COVID-19 – Where We are and the Path Ahead for Staff and Patients

October 13, 2021

The CENTER for VICTIMS of TORTURE

Harvard Program in Refugee Trauma

Objectives

- Learn how the Delta Variant has affected SOT clinics and projects and thus, be able to plan for more in-person encounters with patients/clients in a safe manner.
- Gain a fuller understanding as to how the dynamics of the health care worker – patient/client relationship shifted due to the lack of face-to-face encounters and how to best address this issue.
- Identify the importance of the principles of self-care.

Presenters

Rajeev Bais, MD, MPH

Presenters

Edwin Hayes, MD

Presenters

Dinali Fernando, MD, MPH

Presenters

Richard Mollica, MD, MAR

Presenters

Eugene Augusterfer, LCSW

Poll

Photo by Greg Shield

COVID Pandemic

Where are we now?
Where are we headed?

Rajeev Bais and Edwin Hayes

10/13/2021

- Overview
- Who are the vulnerable groups?
- How long does natural immunity last?
- How long does immunity from the vaccines last?
- What is the current evidence for boosters?
- Is it beneficial to get vaccinated after recovery from COVID-19?
- What is the status for children in terms of vaccination and infection?
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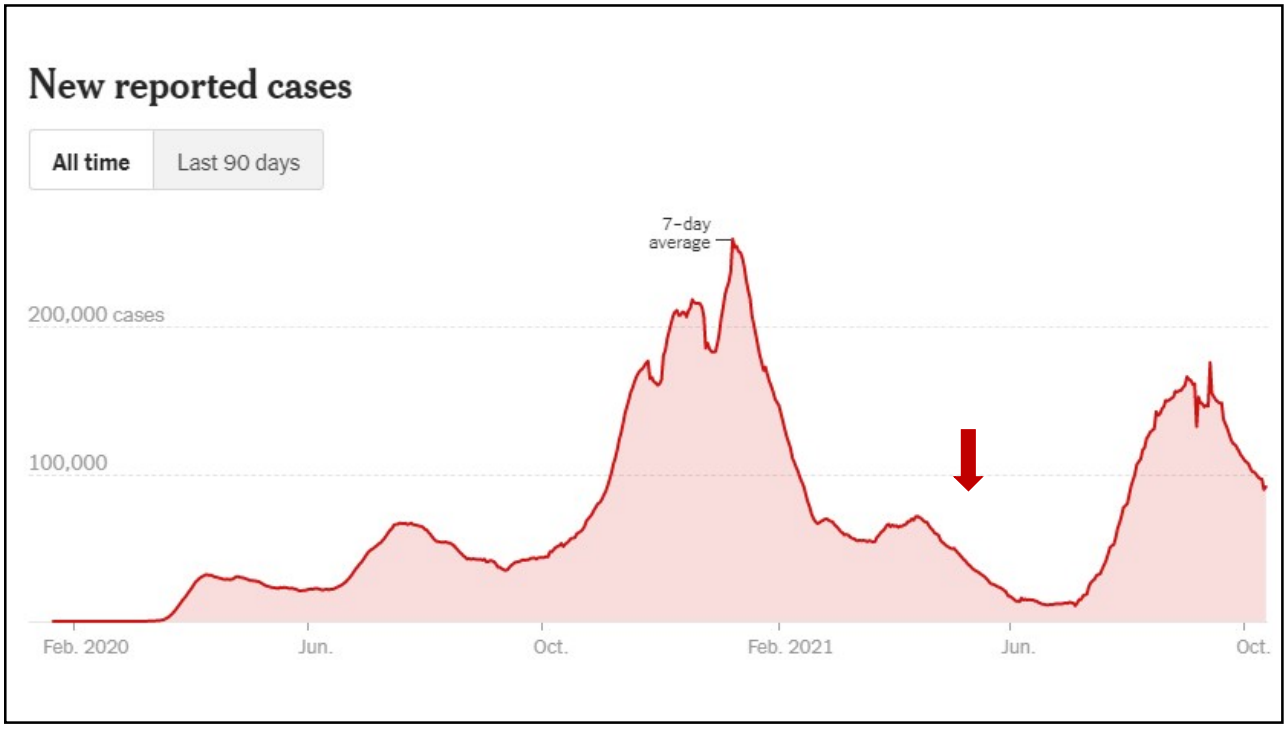
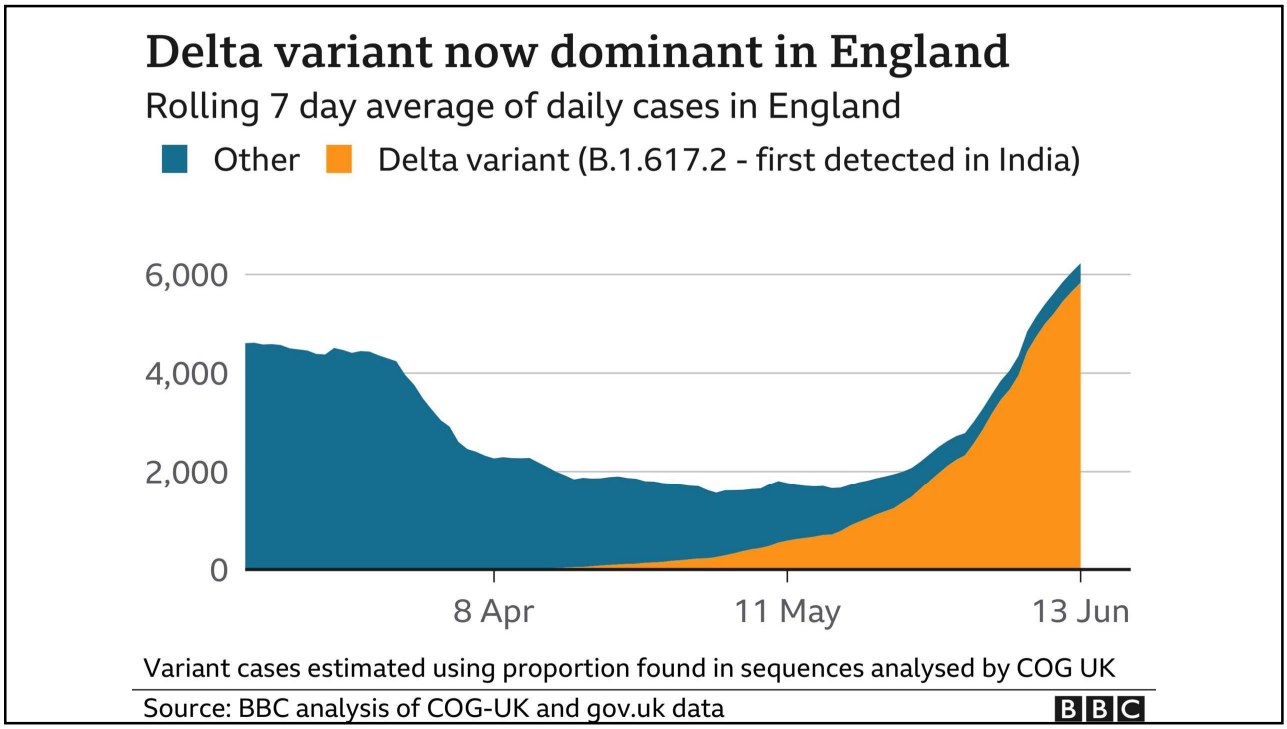
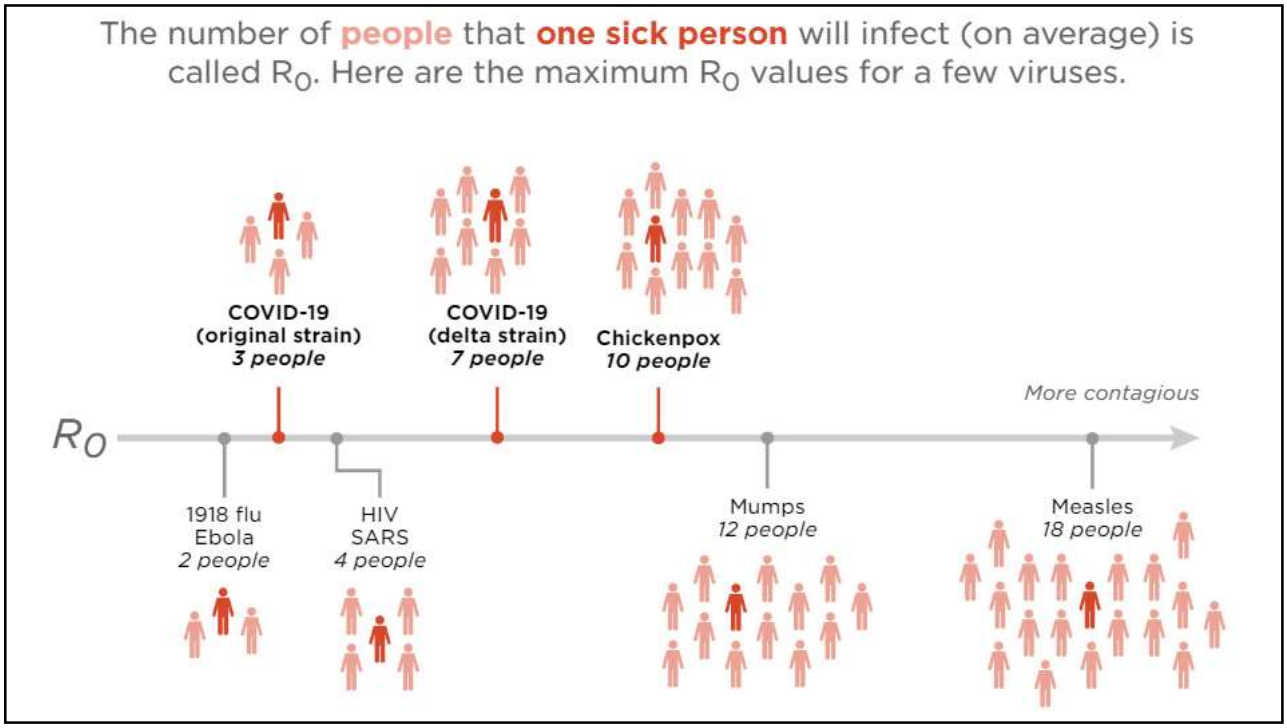
AP
U.S. News World News Politics Entertainment Sports Oddities Lifestyle Health Science Business Tech
Coronavirus pandemic Congress Technology NFL Nobel Prizes
New COVID-19 cases plummet to lowest levels since last June
By STEPHEN GROVES May 22, 2021


New reported cases
All time
Last 90 days
7-day average
200,000 cases
100,000
Feb. 2020
Jun.
Oct.
Feb. 2021
Jun.
Oct.


Delta variant now dominant in England
Rolling 7 day average of daily cases in England
Other
Delta variant (B.1.617.2 - first detected in India)
6,000
4,000
2,000
0
8 Apr
11 May
13 Jun
Variant cases estimated using proportion found in sequences analysed by COG UK
Source: BBC analysis of COG-UK and gov.uk data
BBC


The number of people that one sick person will infect (on average) is called R0. Here are the maximum R0 values for a few viruses.
COVID-19 (original strain) 3 people
COVID-19 (delta strain) 7 people
Chickenpox 10 people
More contagious
R0
1918 flu
Ebola
2 people
HIV
SARS
4 people
Mumps
12 people
Measles
18 people

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Morbidity and Mortality Weekly Report (*MMWR*)

CDC

Outbreak of SARS-CoV-2 Infections, Including COVID-19 Vaccine Breakthrough Infections, Associated with Large Public Gatherings — Barnstable County, Massachusetts, July 2021

Weekly / August 6, 2021 / 70(31);1059-1062

On July 30, 2021, this report was posted online as an MMWR *Early Release.*

Catherine M. Brown, DVM[1]; Johanna Vostok, MPH[1]; Hillary Johnson, MHS[1]; Meagan Burns, MPH[1]; Radhika Gharpure, DVM[2]; Samira Sami, DrPH[2]; Rebecca T. Sabo, MPH[2]; Noemi Hall, PhD[2]; Anne Foreman, PhD[2]; Petra L. Schubert, MPH[1]; Glen R. Gallagher, PhD[1]; Timelia Fink[1]; Lawrence C. Madoff, MD[1]; Stacey B. Gabriel, PhD[3]; Bronwyn MacInnis, PhD[3]; Daniel J. Park, PhD[3]; Katherine J. Siddle, PhD[3]; Vaira Harik, MS[4]; Deirdre Arvidson, MSN[4]; Taylor Brock-Fisher, MSc[5]; Molly Dunn, DVM[5]; Amanda Kearns[5]; A. Scott Laney, PhD[2] (View author affiliations)

View suggested citation

FIGURE 1. SARS-CoV-2 infections (N = 469) associated with large public gatherings, by date of specimen collection and vaccination status* — Barnstable County, Massachusetts, July 2021

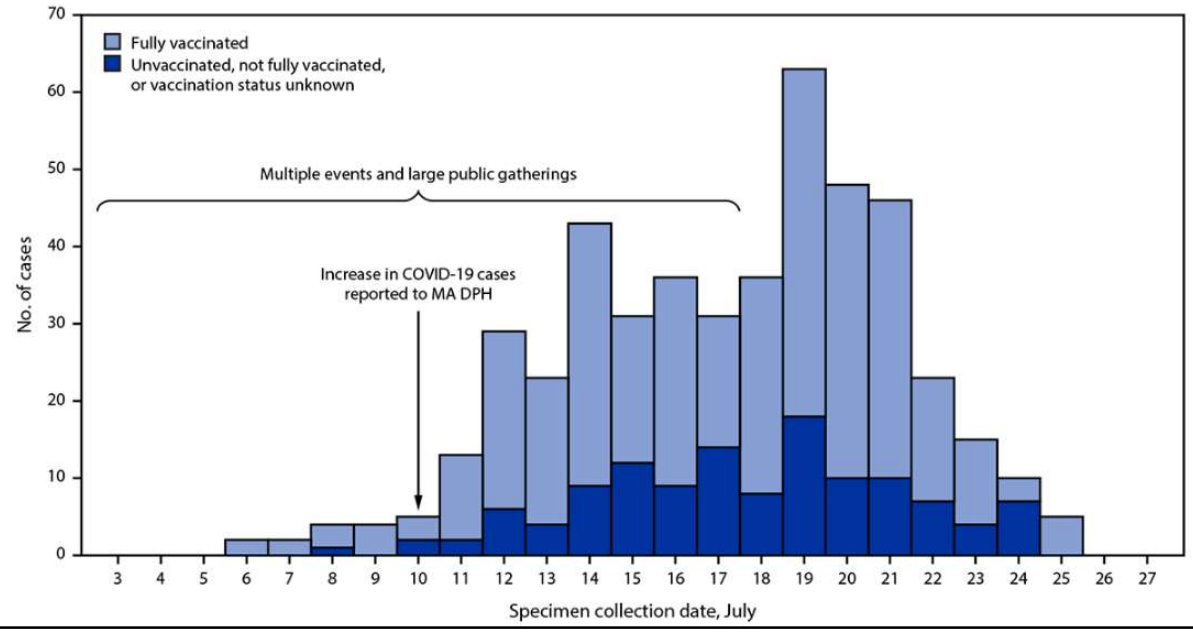
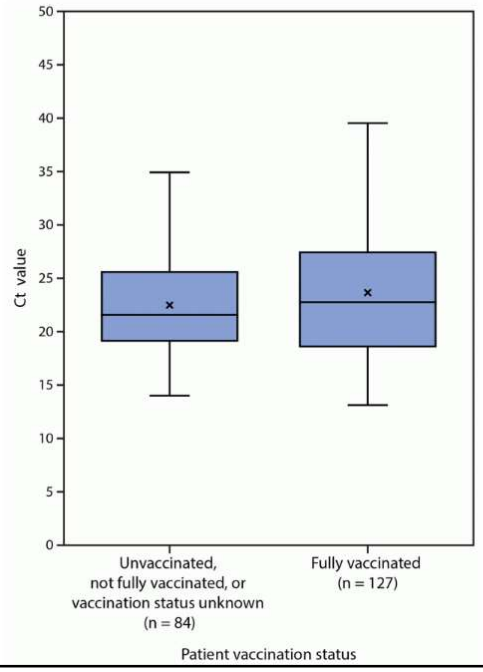


FIGURE 2. SARS-CoV-2 real-time reverse transcription–polymerase chain reaction cycle threshold values* for specimens from patients with infections associated with large public gatherings, by vaccination status† — Barnstable County, Massachusetts, July 2021§



Home / News / Health News

CDC Reverses Guidance, Says Fully Vaccinated People Should Wear Masks Inside in Certain Areas

Citing 'worrisome' data on the highly transmissible delta coronavirus variant, the agency also changed its masking guidance for schools.

By Cecelia Smith-Schoenwalder | July 27, 2021, at 5:05 p.m.

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U.S. FOOD & DRUG ADMINISTRATION

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Home / News & Events / FDA Newsroom / Press Announcements / FDA Approves First COVID-19 Vaccine

FDA NEWS RELEASE

FDA Approves First COVID-19 Vaccine

Approval Signifies Key Achievement for Public Health

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For Immediate Release: August 23, 2021

Español

Today, the U.S. Food and Drug Administration approved the first COVID-19 vaccine. The vaccine has been known as the Pfizer-BioNTech COVID-19 Vaccine, and will now be marketed as Comirnaty (koe-mir'-na-tee), for the prevention of COVID-19 disease in individuals 16 years of age and older. The vaccine also continues to be available under

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08/23/2021

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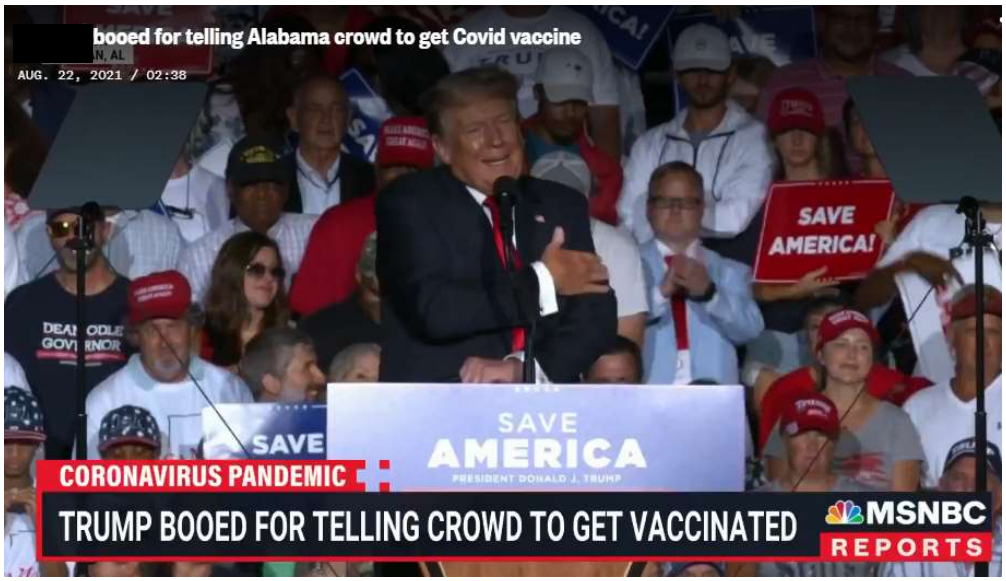
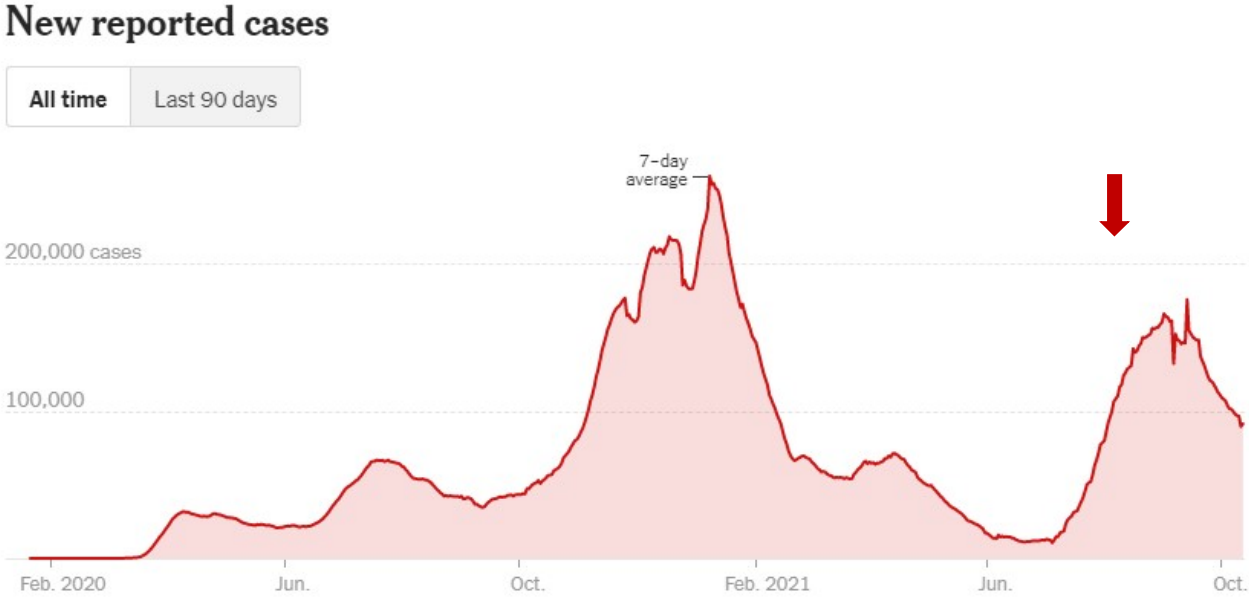
Health Topic(s)
Infectious Disease
Coronavirus


booed for telling Alabama crowd to get Covid vaccine
AUG. 22, 2021 / 02:38
SAVE AMERICA!
SAVE AMERICA
PRESIDENT DONALD J. TRUMP
CORONAVIRUS PANDEMIC
TRUMP BOOED FOR TELLING CROWD TO GET VACCINATED
MSNBC REPORTS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The New York Times

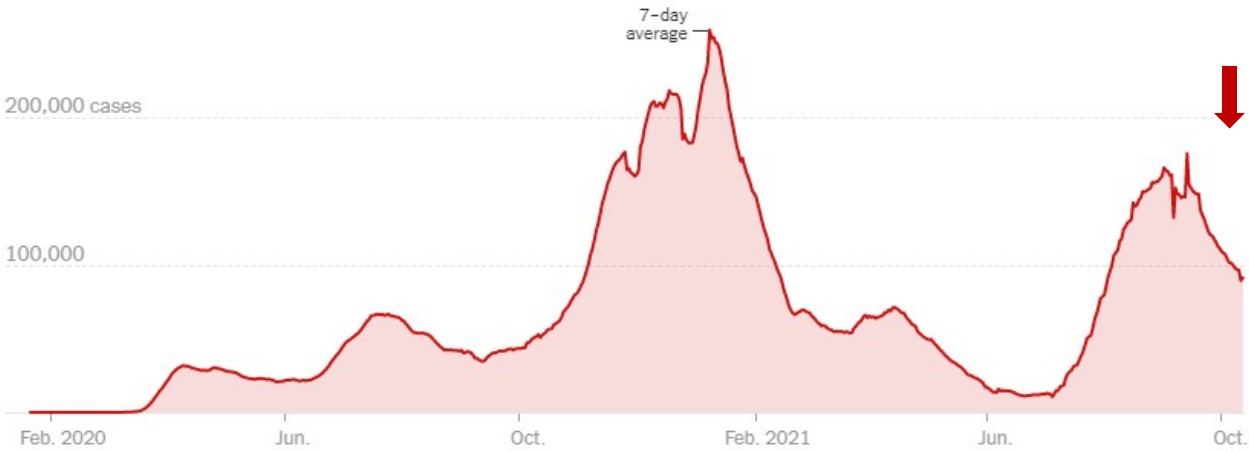
American Hospitals Buckle Under Delta, With I.C.U.s Filling Up

By Albert Sun and Giulia Heyward Aug. 17, 2021

The summer surge in coronavirus cases in the United States, led by the domination of the more contagious Delta variant, is well into its second month, and the number of those hospitalized with Covid-19 has reached heights last seen during the overwhelming winter wave.

New reported cases

All time | Last 90 days



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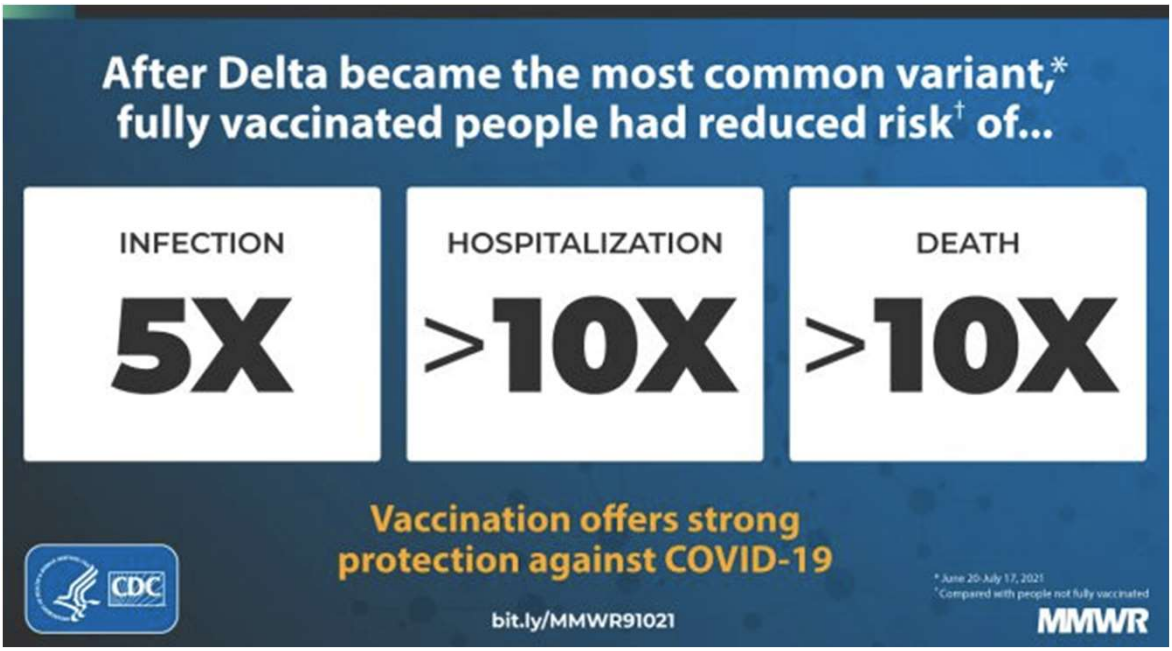

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Morbidity and Mortality Weekly Report (*MMWR*)

CDC

COVID-19 Vaccine Breakthrough Infections Reported to CDC — United States, January 1–April 30, 2021

Weekly / May 28, 2021 / 70(21);792–793

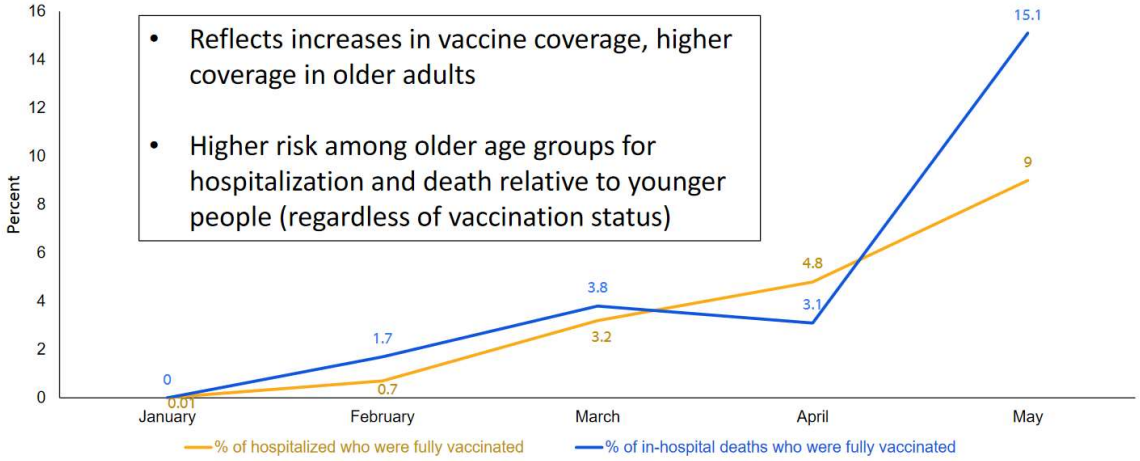
On May 25, 2021, this report was posted online as an MMWR *Early Release.*

CDC COVID-19 Vaccine Breakthrough Case Investigations Team (View author affiliations)

View suggested citation

Increasing percentage of vaccinated persons among those hospitalized in COVID-NET

- Reflects increases in vaccine coverage, higher coverage in older adults
- Higher risk among older age groups for hospitalization and death relative to younger people (regardless of vaccination status)



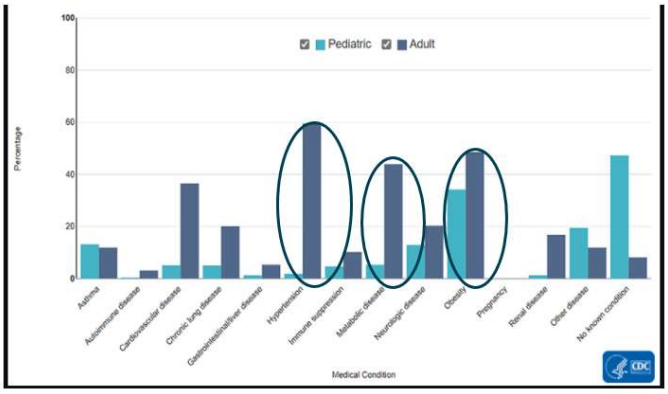
4

Common Comorbidities in hospitalized COVID-19 patients

Adults:
Obesity- 48.6%
Diabetes-43.9%
Cardiovascular disease-36.5%

Children: < 17
Obesity-34.2%
Asthma-13.2%.

Coronavirus Disease 2019 (COVID-19)-Associated Hospitalization Surveillance Network: March 2020-March 2021



JAMA Pediatrics | Original Investigation

Maternal and Neonatal Morbidity and Mortality Among Pregnant Women With and Without COVID-19 Infection
The INTERCOVID Multinational Cohort Study

José Villar, MD; Shabina Ariff, MD; Robert B. Gunier, PhD; Ramachandran Thiruvengadam, MD; Stephen Rauch, MPH; Alexey Kholin, MD; Paola Roggero, PhD; Federico Prefumo, PhD; Marynéa Silva do Vale, MD; Jorge Arturo Cardona-Perez, MD; Nerea Maiz, PhD; Irene Cetin, MD; Valeria Savasi, PhD; Philippe Deruelle, PhD; Sarah Rae Easter, MD; Joanna Sichitiu, MD; Constanza P. Soto Conti, MD; Ernawati Ernawati, PhD; Mohak Mhatre, MD; Jagjit Singh Teji, MD; Becky Liu, MBBS; Carola Capelli, MD; Manuela Oberto, MD; Laura Salazar, MD; Michael G. Gravett, MD; Paolo Ivo Cavoretto, PhD; Vincent Bizor Nachinab, MD; Hadiza Galadanci, MSc; Daniel Oros, PhD; Adejumoke Idowu Ayede, MD; Loïc Sentilhes, PhD; Babagana Bako, MD; Mónica Savorani, MD; Hellas Cena, PhD; Perla K. García-May, MD; Saturday Etuk, MD; Roberto Casale, MD; Sherief Abd-Elsalam, PhD; Satoru Ikenoue, PhD; Muhammad Baffah Aminu, MD; Carmen Vecciarelli, MD; Eduardo A. Duro, MD; Mustapha Ado Usman, MBBS; Yetunde John-Akinola, PhD; Ricardo Nieto, MD; Enrico Ferrazi, MD; Zulfiqar A. Bhutta, PhD; Ana Langer, MD; Stephen H. Kennedy, MD; Aris T. Papageorghiou, MD

JAMA Pediatrics | Original Investigation

Maternal and Neonatal Morbidity and Mortality Among Pregnant Women With and Without COVID-19 Infection

The INTERCOVID Multinational Cohort Study

- Higher risk for
  - Preeclampsia/eclampsia (relative risk [RR], 1.76; 95% CI, 1.27-2.43)
  - Severe infections (RR, 3.38; 95% CI, 1.63-7.01)
  - Intensive care unit admission (RR, 5.04; 95% CI, 3.13-8.10)
  - Maternal mortality (RR, 22.3; 95% CI, 2.88-172)
  - Preterm birth (RR, 1.59; 95% CI, 1.30-1.94)
  - Medically indicated preterm birth (RR, 1.97; 95% CI, 1.56-2.51)
  - Severe neonatal morbidity index (RR, 2.66; 95% CI, 1.69-4.18)
  - Severe perinatal morbidity and mortality index (RR, 2.14; 95% CI, 1.66-2.75)

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Immigrant, Refugee, and Migrant Health

COVID-19 in Newly Resettled Refugee Populations

Español (Spanish)

- Refugees to the United States, especially those who are recently resettled, may experience living arrangements or working conditions that put them at greater risk of getting COVID-19. Some refugees also have limited access to health care, as well as certain underlying medical conditions that put them at increased risk of severe illness from COVID-19, compared to the rest of the U.S. population.

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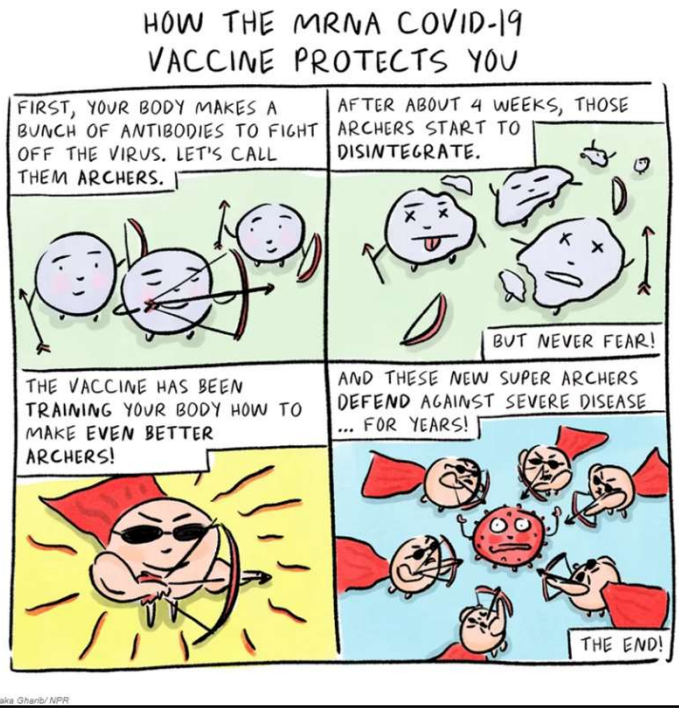

EMERGING INFECTIOUS DISEASES

EID Journal > Volume 27 > Number 9—September 2021 > Main Article

Predictors of Nonseroconversion after SARS-CoV-2 Infection

Weimin Liu[1], Ronnie M. Russell[1], Frederic Bibollet-Ruche[1], Ashwin N. Skelly[1], Scott Sherrill-Mix[1], Drew A. Freeman[1], Regina Stoltz, Emily Lindemuth, Fang-Hua Lee, Sarah Sterrett, Katharine J. Bar, Nathaniel Erdmann, Sigrid Gouma, Scott E. Hensley, Thomas Ketas, Albert Cupo, Victor M. Cruz Portillo, John P. Moore, Paul D. Bieniasz, Theodora Hatziioannou, Greer Massey, Mary-Beth Minyard[2], Michael S. Saag, Randall S. Davis, George M. Shaw, William J. Britt, Sixto M. Leal, Paul Goepfert, and Beatrice H. Hahn

Characteristic	SARS-CoV-2 antibody positive, n = 46	SARS-CoV-2 antibody negative, n = 26	p value†
Age, y, median (IQR)	49 (37–63)	35 (30–46)	0.03
Sex			0.17
M	30 (65)	10 (38)	
F	16 (35)	16 (62)	
Race/ethnicity			1.00
White	28 (61)	20 (77)	
Black	7 (15)	3 (12)	
Asian	7 (15)	3 (12)	
Latinx	4 (9)	0	
RT-PCR of nasal swabs			
DFOS, d, median (IQR)	5 (3–11)	5 (4–8)	0.95
C_t value, median (IQR)‡	24.5 (22–27)	36 (34–77)	<0.00001
Symptoms§	45 (98)	25 (96)	0.21
Severity 0	1 (2)	1 (4)	
Severity 1	5 (11)	8 (31)	
Severity 2	33 (72)	15 (58)	
Severity 3	7 (15)	2 (8)	
Hospitalization	6 (13)	2 (8)	1.00

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Emerging SARS-CoV-2 variants of concern evade humoral immune responses from infection and vaccination

TOM G. CANIELS, ILJA BONTJER, KARLIJN VAN DER STRATEN, MELIAWATI PONIMAN, JUDITH A. BURGER, BRENT APPELMAN, H. A. AYESHA LAVELL, MELISSA OOMEN, GERT-JAN GODEKE, [...] ROGIER W. SANDERS, +20 authors, Authors Info & Affiliations

SCIENCE ADVANCES • 3 Sep 2021 • Vol 7, Issue 36 • DOI: 10.1126/sciadv.abj5365

- Mild Covid
- Severe Covid (hospitalized)
- Vaccinated
- examined serum effect on various SARAS-CoV2 variants
  - Spike protein binding
  - Neutralization Potential

Emerging SARS-CoV-2 variants of concern evade humoral immune responses from infection and vaccination

TOM G. CANIELS, ILJA BONTJER, KARLIJN VAN DER STRATEN, MELIAWATI PONIMAN, JUDITH A. BURGER, BRENT APPELMAN, H. A. AYESHA LAVELL, MELISSA OOMEN, GERT-JAN GODEKE, [...] ROGIER W. SANDERS, +20 authors, Authors Info & Affiliations

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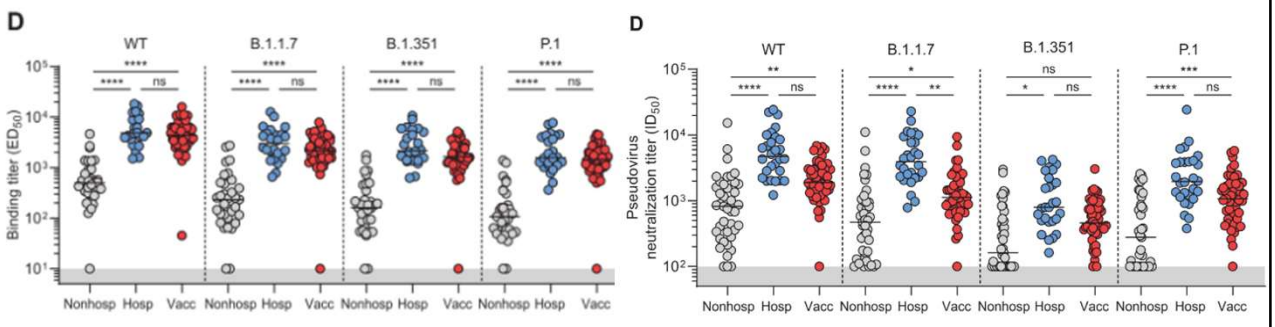

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ORIGINAL ARTICLE

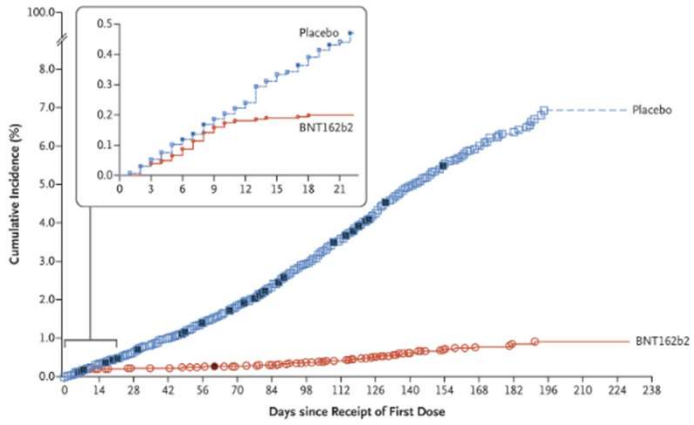
Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine through 6 Months

Stephen J. Thomas, M.D., Edson D. Moreira, Jr., M.D., Nicholas Kitchin, M.D., Judith Absalon, M.D., Alejandra Gurtman, M.D., Stephen Lockhart, D.M., John L. Perez, M.D., Gonzalo Pérez Marc, M.D., Fernando P. Polack, M.D., Cristiano Zerbini, M.D., Ruth Bailey, B.Sc., Kena A. Swanson, Ph.D., et al., for the C4591001 Clinical Trial Group*

Article Figures/Media Metrics

September 15, 2021
DOI: 10.1056/NEJMoa2110345

- 44,165 >16 yrs
- 2,264 12-15 yrs
- Overall vaccine efficacy at 6 mo was 91.3%
- Vaccine efficacy against severe disease was 96.7%
- gradual decline in efficacy over time
- Not powered to give assess efficacy according to subgroup, however VE was consistently high in all groups



Efficacy End Point	BNT162b2 (N=23,040) No. of cases	BNT162b2 Surveillance time 1000 person-yr	BNT162b2 No. at risk	Placebo (N=23,037) No. of cases	Placebo Surveillance time 1000 person-yr	Placebo No. at risk	Vaccine Efficacy % (95% CI)
Overall: first occurrence of Covid-19 after receipt of first dose	131	8.412	22,505	1034	8.124	22,434	87.8 (85.3 to 89.9)
After receipt of first dose up to receipt of second dose	46	1.339	22,505	110	1.331	22,434	58.4 (40.8 to 71.2)
<11 Days after receipt of first dose	41	0.677	22,505	50	0.675	22,434	18.2 (−26.1 to 47.3)
≥11 Days after receipt of first dose up to receipt of second dose	5	0.662	22,399	60	0.656	22,369	91.7 (79.6 to 97.4)
After receipt of second dose to <7 days after	3	0.424	22,163	35	0.422	22,057	91.5 (72.9 to 98.3)
≥7 Days after receipt of second dose	82	6.649	22,132	889	6.371	22,001	91.2 (88.9 to 93.0)
≥7 Days after receipt of second dose to <2 mo after	12	2.923	22,132	312	2.884	22,001	96.2 (93.3 to 98.1)
≥2 Mo after receipt of second dose to <4 mo after	46	2.696	20,814	449	2.593	20,344	90.1 (86.6 to 92.9)
≥4 Mo after receipt of second dose	24	1.030	12,670	128	0.895	11,802	83.7 (74.7 to 89.9)

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Article Figures/Media Metrics

September 15, 2021
DOI: 10.1056/NEJMoa2110345

Efficacy Endpoint Subgroup	BNT162b2 (N[a]=23,040) n1[b]	BNT162b2 Surveillance Time[c] (n2[d])	Placebo (N[a]=23,037) n1[b]	Placebo Surveillance Time[c] (n2[d])	VE (%)	(95% CI[e])
First severe COVID-19 occurrence after dose 1	1	8.439 (22,505)	30	8.288 (22,435)	96.7	(80.3, 99.9)
After dose 1 to before dose 2	0	1.351 (22,505)	6	1.360 (22,435)	100.0	(14.5, 100.0)
Dose 2 to 7 days after dose 2	0	0.425 (22,170)	1	0.423 (22,070)	100.0	(−3783.5, 100.0)
≥7 Days after dose 2	1	6.663 (22,142)	23	6.505 (22,048)	95.7	(73.9, 99.9)

Confirmed severe COVID-19 required confirmation of COVID-19 and the presence of ≥1 of the following: clinical signs at rest indicative of severe systemic illness (respiratory rate ≥30 breaths per minute, heart rate ≥125 beats per minute, SpO_2 ≤93% on room air at sea level, or PaO_2/FiO_2 <300 mmHg); respiratory failure (defined as needing high-flow oxygen, non-invasive ventilation, mechanical ventilation, or extracorporeal membrane oxygenation); evidence of shock (systolic blood pressure <90 mmHg, diastolic blood pressure <60 mmHg, or requiring vasopressors); significant acute renal, hepatic, or neurologic dysfunction; intensive care unit admission; and/or death

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ORIGINAL ARTICLE

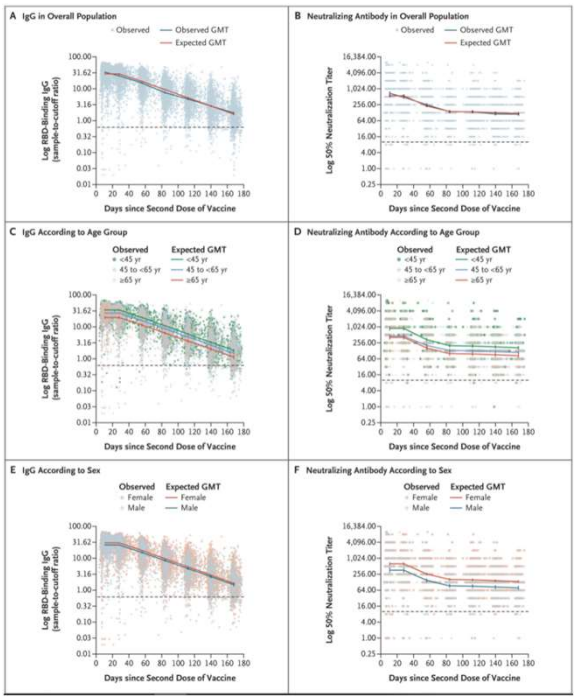
Waning Immune Humoral Response to BNT162b2 Covid-19 Vaccine over 6 Months

Einav G. Levin, M.D., Yaniv Lustig, Ph.D., Carmit Cohen, Ph.D., Ronen Fluss, M.Sc., Victoria Indenbaum, Ph.D., Sharon Amit, M.D., Ram Doolman, Ph.D., Keren Asraf, Ph.D., Ella Mendelson, Ph.D., Arnona Ziv, M.Sc., Carmit Rubin, M.Sc., Laurence Freedman, Ph.D., et al.

Article Figures/Media Metrics

October 6, 2021
DOI: 10.1056/NEJMoa2114583

- 6 mo, prospective study on 4868 healthcare workers in Israel who were tested monthly for the presence of anti-spike IgG and neutralizing Ab
- Level of IgG decreased at a consistent rate
- Neutralizing ab decreased rapidly for the 1st 3 mo with a slow decrease after
- Neutralizing ab at 6mo was substantially lower in men, persons over 65yrs, and in those with immunosuppression



ORIGINAL ARTICLE

Waning of BNT162b2 Vaccine Protection against SARS-CoV-2 Infection in Qatar

Hiam Chemaitelly, M.Sc., Patrick Tang, M.D., Ph.D., Mohammad R. Hasan, Ph.D., Sawsan AlMukdad, M.Sc., Hadi M. Yassine, Ph.D., Fatiha M. Benslimane, Ph.D., Hebah A. Al Khatib, Ph.D., Peter Coyle, M.D., Houssein H. Ayoub, Ph.D., Zaina Al Kanaani, Ph.D., Einas Al Kuwari, M.D., Andrew Jeremijenko, M.D., et al.

Article Figures/Media Metrics

October 6, 2021
DOI: 10.1056/NEJMoa2114114

- Dec 21,2020 - Sept 5, 2021
- 947,035 received 1 dose; 907,763 received 2
- 18,746 breakthrough case; 10,543 with 2 doses
  - 35% received a dx of COVID-19 based on symptoms
- 377 (1 dose) and 106 (2 dose) hospitalizations
- 34 (1 dose) and 15 (2 dose) fatalities

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Article Figures/Media Metrics

October 6, 2021
DOI: 10.1056/NEJMoa2114114

- Vaccine effectiveness against any SARS-CoV-2 infection
  - negligible for the 1st 2 weeks after the 1st dose
  - 36.8% in the 3rd week after the 1st dose
  - 77.5% in the 1st month after the 2nd dose
  - effectiveness gradually declined afterward
  - patterns of decline effectiveness were similar in all strains

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DOI: 10.1056/NEJMoa2114114

- no significant difference between age groups above/below 60
- peak effectiveness against symptomatic disease was 81.5%
  - 73% against asymptomatic disease
- effectiveness against severe disease
  - negligible in 1st 2 weeks after 1st dose
  - 66% in 3rd weeks after 1st dose
  - >96% in 1st 2 months after 2nd dose

BNT162b2 and mRNA-1273 COVID-19 vaccine effectiveness against the Delta (B.1.617.2) variant in Qatar

Patrick Tang, Mohammad R. Hasan, Hiam Chemaitelly, Hadi M. Yassine, Fatiha M. Benslimane, Hebah A. Al Khatib, Sawsan AlMukdad, Peter Coyle, Houssein H. Ayoub, Zaina Al Kanaani, Einas Al Kuwari, Andrew Jeremijenko, Anvar Hassan Kaleeckal, Ali Nizar Latif, Riyazuddin Mohammad Shaik, Hanan F. Abdul Rahim, Gheyath K. Nasrallah, Mohamed Ghaith Al Kuwari, Hamad Eid Al Romaihi, Adeel A. Butt, Mohamed H. Al-Thani, Abdullatif Al Khal, Roberto Bertollini, Laith J. Abu-Raddad

doi: https://doi.org/10.1101/2021.08.11.21261885

- Assessed 'real-world' effectiveness of mRNA vaccines against the delta variant
- Qatar: As of August 2021: 73.8% 2 doses, 87.8% 1 dose
- Pfizer: 906,078 (1 dose), 877,354 (2 doses)
- Moderna: 490,828 (1 dose), 409,041 (2 doses)
- Median date of second dose was May 7, 2021 (Pfizer) and May 12, 2021 (Moderna)
- Median age 31-32 yrs; co-morbidities not assessed

BNT162b2 and mRNA-1273 COVID-19 vaccine effectiveness against the Delta (B.1.617.2) variant in Qatar

Patrick Tang, Mohammad R. Hasan, Hiam Chemaitelly, Hadi M. Yassine, Fatiha M. Benslimane, Hebah A. Al Khatib, Sawsan AlMukdad, Peter Coyle, Houssein H. Ayoub, Zaina Al Kanaani, Einas Al Kuwari, Andrew Jeremijenko, Anvar Hassan Kaleeckal, Ali Nizar Latif, Riyazuddin Mohammad Shaik, Hanan F. Abdul Rahim, Gheyath K. Nasrallah, Mohamed Ghaith Al Kuwari, Hamad Eid Al Romaihi, Adeel A. Butt, Mohamed H. Al-Thani, Abdullatif Al Khal, Roberto Bertollini, Laith J. Abu-Raddad

doi: https://doi.org/10.1101/2021.08.11.21261885

- As of July 21, 2021
- Breakthrough Infections of the Delta Strain
  - Pfizer: 54 (1 doses) and 249 (2 dose)
  - Moderna: 27 (1 doses) and 26 (2 doses)
- Severe Infections (hospitalizations) from the Delta Strain
  - Pfizer: 3 (1 dose) and 4 (2 doses) [1 ICU admission]
  - Moderna: 3 (1 dose) and 0 (2 doses)
- Zero fatalities

BNT162b2 and mRNA-1273 COVID-19 vaccine effectiveness against the Delta (B.1.617.2) variant in Qatar

Patrick Tang, Mohammad R. Hasan, Hiam Chemaitelly, Hadi M. Yassine, Fatiha M. Benslimane, Hebah A. Al Khatib, Sawsan AlMukdad, Peter Coyle, Houssein H. Ayoub, Zaina Al Kanaani, Einas Al Kuwari, Andrew Jeremijenko, Anvar Hassan Kaleeckal, Ali Nizar Latif, Riyazuddin Mohammad Shaik, Hanan F. Abdul Rahim, Gheyath K. Nasrallah, Mohamed Ghaith Al Kuwari, Hamad Eid Al Romaihi, Adeel A. Butt, Mohamed H. Al-Thani, Abdullatif Al Khal, Roberto Bertollini, Laith J. Abu-Raddad

doi: https://doi.org/10.1101/2021.08.11.21261885

- Estimated Vaccine Effectiveness (+PCR regardless of reason for test)
  - >14 days after 1st dose: 64.2% (Pfizer), 79% (Moderna)
    - Severe dx effectiveness: 100% (Pfizer and Moderna)
  - >14 days after the 2nd dose: 53.5% (Pfizer), 84.8% (Moderna)
    - Severe dx effectiveness: 89.7% (Pfizer), 100% (Moderna)

ORIGINAL ARTICLE

Effectiveness of Covid-19 Vaccines in Ambulatory and Inpatient Care Settings

Mark G. Thompson, Ph.D., Edward Stenehjem, M.D., Shaun Grannis, M.D., Sarah W. Ball, Sc.D., Allison L. Naleway, Ph.D., Toan C. Ong, Ph.D., Malini B. DeSilva, M.D., M.P.H., Karthik Natarajan, Ph.D., Catherine H. Bozio, Ph.D., M.P.H., Ned Lewis, M.P.H., Kristin Dascomb, M.D., Ph.D., Brian E. Dixon, M.P.A., Ph.D., et al.

- 21,544 ED or UC visits
- 41,552 hospitalizations
- Adults >50 yrs with COVID-like symptoms
- Jan-June 2021 (not yet delta)
- Tested for SARS-CoV-2
- Vaccination status determined
- Vaccine effectiveness estimated

ORIGINAL ARTICLE

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Emergency Department or Urgent Care Visits

Vaccine	Vaccine Effectiveness (95% CI)	No. of Patients	% Positive for SARS-CoV-2
		Unvaccinated/fully vaccinated	
BNT162b2	89% (85–91)	11,812/3,589	24.1/2.9
mRNA-1273	92% (89–94)	11,812/2,476	24.1/2.0
Ad26.COV2.S	73% (59–82)	8,461/456	26.0/6.4

Hospitalization

Vaccine	Vaccine Effectiveness (95% CI)	No. of Patients	% Positive for SARS-CoV-2
		Unvaccinated/fully vaccinated	
BNT162b2	87% (85–90)	20,406/8,500	18.1/1.9
mRNA-1273	91% (89–93)	20,406/6,374	18.1/1.5
Ad26.COV2.S	68% (50–79)	10,761/707	18.6/4.2

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- Vaccine effectiveness against hospitalization relating to:
  - African Americans - 86%
  - Hispanics - 90%
  - Patients > 85yrs - 83%

SARS-CoV-2 Infections and Hospitalizations Among Persons Aged ≥16 Years, by Vaccination Status — Los Angeles County, California, May 1–July 25, 2021

MMWR Morbidity and Mortality Weekly Report

Jennifer B. Griffin, PhD, [1] Meredith Haddix, MPH, [1] Phoebe Danza, MPH, [1] Rebecca Fisher, MPH, [1] Tae Hee Koo, MPH, [1] Elizabeth Traub, MPH, [1] Prabhu Gounder, MD, [1] Claire Jarashow, PhD, [2] and Sharon Balter, MD[✉ 1]

Mortal Wkly Rep. 2021 Aug 27; 70(34): 1170–1176. PMC

- LACDPH/California Immunizations Registry 2 (CAIR2) data
- May1-July 25, 2021
- Delta predominant strain
- 43,127 reported COVID infections in people >16 years old
  - Fully Vaccinated:10,895 (25.3%)
  - Partially Vaccinated: 1,431 (3.3%)
  - Unvaccinated: 30,801 (71.4%)
- Fully Vaccinated: 3.2% hospitalized, 0.5% ICU, 0.2% mech vent
- Unvaccinated: 7.6% hospitalized, 1.5% ICU, 0.5% mech vent
- Unvaccinated had 4.9x the rate of infection and 29.2x the rate of hospitalization

SARS-CoV-2 Infections and Hospitalizations Among Persons Aged ≥16 Years, by Vaccination Status — Los Angeles County, California, May 1–July 25, 2021

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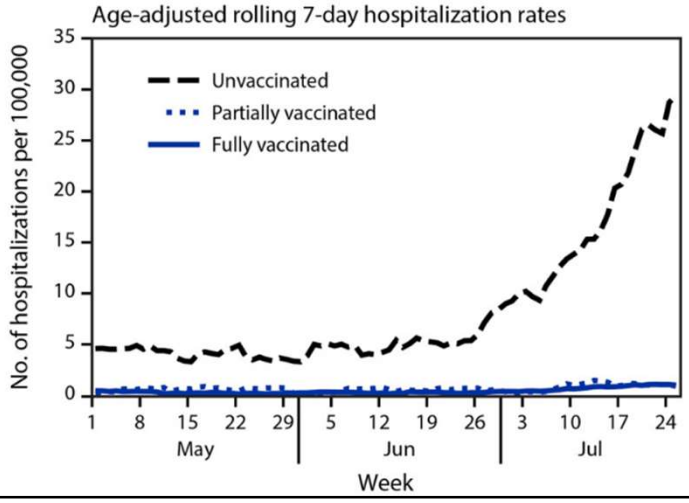
Jennifer B. Griffin, PhD, [1] Meredith Haddix, MPH, [1] Phoebe Danza, MPH, [1] Rebecca Fisher, MPH, [1] Tae Hee Koo, MPH, [1] Elizabeth Traub, MPH, [1] Prabhu Gounder, MD, [1] Claire Jarashow, PhD, [2] and Sharon Balter, MD [1]

Mortal Wkly Rep. 2021 Aug 27; 70(34): 1170–1176.



Waning immunity of the BNT162b2 vaccine: A nationwide study from Israel

Yair Goldberg, Micha Mandel, Yinon M. Bar-On, Omri Bodenheimer, Laurence Freedman, Eric J. Haas, Ron Milo, Sharon Alroy-Preis, Nachman Ash, Amit Huppert

doi: https://doi.org/10.1101/2021.08.24.21262423

- 60+ yr olds who received their vax in March 21 were 1.6x more protected against infection and 1.7x more protected against severe disease than those who received their vax in Jan 21
- Similar results were found in all age groups after 6 mo

Correlation of SARS-CoV-2 Breakthrough Infections to Time-from-vaccine; Preliminary Study

Barak Mizrahi, Roni Lotan, Nir Kalkstein, Asaf Peretz, Galit Perez, Amir Ben-Tov, Gabriel Chodick, Sivan Gazit, Tal Patalon

doi: https://doi.org/10.1101/2021.07.29.21261317

ORIGINAL ARTICLE

Protection of BNT162b2 Vaccine Booster against Covid-19 in Israel

Yinon M. Bar-On, M.Sc., Yair Goldberg, Ph.D., Micha Mandel, Ph.D., Omri Bodenheimer, M.Sc., Laurence Freedman, Ph.D., Nir Kalkstein, B.Sc., Barak Mizrahi, M.Sc., Sharon Alroy-Preis, M.D., Nachman Ash, M.D., Ron Milo, Ph.D., and Amit Huppert, Ph.D.

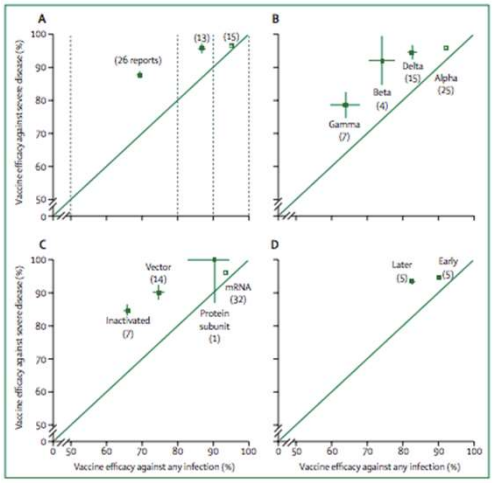
Article Figures/Media Metrics October 7, 2021

Table 2. Primary Outcomes of Confirmed Infection and Severe Illness.*

Outcome	Nonbooster Group	Booster Group	Adjusted Rate Ratio (95% CI)†
Confirmed infection			11.3 (10.4–12.3)
No. of cases	4439	934	
No. of person-days at risk	5,193,825	10,603,410	
Severe illness			19.5 (12.9–29.5)
No. of cases	294	29	
No. of person-days at risk	4,574,439	6,265,361	

Considerations in boosting COVID-19 vaccine immune responses

Philip R Krause, Thomas R Fleming, Richard Peto, Ira M Longini, J Peter Figueroa, Jonathan A C Sterne, Alejandro Cravioto, Helen Rees, Julian P T Higgins, Isabelle Boutron, Hongchao Pan, Marion F Gruber, Narendra Arora, Fatema Kazi, Rogerio Gaspar, Soumya Swaminathan, Michael J Ryan, Ana-Maria Henao-Restrepo



- Overview
- Who are the vulnerable groups?
- How long does natural immunity last?
- How long does immunity from the vaccines last?
- Is it beneficial to get vaccinated after recovery from COVID-19?
- What is the current evidence for boosters?
- What is the status for children in terms of vaccination and infection?
- What is new in terms of treatment?

Reduced Risk of Reinfection with SARS-CoV-2 After COVID-19 Vaccination — Kentucky, May–June 2021

Weekly / August 13, 2021 / 70(32);1081-1083

On August 6, 2021, this report was posted online as an MMWR *Early Release.*

Alyson M. Cavanaugh, DPT, PhD[1,2]; Kevin B. Spicer, MD, PhD[2,3]; Douglas Thoroughman, PhD[2,4]; Connor Glick, MS[2]; Kathleen Winter, PhD[2,5]

- case (1): control (2)
  - matched by age, sex, and date of initial + SARS-CoV-2 PCR test (March-December 2020)
  - 246 cases:492 controls
  - 60.6% female
  - Fully Vaccinated:20.3% cases, 34.3% controls
  - Ky residents with previous infections who were unvaccinated had 2.34 times the odds of reinfection compared to those fully vaccinated

- Overview
- Who are the vulnerable groups?
- How long does natural immunity last?
- How long does immunity from the vaccines last?
- What is the current evidence for boosters?
- Is it beneficial to get vaccinated after recovery from COVID-19?
- What is the status for children in terms of vaccination and infection?
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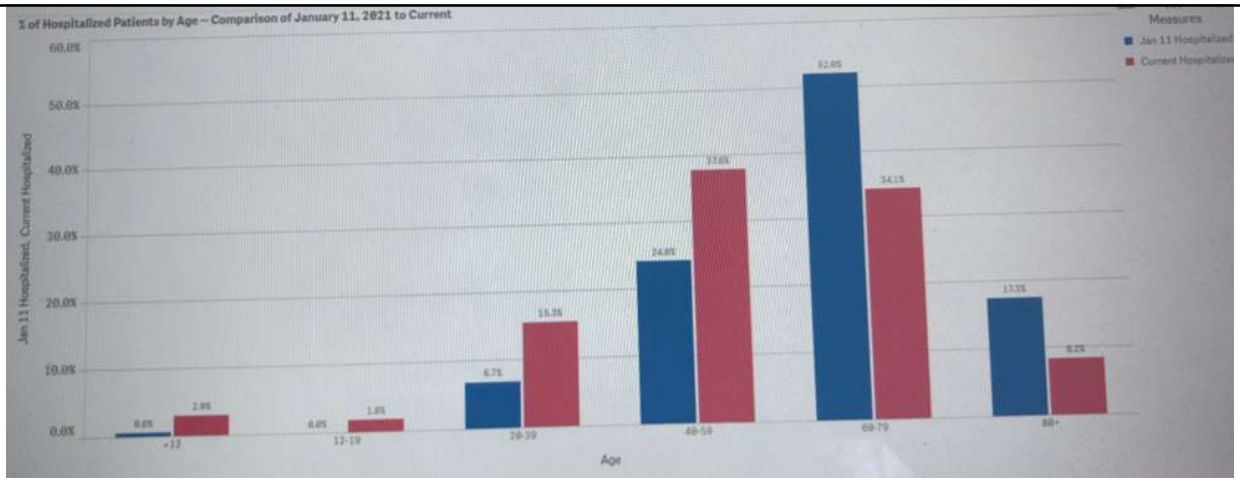
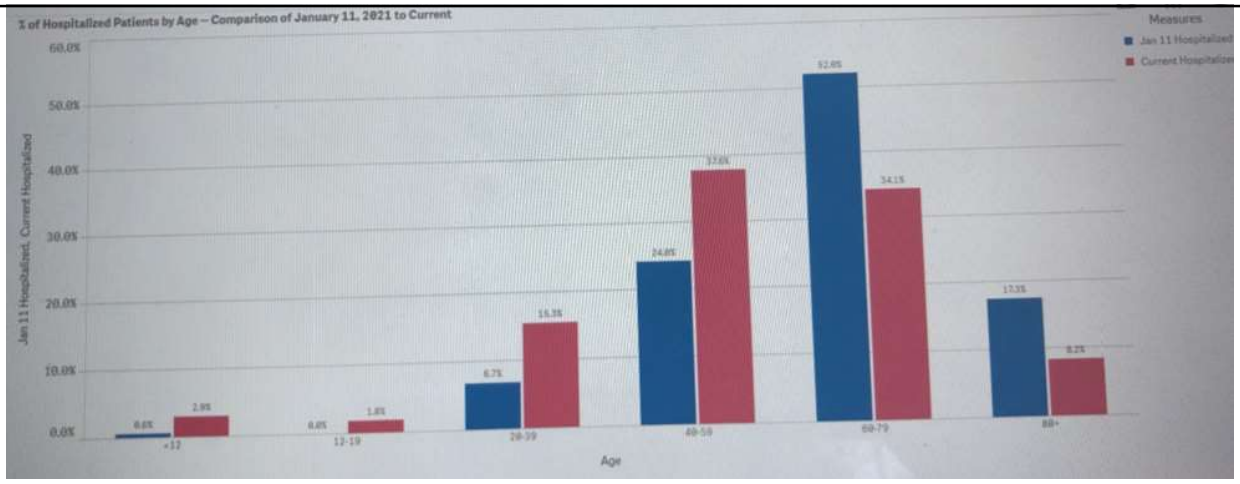
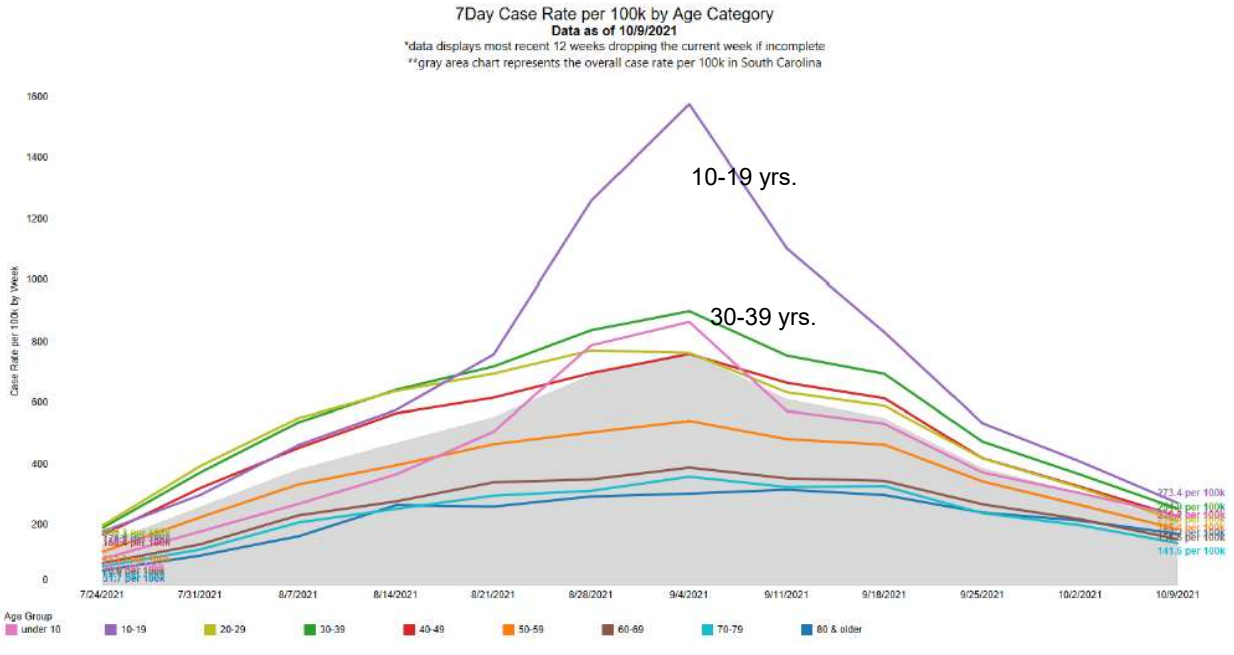


- Comparing January to August 2021
- By age groups



- Age <12 0.6% vs 2.9%
- Age 12-19 0.0% vs 1.8%
- Age 20-39 6.7% vs 15.3%
- Age 40-59 24% vs 37.6%
- Age 60-79 52% vs 34.1%
- Age 80+ 17.3% vs 8.2%



Count of Cases (confirmed & probables) with Percent Change
Most Recent Completed Week Compared to 12 Weeks Prior

	under 10		10-19		20-29		30-39		40-49		50-59		60-69		70-79		80 & older	
	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21
Count Cases Suppressed	540	1,390	1,164	1,773	1,370	1,470	1,250	1,656	1,042	1,421	762	1,260	493	1,002	283	615	100	333
Case Rate by Age per 100k by Week	90.1	232.0	179.5	273.4	200.3	214.9	192.4	254.9	168.4	229.7	113.3	187.4	76.0	154.5	65.1	141.6	51.7	172.2
% Change in Cases		157.4%		52.3%		7.3%		32.5%		36.4%		65.4%		103.2%		117.3%		233.0%

Count of Hospitalized Cases (confirmed & probables) with Percent Change
Most Recent Completed Week Compared to 12 Weeks Prior

	under 10		10-19		20-29		30-39		40-49		50-59		60-69		70-79		80 & older	
	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21	7/24/21	10/9/21
Count Hospitalizations Suppressed	<5	<5	<5	5	8	7	23	11	23	23	50	28	53	40	54	43	30	44
Hospitalization Rate by Age per 100k by Week	0.2	0.7	0.5	0.8	1.2	1.0	3.5	1.7	3.7	3.7	7.4	4.2	8.2	6.2	12.4	9.9	15.5	22.7
% Change in Hospitalization Rate by Age		300.0%		66.7%		-12.5%		-52.2%		0.0%		-44.0%		-24.5%		-20.4%		46.7%

Why are vaccination rates so low in 12-24? Myocarditis Fears

- VAERS data
- Kaiser Permanente Southern California analysis
- Incidence myocarditis post mRNA vaccine aged 18 and older
- Compared with myocarditis incidence in unvaccinated 12/14/2020-07/20/2021; and with vaccinated individuals during a 10-day period 1 year prior to vaccination

Acute Myocarditis Following COVID-19 mRNA Vaccination in Adults Aged 18 Years or Older

Anthony Simone, MD; John Herald, MD; Aiyu Chen, MPH; et al

Research Letter | October 4, 2021

ONLINE FIRST

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2784800

Table 1. Incidence Rates and Rate Ratios of Myocarditis in Vaccinated Individuals Compared With Control Groups

Variable	Myocarditis cases, No.	No. of at-risk individuals	Follow-up time, person-days	Incidence over a 10-d observation period per 1 million individuals (95% CI)	Incidence rate ratio (95% CI)	*P* value
Compared with individuals who did not receive the COVID-19 mRNA vaccine						
Unexposed[a]	75[b]	1 577 741	343 947 538	2.2 (1.7-2.7)		
0-10 d After dose 1	2	2 392 924	23 929 240	0.8 (0.2-3.3)	0.38 (0.05-1.40)	.15
0-10 d After dose 2	13	2 236 851	22 368 510	5.8 (3.4-10)	2.7 (1.4-4.8)	.004
Compared to the same cohort during a 10-d period 1 y prior to vaccination[c]						
During a 10-d observation period 1 y prior to dose 1	2	2 392 924	23 929 240	0.8 (0.2-3.3)		
0-10 d After dose 1	2	2 392 924	23 929 240	0.8 (0.2-3.3)	1.0 (0.1-13.8)	>.99
During a 10-d observation period 1 y prior to dose 2	4	2 236 851	22 368 510	1.8 (0.7-4.8)		
0-10 d After dose 2	13	2 236 851	22 368 510	5.8 (3.4-10)	3.3 (1.0-13.7)	.03

- 15 cases of myocarditis among the 2,392,924 Kaiser Permanente Southern California members who received at least 1 dose of the mRNA vaccines w/in 6 months of follow up
- 1 case per 172,414 fully vaccinated individuals
- Relative ratio of 2.7 compared with unvaccinated individuals

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2784800

Table 2. Case Description and Clinical Course[a]

Patient No.	Demographics[b]	Days to chest pain onset	ECG	Troponin I peak, ng/mL	Evaluation of CAD	LVEF on echo, %	LOS, d
1	18-25 y, White man	7	Diffuse ST elevation	8.10	No CT evidence of CAD	55-60	3
2	18-25 y, White man	5	Inferolateral T wave inversion	8.87[c]	No CT evidence of CAD	55-60	2
3	18-25 y, White man	5	Sinus tachycardia, no ischemic changes	1.59[c]	No CT evidence of CAD	60-65	3
4	26-40 y, White man	3	No ischemic changes	2.50	Normal coronaries on cardiac catheterization	60-65	3
5	26-40 y, Hispanic man	3	Diffuse ST elevation	1.53[c]	Normal coronaries on cardiac catheterization	55-60	1
6	26-40 y, White man	3	Diffuse ST elevation	17.12[c]	Normal coronaries on cardiac catheterization	45, Global hypokinesis	3
7	18-25 y, White man	4	Diffuse ST elevation	5.00	No cardiac catheterization or CT performed	60-65	2
8	18-25 y, Hispanic man	2	Diffuse ST elevation	11.79	No CT evidence of CAD, MRI with myopericarditis	50-55	3
9	18-25 y, White man	3	No ischemic changes	7.37	No CT evidence of CAD	55-50	5
10	26-40 y, Hispanic man	1	No ischemic changes	2.98	Normal coronaries on cardiac catheterization	60-65	3
11	26-40 y, man, unknown ethnicity	3	Diffuse ST elevation	32.30	No CT evidence of CAD	55-60	3
12	26-40 y, White man	1	Diffuse ST elevation	6.28	No cardiac catheterization or CT performed	55-60	1
13	18-25 y, Hispanic man	3	Diffuse ST elevation	16.9	No cardiac catheterization or CT performed	30-35, Global hypokinesis[d]	3
14	18-25 y, White man	1	Diffuse ST elevation	15.9[c]	No cardiac catheterization or CT performed	50-55	3
15	26-40 y, Asian man	2	Diffuse ST elevation	0.49[c]	No CT evidence of CAD	50-55	3

Editorial

ONLINE FIRST FREE

October 4, 2021

COVID-19 Messenger RNA Vaccination and Myocarditis—A Rare and Mostly Mild Adverse Effect

Vinay Guduguntla, MD[1,2]; Mitchell H. Katz, MD[3,4]

» Author Affiliations | Article Information

JAMA Intern Med. Published online October 4, 2021. doi:10.1001/jamainternmed.2021.5634

All men aged <40 years, no prior cardiac history, discharged within 1-5 days (median 3) of conservative management

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2784801

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Safety of the BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Setting

- Vaccinated and control groups 884,828 persons
- Vaccination associated with an elevated risk of myocarditis (risk ratio, 3.24; 95% confidence interval [CI], 1.55 to 12.44)
- SARS-CoV-2 infection associated with substantially increased risk of myocarditis (risk ratio, 18.28; 95% CI, 3.95 to 25.12) and of additional serious adverse events, including deep-vein thrombosis, pulmonary embolism, myocardial infarction, intracranial hemorrhage, and thrombocytopenia

DOI: 10.1056/NEJMoa2110475

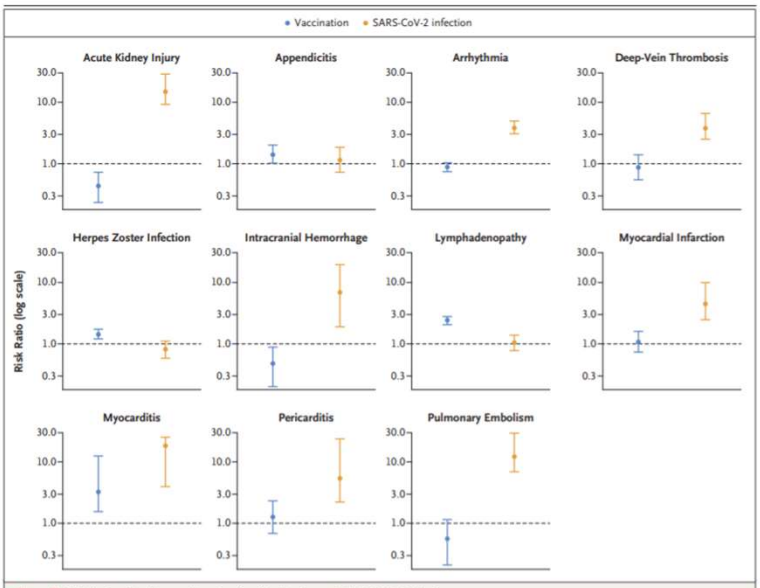


Figure 3. Risk Ratios for Adverse Events after Vaccination or SARS-CoV-2 Infection.
Estimated risk ratios for adverse events after vaccination or SARS-CoV-2 infection are shown. The risk ratio on the y axis is presented on a logarithmic scale to facilitate comparison of both increased and decreased risk. I bars indicate 95% confidence intervals.

DOI: 10.1056/NEJMoa2110475

Myocarditis: classic, MIS-C, and vaccine - associated

- Pre-print, retrospective cohort study, all patients hospitalized at Emory aged <21 years with classic viral myocarditis from 2015-2019, MIS-C myocarditis from 3/2020-2/2021 and COVID-19 vaccine-related myocarditis from 5/2021-6/2021
- 201 total, 43 with classic myocarditis, 149 MIS-C myocarditis, and 9 COVID-19 vaccine-related myocarditis
- 93% (139/149) with MIS-C myocarditis and 100% of patients with COVID-19 vaccine-related myocarditis had normal LVEF at the time of discharge compared to 70% (30/43) of classic myocarditis group (p<0.001)

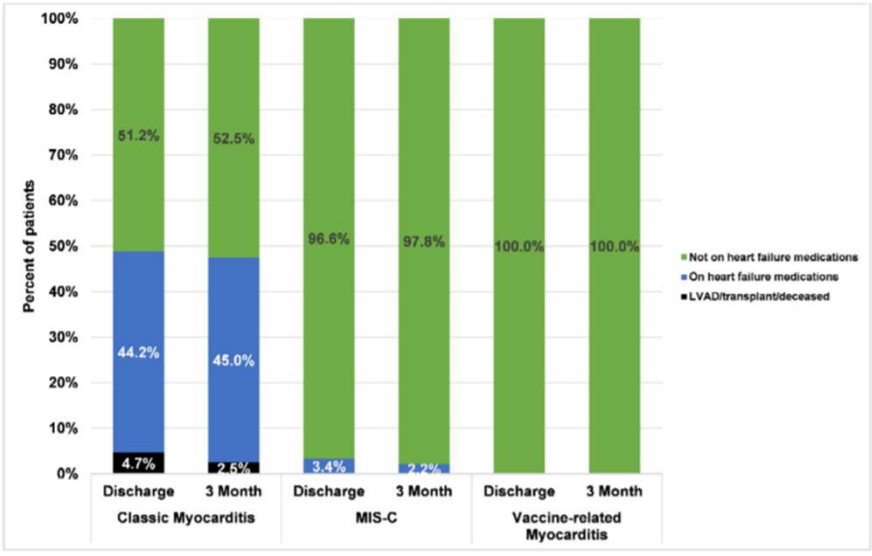
https://www.medrxiv.org/content/10.1101/2021.10.05.21264581v1

Multisystem Inflammatory Syndrome in Children (MIS-C)

Multisystem Inflammatory Syndrome in Children (MIS-C)

- An individual aged <21 years presenting with fever*, laboratory evidence of inflammation**, and evidence of clinically severe illness requiring hospitalization, with multisystem (≥2) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic or neurological); AND
- No alternative plausible diagnoses; AND
- Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or exposure to a suspected or confirmed COVID-19 case within the 4 weeks prior to the onset of symptoms.

Figure 2: Comparison of discharge outcomes and three month outcomes among those with classic myocarditis, multisystem inflammatory syndrome in children (MIS-C), or COVID-19 vaccine-related myocarditis.



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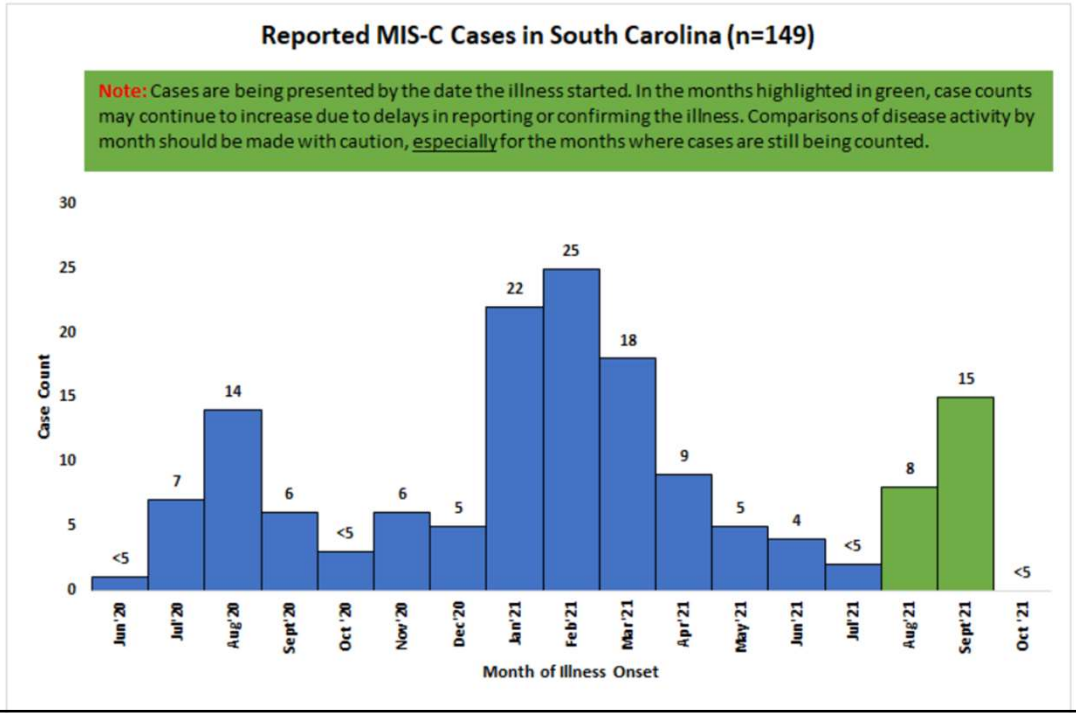


- Overview
- Who are the vulnerable groups?
- How long does natural immunity last?
- How long does immunity from the vaccines last?
- Is it beneficial to get vaccinated after recovery from COVID-19?
- What is the current evidence for boosters?
- What is the status for children in terms of vaccination and infection?
- What is new in terms of treatment?

What is new in terms of treatment?

- Monoclonal antibodies
- Dexamethasone
- Remdesivir
- Tocilizumab/Baricitinib
- Molnupiravir

Molnupiravir

- Oral
- Ribonucleoside analog
- Inhibits the replication of SARS-CoV-2

Molnupiravir – MOVe-OUT

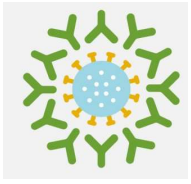
- Randomized, placebo-controlled, double-blind, multisite trial
- End points: Hospitalization and/or Death from time of enrollment through 29 days
- 775 pts, 18 yo or older
- Mild to moderate COVID
- Less than 5day of symptoms
- At least 1 risk factor associated with poor disease outcome
- Excluded HD/eGFR <30ml/min, HIV with VL>50 or AIDS defining illness w/in 6mo; hx of hep b/c with cirrhosis, ESLD, HCC, AST/ALT >3x ULN; plt<100K

Molnupiravir – MOVe-OUT

- Compared 200mg; 400mg; 800mg of molnupiravir BID for 5 days to placebo
- Interim analysis: 775pts (Molnu:385, Placebo:377)
- Hospitalization/Death: 7.5% vs 14.1% (0 deaths vs 8 deaths)
- Delta, Gamma, Mu strains accounted for 80%
- Under FDA EUA evaluation

Costs

- Molnupiravir ~$700 for 5-day course



- Monoclonal antibodies ~$1,250-$2,100 per infusion

- Vaccine ~$20/dose

COVID-19 hospitalizations

October 8, 2021

250 Hospitalized
30 Vaccinated (12%)
220 Unvaccinated (88%)

79 ICU
9 Vaccinated (11%)
70 Unvaccinated (89%)

49 Ventilated
3 Vaccinated (6%)
46 Unvaccinated (94%)

Combined data from all 11 Prisma Health hospitals treating COVID-19 patients in its Columbia and Greenville, S.C. markets. Percentages rounded.

Get Vaccinated

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Photo by Greg Shield

Thank you for attending this webinar!

COVID-19 – Where We are and the Path Ahead for Staff and Patients

October 13, 2021

The National Capacity Building Project is a project of the Center for Victims of Torture: www.cvt.org

More resources are available at www.healtorture.org.

The CENTER for VICTIMS of TORTURE
National Capacity Building Project