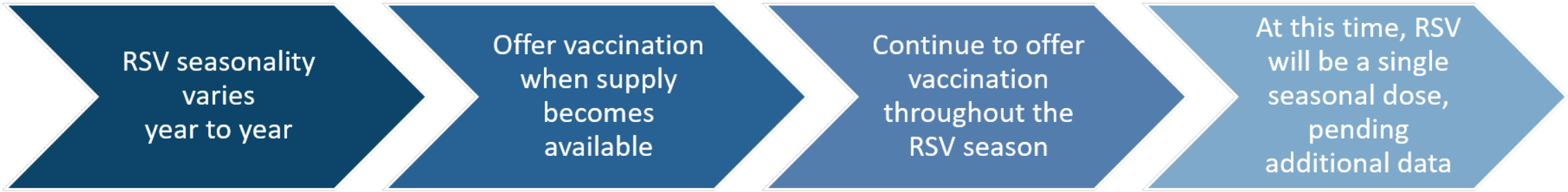
- Shared Clinical Decision Making
  - Ultimately, RSV vaccines were not recommended as “routine” vaccines
  - Historically suboptimal coverage when vaccination is given at provider discretion
- Trials were underpowered to show:
  - Efficacy in the oldest adults and in adults who are frail
  - Efficacy against RSV hospitalization
  - Efficacy against symptomatic illness, which may indicate efficacy against more severe disease
- Concern for Equity
  - Underlying conditions
  - Race
- Uncertainty around adverse events in clinical trials
  - GBS
  - Inflammatory neurologic events

RSV Seasons– Ideal Timing of Vaccine?



Reference: ACIP Slides June 21, 2023 Britton & Melgar - *Summary of Proposed Clinical Considerations for RSV Vaccines*

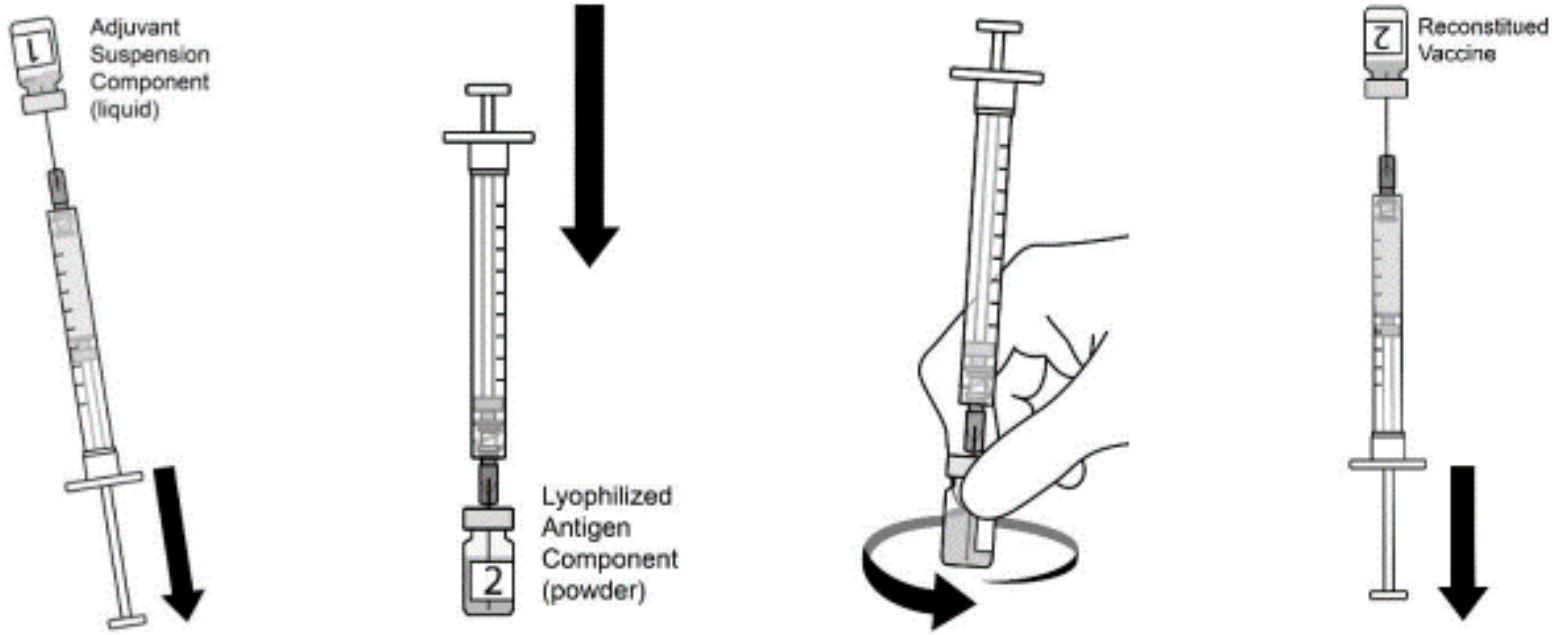
Clinical Consideration: Timing of RSV vaccination for the 2023-2024 RSV season



Reference: ACIP Slides June 21, 2023 Britton & Melgar - *Summary of Proposed Clinical Considerations for RSV Vaccines*

Arexvy (GSK) - Dose Preparation

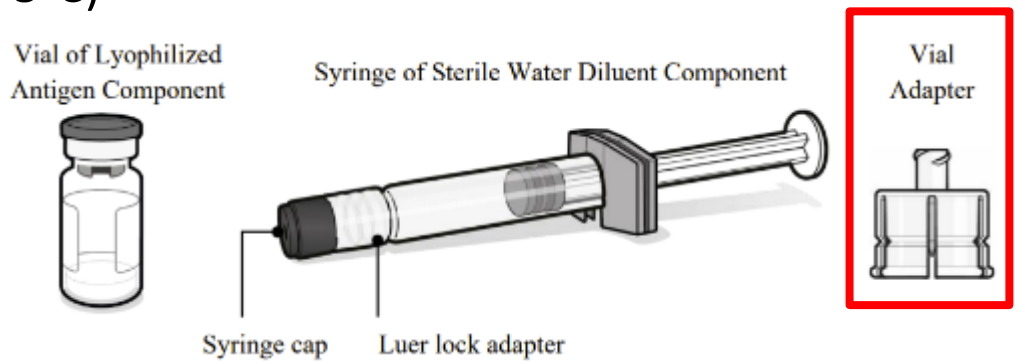
- Shipped/stored at refrigeration temperatures (2-8°C)
- Requires reconstitution with adjuvant (similar to zoster vaccine)
- Single 0.5mL intramuscular dose
- Discard 4 hours after reconstitution

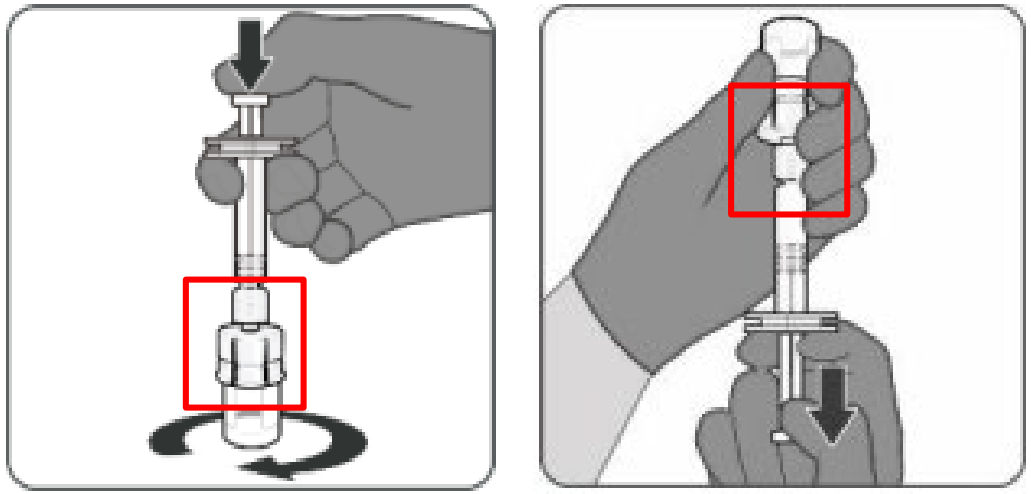


Reference: Arexvy package insert: Package Insert - AREXVY (fda.gov)

Abrysvo™ (Pfizer) - Dose Preparation

- Shipped/stored at refrigeration temperatures (2-8°C)
- Requires reconstitution using unique kit
- Single 0.5mL intramuscular dose
- Discard 4 hours after reconstitution





RSV Product Details & Published Cost

Product Name	Dosage Form	Age Group	Cost
RSV Vaccine Arexvy (GSK) NDC 58160-0848-11; CVX 303	0.5mL vial, reconstituted	≥ 60 years	$181.27/dose (McKesson IHS FSS Contracted Price 8/2/23)
RSV Vaccine Abrysvo (Pfizer) NDC 00069-0344-01, -05, -10; CVX 305	0.5mL vial, reconstituted	≥ 60 years	$283.23/dose (McKesson **Open Market** Price 8/2/23)
RSV mAb Beyfortus (Sanofi) NDC 49281-0575-15; CVX 306	0.5mL syringe	0-24 months	Not available
RSV mAb Beyfortus (Sanofi) NDC 49281-0574-15; CVX 307	1 mL syringe	0-24 months	Not available

RSV Maternal Vaccine

REVIEW OF A POTENTIAL VACCINE CANDIDATE

Maternal RSV Vaccine

- Abrysvo (Pfizer)
  - >7000 pregnant patients enrolled in clinical trials
  - FDA Advisory group voted to recommend approval (10-4)
  - **Full FDA approval is pending**, anticipated review in fall 2023 and ACIP review October 2023
- Studied as 0.5mL IM dose given at 24-36 weeks gestation to offer passive immunity to prevent RSV infection in infants after birth
- Vaccine Efficacy:
  - 82% for severe RSV LRTD within 90 days of birth
  - 64% for severe RSV LRTD within 180 days of birth

Maternal RSV Vaccine - Adverse Events

Abrysvo™ (Pfizer)

- Premature delivery was reported in 5.7% (vaccine group) vs 4.7% (placebo)
  - Difference was not statistically significant
  - Rates are lower than the U.S. background rate
- Low birth weight was reported in 5.1% (vaccine group) vs 4.4% (placebo)
  - Relative risk: 1.20 (0.99, 1.46)
  - Absolute risk with wide CI: 9 more per 1,000 (from 0 fewer to 22 more)

GSK Vaccine (Arexvy base vaccine WITHOUT adjuvant)

- Phase 3 maternal clinical trials halted due to a safety signal for:
  - An imbalance of preterm births in low and-middle income countries (but not high-income countries)
    - Relative risk (95% CI) = 1.38 (1.08, 1.75)
  - Imbalance of neonatal deaths (likely a consequence of preterm birth imbalance)
    - Relative risk (95% CI) = 2.16 (0.62, 7.55)
- Out of an abundance of caution and very conversative approach, GSK halted trials and does not plan to seek a maternal indication

Reference: ACIP Slides June 21, 2023 Flemin-Dutra Evidence to Recommendations Framework Pediatric/Maternal RSV: (cdc.gov)

RSV Monoclonal Antibodies

OVERVIEW OF TWO FDA APPROVED PRODUCTS

RSV Prevention - Peds

There are now 2 FDA approved monoclonal antibody (mAb) products to prevent RSV

- mAbs provide immediate passive immunity, with no need to develop an immune response
- Palivizumab (Synagis)
  - Prevention of severe illness in infants and young children with risk factors for severe disease
  - Limited use (<2% of all infants qualify)
    - Only for premature infants, children with heart or lung disease
  - Administered MONTHLY during RSV season with weight-based dosing
- Nirsevimab (Beyfortus)
  - Appropriate for ALL infants, including term, pre-term, healthy infants and infants/children with chronic diseases
  - Provides long-acting protection against RSV (at least 5 months)
  - Administered as a single IM injection, with 3 doses based on weight and age

Nirsevimab – Clinical Trials

- Phase 3 MELODY, Phase 2/3 MEDLEY and Phase 2b trials
  - Efficacy
    - ~80% efficacy against medically attended RSV disease, including lower respiratory tract infections and hospitalizations
    - 90% efficacy against RSV associated lower respiratory tract infections with ICU admission
  - Safety and Adverse Events
    - Nirsevimab was well tolerated, with similar adverse events to placebo
      - The most commonly reported adverse reactions were injection site reactions (0.3%) and rash (0.9%)

Nirsevimab – ACIP Recommendations

On August 3rd, 2023, ACIP voted to unanimously approve Nirsevimab and the CDC Director endorsed the recommendation.

- The Morbidity and Mortality Weekly Report, when published, will solidify the guidance
  - Anticipate 1-2 months until publication
- **Infants Birth to 7 months**
  - Administer Nirsevimab to **all infants** born during or entering their **1st RSV season**
    - Single dose, administered IM
      - 50 mg for infants <5 kg
      - 100 mg for infants ≥5 kg
    - Timing: Ideally administer within 10 days of birth, when the product becomes available
- **Infants and Toddlers 8-19 months**
  - Administer Nirsevimab to **specialty populations during their 2nd RSV season**
    - Children with increased risk for severe disease
      - Chronic lung disease, chronic heart disease, immunocompromise, etc
    - **ALL American Indian and Alaska Native children**
    - Single dose, administered IM
      - 200mg for all children in this age range

Nirsevimab – Cost & Procurement

- Nirsevimab is an mAb, it prevents illness and disease – much like a vaccine
- There is no statutory definition of “vaccine” for the Vaccines for Children Program (VFC), nor is there a definition of “vaccine” under the Affordable Care Act
  - **Nirsevimab will be covered under VFC Program**
    - All AI/AN children are eligible for VFC vaccine (as well as Medicaid and uninsured children)
  - Nirsevimab has a CVX code, which is a numeric string used to document administered vaccines
    - This will assist clinicians in consistent documentation and retrievable records, with the goal of recording doses in Immunization Information Systems)IIS)
- Cost
  - Cost is not yet available, but has been estimated at $445/100mg dose
  - Cost Effectiveness models were interpreted as “probably a reasonable and efficient use of resources” by the ACIP Work Group
    - Vaccine may be procured under the VFC program at no cost to enrolled facilities administering vaccine to eligible patients
    - Private purchase will be available as well
      - NSSC will work to procure this product and obtain it through negotiated contracts

RSV Products - Now & Future

Elders (≥ 60yrs)

- **Approved:**
  - Arexvy (GSK)
    - Protein subunit- adjuvanted
  - Abrysvo (Pfizer)
    - Protein subunit
- **Future:**
  - Moderna
    - mRNA platform
  - Bavarian Nordic
    - Live vaccinia virus platform

Maternal

- **Approved:** None
- **Future:**
  - Potential expansion of Abrysvo (Pfizer) indication
    - Anticipate ACIP review in October 2023
  - Arexvy (GSK) clinical trials halted, this will not be pursued due to safety signals

Infants/Toddlers

- **Approved:**
  - ~~Palivizumab (Synagis) for certain high-risk infants~~
    - (Essentially obsolete soon)
  - Nirsevimab (Beyfortus)
    - FDA approved
      - July 17, 2023
    - ACIP recommended & CDC endorsed
      - August 3, 2023
  - Recommendations:
    - Birth to 7 months
      - All infants
    - 8-19 months
      - AI/AN and high-risk infants

Considerations

- Cost for the RSV vaccines and mAbs are still being finalized
- RSV in Maternal and Child Health
  - Uncertainty of place in therapy for potential maternal RSV indication vs pediatric RSV mAb
    - Will children of vaccinated pregnancy people be unable to access Nirsevimab?
    - Will both maternal vaccination AND infant mAb administration be recommended?
- RSV Vaccines for elders
  - RSV vaccine uptake in elders this season is unknown, but vaccine uptake, in general, is typically higher in elder adults
    - Shared Clinical Decision Making may reduce uptake
    - Opportunity for robust immunization programs and outreach to offer this vaccine
  - Medicare plans to pay for vaccination with no out-of-pocket cost for 65 years+
    - RSV vaccination will be covered by Medicare Part D
  - Affordable Care Act should allow for most elders 60-64 years to be vaccinated with no out-of-pocket cost

Education and Planning

Start educating about the burden of RSV disease, RSV vaccines, RSV mAbs, and future products and indications NOW!

- Identify collaboration opportunities for elder adults and potentially pregnant people
  - Family practice, specialists, long-term care facilities, hospital admissions, pharmacies, OB/GYN offices
- Think about nirsevimab and how it will be addressed and administered within your system
  - Who will be administering this product at your site?
  - How will your site gather and reconcile records to identify candidates for administration?
  - How will this mAb be documented in the electronic health record?
    - IHS OIT will work on a development plan for EHR/RPMS
  - Will your documentation be transmitted to an IIS?
- Plan for fall roll-out of influenza, COVID-19 and RSV products

COVID-19 Vaccines

ANTICIPATED FALL PRODUCTS & RECOMMENDATIONS

(PENDING REGULATORY AUTHORIZATIONS)

COVID-19 Vaccine Strain Selection

- The FDA Vaccines and Related Biological Products Advisory Committee (VRBPAC) met on June 15, 2023
  - The XBB.1.5 monovalent sublineage was selected for the fall vaccine composition
- All 3 manufacturers (Pfizer, Moderna, Novavax) have already begun work on vaccines with the XBB.1.5 strain, so they already have a jump on the work and manufacturing.
  - This will be helpful for ensuring a robust supply chain
- **NEW XBB vaccine launch is expected in mid to late September**, which will coincide with flu & RSV vaccination efforts
- Anticipate AMPLE Supply, with no concern for available product in the early phase of roll out

COVID-19 Vaccines – Rollout Fall 2023

Anticipated/possible changes per FDA remarks and ACIP discussion

- For the general healthy population ≥6 yrs, a **single dose** is believed to be sufficient
  - There may be a recommendation and written authorization for a 2nd dose to elders and immunocompromised, with a 2-4 month minimum interval
  - Children < 5yrs MAY need more than 1 dose (COVID may remain a multi-dose series within certain age ranges)
- How the recommendations will change and the rollout for the shift to XBB vaccine is unknown
  - Will the EUA for the XBB vaccine be authorized on a single day, and deauthorization of bivalent vaccine occur on the same day?
    - If so, when will the new vaccine begin being distributed and available for use?
  - In the past once the EUA was issued, the new vaccine would ship out
  - There may be a window where bivalent doses are deauthorized, but XBB doses have not yet arrived at sites.
- Next steps will include finalization of public and private contracts, pricing, determination of distribution and vendors, and a clearer transition to commercial supply.
  - Focus on single dose vials, smaller package sizing, reduced waste

Timeline for

COVID-19 Vaccine Procurement Pathways

- **Commercialized/Purchased Private Supply Vaccine**
  - It is anticipated that I/T/U facilities will have access to the COVID-19 vaccines via a VA National Standardization Contract through the Pharmaceutical Prime Vendor via the NSSC.
    - To our knowledge, contracts and pricing have not been finalized.
      - Federal pricing of private supply COVID-19 vaccine is not currently available.
      - Vendors/distributors of COVID-19 vaccine have not been disclosed.
  - NSSC will work with customers to ensure continued access to COVID vaccines.
- **The VFC Program**
  - VFC will have orderable COVID vaccine at no cost for eligible children 0-18yrs (AI/AN children, uninsured, and children on Medicaid), just like other VFC vaccines.
- **The "HHS Bridge Program"**
  - The Bridge Program will provide no cost COVID vaccine uninsured adults in the U.S. at participating partners, including retail pharmacies, FQHCs, health departments.
  - State jurisdictions will potentially enroll sites (similar to VFC programs) to procure and administer COVID vaccine at no cost to uninsured individuals.
  - It is unclear whether IHS facilities will be eligible to enroll, receive and administer Bridge Program vaccine.

COVID-19 Vaccine Coverage Planning

- FDA and CDC anticipate no out of pocket cost for most Americans wanting the COVID vaccine this fall
  - VFC will cover vaccine for eligible children 0-18yrs
  - Medicare, Medicaid, and private insurance will cover the vaccine
  - Few Americans will have any out-of-pocket cost, and only in rare situations of out of network providers
- 25 million uninsured individuals will be covered by the *HHS Bridge Program*, which is still in development by the CDC

Influenza Vaccine

2023-2024 FALL RECOMMENDATIONS PENDING

2023-2024 Influenza Vaccine

- The 2023-2024 season U.S. flu vaccines will contain an updated influenza A(H1N1)pdm09 component:
  - An influenza A/Victoria/4897/2022 (H1N1)pdm09-like virus (egg-based vaccines)
  - An influenza A/Wisconsin/67/2022 (H1N1)pdm09-like virus (cell and recombinant vaccines)
  - An influenza A/Darwin/9/2021 (H3N2)-like virus (egg-based vaccines)
  - An influenza A/Darwin/6/2021 (H3N2)-like virus (cell and recombinant vaccines)
  - An influenza B/Austria/1359417/2021-like virus (B/Victoria lineage)
  - An influenza B/Phuket/3073/2013-like virus (B/Yamagata lineage
- Effectiveness of 2022-2023 Influenzas Vaccine:
  - There was a “good match” to the circulating virus
  - 54% for preventing medically attended influenza A infection among persons aged <65 years
  - 71% for preventing symptomatic influenza A illness among children and adolescents aged <18 years

Anticipated Influenza Recommendations

The 2023-2024 ACIP Recommendations have not been published yet

- Proposed 2023-2024 ACIP Influenza Recommendations:
- Indications
  - **All persons ages ≥6 months who do not have contraindications should receive influenza vaccine.**
    - Clarifying guidance for individuals with egg allergy - ANY influenza vaccine (egg based or non-egg based) that is otherwise appropriate for the recipient's age and health status can be used.
- Timing
  - Adults
    - **Vaccination should ideally be offered during September or October for MOST persons**
  - Children
    - Those who require 2 doses: Administer 1st dose ASAP (including July/August) to allow the second dose (given ≥4 weeks later) to be given by the end of October.
    - Those who require only 1 dose: Vaccination during July/August can be considered
  - Vaccination should continue throughout the influenza season as long as influenza viruses are circulating and unexpired vaccine is available.

References: ACIP Slides Influenza Vaccine Safety Update and Proposed Recommendations for the 2023-24 Influenza Season. June 21, 2023. and Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season | MMWR (cdc.gov)

Anticipated Influenza Recommendations

- Adults ≥65 years
  - PREFERENTIAL RECOMMENDATION
    - 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
- Children and Adults 6 months – 64 years
  - Any licensed and age-appropriate influenza vaccine should be used
  - There is no preferential recommendation for any product, brand or vaccine type

IHS NSSC Contracted Influenza Vaccines

2023-24 Season:

Product Name	Dosage Form	Age Group
Fluzone **High Dose** Quadrivalent (HD-IIV4) NDC 49281-0123-65; CVX 197	0.7mL PFS	≥ 65 years
Fluzone Quadrivalent Pre-Filled Syringe (IIV4pf) NDC 49281-0423-50; CVX 150	0.5mL PFS	≥ 6 months
Fluzone Quadrivalent Multi-dose Vials (IIV4pf) NDC 49281-0639-15; CVX 158	5 mL MDV	≥ 6 months

(PFS = Prefilled Syringes)

LET'S PREVENT A TRIPLEDEMIC TOGETHER!

- Fall 2023 – Planning Starts NOW!
- RSV hit the U.S. especially hard last fall, while COVID-19 and influenza cases were also rising
- Coadministration of ALL vaccines is supported
  - ACIP specifically recommends that RSV vaccines may be administered simultaneously with seasonal influenza vaccines, COVID-19 vaccines, pneumococcal vaccines, Td/Tdap, and zoster vaccine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