COVID-19 Update

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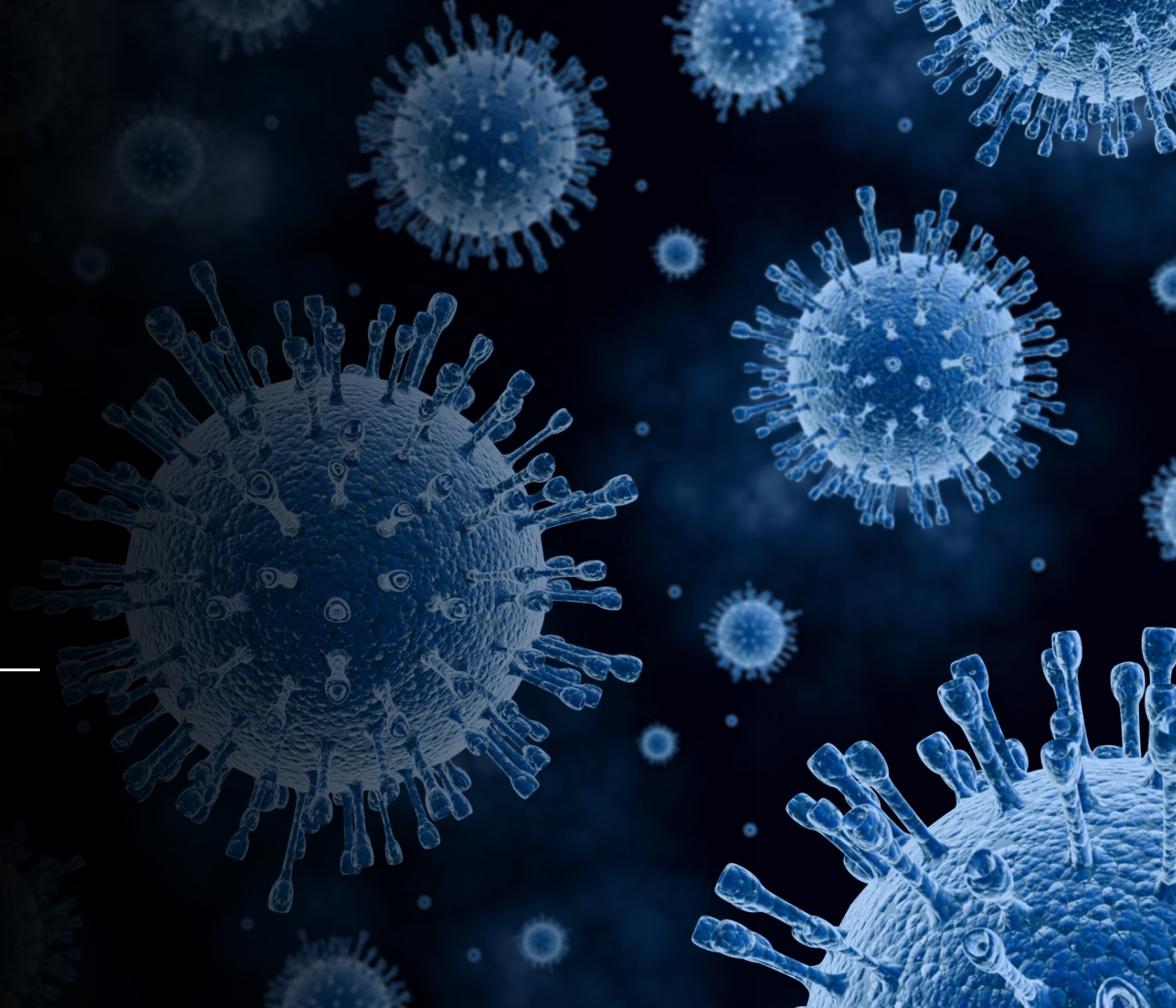


Outline

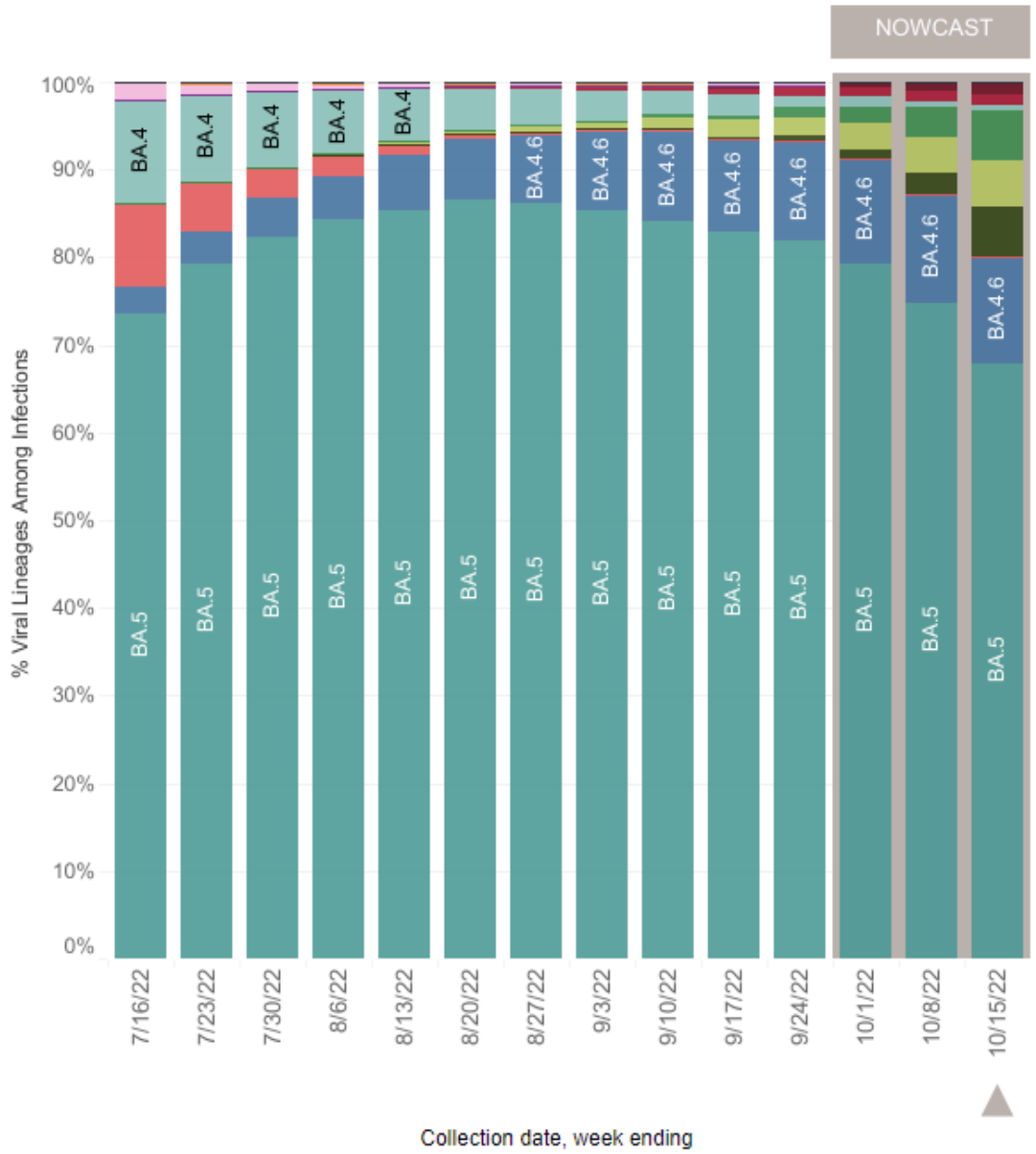
COVID-19 Update

- US Stats
- PASC
- Vaccine protection
- Evusheld update
- Treatment update

Monkeypox Update

Influenza Update

United States: 7/10/2022 – 10/15/2022



United States: 10/9/2022 – 10/15/2022 NOWCAST

USA

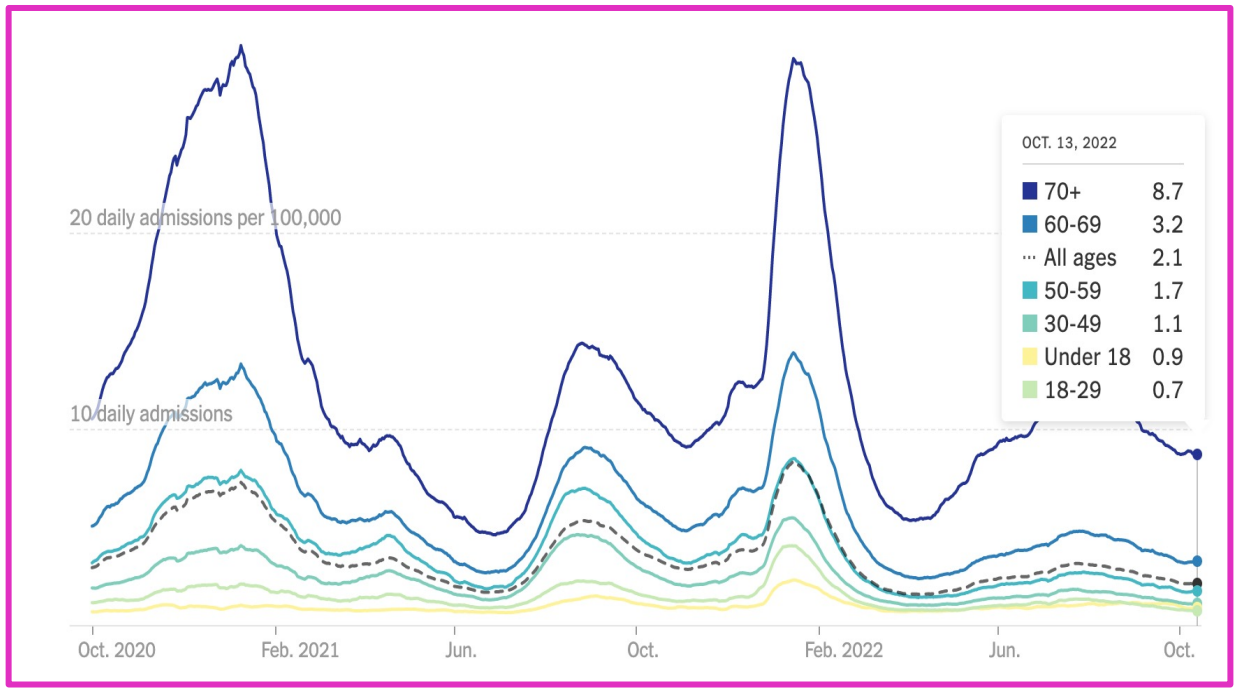
WHO label	Lineage #	US Class	%Total	95%PI
Omicron	BA.5	VOC	67.9%	64.1-71.4%
	BA.4.6	VOC	12.2%	11.1-13.4%
	BQ.1.1	VOC	5.7%	3.5-9.1%
	BQ.1	VOC	5.7%	3.5-8.9%
	BF.7	VOC	5.3%	4.6-6.1%
	BA.2.75.2	VOC	1.4%	0.9-2.2%
	BA.2.75	VOC	1.3%	1.0-1.6%
	BA.4	VOC	0.6%	0.5-0.6%
	BA.2.12.1	VOC	0.0%	0.0-0.0%
	BA.2	VOC	0.0%	0.0-0.0%
	BA.1.1	VOC	0.0%	0.0-0.0%
	B.1.1.529	VOC	0.0%	0.0-0.0%
Delta	B.1.617.2	VBM	0.0%	0.0-0.0%
Other	Other*		0.0%	0.0-0.0%

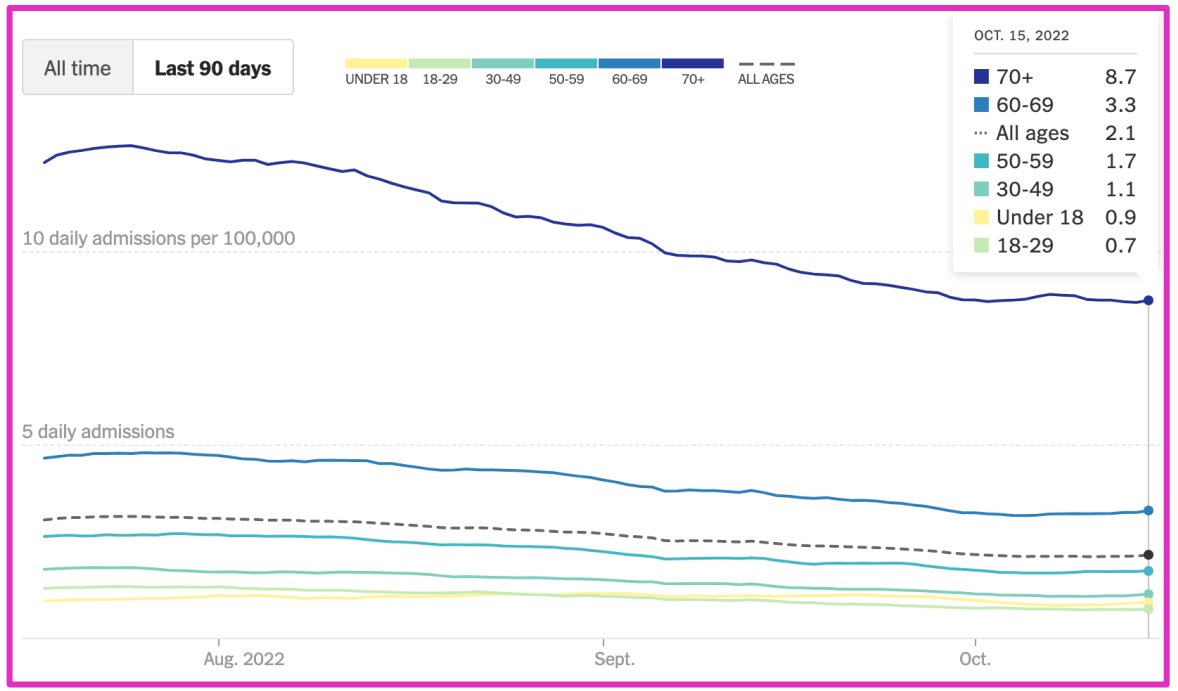
* Enumerated lineages are US VOC and lineages circulating above 1% nationally in at least one week period. "Other" represents the aggregation of lineages which are circulating <1% nationally during all weeks displayed.

** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates

AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1, BA.3 and their sublineages (except BA.1.1 and its sublineages) are aggregated with B.1.1.529. Except BA.2.12.1, BA.2.75, BA.2.75.2 and their sublineages, BA.2 sublineages are aggregated with BA.2. Except BA.4.6, sublineages of BA.4 are aggregated to BA.4. Except BF.7, BQ.1 and BQ.1.1, sublineages of BA.5 are aggregated to BA.5. Sublineages of BA.1.1 and BA.2.75 (except BA.2.75.2 and its sublineages) are aggregated to the parental BA.1.1 and BA.2.75 respectively. Previously, BA.2.75.2 was aggregated with BA.2.75, and BQ.1 and BQ.1.1 were aggregated with BA.5. Lineages BA.4.6, BF.7, BA.2.75.2, and BQ.1.1 contain the spike substitution R346T.

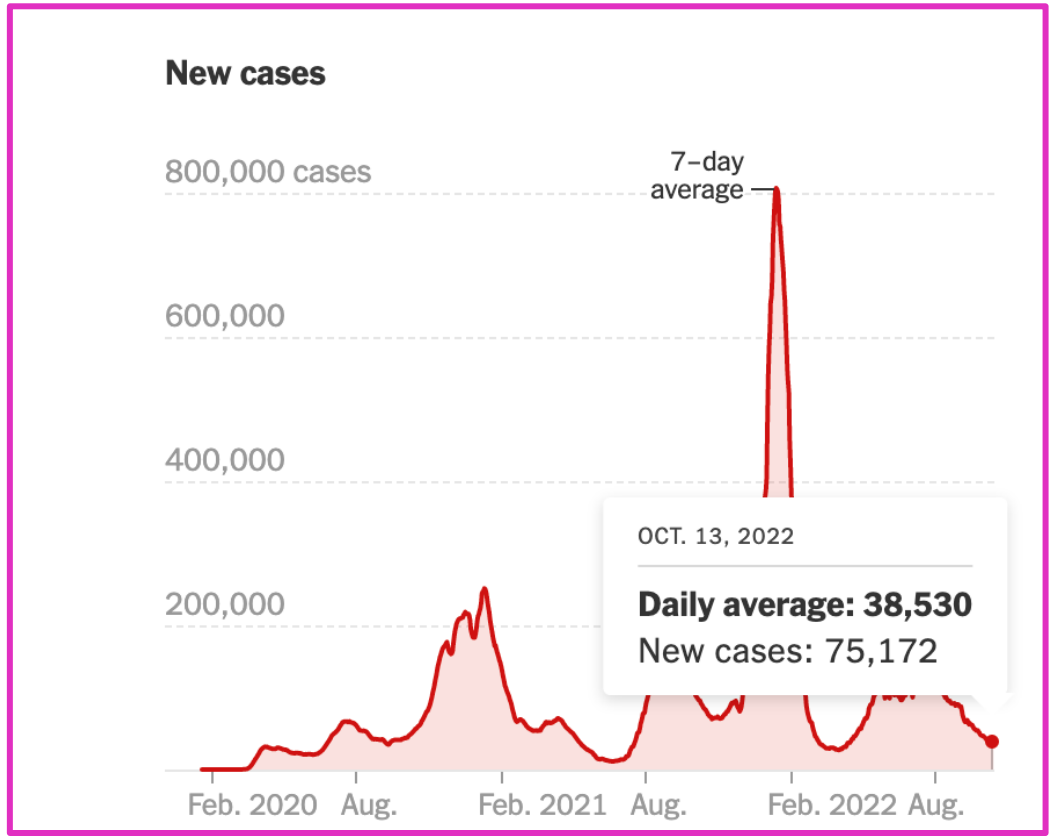
Number of people per 100,000 stratified by age that were newly admitted to a hospital with Covid-19 each day, according to data reported by hospitals to the U.S. Department of Health and Human Services

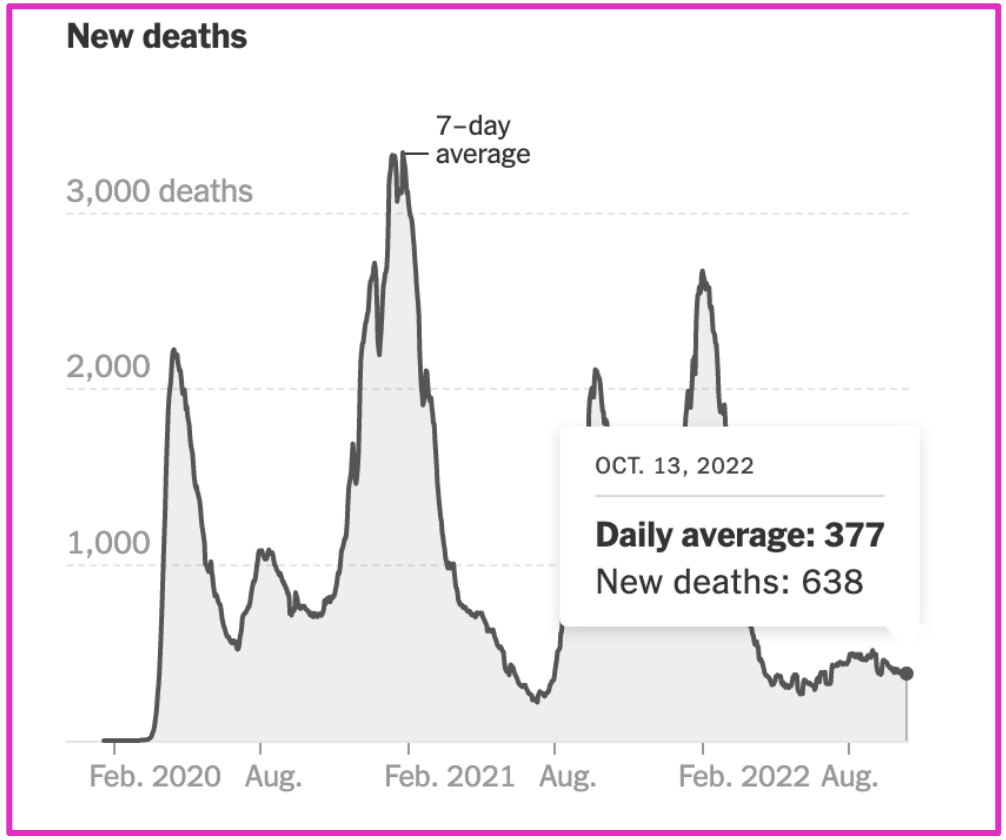




NY Times COVID tracker

7-day Average of New COVID-19 Cases and Deaths in the United States





Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort

Background

- Disease characterization of Post-Acute Sequelae of SARS-CoV-2 (PASC) does not account for pre-existing conditions and time course of incidence.

Primary aim

- Define a set of PASC conditions
- Describe the timing of the conditions, by applying to a diverse population and comparison group of similar PCR-negative individuals
- Identify the clinical conditions for which there is an increased risk for those PCR-positive (vs. PCR-negative)
- Estimate PASC incidence among those PCR-positive.

Study population

- A longitudinal cohort of COVIDPCR-positive patients and matched them to COVIDPCR-negative patients within the Kaiser Permanente Mid-Atlantic States was selected

Horberg MA, Watson E, Bhatia M, et al. Nature Communications | (2022) 13:5822

Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort

METHODS

Longitudinal data and matching to a COVID PCR-negative population

- To discriminate PASC conditions over time within our patient population during 2020.

Conditions were classified as:

- Acute and persistent (occurring 0-30 days post COVID PCR and persisted 30–120 days post-test)
- Late (occurring initially 30-120 days post-test).

Matched 3:1

- COVIDPCR negative COVIDPCR-positive by age, sex, testing month and service area, controlling for pre-existing conditions up to four years prior;

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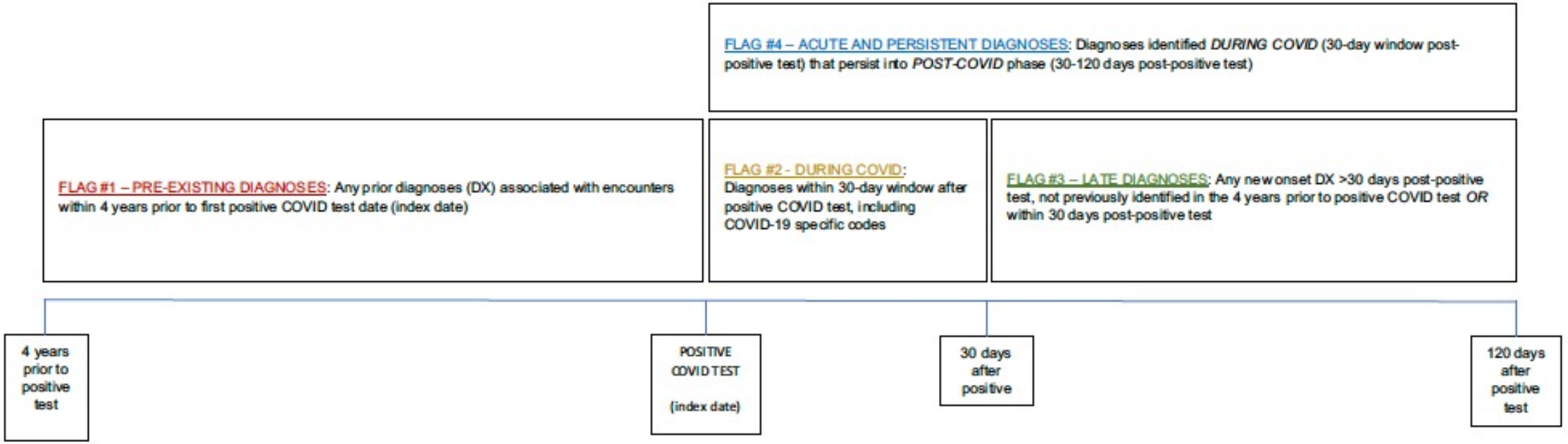
Diagnosis Observation Periods. Diagnostic observation timeline for CCS conditions in relation to the COVID testing date as the index date. The time periodsused in this study were defined as follows: Late: 30–120 days post COVID test date; Acute and persistent 0–30 days post COVID test date and persisted 30–120 days; Pre-existing conditions: four years prior to COVID test date.



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Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort RESULTS

31,390 total PCR-positive patients were identified.

The majority were

- Female
- Over half were less than 50 years old
- Over half were minority populations with 39% Black and 29% Hispanic.
- Over half were overweight (BMI > 25 kg/m^2).
- The most frequent pre-existing conditions co-morbidity was diabetes mellitus.

Horberg MA, Watson E, Bhatia M, et al. Nature Communications | (2022) 13:5822

Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort RESULTS

The most common acute and persistent PASC-related conditions, that were either greater than the pre-existing conditions time interval or determined clinically significant during physician review, were

- Other lower respiratory disease (4.5%)
- Respiratory failure (2.7%).

Overall, 37.7% of PCR-positive patients had at least one condition In the acute and persistent or late period

- 16.5% had at least one PASC-related condition in either period. 4.1% had a PASC-related condition in the acute and persistent period

Most common late PASC-related conditions were:

- Gastrointestinal disorders (abdominal pain)
- Other nervous system disorders (dizziness, vertigo)
- Nonspecific chest pain
- Malaise and fatigue
- Anxiety disorders, mental health disorders
- Other lower respiratory diseases
- Cardiac dysrhythmias

Horberg MA, Watson E, Bhatia M, et al. Nature Communications | (2022) 13:5822

Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort RESULTS

Number of matched patients in the study

- 28,118 **PCRpositive** to 70,293 **PCR-negative** patients resulted.

Risk of any PASC condition was 12% greater for PCRpositive patients in the late period with a significantly higher risk of

- Anosmia
- Cardiac dysrhythmia,
- Diabetes
- Genitourinary disorders,
- Malaise
- Nonspecific chest pain.

Conclusions

- Our findings contribute to a more refined PASC definition which can enhance clinical care.

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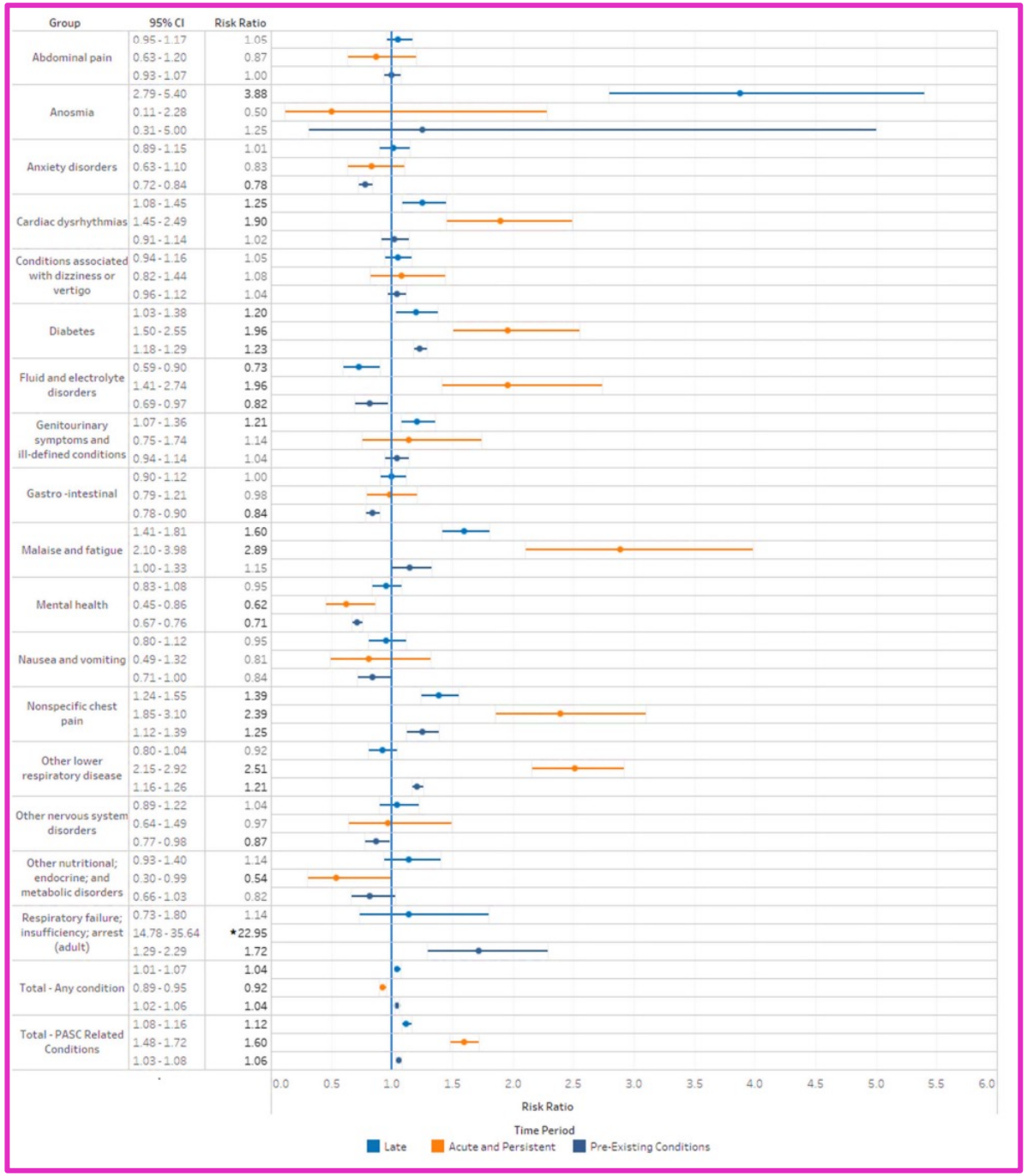
Post-acute sequelae of SARS-CoV-2 with clinical condition definitions and comparison in a matched cohort

- Unadjusted risk ratios (and 95% confidence intervals) of PASC-related conditions comparing PCR-positive (vs. PCR-negative), in three-time periods anchored on the date of SARS-CoV-2 PCR test result. A CCS condition risk ratio comparison with a 95% CI plot for PCR-positive population vs PCR-negative population within our study time periods.

- Risk ratio is the measure of interest comprised of the number of CCS conditions incident in the PCR-positive cohort (n = 28,118) versus CCS conditions incident in the PCR-negative cohort (n = 70,293), with 95% confidence intervals represented by the respective bands. Utilizing 1.0 as the baseline, significant risk ratios ($p < 0.05$) for the PASC-related conditions can be identified in bold and compared in scale to the other conditions. (*) Asterisk designates that the metric was too large to fit within the scale of the graphic.



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Association of Primary and Booster Vaccination and Prior Infection With SARS-CoV-2 Infection and Severe COVID-19 Outcomes

OBJECTIVE

- To estimate the time-varying association of primary and booster COVID-19 vaccination and prior SARS-CoV-2 infection with subsequent SARS-CoV-2 infection,hospitalization, and death.

DESIGN, SETTING, AND PARTICIPANTS

- Cohort study of 10.6 million residents in North Carolina from March 2, 2020, through June 3, 2022.

EXPOSURES

- COVID-19 primary vaccine series and boosters and prior SARS-CoV-2 infection.

MAIN OUTCOMES AND MEASURES

- Rate ratio (RR) of SARS-CoV-2 infection and hazard ratio (HR) of COVID-19–related hospitalization and death.

JAMA. 2022;328(14):1415-1426.doi:10.1001/jama.2022.17876

Association of Primary and Booster Vaccination and Prior Infection With SARS-CoV-2 Infection and Severe COVID-19 Outcomes:

RESULTS

Demographics of the 10.6 million Participants

- The median age was 39 years and 51.3%were female
- 71.5% were White, and 9.9% were Hispanic.
- As of June 3, 2022, 67% of participants had been vaccinated.
- There were 2,771 364 SARS-CoV-2 infections
- Hospitalization rate of 6.3%
- Mortality rate of 1.4%.

JAMA. 2022;328(14):1415-1426.doi:10.1001/jama.2022.17876

Association of Primary and Booster Vaccination and Prior Infection With SARS-CoV-2 Infection and Severe COVID-19 Outcomes:

RESULTS

The adjusted RR of the primary vaccine series compared with being unvaccinated against infection 10 months after the first dose, became

- 0.53 (95%CI, 0.52-0.53) for BNT162b2 (Pfizer)
- 0.52 (95%CI, 0.51-0.53) for mRNA-1273 (Moderna)
- 0.51 (95%CI, 0.50-0.53) for Ad26.COV2.S (Johnson & Johnson)

The adjusted HR for hospitalization remained at

- 0.29 (95%CI, 0.24-0.35) for BNT162b2,
- 0.27 (95%CI, 0.23-0.32) for mRNA-1273,
- and 0.35 (95%CI, 0.29-0.42) for Ad26.COV2.S

The adjusted HR of death remained at

- 0.23 (95%CI, 0.17-0.29) for BNT162b2,
- 0.15 (95%CI, 0.11-0.20) for mRNA-1273,
- 0.24 (95%CI, 0.19-0.31) for Ad26.COV2.S.

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Association of Primary and Booster Vaccination and Prior Infection With SARS-CoV-2 Infection and Severe COVID-19 Outcomes:

RESULTS

Compared to the BNT162b2 (Pfizer) primary series, boosting in December 2021 had a1month protection for reinfection of

- aRR 0.39 (95%CI, 0.38-0.40) with BNT162b2 (Pfizer)
- aRR of 0.32 (95%CI, 0.30-0.34) with mRNA-1273 (Moderna)

And 3 month protection of

- a RR of 0.84 (95%CI, 0.82-0.86) with BNT162b2
- aRR of 0.60 (95%CI, 0.57-0.62) with mRNA-1273

Among all participants, the aRR of Omicron infection compared with no prior infection was estimated

- 0.23 (95%CI, 0.22-0.24) against infection,
- 0.10 (95%CI, 0.07-0.14) against hospitalization and
- 0.11 (95%CI, 0.08-0.15) against death after 4 months.

JAMA. 2022;328(14):1415-1426.doi:10.1001/jama.2022.17876

Association of Primary and Booster Vaccination and Prior Infection With SARS-CoV-2 Infection and Severe COVID-19 Outcomes

CONCLUSIONS AND RELEVANCE

- Receipt of primary COVID-19 vaccine series compared with being unvaccinated
- Receipt of boosters compared with primary vaccination
- Prior infection compared with no prior infection

Were all significantly associated with

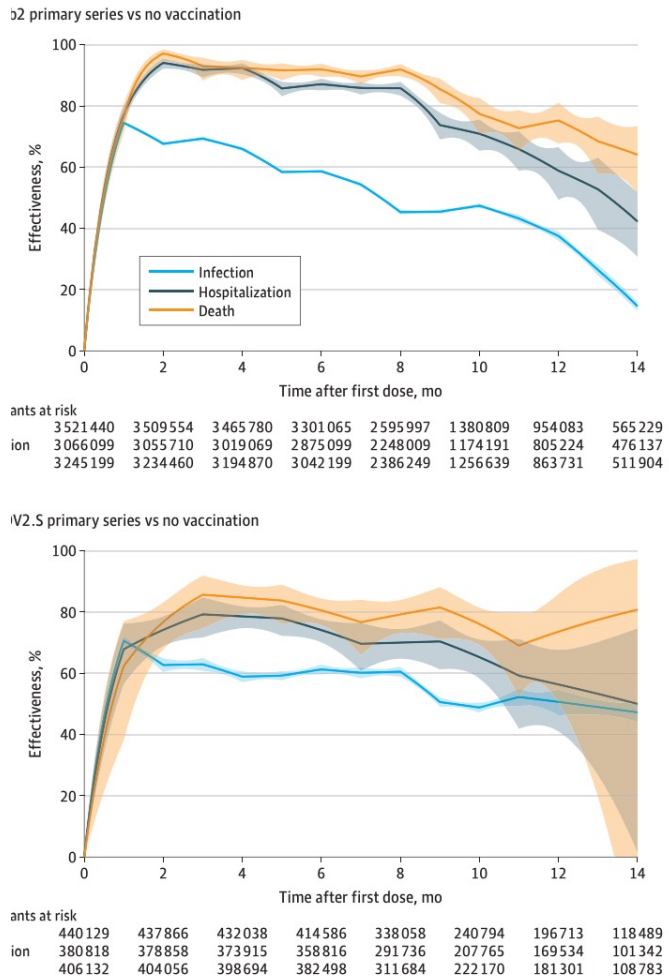
- Lower risk of SARS-CoV-2 infection (including Omicron)
- Lower hospitalization
- Lower death.

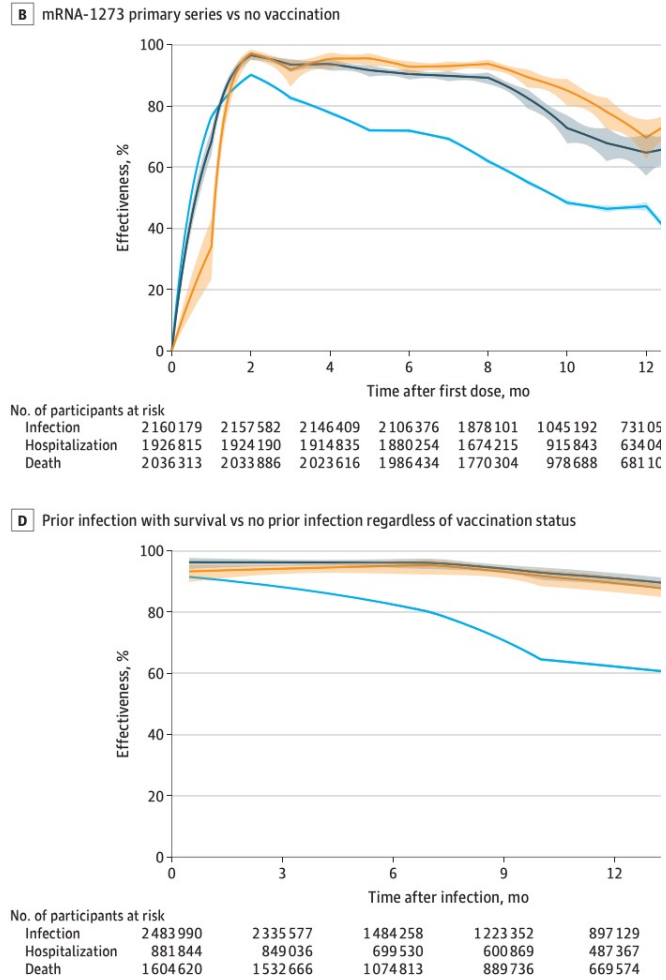
The associated protection waned over time, especially against infection.

JAMA. 2022;328(14):1415-1426.doi:10.1001/jama.2022.17876

Effectiveness of Primary Vaccination Series and Prior Infection in Reducing the Risk of SARS-CoV-2 Infection, Hospitalization, or Death

- Estimates of effectiveness are shown by solid curves, and 95% CIs are shown by shaded bands. The steep upward trends seen early in panels A-C, but not in panel D, represent the ramp-up period of vaccination. Each curve is truncated at 15 months or when the number at risk hits 15% of the relevant sample. D, Comparison of prior infection with survival to no prior infection among all participants (vaccinated and not), with 98.6% of all participants surviving the prior infection. Home testing for infection is not included. Further detail can be found in eTable 1 in the Supplement





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Summary

Question

- How does the association of COVID-19 vaccination and prior SARS-CoV-2 infection with subsequent SARS-CoV-2 infection and severe COVID-19 outcomes change over time?

Findings

- In a cohort study of 10.6 million North Carolina residents from March 2020 to June 2022, receipt of a primary COVID-19 vaccine series compared with being unvaccinated, receipt of a booster compared with primary vaccination, and prior SARS-CoV-2 infection compared with no prior infection were all significantly associated with lower risk of SARS-CoV-2 infection and resulting hospitalization and death.
- The estimates for the associated protection decreased over time, especially for the outcome of infection, and varied by type of circulating variant.

Meaning

- Receipt of COVID-19 vaccines and boosters, as well as prior SARS-CoV-2 infection, were associated with protection against SARS-CoV-2 infection (including Omicron) and severe COVID-19 outcomes, although the associated protection waned

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Evusheld FDA Update

The FDA issued a warning to patients and healthcare providers

- There may be an increased risk of developing COVID-19 in areas where the Omicron subvariant BA.4.6 is circulating even after receiving Evusheld.

The warning was issued in response to

- Studies demonstrating that the two monoclonlas antibodies in AstraZeneca's Evusheld do not neutralize BA.4.6.

As of October 1, 2022

- The U.S. CDC reports that approximately 12.8% sequenced COVID-19 infections are BA.4.6 in the U.S.

Region 7 which covers Iowa, Kansas, Missouri, and Nebraska

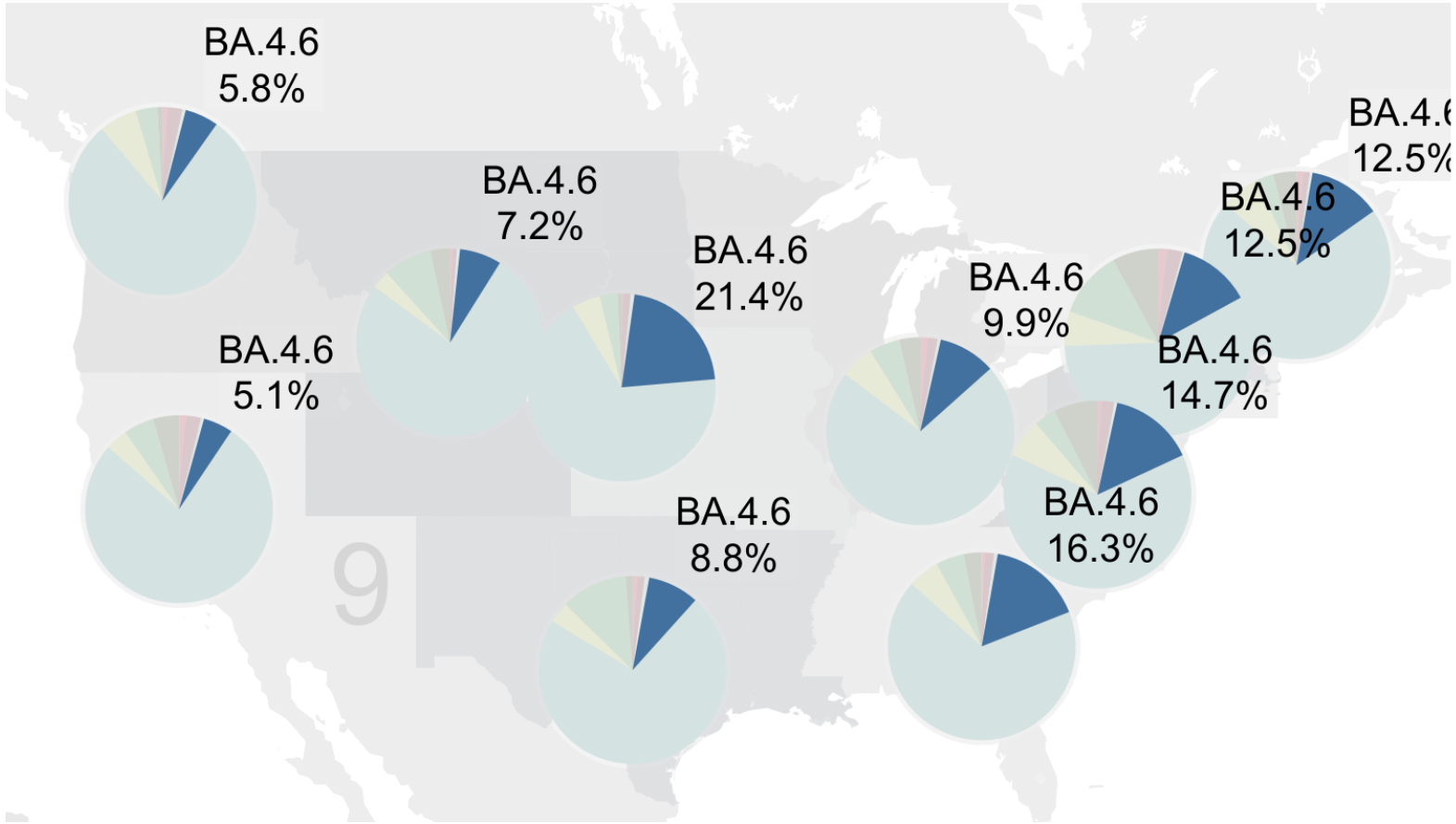
- Currently has the highest proportion of BA.4.6. infections in the U.S. at 21.9%.

FDA posted the following updated documents addressing BA.4.6:

- Evusheld Fact Sheet for Healthcare Providers (updated 10/3/2022)
- Frequently Asked Questions on the EUA for Evusheld (updated 10/3/2022)

https://primaryimmune.org/news/update-astrazenecas-evusheld-authorized-covid-19-preventative-immunocompromised

BA.4.6 Percentage by US Regions 10/09/22 – 10/15/22

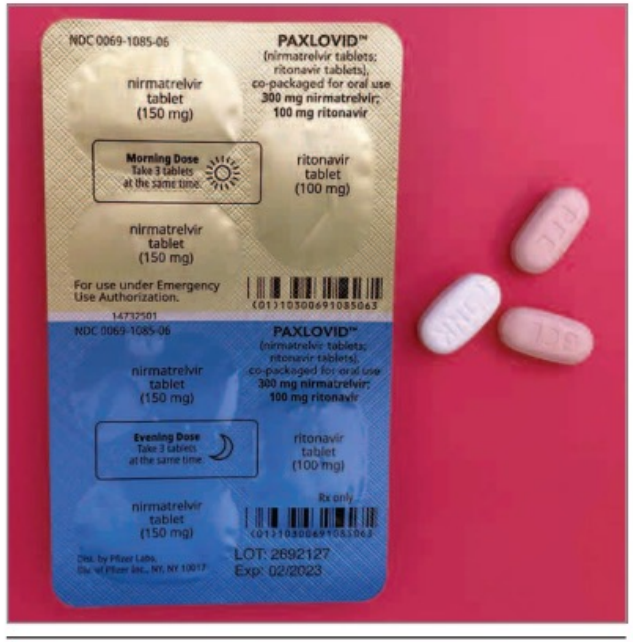


https://covid.cdc.gov/covid-data-tracker/#variant-proportions

Evusheld: What should providers do?

- Update your fact sheet
- Inform your patients
- What percentage of protection makes you and your patient comfortable?

FDA Update for Paxlovid Use



The FDA has updated a Paxlovid (nirmatrelvir and ritonavir) checklist designed to help evaluate

- Potential drug interactions
- Other patient factors before prescribing it for COVID-19

It incorporates additional guidance on

- Drugs that should not be taken with Paxlovid
- Or drugs that may require dose or other treatment adjustments.

The tool includes:

- Specific instructions for suspending and restarting common statins
- Advising what to do for patients taking hormonal contraceptives containing ethinyl estradiol
- Following up on patients taking HIV antiretroviral medications.
- Lists more than 120 drugs that are either contraindicated, should be avoided or held, or require dose adjustments or special monitoring when used with Paxlovid.

Eligible patients must:

- Test positive for SARS-CoV-2
- Be 18 years or older or 12 years or older and weigh at least 40 kg, or 88.2 lb.
- Must have mild to moderate COVID-19 symptoms
- Be at risk for progression to severe disease.
- **Be within 5 days of symptom onset** and must not require hospitalization for severe or critical COVID19.
- Kidney and liver function should be assessed.

https://www.fda.gov/media/155050/download

Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge

BACKGROUND

- The oral protease inhibitor nirmatrelvir has shown substantial efficacy in highrisk, unvaccinated patients infected with the B.1.617.2 (delta) variant of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- Data regarding the effectiveness of nirmatrelvir in preventing severe coronavirus disease 2019 (Covid-19) outcomes from the B.1.1.529 (omicron) variant are limited.

METHODS

- Data for all members of Clalit Health Services who were 40 years of age or older at the start of the study period and were assessed as being eligible to receive nirmatrelvir therapy during the omicron surge.
- A Cox proportional-hazards regression model with time-dependent covariates was used to estimate the association of nirmatrelvir treatment with hospitalization and death due to Covid-19, with adjustment for sociodemographic factors, coexisting conditions, and previous SARS-CoV-2 immunity status.

n engl j med 387;9 nejm.org September 1, 2022

Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge

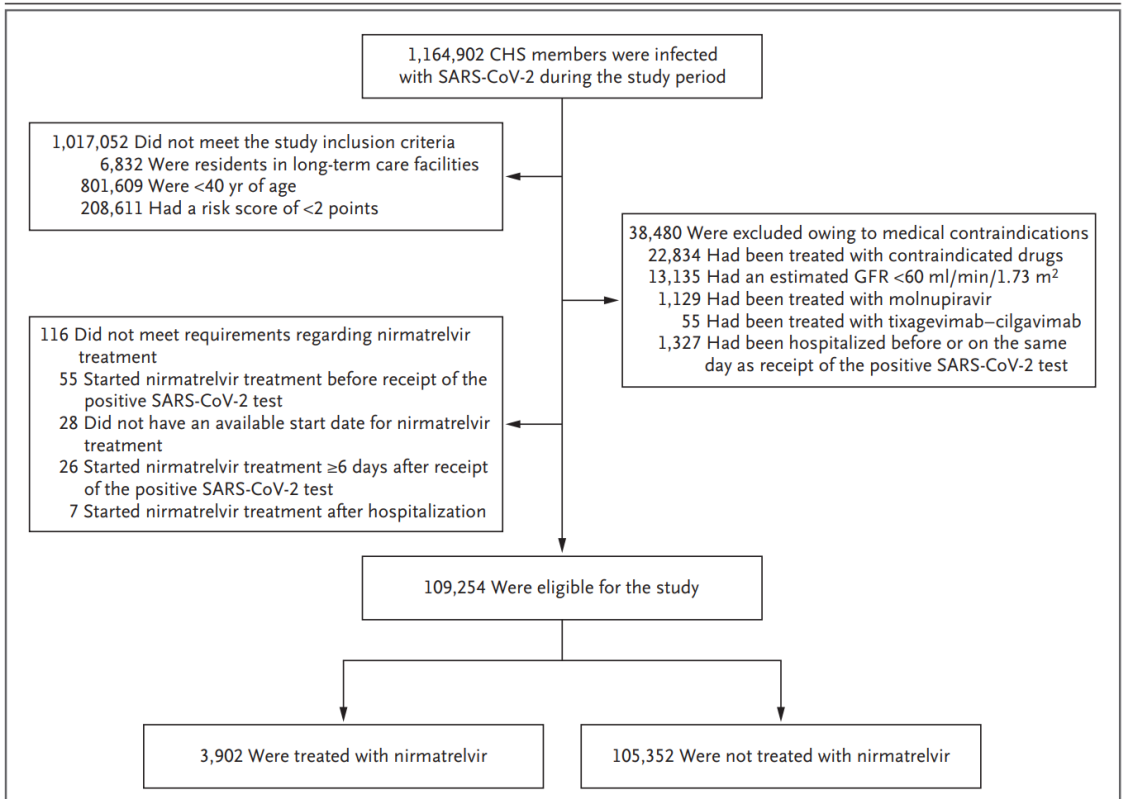


Figure 1. Assessment for Eligibility.

CHS denotes Clalit Health Services, GFR glomerular filtration rate, and SARS-CoV-2 severe acute respiratory syndrome coronavirus 2.

Table 2. Association between Confounding Variables and Hospitalization Due to Covid-19, According to Age Group.*

Variable	Hazard Ratio for Hospitalization Due to Covid-19 (95% CI)	
	40–64 yr (N = 66,433)	≥65 yr (N = 42,821)
Demographic and other variables at baseline		
Nirmatrelvir therapy	0.74 (0.35–1.58)	0.27 (0.15–0.49)
Male sex	1.41 (1.13–1.75)	1.65 (1.43–1.91)
Age	1.06 (1.04–1.08)	1.09 (1.08–1.09)
Score for socioeconomic status	1.01 (0.95–1.07)	0.89 (0.86–0.93)
No previous immunity	5.79 (4.58–7.32)	5.82 (4.99–6.78)
Clinical risk factors		
Recent hospitalizations	3.36 (2.66–4.24)	2.09 (1.80–2.43)
Obesity	1.29 (1.03–1.63)	1.07 (0.91–1.25)
Diabetes	1.34 (1.04–1.74)	1.36 (1.18–1.58)
Chronic hepatic disease	1.78 (1.24–2.53)	1.11 (0.82–1.50)
Neurologic disease	1.82 (1.30–2.53)	1.58 (1.34–1.87)
Chronic heart failure	2.41 (1.61–3.61)	1.44 (1.17–1.78)
Chronic obstructive pulmonary disease	2.26 (1.52–3.35)	1.74 (1.40–2.15)
History of stroke	1.81 (1.24–2.63)	1.39 (1.16–1.67)
Chronic kidney failure	1.82 (0.96–3.44)	1.78 (1.33–2.38)

The association between nirmatrelvir therapy and hospitalization due to coronavirus disease 2019 (Covid-19) was estimated with the use of a multivariate Cox proportional-hazards regression model after adjustment for sociodemographic factors, coexisting illnesses, and SARS-CoV-2 immunity status. Variables that met the testing criteria and were significantly associated with the outcome served as the inputs for the multivariate regression analysis. CI denotes confidence interval

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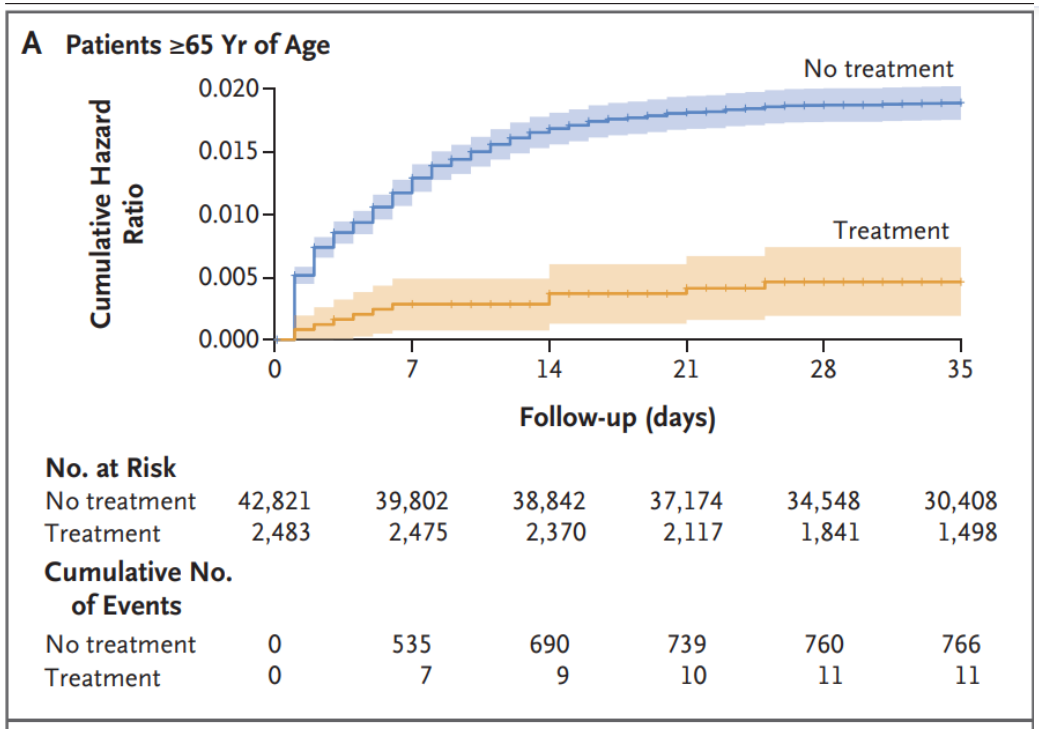
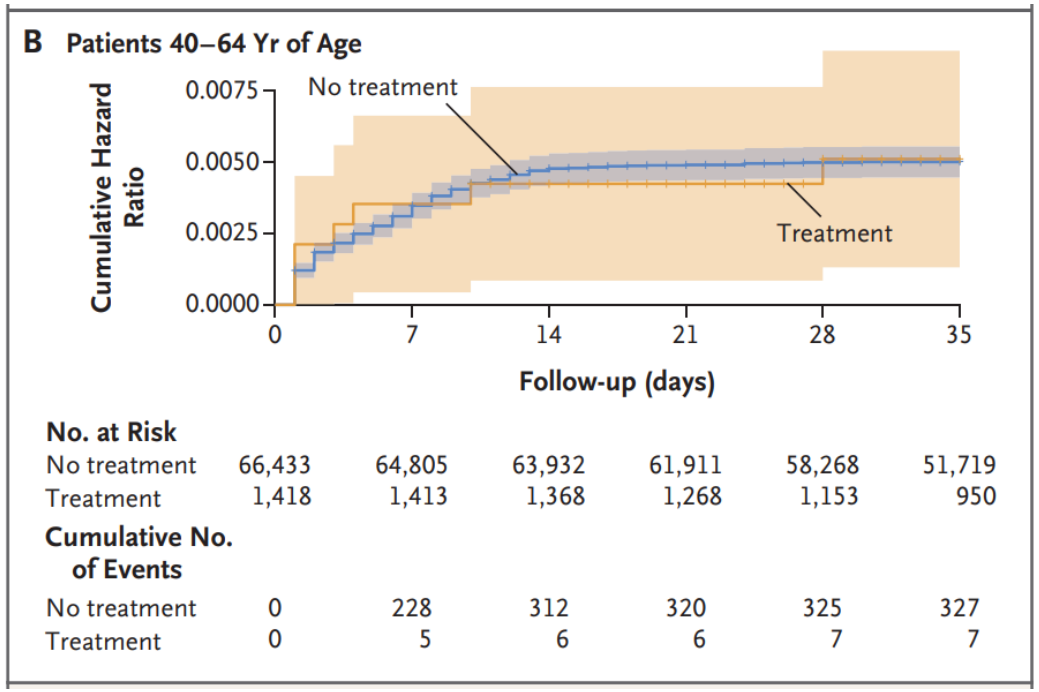
Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge





Cumulative Hazard Ratio for Hospitalization Due to Covid-19, According to Age Group and Treatment Status. For patients who did not receive treatment with nirmatrelvir, time zero corresponds to the time at which each patient received the diagnosis of coronavirus disease 2019 (Covid-19). For patients who received treatment with nirmatrelvir, time zero corresponds to the time at which a patient began the treatment. The shaded areas indicate the 95% confidence intervals.

Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge

Table 3. Hazard Ratios for Hospitalization Due to Covid-19, According to Immunity Status and Age Group.

Variable	All Patients		Patients without Previous Immunity		Patients with Previous Immunity	
	40–64 yr (N=66,433)	≥65 yr (N=42,821)	40–64 yr (N=20,555)	≥65 yr (N=3318)	40–64 yr (N=45,878)	≥65 yr (N=39,503)
Hazard ratio for hospitalization (95% CI)	0.74 (0.35 to 1.58)	0.27 (0.15 to 0.49)	0.23 (0.03 to 1.67)	0.15 (0.04 to 0.60)	1.13 (0.50 to 2.58)	0.32 (0.17 to 0.63)

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Nirmatrelvir Use and Severe Covid-19 Outcomes During the Omicron Surge

RESULTS

- A total of 109,254 patients met the eligibility criteria, of whom 3902 (4%) received nirmatrelvir during the study period.
- **Among patients 65 years of age or older, the rate of hospitalization** due to Covid-19 was **14.7 cases per 100,000 person-days** among treated patients as compared with **58.9 cases per 100,000 person-days** among untreated patients (adjusted hazard ratio, 0.27; 95% confidence interval [CI], 0.15 to 0.49). And the aHR for death due to Covid-19 was 0.21 (95% CI, 0.05 to 0.82).
- **Among patients 40 to 64 years of age, the rate of hospitalization** due to Covid-19 **was 15.2 cases per 100,000 person-days** among treated patients and **15.8 cases per 100,000 person-days** among untreated patients (adjusted hazard ratio, 0.74; 95% CI, 0.35 to 1.58). The adjusted hazard ratio for death due to Covid-19 was 1.32 (95% CI, 0.16 to 10.75)

CONCLUSIONS

- Among patients 65 years of age or older, the rates of hospitalization and death due to Covid-19 were significantly lower among those who received nirmatrelvir than among those who did not. No evidence of benefit was found in younger adults.

Limitations

Residual confounding and selection bias

- May not have measured, or corrected adequately for differences in early diagnosis and differential access to nirmatrelvir therapy.
- The study showed that only a minority of patients who were identified as high risk and eligible for nirmatrelvir therapy received the antiviral therapy. The authors do not know why the other eligible patients did not receive treatment, and there may be some selection mechanism that is not explained by the observed confounders

Patients who were likely to be hospitalized because of severe symptoms were systematically treated at a higher rate.

- It is likely that the treatment effect was underestimated in this study.

Heterogeneity of degrees of immunity

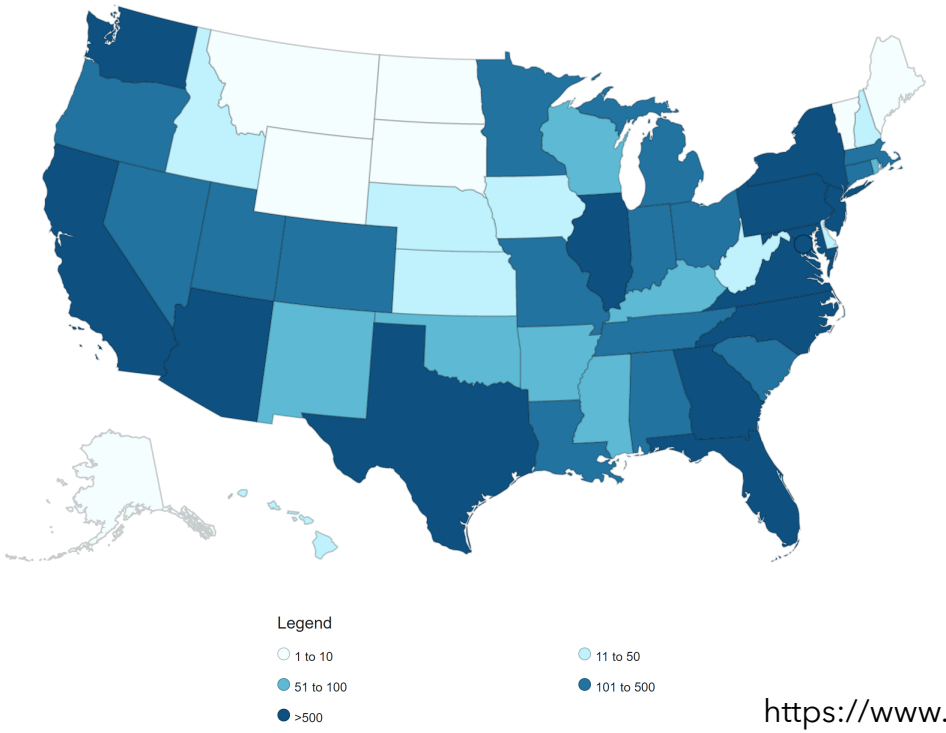
- In the subgroup of patients with previous immunity, including differences in the time since the patient's last vaccine dose.

Monkeypox: US Statistics

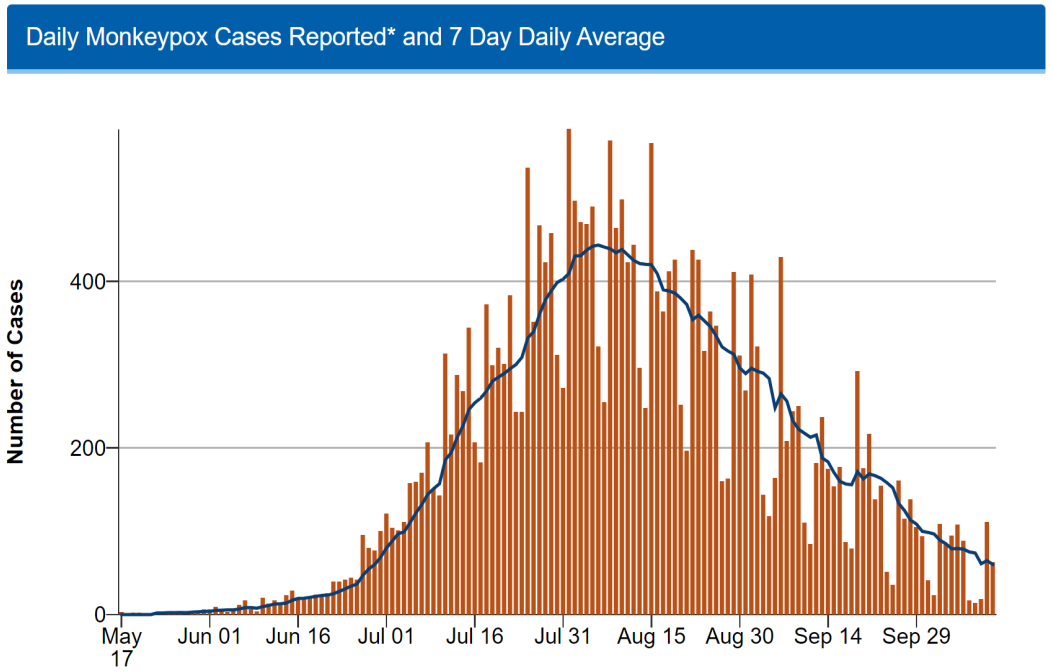
2022 U.S. Map & Case Count

Data as of October 18 2022

27,558 Total confirmed monkeypox/orthopoxvirus cases



U.S. Monkeypox Case Trends Reported to CDC Data October 12 2022



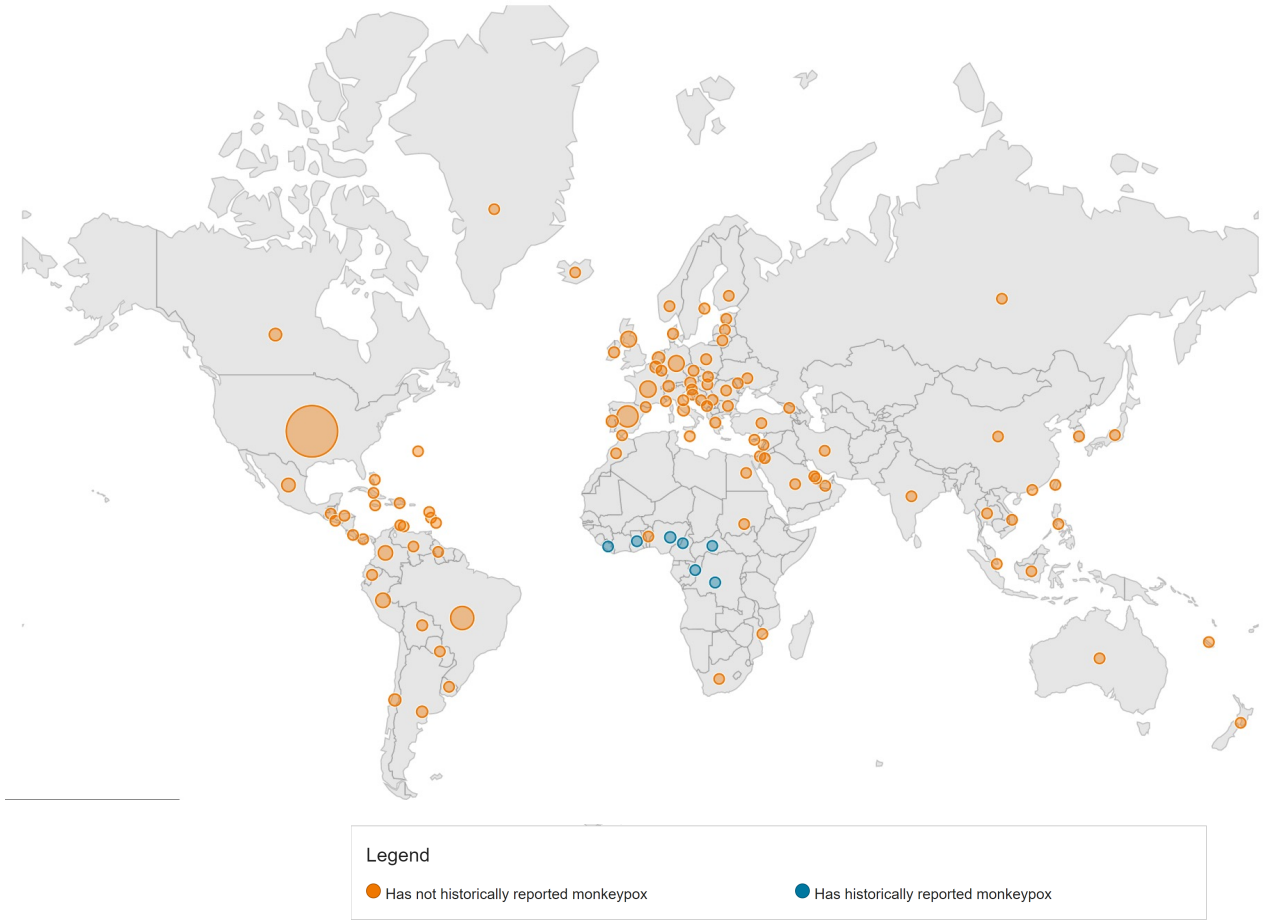
3 Deaths Confirmed

https://www.cdc.gov/poxvirus/monkeypox/index.html

2022 Monkeypox Outbreak Global Map
Data as of 18 Oct 2022

73,782 Cases

31 total deaths
(13 in historically reported locations



https://www.cdc.gov/poxvirus/monkeypox/index.html

Science Brief: Detection and Transmission of Monkeypox Virus
Updated October 18, 2022

During the current outbreak the principal mode by which people have been infected is through:

- Close contact during sexual activity with one or more monkeypox lesions on the skin or mucosal surfaces (e.g., oropharynx, anorectum) of a person with monkeypox.

A small number of infections have also resulted from:

- Injury with a sharp instrument used to sample skin lesions (a practice not recommended by CDC)
- Skin piercing and tattooing, (the precise means of transmission during piercing and tattooing remain unknown)

https://www.cdc.gov/poxvirus/monkeypox/index.html

Science Brief: Detection and Transmission of Monkeypox Virus Updated October 18, 2022

Epidemiological evidence at present

- Is insufficient to establish exposure to other potential sources of infection
- Despite monkeypox virus DNA having been detected and, in some cases, but not all, replication-competent (i.e., potentially infectious) virus isolated from them.

Risk of infection through contact with contaminated surfaces or objects (fomites)

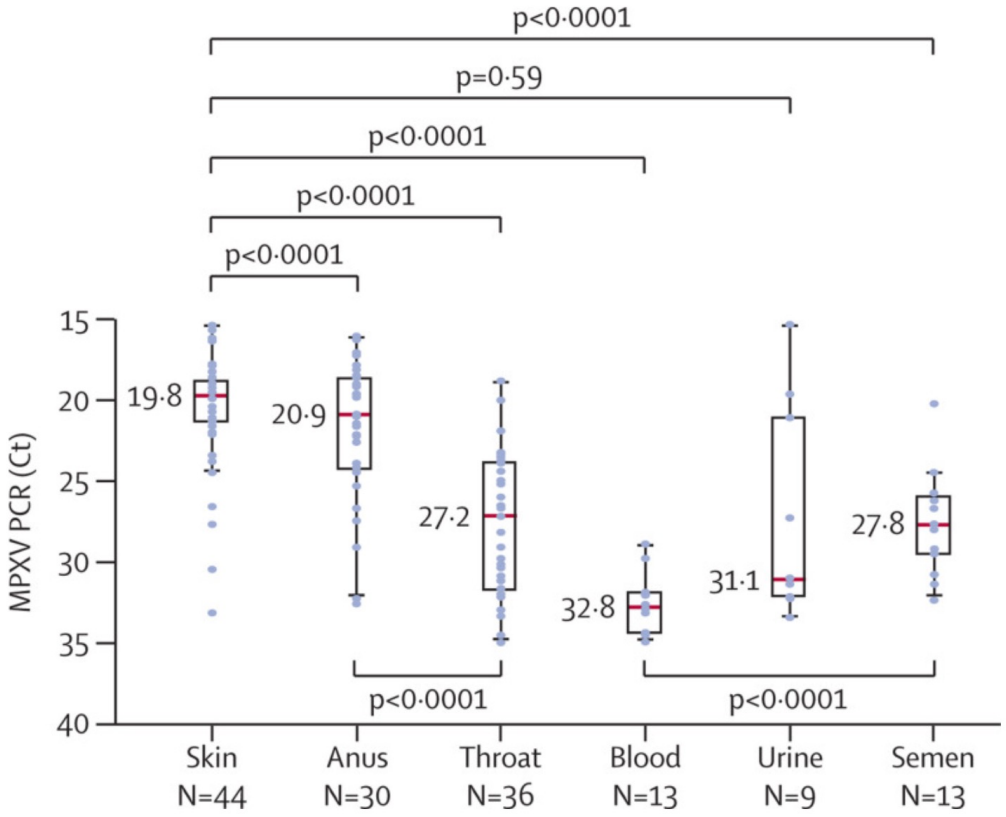
- Is considered low.

Monkeypox virus has been detected in anogenital and urethral samples from asymptomatic persons

- However, no cases of transmission have yet been definitively linked to exposure to infected persons who are not showing signs or symptoms of illness.

https://www.cdc.gov/poxvirus/monkeypox/index.html

Monkeypox virus Concentrations According to Sampled Exposure Source (From Palich et al.)



https://www.cdc.gov/poxvirus/monkeypox/about/science-behind-transmission.html

Exposure source	*Monkeypox virus* DNA detected by PCR	Replication-competent virus detected/isolated	Epidemiologically supported source of infection
Skin	Yes	Yes	Yes
Oropharynx and saliva	Yes*	Yes	Yes
Anorectum	Yes	Yes	Yes†
Semen	Yes*	Yes	Insufficient data
Urine/urethra	Yes	Yes	Insufficient data
Conjunctiva or ocular fluid	Yes	Yes	Insufficient data
Blood/plasma/serum	Yes	Insufficient data	Insufficient data
Feces	Yes	Insufficient data	Insufficient data
Vaginal fluid	Insufficient data	Insufficient data	Insufficient data
Breastmilk	Insufficient data	Insufficient data	Insufficient data
Contaminated sharp‡	Insufficient data	Insufficient data	Yes

Monkeypox virus in Human Samples and Implications for Transmission

https://www.cdc.gov/poxvirus/monkeypox/about/science-behind-transmission.html

Monkeypox: Who Should beTreated?

Severe disease (e.g., hemorrhagic/confluent rash, sepsis, encephalitis, or hospitalized)

At high risk of severe disease:

- Immunocompromised: HIV, Cancer, transplant, chemo, XRT, biologic Rx, steroids, GVHD, autoimmune disease with immunocompromise
- Pediatric populations, especially younger than 8 years of age
- Atopic dermatitis or other active exfoliative skin conditions (e.g., eczema, burns, impetigo, varicella zoster virus infection, herpes simplex virus infection, severe acne, severe diaper dermatitis with extensive areas of denuded skin, psoriasis, or Darier disease Pregnant or breastfeeding persons
- Complications : superinfection, gastroenteritis with severe nausea/vomiting, diarrhea, or dehydration; bronchopneumonia;
- Aberrant placement : with involvement of eyes, mouth, genitals or anus

Monkeypox: Treatment Options

Tecoviramat (TPOXX)

- Approved for smallpox (Investigational drug for Monkepox)
- 4190 patients prescribed or treated with

Vaccinia Immune Globulin

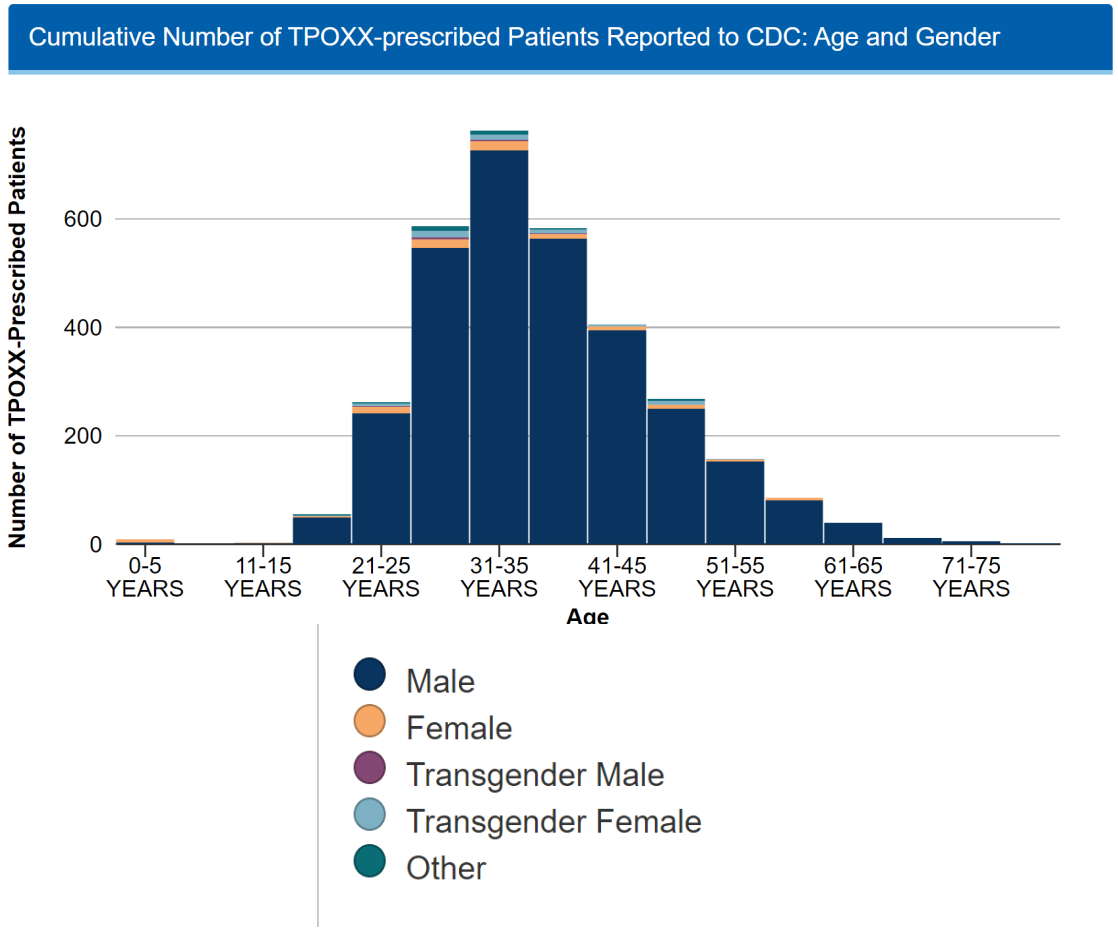
- Approved for vaccinia vaccine complications

Cidofovir

- Approved for CMV retinitis

Brincidofovir

- Approved for smallpox



Tecoviramat

Inhibitor of the orthopoxvirus VP37 envelope wrapping protein

Oral 200 mg capsules or IV formulation available (renally adjusted)

- 600 mg every 12 hours for 14 days for 40-120KG (q8 hours if >120kg)

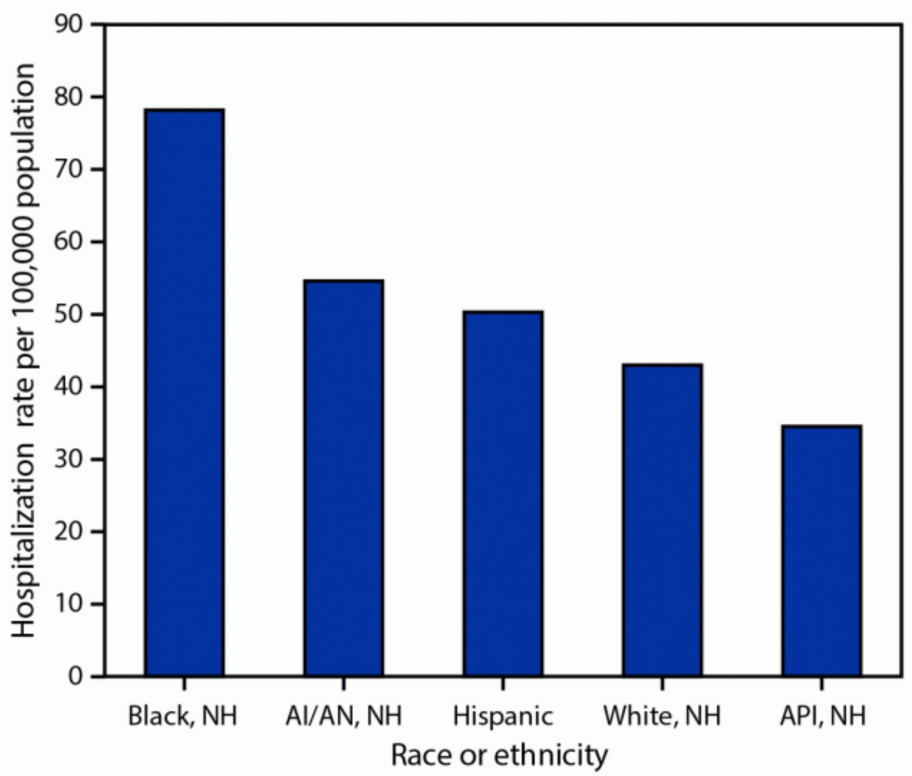
Appears to shorten illness and prevent spread

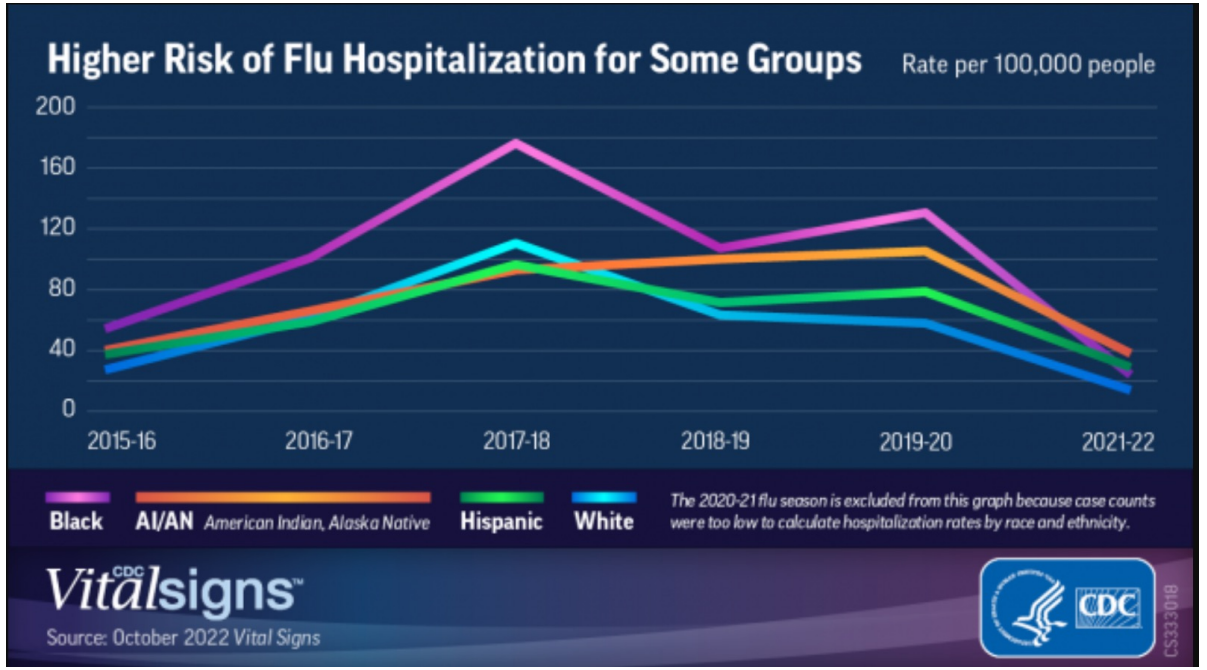
Adverse Reactions

- Oral: headache, nausea, abdominal pain, and vomiting, neutropenia
- IV: infusion site pain, swelling, erythema, extravasation, and headache

Drug Interactions: repaglinide and midazolam

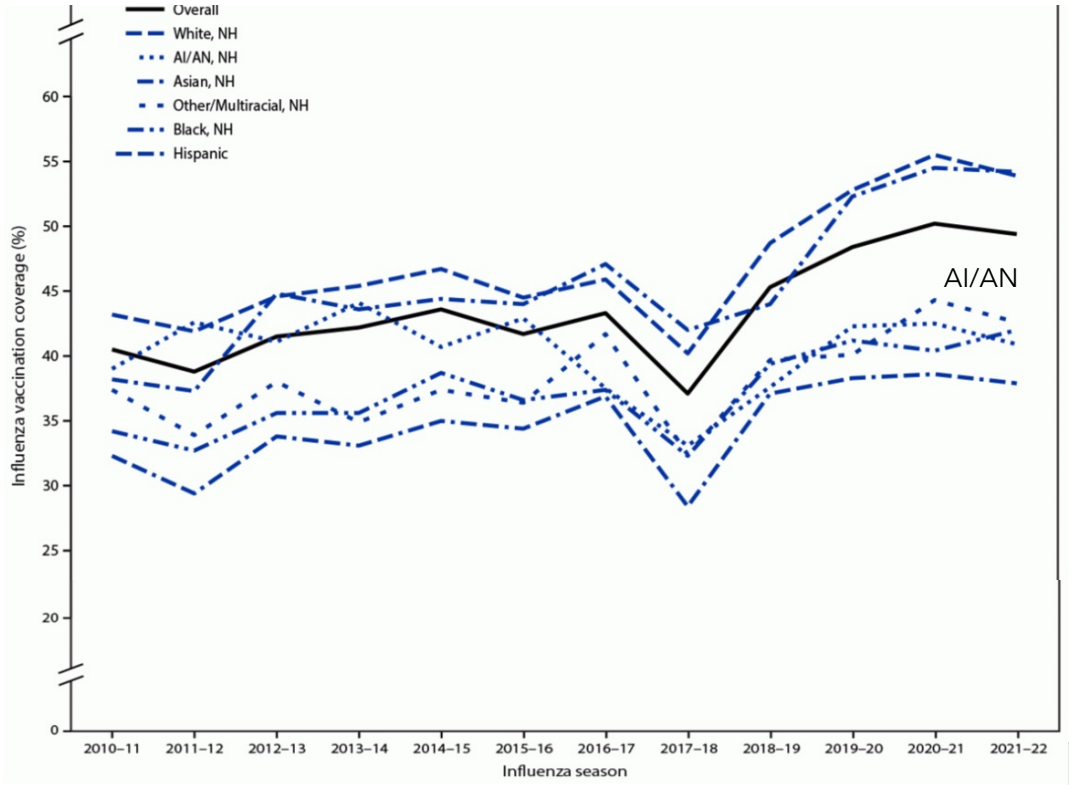
Age-adjusted Influenza-associated hospitalization rates* among adults aged ≥18 years, by race and ethnicity – Influenza-Associated Hospitalization Surveillance Network, United States, 2009–10 through 2021–22†





Black CL, O'Halloran A, Hung M, et al. *Vital Signs:*. MMWR Morb Mortal Wkly Rep. ePub: 18 October 2022.

Influenza vaccination coverage among adults aged ≥18 years, by race and ethnicity and influenza season – Behavioral Risk Factor Surveillance System, United States, 2010–11 through 2021–22



Abbreviations: AI/AN = American Indian or Alaska Native; NH = non-Hispanic.

A provider recommendation and offer of vaccination is strongly associated with vaccination

- Hispanic, AI/AN, and multiracial and adults of other races were less likely than were White adults to report having a personal health care provider and a routine medical checkup in the past 12 months.
- Black, Hispanic, AI/AN, and multiracial and adults of other races who reported a recent medical checkup, **influenza vaccination coverage was <50% and was also lower than coverage among White adults with a recent medical checkup**, suggesting that missed opportunities for influenza vaccination occurred during these visits.

Black CL, O'Halloran A, Hung M, et al. *Vital Signs:*. MMWR Morb Mortal Wkly Rep. ePub: 18 October 2022.

Vital Signs: Influenza Hospitalizations and Vaccination Coverage by Race and Ethnicity—United States, 2009–10 Through 2021–22 Influenza Seasons

What is already known about this topic?

- Historically, persons from some racial and ethnic minority groups have had higher rates of influenza hospitalization and death and lower influenza vaccination coverage than White

What is added by this report?

- Racial and ethnic disparities in influenza disease severity and vaccination coverage, along with disparities in access to care, have persisted since the 2009–10 and 2010–11 influenza seasons.

What are the implications for public health practice?

- Tailored efforts to increase access to influenza vaccination and improve vaccine confidence among racial and ethnic minority communities, including creating culturally relevant communication campaigns and offering vaccination in nontraditional settings, are critical and might decrease disparities in influenza vaccination and disease severity.

Black CL, O'Halloran A, Hung M, et al. *Vital Signs:* Influenza Hospitalizations and Vaccination Coverage by Race and Ethnicity—United States, 2009–10 Through 2021–22 Influenza Seasons. MMWR Morb Mortal Wkly Rep. ePub: 18 October 2022.