COVID-19 Update
March 15, 2023

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Outline

COVID-19

- USA COVID-19 stats and variants update
- Long COVID

RSV in Adults Update

Influenza updates

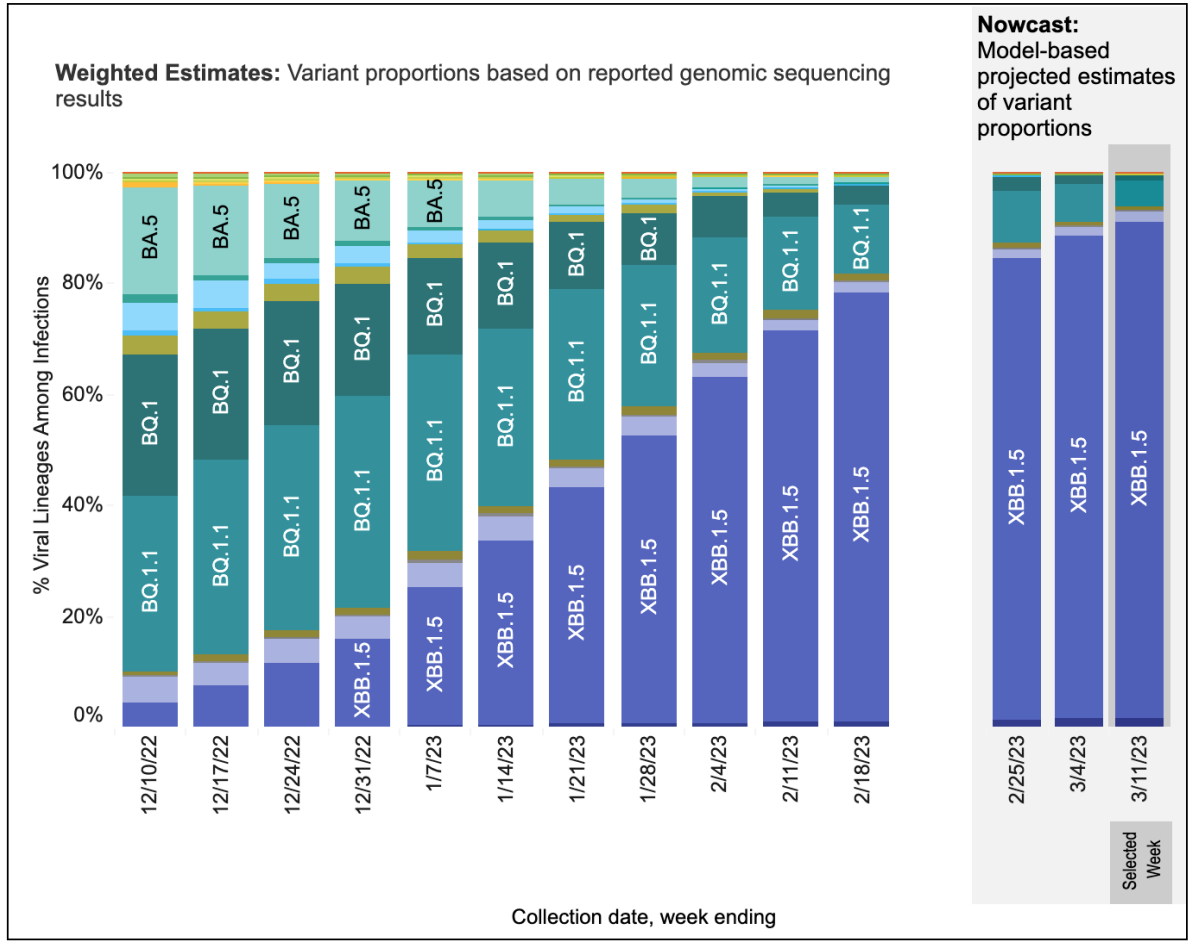
	ON MARCH 10	DAILY AVG.	PER 100,000	14-DAY CHANGE	TOTAL REPORTED
Cases	10,161	29,498	9	–31%	103,535,689
Deaths	51	393	<1	+38%	1,131,963
Hospitalized	—	24,887	8	–11%	
Test positivity		7.9%			

Vaccination rate for the U.S.

Source: Centers for Disease Control and Prevention. Percentages are the share of a population that is fully vaccinated.

Weighted and Nowcast Estimates in United States for Weeks of 12/4/2022 – 3/11/2023

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.



Nowcast Estimates in United States for 3/5/2023 – 3/11/2023

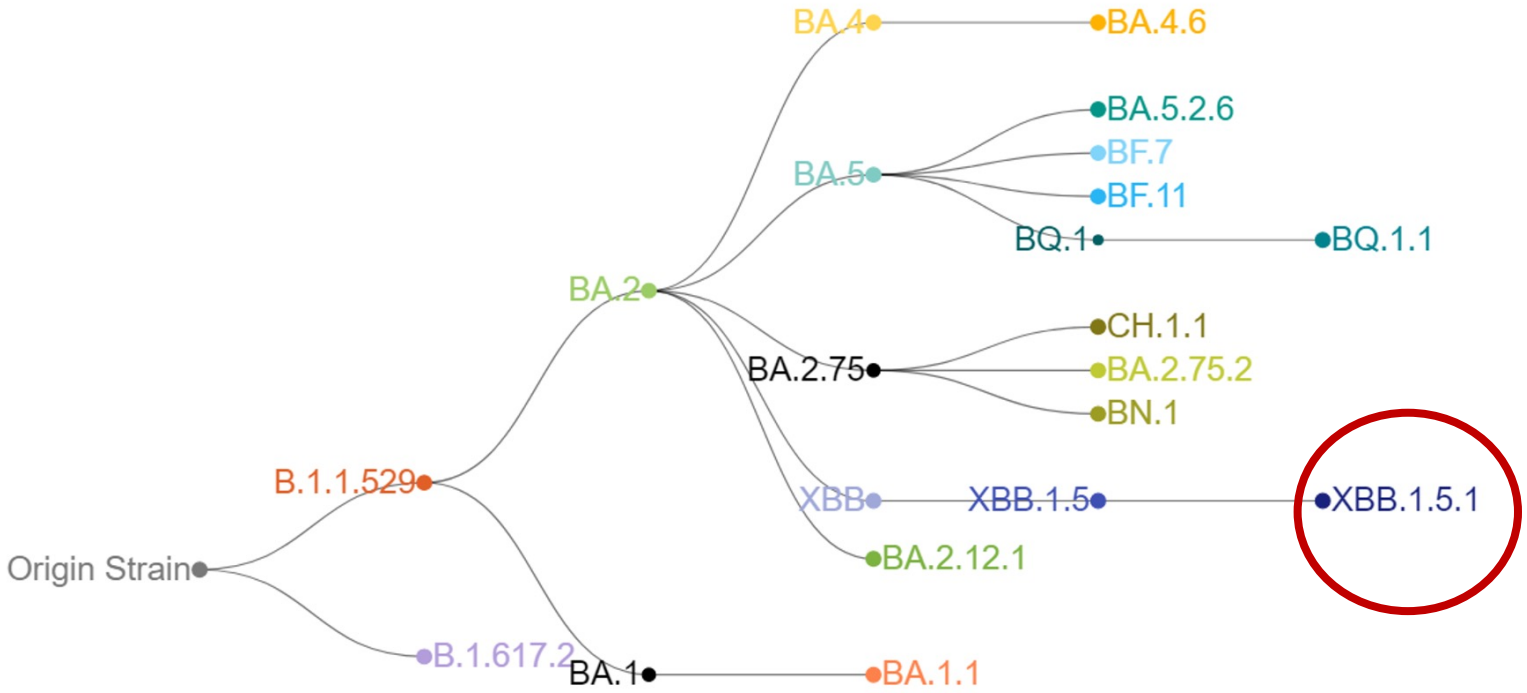
USA

WHO label	Lineage #	US Class	%Total	95%PI
Omicron	XBB.1.5	VOC	89.5%	85.8-92.3%
	BQ.1.1	VOC	4.7%	3.3-6.8%
	XBB	VOC	2.1%	1.1-3.9%
	XBB.1.5.1	VOC	1.6%	1.0-2.4%
	BQ.1	VOC	1.0%	0.7-1.5%
	CH.1.1	VOC	0.7%	0.4-1.0%
	BN.1	VOC	0.1%	0.1-0.2%
	BA.2	VOC	0.1%	0.0-1.1%
	BA.5	VOC	0.1%	0.0-0.1%
	BF.7	VOC	0.0%	0.0-0.1%
	BA.5.2.6	VOC	0.0%	0.0-0.0%
	BA.2.75	VOC	0.0%	0.0-0.0%
	BF.11	VOC	0.0%	0.0-0.0%
	BA.2.75.2	VOC	0.0%	0.0-0.0%
	B.1.1.529	VOC	0.0%	0.0-0.0%
	BA.4.6	VOC	0.0%	0.0-0.0%
	BA.2.12.1	VOC	0.0%	0.0-0.0%
	BA.4	VOC	0.0%	0.0-0.0%
	BA.1.1	VOC	0.0%	0.0-0.0%
Delta	B.1.617.2	VBM	0.0%	0.0-0.0%
Other	Other*		0.1%	0.0-0.1%

COVID Data Tracker: https://covid.cdc.gov/covid-data-tracker/#variant-proportions

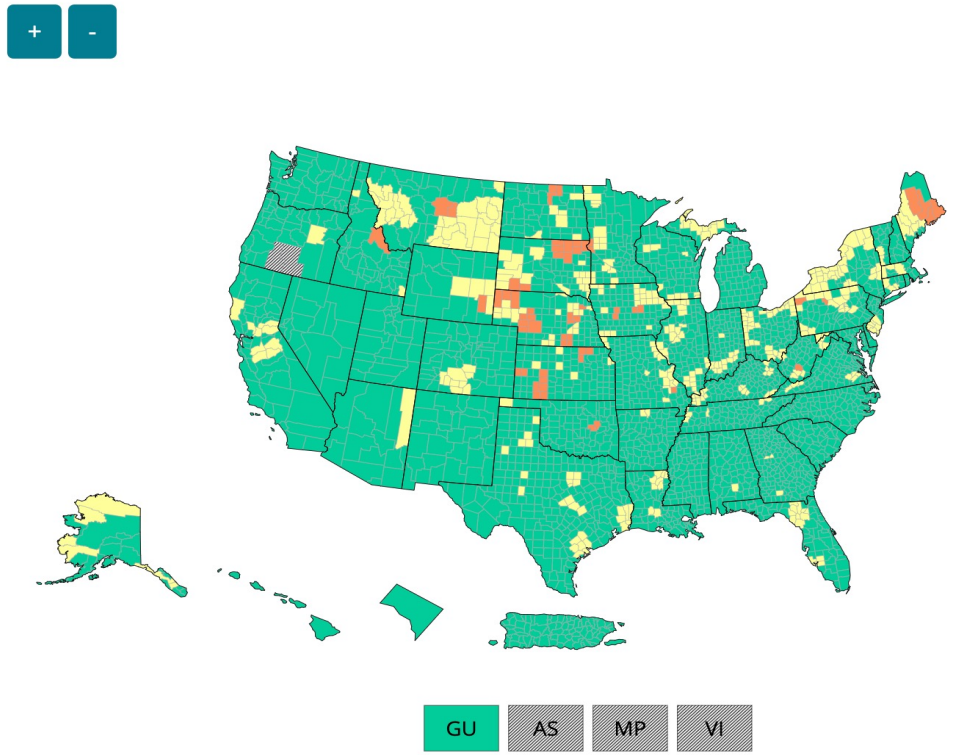
SARS-CoV-2 Lineages

XBB.1.5 is a recombinant variant of Omicron BA.2.75 and BA.2.10



https://covid.cdc.gov/covid-data-tracker/#variant-summary

COVID-19 Community Levels in US by County



COVID-19 Community Levels in US by County

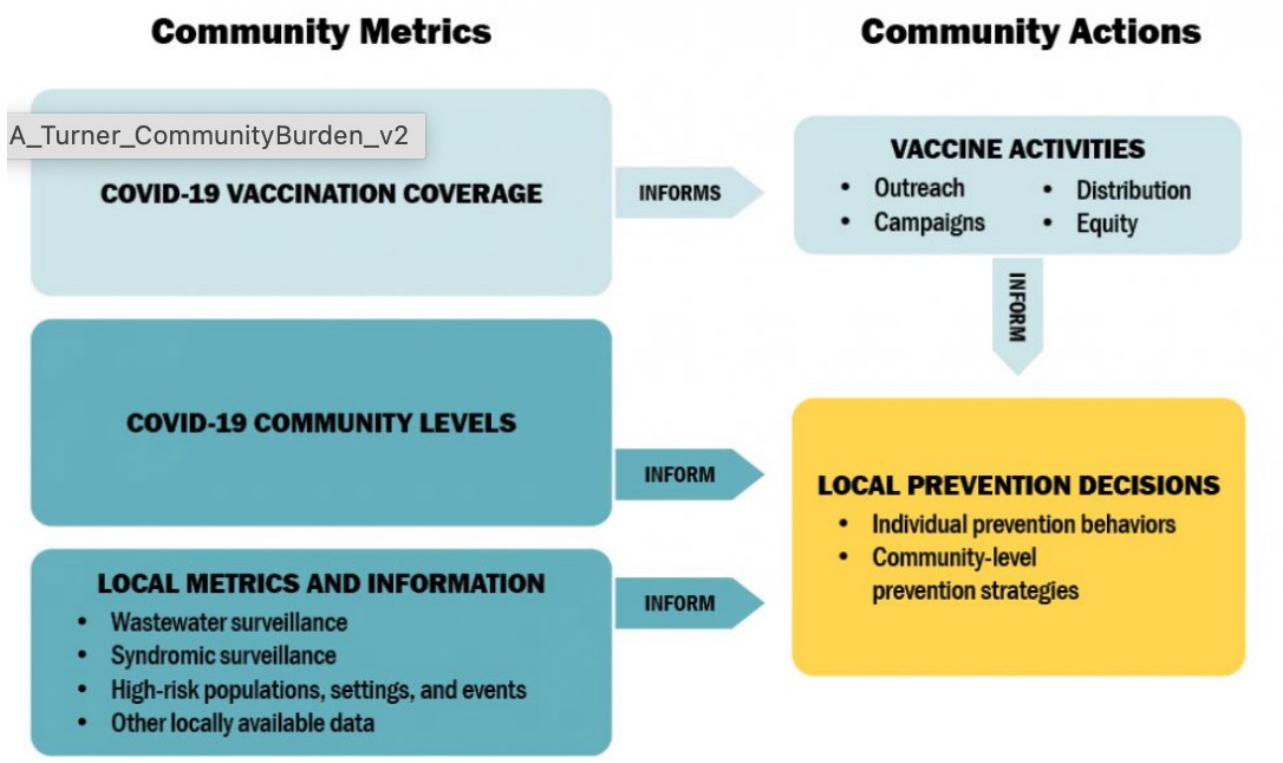
	Total	Percent	% Change
High	61	1.89%	– 0.59%
Medium	420	13.05%	– 2.53%
Low	2738	85.06%	3.12%

How are COVID-19 Community Levels calculated?

Time Period: COVID-19 Community Levels were calculated on Thu Mar 09 2023. New COVID-19 cases per 100,000 population (weekly total) are calculated using data from Thu Mar 02 2023 - Wed Mar 08 2023. **New COVID-19 admissions per 100,000 population (7-day total) and Percent of inpatient beds occupied by COVID-19 patients (7-day average)** are calculated using data from Wed Mar 01 2023 - Tue Mar 07 2023.

https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

How community metrics and actions should inform the prevention decisions of local authorities



- At the **Low level,** individual and community-level recommendations focus on best practices in infection prevention and control in community settings:
  - Promoting up-to-date vaccinations as the front-line strategy to protect from severe disease.
  - Improving ventilation, testing to identify infection early, and following recommendations for isolation and after an exposure.
- The **Medium level** strengthens emphasis on protecting people who are **immunocompromised or at increased risk for severe disease**, and enhanced prevention measures for high-risk settings.
- At the **High level**, additional recommendations for individuals and communities focus on **wearing masks indoors in public and providing added protection to populations at high risk.**

https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

Individual and Community-Level Prevention Strategies

Individual-Level Prevention Steps You Can Take Based on Your COVID-19 Community Level

LOW, MEDIUM, AND HIGH

At all COVID-19 Community Levels:

- Stay up to date on vaccination, including recommended booster doses.
- Maintain ventilation improvements.
- Avoid contact with people who have suspected or confirmed COVID-19.
- Follow recommendations for isolation if you have suspected or confirmed COVID-19.
- Follow the recommendations for what to do if you are exposed to someone with COVID-19.
- If you are at high risk of getting very sick, talk with a healthcare provider about additional prevention actions.

MEDIUM AND HIGH

When the COVID-19 Community Level is Medium or High:

- If you are at high risk of getting very sick, wear a high-quality mask or respirator (e.g., N95) when indoors in public
- If you have household or social contact with someone at high risk for getting very sick, consider self-testing to detect infection before contact, and consider wearing a high-quality mask when indoors with them

HIGH

When the COVID-19 Community Level is High:

- Wear a high-quality mask or respirator.
- If you are at high risk of getting very sick, consider avoiding non-essential indoor activities in public where you could be exposed.

Community-Level Prevention Strategies

LOW, MEDIUM, AND HIGH

At all COVID-19 Community Levels:

- Promote equitable access to vaccination, testing, masks and respirators, treatment and prevention medications, community outreach, and support services.
- Ensure access to testing, including through point-of-care and at-home tests for all people.
- Maintain ventilation improvements.
- Provide communications and messaging to encourage isolation among people who test positive.

MEDIUM AND HIGH

When the COVID-19 Community Level is Medium or High:

- Implement screening testing in high-risk settings where screening testing is recommended.

HIGH

When the COVID-19 Community Level is High:

- Implement healthcare surge support as needed.

https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

COVID-19 Community Level	Individual- and household-level prevention behaviors	Community-level prevention strategies (as recommended by state or local authorities)	COVID-19 Community Level
Low	•Stay up to date with COVID-19 vaccines and boosters •Maintain improved ventilation throughout indoor spaces when possible •Follow CDC recommendations for isolation and after exposures, including getting tested if you are exposed to COVID-19 or have symptoms of COVID-19 •If you are immunocompromised or high risk for severe disease • Have a plan for rapid testing if needed (e.g., having home tests or access to testing) • Talk to your healthcare provider about whether you are a candidate for treatments like oral antivirals, PrEP, and monoclonal antibodies	•Distribute and administer vaccines to achieve high community vaccination coverage and ensure health equity •Maintain improved ventilation in public indoor spaces •Ensure access to testing, including through point-of-care and at-home tests for all people • Communicate with organizations and places that serve people who are immunocompromised or at high risk for severe disease to ensure they know how to get rapid testing •Ensure access and equity in vaccination, testing, treatment, community outreach, support services for disproportionately affected populations	**Low**
Medium	•If you are immunocompromised or high risk for severe disease • Wear a mask or respirator indoors in public • Have a plan for rapid testing if needed (e.g., having home tests or access to testing) • Talk to your healthcare provider about whether you are a candidate for treatments like oral antivirals, PrEP, and monoclonal antibodies •If you have household or social contact with someone at high risk for severe disease consider wearing a mask when indoors with them •Stay up to date with COVID-19 vaccines and boosters •Maintain improved ventilation throughout indoor spaces when possible •Follow CDC recommendations for isolation and after exposures, including getting tested if you are exposed to COVID-19 or have symptoms of COVID-19	•Protect people at high risk for severe illness or death by ensuring equitable access to vaccination, testing, treatment, support services, and information •Implement enhanced prevention measures in high-risk congregate settings (see guidance for correctional facilities and homeless shelters •Distribute and administer vaccines to achieve high community vaccination coverage and ensure health equity •Maintain improved ventilation in public indoor spaces •Ensure access to testing, including through point-of-care and at-home tests for all people • Communicate with organizations and places that serve people who are immunocompromised or at high risk for severe disease to ensure they know how to get rapid testing •Ensure access and equity in vaccination, testing, treatment, community outreach, support services for disproportionately affected populations	**Medium**
High	•Wear a well-fitting mask[1] indoors in public, regardless of vaccination status (including in K-12 schools and other indoor community settings) •If you are immunocompromised or high risk for severe disease • Wear a mask or respirator indoors in public • Consider avoiding non-essential indoor activities in public where you could be exposed • Have a plan for rapid testing if needed (e.g., having home tests or access to testing) • Talk to your healthcare provider about whether you are a candidate for treatments like oral antivirals, PrEP, and monoclonal antibodies •If you have household or social contact with someone at high risk for severe disease consider wearing a mask when indoors with them •Stay up to date with COVID-19 vaccines and boosters •Maintain improved ventilation throughout indoor spaces when possible •Follow CDC recommendations for isolation and after exposures, including getting tested if you are exposed to COVID-19 or have symptoms of COVID-19	•Consider setting-specific recommendations for prevention strategies based on local factors •Implement healthcare surge support as needed •Protect people at high risk for severe illness or death by ensuring equitable access to vaccination, testing, treatment, support services, and information •Implement enhanced prevention measures in high-risk congregate settings (see guidance for correctional facilities and homeless shelters) •Distribute and administer vaccines to achieve high community vaccination coverage and ensure health equity •Maintain improved ventilation in public indoor spaces •Ensure access to testing, including through point-of-care and at-home tests for all people • Communicate with organizations and places that serve people who are immunocompromised or at high risk for severe disease to ensure they know how to get rapid testing •Ensure access and equity in vaccination, testing, treatment, community outreach, support services for disproportionately affected populations	**High**

https://www.cdc.gov/coronavirus/2019-ncov/your-health/covid-by-county.html

Which of the Following Statements are True Regarding Variant XBB.1.5

A. Reinfection rates with XBB.1.5 are similar compared to BQ.1

B. Patiets infected with XBB.1.5 have higher hospitalization and death rates compared to those infected with BQ.1

C. The Epicenter of XBB.1.5 was New York City

D. The Epicenter of XBB.1.5 was Washington DC

E. A and C are correct

F. B and D are correct

Epidemiologic Characteristics of SARS-CoV-2 Recombinant Variant XBB.1.5 — New York City, November 1, 2022–January 4, 2023

- Omicron XBB.1.5 variant, was first detected in New York City (NYC) in October 2022.
- As of January 7, 2023, XBB.1.5 was the predominant variant in NYC, which was likely the epicenter of XBB.1.5
- Disease severity of XBB.1.5 compared to the co-circulating strain was evaluated.

Luoma E, Rohrer R, Parton H, et al. MMWR Morb Mortal Wkly Rep 2023;72:212–214.

Epidemiologic Characteristics of SARS-CoV-2 Recombinant Variant XBB.1.5 — New York City, November 1, 2022–January 4, 2023

SARS-CoV-2 specimens collected from NYC residents were sequenced

- At five DOHMH COVID-19 Express laboratories, 190 outpatient clinics, and 11 emergency departments within the NYC municipal hospital system

To identify demographic characteristics and previous SARS-CoV-2–positive test results, monovalent immunization history,* hospitalization status, and vital status, sequenced isolates were matched to the:

- DOHMH COVID-19 surveillance database
- Citywide Immunization Registry
- Health information exchanges
- e-Vitals Death Registry

Persons infected with XBB.1.5 (3,019) were compared with persons infected with BQ.1† (6,067) during November 1, 2022–January 4, 2023

- Because both variants were co-circulating in NYC starting in November 2022, and BQ.1 was the predominant variant in NYC when XBB.1.5 emerged.

Luoma E, Rohrer R, Parton H, et al. MMWR Morb Mortal Wkly Rep 2023;72:212–214.

Epidemiologic Characteristics of SARS-CoV-2 Recombinant Variant XBB.1.5 — New York City, November 1, 2022–January 4, 2023

Higher percent of patients with XBB.1.5:

- Were younger
- Were identified as racial and ethnic minorities
- Lived in high-poverty neighborhoods
- Had lower completion of of a primary COVID-19 vaccination series with ≥1 dose of monovalent vaccine booster

Reinfection rates were similar (25.2% [XBB.1.5]; 25.4% [BQ.1]).

No difference in the proportion of patients hospitalized or those who died was observed

- Suggesting no significant difference in disease severity.

Linked epidemiologic and genomic data provide a means to evaluate characteristics of emerging variants

- Including disease severity, that are important for rapid risk assessment.

Routine linkage of epidemiologic and sequencing data allows:

- Tracking of emerging variants and ongoing assessment of reinfection, infection after vaccination, and disease severity.

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E. A and C are correct

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Effect of covid-19 vaccination on long covid: systematic review

OBJECTIVE

- To determine the effect of covid- 19 vaccination, given before and after acute infection with the SARS- CoV- 2 virus, or after a diagnosis of long covid, on the rates and symptoms of long covid.

DESIGN

- Systematic review.
- The high heterogeneity between studies precluded any meaningful meta- analysis. The studies failed to adjust for potential confounders, such as other protective behaviors and missing data, thus increasing the risk of bias and decreasing the certainty of evidence to low.

DATA SOURCES

- PubMed, Embase, and Cochrane covid- 19 trials, and Europe PubMed Central (Europe PMC) for preprints, from 1 January 2020 to 3 August 2022.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES

- Trials, cohort studies, and case- control studies reporting on patients with long covid and symptoms of long covid, with vaccination before and after infection with the SARS- CoV- 2 virus, or after a diagnosis of long covid. Risk of bias was assessed with the ROBINS- I tool.

BMJMED 2023;2:e000385. doi:10.1136/ bmjmed-2022-000385

Effect of covid-19 vaccination on long covid: systematic review RESULTS

1645 articles were screened

- No randomized controlled trials were found.

16 observational studies from five countries were identified

- Studies were from USA, UK, France, Italy, and the Netherlands
- Studies combined included 614 392 patients

The most common symptoms of long covid that were studied were:

- Fatigue, cough, loss of sense of smell, shortness of breath, loss of taste, headache, muscle ache, difficulty sleeping, difficulty concentrating, worry or anxiety, and memory loss or confusion.

BMJMED 2023;2:e000385. doi:10.1136/ bmjmed-2022-000385

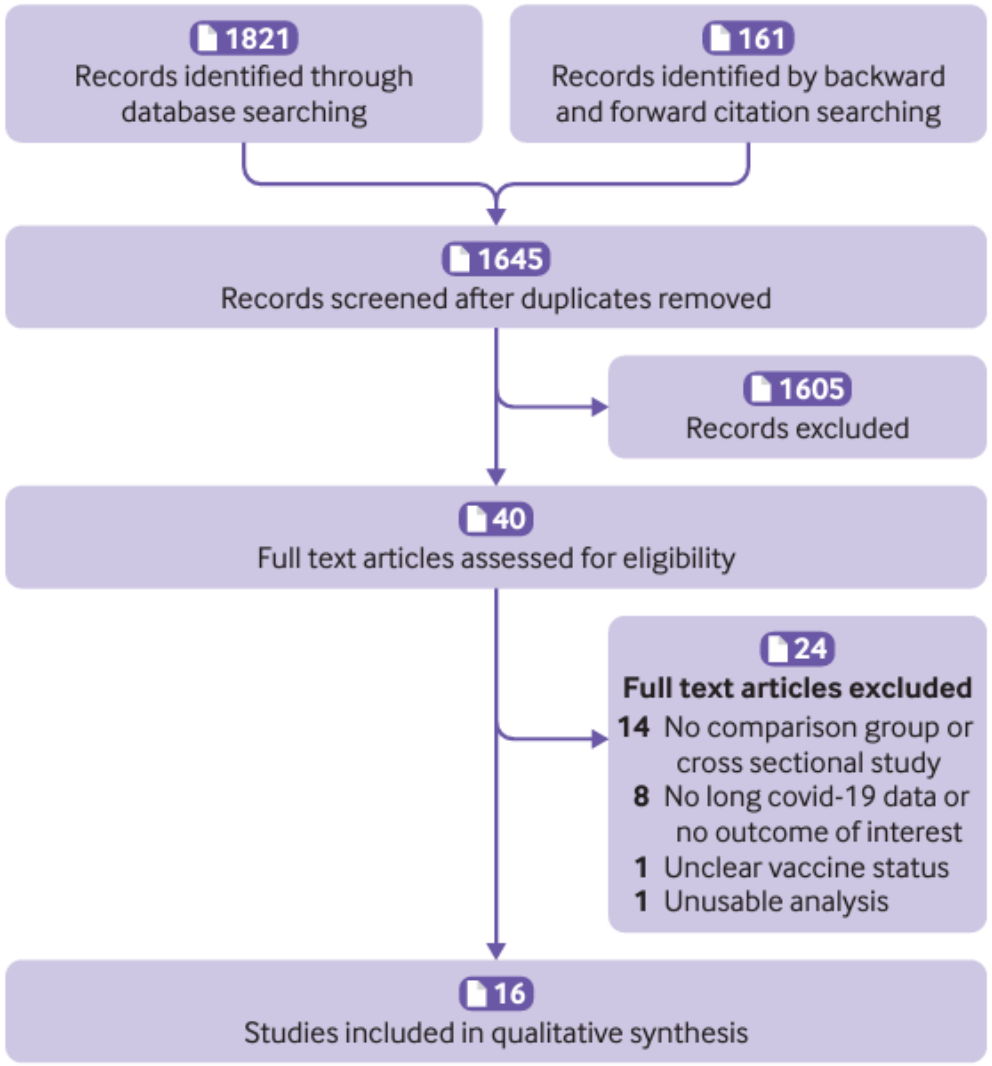
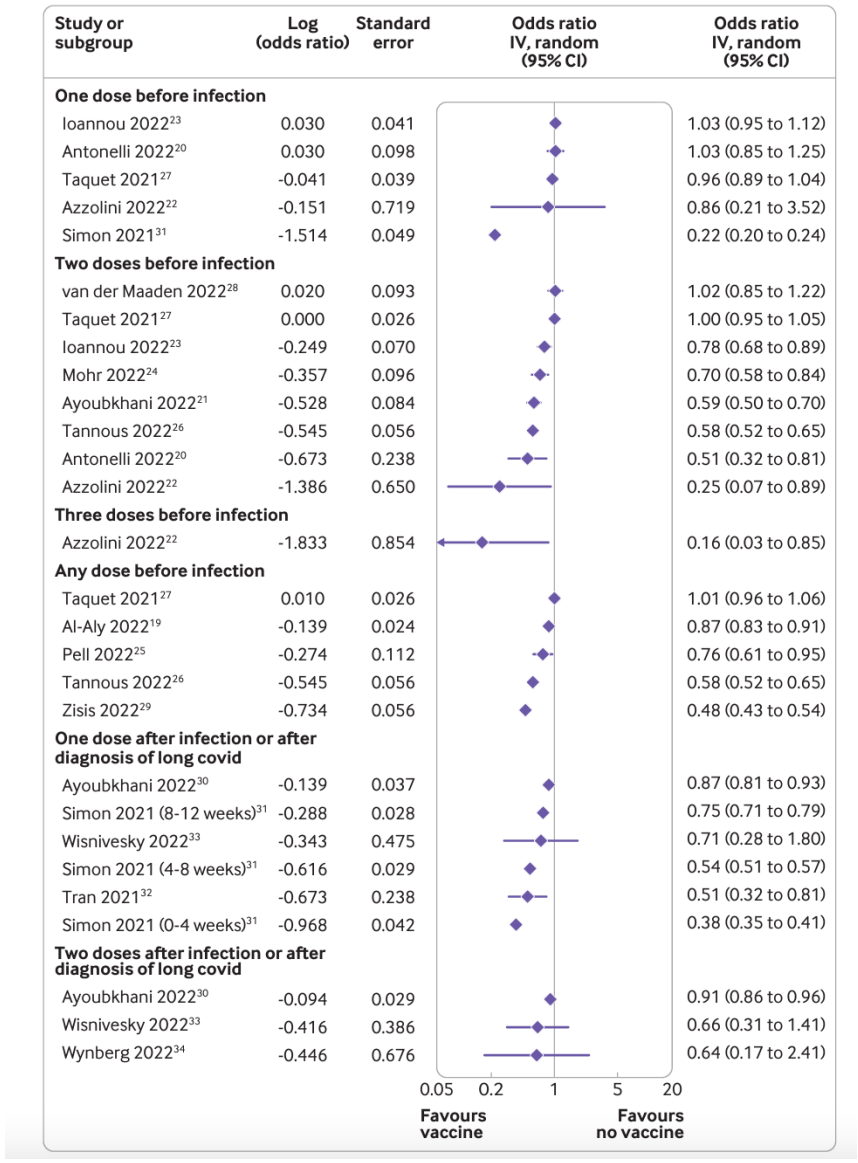


Figure 1 | Screening and selection of studies



BMJMED 2023;2:e000385. doi:10.1136/ bmjmed-2022-000385

Effect of covid-19 vaccination on long covid: systematic review RESULTS

12 studies reported data on vaccination before infection with the SARS- CoV- 2 virus, and 10 showed a significant reduction in the incidence of long covid:

- The odds ratio of developing long covid with one dose of vaccine ranged from 0.22 to 1.03
- With two doses, odds ratios were 0.25- 1
- With three doses, 0.16
- With any dose, 0.48- 1.01.

Five studies reported on vaccination after infection

- Odds ratios of 0.38- 0.91.

The high heterogeneity between studies precluded any meaningful meta- analysis.

The studies failed to adjust for potential confounders, such as other protective behaviours and missing data, thus increasing the risk of bias and decreasing the certainty of evidence to low.

BMJMED 2023;2:e000385. doi:10.1136/ bmjmed-2022-000385

Effect of covid-19 vaccination on long covid: systematic review: Conclusions

Current studies suggest that covid- 19 vaccines might have protective and therapeutic effects on long covid.

More robust comparative observational studies and trials are needed, however, to clearly determine the effectiveness of vaccines in preventing and treating long covid.

Outline

COVID-19

- USA COVID-19 stats and variants update
- Long COVID

RSV in Adults Update

Influenza updates

Which of the Following Statements are True Regarding RSV

A. RSV is seasonal and usually occurs after the winter months
B. RSV is the leading cause of hospitalization in children younger than 5 years old
C. RSV is a major cause of death, rivaling seasonal influenza, among frail older adults
D. The first RSV vaccine trials were conducted in 1965 and 1966
E. Only A and C are correct
F. All statements are correct

RSV Summary

Seasonality usually in winter months

Diagnostics for RSV is not always undertaken

Impossible to identify just by symptoms

Risk factors for poor outcomes:

- Increasing age, Chronic heart or lung disease, Immunosuppression and solid organ tumors
- RSV outcomes are at least as severe as for influenzae
- RSV affects people throughout their lives but the burden of disease is greatest at extremes of age
- RSV causes significant hospitalizations and mortality
  - Hospitalization rates for **RSV** are similar to those for S**treptococcus pneumonia and influenza**

RSV has not gone away

- Care home studies and COVID-19 precautions highlight the need and possibility of supressing the virus
- **An effective vaccine would greatly aid in this endeavour**

HEALTH NEWS

Paving the way for the world's first RSV vaccine, FDA advisers recommend two different shots

An FDA advisory committee has recommended that the agency approve two RSV vaccines for older people, one from Pfizer and another from GSK.

The Journey to RSV Vaccines — Heralding an Era of Structure-Based Design

Barney S. Graham, M.D., Ph.D.

1956

RSV was discovered in 1956

- Was initially dubbed “chimpanzee coryza agent.”
- In 1957, it was found to be the cause of bronchiolitis.

1965 and 1966

Whole-inactivated RSV vaccine trials conducted in 1965 and 1966.

- The youngest was immunized before 6 months of age and before their first RSV infection.
- During the winter of 1966–1967, there was an outbreak of RSV in the youngest age group, and of the 31 vaccinated infants, 20 were infected, 16 were hospitalized, and 2 died

now

RSV infects everyone by 3 years of age

- Most infections result in mild or no disease
- Leading cause of hospitalization in children younger than 5 yo
- It is a major cause of death, rivaling seasonal influenza, among frail older adults.

N Engl J Med 2023; 388:579-581

The Journey to RSV Vaccines — Heralding an Era of Structure-Based Design

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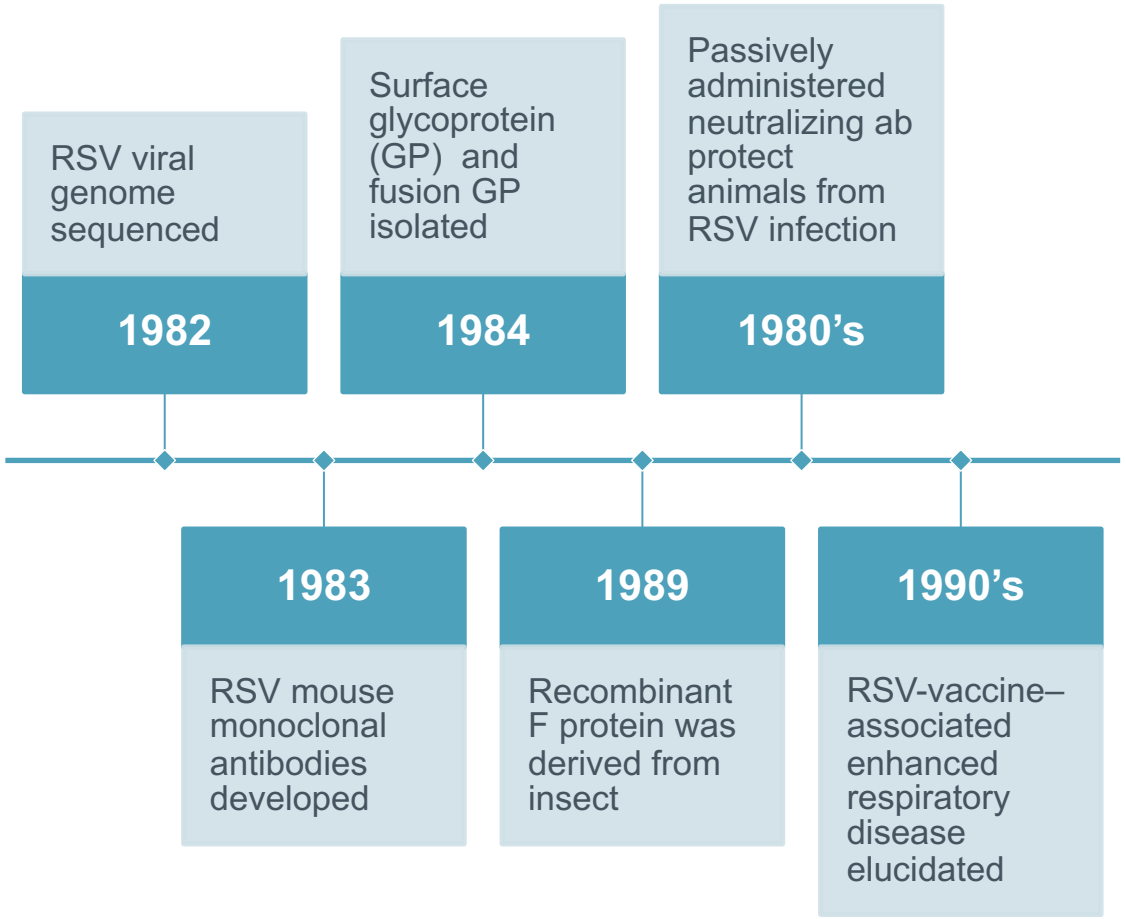

- After nearly 30 years of work to elucidate the immunologic events that resulted in RSV-vaccine–enhanced disease, vaccine development efforts were cautiously reinitiated
  - PreF shown to be more immunogenic than post F for boosting RSV neutralizing activity
- The success of structure-based vaccine design for RSV informed the rapid response to Covid-19 and were the basis for coronavirus pandemic preparedness in 2019.
- **Because of the technical advances in biomedical science and the RSV blueprint, work that had taken decades in RSV research was compressed into just a few weeks for SARS-CoV-2**
  - This work provided sequences, structures, and reagents needed to rapidly develop safe and effective vaccines and therapeutic mAbs.

"With Covid-19 vaccines now approved for clinical use and RSV vaccines shown to be effective and awaiting approval, we have entered an era of precision antigen design based on protein engineering guided by atomic-level structure. I hope these advances will lead to future successes in addressing unmet needs and combating threats from emerging pathogens".

The Journey to RSV Vaccines — Heralding an Era of Structure-Based Design

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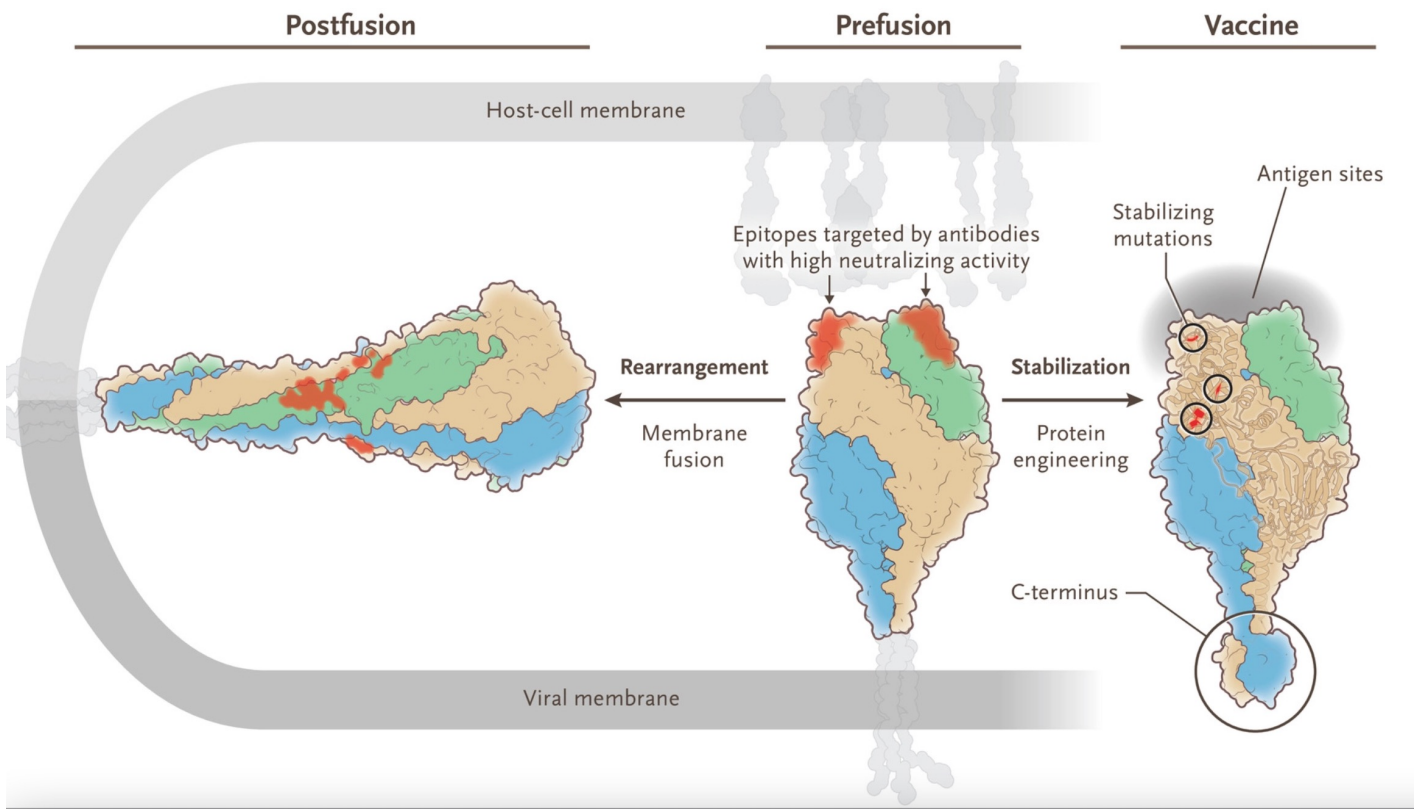


The Effect of Respiratory Syncytial Virus (RSV) Fusion Glycoprotein (F) Structure on Antigenicity.

The trimeric RSV F protein in its prefusion state (middle) is anchored on the viral envelope by a transmembrane domain at the C-terminus. At the apex of the prefusion F protein, there is an epitope (denoted in red) targeted by antibodies with high neutralizing activity.

When F protein rearranges into the post fusion form (left), either spontaneously on the viral membrane or after creating a fusion pore with the host-cell membrane, the epitope is lost.

Stabilizing mutations can be introduced on the interior of the protein (right, small circled areas) to hold it in the prefusion conformation and preserve neutralization-sensitive epitopes at the apex for use as a vaccine antigen.

The ectodomain of RSV F vaccines can be delivered as a soluble trimeric protein (right) by constraining the C-terminus (right, large circled area) or, if expressed by gene delivery, the membrane of the protein can be anchored by retaining the transmembrane domain.

N Engl J Med 2023; 388:579-581

RSV Vaccine for Older Adults

- 12,467 participants received one dose of the RSVPreF3 OA vaccine and 12,499 received placebo.
- Efficacy against RT-PCR–confirmed RSV-related lower respiratory tract disease was **82.6%** (96.95% [CI], 57.9 to 94.1)
- Efficacy against severe RSV-related lower respiratory tract disease was **94.1%** (95% CI, 62.4 to 99.9)
- High vaccine efficacy was observed in various age groups and in participants with coexisting conditions.
- The RSVPreF3 OA vaccine was more reactogenic than placebo,
  - But most adverse events for which reports were solicited were transient, with mild-to-moderate severity.

N Engl J Med, Volume 388(7):595-608, February 16, 2023

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Respiratory Syncytial Virus Prefusion F Protein Vaccine in Older Adults

Papi A et al. DOI: 10.1056/NEJMoa2209604

CLINICAL PROBLEM

Older adults with respiratory syncytial virus (RSV) infection are at risk of lower respiratory tract disease, potentially leading to exacerbation of underlying conditions, hospitalization, and death. There are no licensed RSV vaccines or prophylactic interventions for older adults.

CLINICAL TRIAL

Design: An ongoing phase 3, international, randomized, placebo-controlled trial assessed the efficacy and safety of an AS01$_E$-adjuvanted respiratory syncytial virus (RSV) prefusion F protein–based candidate vaccine (RSVPreF3 OA) among adults ≥60 years of age.

Intervention: 25,040 participants in 17 countries were assigned to receive a single dose of the RSVPreF3 OA vaccine or placebo before the RSV season. The primary objective was to show vaccine efficacy against RSV-related lower respiratory tract disease during one RSV season.

RESULTS

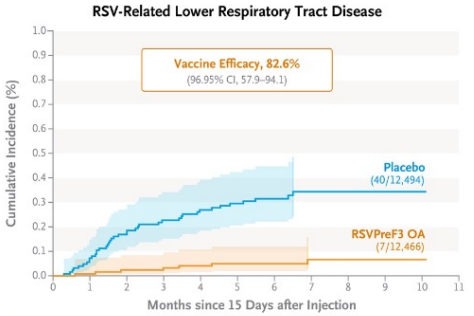
Efficacy: During a median follow-up of 6.7 months, among 24,960 participants with evaluable data, vaccine efficacy against RSV-confirmed lower respiratory tract disease was >80%.

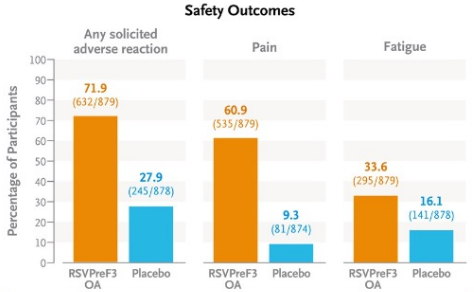
Safety: Solicited adverse events occurred more often with the vaccine than with placebo; most were mild to moderate in severity and resolved within the 4-day solicitation period. Pain was the most common solicited injection-site reaction with the vaccine, and fatigue was the most common solicited systemic reaction.

LIMITATIONS AND REMAINING QUESTIONS

- A small number of frail participants and participants ≥80 years of age were included; longer follow-up is needed to determine efficacy in these subgroups.
- The trial had limited ability to detect rare side effects.
- Public health measures to limit Covid-19 transmission reduced the spread of RSV and altered the RSV season.
- Additional RSV seasons need to be studied to better understand vaccine efficacy.

Links: Full Article | NEJM Quick Take | Perspective





CONCLUSIONS

A single dose of an AS01$_E$-adjuvanted RSV prefusion F protein–based candidate vaccine (RSVPreF3 OA) given before the RSV season showed high efficacy against RSV-related lower respiratory tract disease and had an acceptable safety profile in adults ≥60 years of age.

Conclusions

A single dose of the RSVPreF3 OA vaccine had an acceptable safety profile and prevented RSV-related acute respiratory infection and lower respiratory tract disease and severe RSV-related lower respiratory tract disease in adults 60 years of age or older, regardless of RSV subtype and the presence of underlying coexisting conditions.

The NEW ENGLAND JOURNAL of MEDICINE

N Engl J Med, Volume 388(7):595-608, February 16, 2023

RSV Vaccine for Older Adults

- The primary end point was the first occurrence of RSV-mediated lower respiratory tract disease that met one of three case definitions:
  - Three or more symptoms of lower respiratory tract infection **(definition 1)**
  - Two or more symptoms of lower respiratory tract infection **(definition 2)**
  - Either two or more symptoms of lower respiratory tract infection or one or more symptoms of lower respiratory tract infection plus at least one systemic symptom **(definition 3).**
- Vaccine efficacy was 80.0% 75.0% ,69.8% for case definitions 1, 2, and 3, respectively.
- Patients on vaccine arm had less symptoms and returned to usual health status earlier
- Percentages of participants with solicited local and systemic adverse events were higher in the vaccine group than in the placebo group (local, 37.9% vs. 8.4%; systemic, 41.4% vs. 16.4%).
- The frequency of serious adverse events was similar in the vaccine group and the placebo group (4.6% and 4.7%, respectively).

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Efficacy and Safety of an Ad26.RSV.preF–RSV preF Protein Vaccine in Older Adults

Falsey AR et al. DOI: 10.1056/NEJMoa2207566

CLINICAL PROBLEM

Respiratory syncytial virus (RSV) is an important cause of lower respiratory tract disease in older adults, potentially leading to hospitalization, intensive care unit admission, and death. Currently, there are no licensed RSV vaccines.

CLINICAL TRIAL

Design: A phase 2b, proof-of-concept, U.S.-based, multicenter, double-blind, randomized, placebo-controlled trial evaluated an investigational vaccine made up of a recombinant adenovirus vector encoding a conformation-stabilized RSV prefusion F protein (Ad26.RSV.preF) combined with recombinant RSV preF protein in adults ≥65 years of age.

Intervention: 5782 participants were assigned to receive an intramuscular dose of Ad26.RSV.preF–RSV preF protein vaccine or placebo. The primary end point was the first occurrence of RT-PCR–confirmed RSV-mediated lower respiratory tract disease that met one of three case definitions (definition 1, ≥3 symptoms of lower respiratory tract infection; definition 2, ≥2 such symptoms; and definition 3, either ≥2 such symptoms or ≥1 such symptom plus ≥1 systemic symptom).

RESULTS

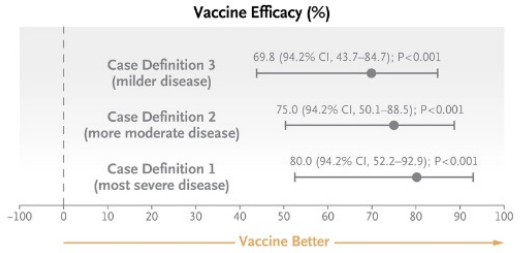
Efficacy: During one RSV season among 5592 participants in the primary analysis, vaccine efficacy against RSV-mediated lower respiratory tract disease ranged from 70% to 80%, depending on the case definition.

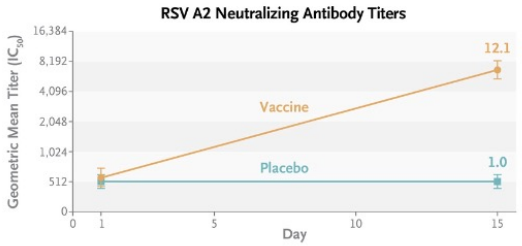
Safety: Solicited adverse events within 7 days occurred more often in the vaccine group than in the placebo group and were mostly mild to moderate in severity. Overall, the incidence of serious adverse events was similar in the two groups.

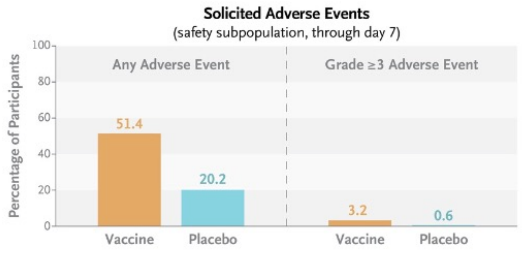
LIMITATIONS AND REMAINING QUESTIONS

- The surveillance period was shortened and the burden of RSV circulating in the community was low owing to the Covid-19 pandemic.
- Few participants ≥85 years of age were enrolled.
- White participants were overrepresented, and Black, Asian, and Hispanic participants were underrepresented.

Links: Full Article | NEJM Quick Take | Perspective



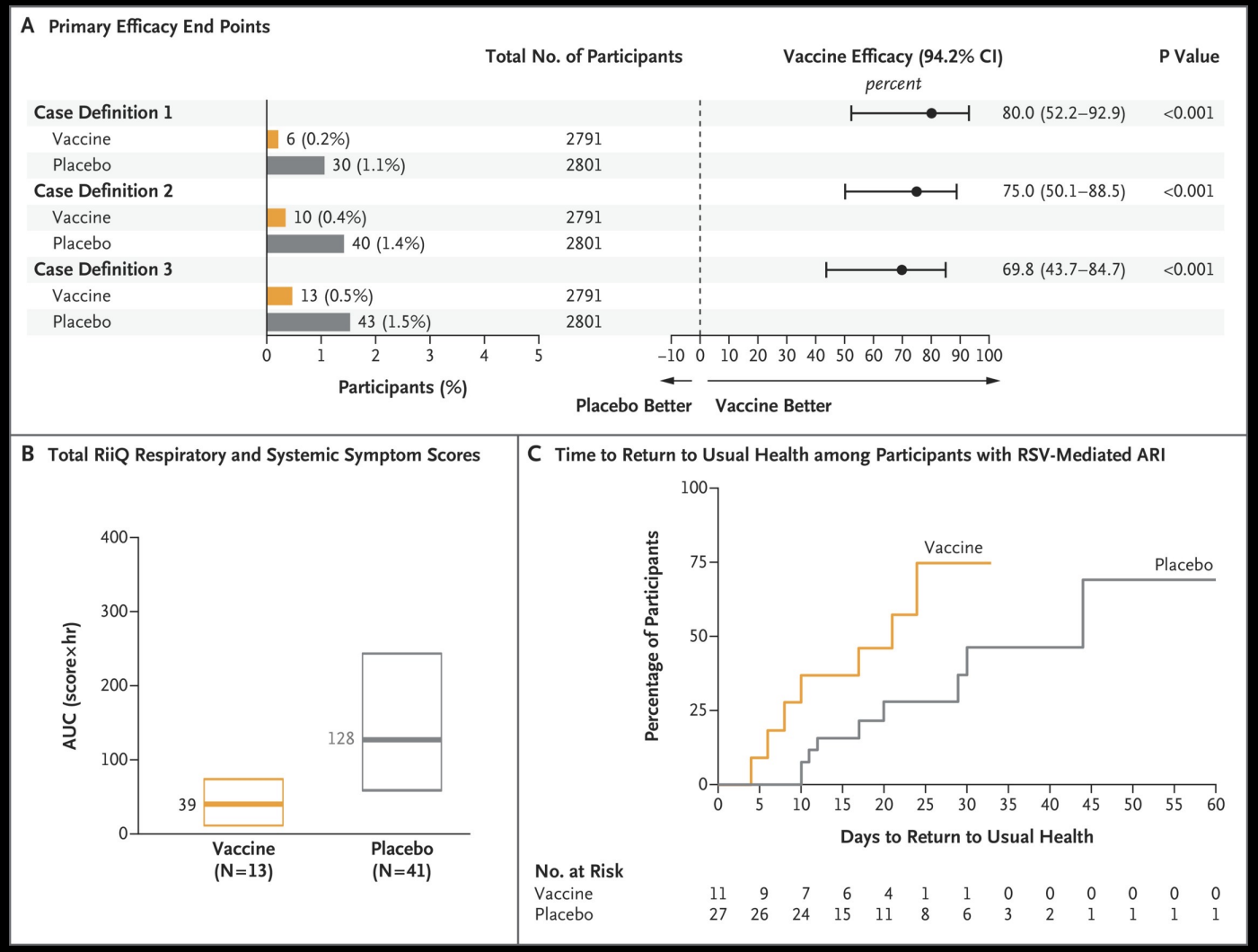




CONCLUSIONS

Among adults ≥65 years of age, a single dose of the investigational Ad26.RSV.preF–RSV preF protein vaccine was efficacious against RSV-mediated lower respiratory tract disease.

Vaccine Efficacy.



Falsey AR et al. N Engl J Med2023;388:609-620

Conclusions

In adults 65 years of age or older, Ad26.RSV.preF–RSV preF protein vaccine was immunogenic and prevented RSV-mediated lower respiratory tract disease.

Which of the Following Statements are True Regarding RSV

A. RSV is seasonal and usually occurs after the winter months

B. RSV is the leading cause of hospitalization in children younger than 5 years old

C. RSV a major cause of death, rivaling seasonal influenza, among frail older adults

D. The first RSV vaccine trials were conducted in 1965 and 1966

E. Only A and C are correct

F. All statements are correct

Outline

COVID-19

- USA COVID-19 stats and variants update
- Long COVID

RSV in Adults Update

Influenza updates

Influenza Update

The FDA granted EUA to an at-home diagnostic PCR test that detects

- SARS-CoV-2
- Influenza A
- Influenza B

It is a NAAT test that uses nasal self collected swabs by people 14 years or older or

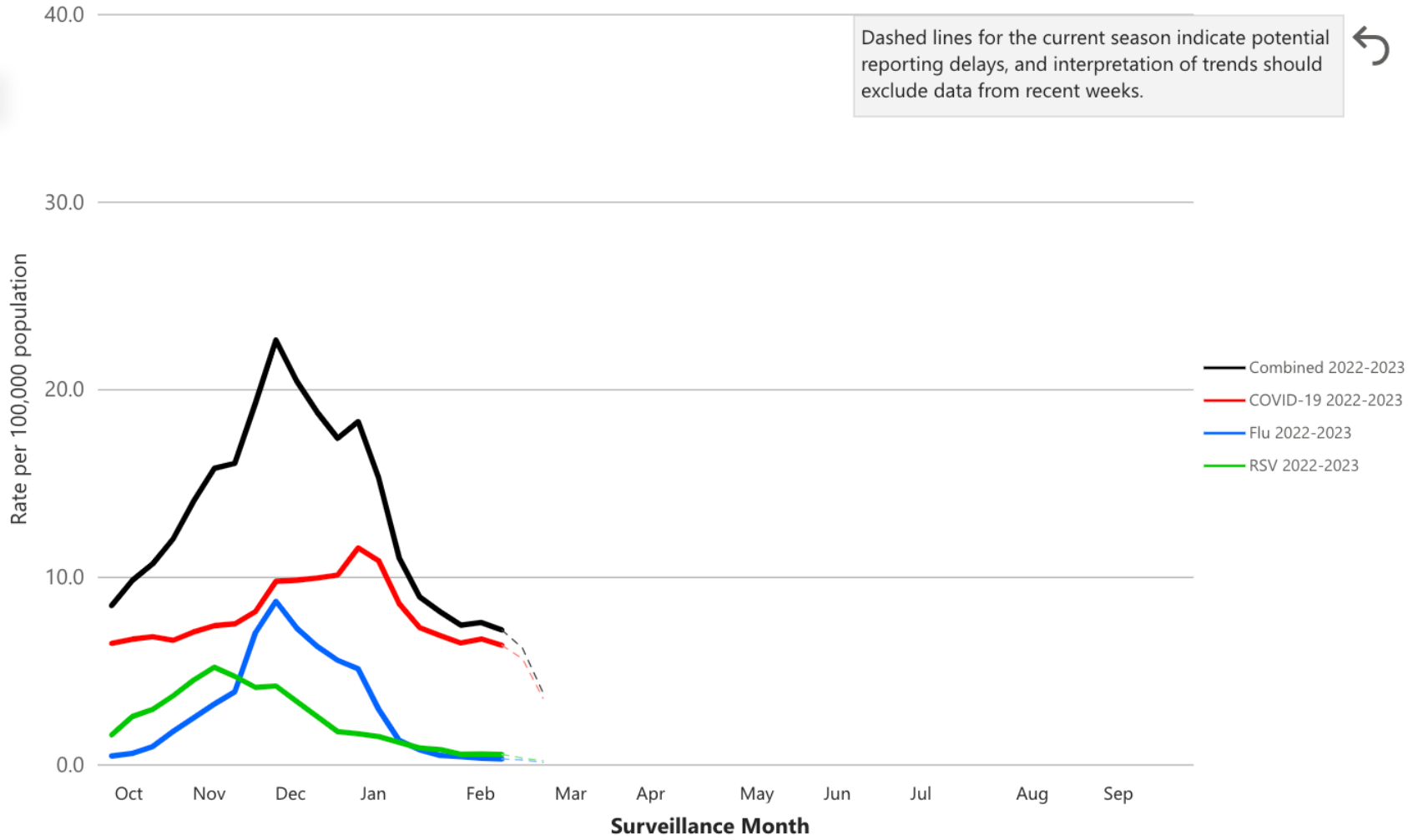
- Collected by an adult for those aged 2 years or older.

The test detected

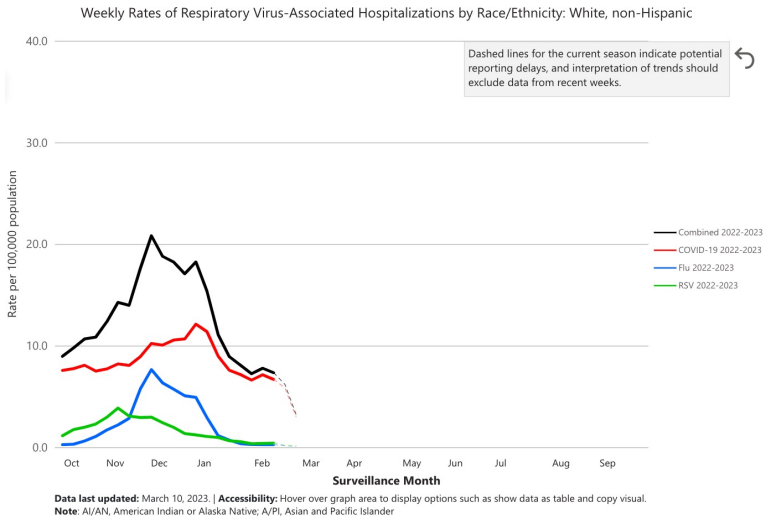
- 100% of negative and 88.3% of positive COVID-19 samples
- 99.3% of negative and 90% of positive influenza A samples
- 99.9% of negative influenza B samples

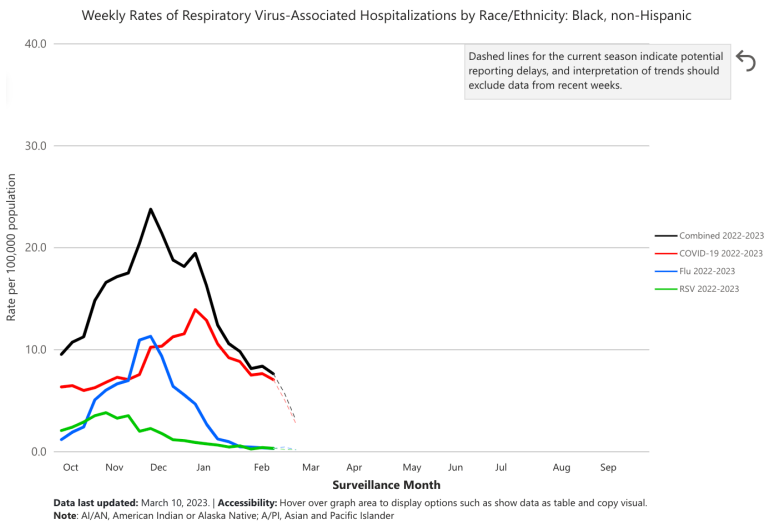
Home PCR Test for SARS-CoV-2 and Influenza

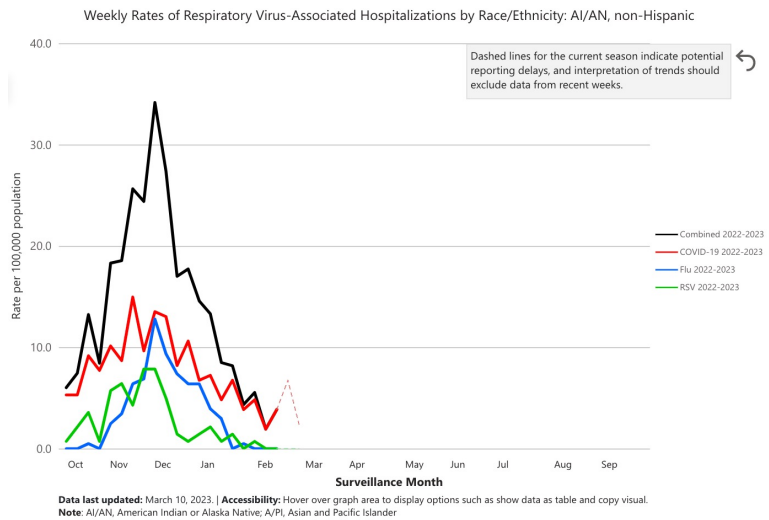
Weekly Rates of Respiratory Virus-Associated Hospitalizations by Season



Data last updated: March 10, 2023. | **Accessibility:** Hover over graph area to display options such as show data as table and copy visual.







RESP-NET Interactive Dashboard

The Respiratory Virus Hospitalization Surveillance Network (RESP-NET) comprises three platforms that conduct population-based surveillance for laboratory-confirmed hospitalizations associated with COVID-19, Influenza, and Respiratory Syncytial Virus (RSV) among children and adults. While RESP-NET does not collect data on all hospitalizations caused by respiratory illnesses, it can describe hospitalizations caused by three viruses that account for a large proportion of these hospitalizations. Surveillance is conducted through a network of acute care hospitals in select counties in 13 states. The surveillance platforms for COVID-19, Influenza, and RSV (known as COVID-NET, FluSurv-NET, and RSV-NET, respectively) cover more than 29 million people and include an estimated 8-10% of the U.S. population.

https://www.cdc.gov/surveillance/resp-net/dashboard.html

Scenario

- A respiratory virus starts spreading tomorrow in the United States.
- It appears more transmissible and more deadly than SARS-CoV-2
- It is equally risky for children and adults, based on the rapid spread and number of deaths in another country.
- There's no available vaccine, though one is under investigation.
- There are only 10 reported cases in the United States, but five are in the jurisdiction you are advising.
- This is all the information available.

nytimes.com

Should Schools Close?

A. Yes, but only briefly, *Prolonged school closures during the Covid-19 pandemic caused substantial harms that will likely be felt for decades.*

B. No, at least not yet. *The decision to close schools must be based on the best current understanding of risks and benefits.*

nytimes.com

Should there be a mask mandate?

A. Yes, *it will help, the virus is most likely already spreading undetected in our community.*
B. No this isn't the time. *There are other effective interventions to focus on first.*

nytimes.com

Should there be a travel ban?

A. Yes, if done properly. *Travel bans can be an effective public health tool.*
B. No, the impact will be low. *Travel bans have rarely stopped the spread of new pathogens.*

nytimes.com

questions