

RESPIRATORY VIRUS VACCINES

	COVID-19	Influenza	Respiratory Syncytial Virus (RSV)
Who should get it?	Everyone 6 months or older should receive the updated COVID-19 vaccine ¹	Everyone ages 6 months and older ⁵	Adults 60 years and older and Individuals 32-36 weeks pregnant ²
Vaccine Schedule	Children ages 6 months to 4 years: complete vaccination with recommended doses of the updated COVID-19 vaccine ⁸ Everyone 5 years or older including pregnant individuals: updated COVID-19 vaccine 2 months or more after the last dose ⁸	9 years or older : 1 dose 6 months to 8 years old: 2 doses of 2023-2024 vaccine ≥ 4 weeks apart Pregnant individuals: Quadrivalent and recombinant flu vaccines may be given in any trimester ⁵	Adults 60 years of age and older may receive a single dose of RSV vaccine using shared clinical decision-making ¹² Individuals who are 32-36 weeks pregnant during RSV season Arexvy not recommended for pregnant individuals) ¹⁶
What the vaccine covers	Currently circulating SARS-CoV-2 XBB-sublineage variants and Omicron variant XBB.1.5 ¹⁴	A strains: H1N1 and H3N2 B strains: Victoria lineage and Yamagata lineage ⁶	Abrysvo: contains F protein from subtypes A and B ¹² Arexvy: single F protein + adjuvant ¹²

Discussions with the Public on Vaccine Myths vs. Facts

"Vaccinations can cause autism" - False
 This myth came from falsified publications linking the MMR vaccine to autism.¹⁷The articles have since been retracted and the scientists that published these articles have been revoked of their license. There have since been numerous peer-reviewed, scientific articles demonstrating there is no link between vaccines and autism.

"Vaccine production is rushed and not always tested properly before distribution to the public" - False
 It's true that the production of the COVID-19 vaccine was the fastest a vaccine has come to market.¹⁸ Typically, vaccine production takes anywhere between 5-10 years (see vaccine development process image for more on the developmental process). The threat of COVID-19 and its deadly consequences when first introduced to the world created a tremendous need that was met with additional funding and worldwide research collaborations. This accelerated process allowed for large randomized controlled trials, the gold standard of medicinal science, to be conducted before it was distributed to the public.

"Vaccines have unsafe toxins and can make you sick" - False
 Vaccines were originally developed to contain whole pathogens (live attenuated or inactivated) which conferred high immunogenicity but also poor reactogenicity. At present, many vaccinations instead contain purified antigen which poses less risk of adverse reactions, but consequently a decreased immunogenic effect. To enhance the lifespan and immunogenic potential of these vaccines, preservatives and adjuvants started being included in the manufacturing process in 1932.² Since their discovery, there have been many instances of sensitivities and widespread adverse reactions to some of these additions. Specific examples include: thimerosal^{1,6}, gluten^{26,3a} and formaldehyde, which was found in the RSV vaccine in the 1960s^{1,4,37} Because of this history, preservatives and adjuvants are constantly monitored for safety and efficacy throughout vaccine development.

"If I already had COVID-19/RSV/Flu, then I don't need a vaccine" - False
 While previous infection offers some immunity to reinfection, the immunity can be highly dependent upon the predominant serotype or variant of the virus (Mohr). For these cases, vaccinations tend to be more effective because they can be targeted to the current predominating strain of the virus. Further, for those who have been vaccinated and still get infected, symptoms tend to be "tamed" when compared cases without vaccine immunity, particularly with flu.²³

^{21,27,28}



COMMUNICATING WITH THE PUBLIC ABOUT VACCINES

help your community get that immunity!

Why Vaccines are important?

HERD IMMUNITY

- Is seen by having a high proportion of the population vaccinated or have immunity from a previous infection.⁹
- Herd Immunity through vaccination can prevent the spread of disease and unnecessary deaths.⁹



How do vaccines work?

- Our bodies create trained soldiers, known as **antibodies**, to recognize specific bugs based on targeted pieces presented in vaccines!²⁶
- RSV vaccine targets the RSV pre fusion (pre-F) protein.¹⁶
- Flu vaccine targets the hemagglutinin protein on the surface of influenza.¹⁵
- COVID-19 vaccine targets the spike protein (S-protein) SARS-CoV-2.¹⁸

CDC Respiratory virus updates and vaccine info⁷

Updated Weekly



Project firstline⁴
 “At Project Firstline, our aim is to equip healthcare workers with the necessary information and resources to safeguard their well-being and prevent the transmission of infections.” -CDC



Vaccine Development Process³⁶



Pre-trials

- Chemical identified for potential medicinal use
- Administer to small animals like mice
- Determine proof of concept and safety parameters
- Adjust vaccine to make it more effective.
- Formulation and stability data determined



Research & Development

Phase 1

- Safety Check
- Administered to less than 100 healthy people typically
- Identify side effects in humans



Identify side effects

Phase 2

- Dose Optimization
- Administered to hundreds of healthy people typically
- Identify dose-related side effects
- Quantify immune response



Evaluate dosage

Phase 3

- Efficacy Evaluation
- Administered to hundreds to thousands of people
- Determine vaccine efficacy
- Monitor common and less common side effects
- Collect information to support safe use in a specific population



Confirm efficacy & Safety

FDA Approval for Use In General Population



Approval

Phase 4

- Administered to thousands of people in routine practice
- Evaluate effectiveness over a longer period of time
- Safety data captured by the Vaccine Adverse Event Reporting System (VAERS)
- Not typically industry-funded



Continuous Monitoring