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

October 13, 2021

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

Edwin Hayes, MD
Presenters

Eugene Augusterfer, LCSW

Poll

Photo by Greg Sheld
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?
• What is new in terms of treatment?
• Overview
  • Who are the vulnerable groups?
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  • What is the current evidence for boosters?
  • Is it beneficial to get vaccinated after recovery from COVID-19?
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  • What is new in terms of treatment?
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 |

![Graph showing new reported COVID-19 cases with a significant decrease in recent months]
**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)**

Variant cases estimated using proportion found in sequences analysed by COG UK

Source: BBC analysis of COG-UK and gov.uk data

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The number of **people** that **one sick person** will infect (on average) is called $R_0$. Here are the maximum $R_0$ values for a few viruses.
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, DVM¹; Johanna Vostok, MPH²; Hillary Johnson, MPH⁵; Meagan Burns, MPH³; Radhika Gharapure, DVM¹; Samira Sani, DrPH⁴; Rebecca T. Sabo, MPH⁴; Noemi Hall, PhD³; Anne Foreman, PhD³; Petra L. Schubert, MPH⁴; Glen R. Gallagher, PhD⁴; Timelia Fink¹; Lawrence C. Madoff, MD⁵; Stacey B. Gabriel, PhD⁴; Bronwyn MacInnis, PhD³; Daniel J. Park, PhD³; Katherine J. Siddle, PhD³; Vaira Hank, MS⁶; Deirdre Arvidson, MSN⁷; Taylor Brock-Fisher, MS⁶; Molly Dunn, DVM³; Amanda Keams⁸; A. Scott Laney, PhD³ (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

[Diagram showing the number of cases associated with large public gatherings, with a peak around the 19th of July.]
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 Cecilia Smith-Schoenwalder | July 27, 2021, at 5:05 p.m.
FDA Approves First COVID-19 Vaccine
Approval Signifies Key Achievement for Public Health

For Immediate Release: August 23, 2021

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 (ko-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...
New reported cases

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>All time</td>
<td>Last 90 days</td>
</tr>
</tbody>
</table>

![Graph showing new reported cases](image)

- 7-day average

200,000 cases

100,000
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.
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• What is the status for children in terms of vaccination and infection?

• What is new in terms of treatment?
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)
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%

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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 Arif, MD; Robert B. Gunier, PhD; Ramachandran Thiruvengadam, MD; Stephen Rauch, MPH; Alexey Kholin, MD; Paola Roggero, PhD; Federico Prelumo, PhD; Marynéa Silva do Vale, MD; Jorge Arturo Cardona-Pérez, MD; Nerea Maiz, PhD; Irene Cetin, MD; Valeria Savasi, PhD; Philippe Delavalle, PhD; Sarah Rae Easter, MD; Joanna Sichitu, MD; Constanza P. Soto Correa, MD; Ernawati Ernawati, PhD; Mohak Mhatre, MD; Jagjit Singh Teji, MD; Becky Liu, MBBS; Carla Capelli, MD; Manuela Oberto, MD; Laura Salazar, MD; Michael G. Gravett, MD; Paolo Ivo Cavoretto, PhD; Vincent Bizzoz Nachinah, MD; Hadira Galadanci, MSc; Daniel Coss, PhD; Adejumoke Idowu Ayedra, MD; Loic Sentilhes, PhD; Babagana Bako, MD; Monica Savorani, MD; Hélia Cosa, PhD; Perla K. Garcia, MD; Saturday Etuk, MD; Roberto Cassale, MD; Sherief Abd-Elsalam, PhD; Satoru Ikemune, PhD; Muhammad Raffi Aminu, MD; Carmen Vecchiarelli, MD; Eduardo A. Duro, MD; Mustapha Ado Usman, MBBS; Yetunde John-Adonola, PhD; Ricardo Nieto, MD; Enrico Ferrazzi, MD; Zulfikar A. Bhutta, PhD; Ana Langer, MD; Stephen H. Kennedy, MD; Aris T. Papageorgiou, MD
• 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)

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.
• Overview
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HOW THE mRNA COVID-19
VACCINE PROTECTS YOU

First, your body makes a bunch of antibodies to fight off the virus. Let’s call them archers.

After about 4 weeks, those archers start to disintegrate.

But never fear!

The vaccine has been training your body how to make even better archers!

And these new super archers defend against severe disease ... for years!

The end!
### Predictors of Nonseroconversion after SARS-CoV-2 Infection

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>SARS-CoV-2 antibody positive, n = 46</th>
<th>SARS-CoV-2 antibody negative, n = 26</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y (median IQR)</td>
<td>40 (37-43)</td>
<td>35 (30-46)</td>
<td>0.03</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td>0.17</td>
</tr>
<tr>
<td>Male</td>
<td>38 (83%)</td>
<td>16 (62%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>18 (37%)</td>
<td>10 (38%)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>White</td>
<td>28 (61%)</td>
<td>20 (77%)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>7 (15%)</td>
<td>3 (12%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>7 (15%)</td>
<td>3 (12%)</td>
<td></td>
</tr>
<tr>
<td>Latine</td>
<td>4 (9%)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>RT-PCR off-culture samples</td>
<td></td>
<td></td>
<td>0.95</td>
</tr>
<tr>
<td>DIOS, % (median IQR)</td>
<td>5 (3-11)</td>
<td>5 (3-8)</td>
<td></td>
</tr>
<tr>
<td>Ct value, median (IQR)</td>
<td>24.5 (22-27)</td>
<td>35 (34-77)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Symptoms</td>
<td></td>
<td></td>
<td>0.21</td>
</tr>
<tr>
<td>Severity 0</td>
<td>1 (2%)</td>
<td>1 (4%)</td>
<td></td>
</tr>
<tr>
<td>Severity 1</td>
<td>5 (11%)</td>
<td>6 (23%)</td>
<td></td>
</tr>
<tr>
<td>Severity 2</td>
<td>35 (73%)</td>
<td>15 (58%)</td>
<td></td>
</tr>
<tr>
<td>Severity 3</td>
<td>7 (15%)</td>
<td>2 (8%)</td>
<td></td>
</tr>
<tr>
<td>Hospitalization</td>
<td>6 (13%)</td>
<td>2 (8%)</td>
<td>1.00</td>
</tr>
</tbody>
</table>
• Mild Covid
• Severe Covid (hospitalized)
• Vaccinated
• examined serum effect on various SARAS-CoV2 variants
  • Spike protein binding
  • Neutralization Potential
• Overview
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### 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 Curtman, 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*

**Table:**

<table>
<thead>
<tr>
<th>Article</th>
<th>Figures/Media</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>44,165 &gt;16 yrs</strong></td>
<td></td>
<td><strong>2,264 12-15 yrs</strong></td>
</tr>
<tr>
<td><strong>Overall vaccine efficacy at 6 mo was 91.3%</strong></td>
<td></td>
<td><strong>Vaccine efficacy against severe disease was 96.7%</strong></td>
</tr>
<tr>
<td><strong>gradual decline in efficacy over time</strong></td>
<td></td>
<td><strong>Not powered to give assess efficacy according to subgroup, however VE was consistently high in all groups</strong></td>
</tr>
</tbody>
</table>

DOI: 10.1056/NEJMoa210345
# Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine through 6 Months


<table>
<thead>
<tr>
<th>Efficacy Endpoint Subgroup</th>
<th>BNT162b2 (N=23,040)</th>
<th>Placebo (N=23,037)</th>
<th>VE (%)</th>
<th>(95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First severe COVID-19 occurrence after dose 1</td>
<td>n1=1</td>
<td>Surveillance Time (n2=30)</td>
<td>8.439 (22,505)</td>
<td>8.288 (22,435)</td>
</tr>
<tr>
<td>After dose 1 to before dose 2</td>
<td>n1=0</td>
<td>Surveillance Time (n2=6)</td>
<td>1.351 (22,505)</td>
<td>1.360 (22,435)</td>
</tr>
<tr>
<td>Dose 2 to 7 days after dose 2</td>
<td>n1=0</td>
<td>Surveillance Time (n2=1)</td>
<td>0.425 (22,170)</td>
<td>0.423 (22,070)</td>
</tr>
<tr>
<td>≥7 Days after dose 2</td>
<td>n1=1</td>
<td>Surveillance Time (n2=23)</td>
<td>6.663 (22,142)</td>
<td>6.505 (22,048)</td>
</tr>
</tbody>
</table>

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 ≥25 beats per minute, SpO2 ≤95% on room air at sea level, or PaO2/FiO2 <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.
- 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
• 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

• 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
• 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

• 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
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

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


- 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

### Emergency Department or Urgent Care Visits

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Vaccine Effectiveness (95% CI)</th>
<th>No. of Patients Unvaccinated/fully vaccinated</th>
<th>% Positive for SARS-CoV-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNT162b2</td>
<td>89% (85-91)</td>
<td>12,812/3,589</td>
<td>24.1/2.9</td>
</tr>
<tr>
<td>mRNA-1273</td>
<td>92% (89-96)</td>
<td>11,812/2,476</td>
<td>24.1/2.0</td>
</tr>
<tr>
<td>Ad26.COV2.S</td>
<td>73% (69-82)</td>
<td>8,461/456</td>
<td>26.0/6.4</td>
</tr>
</tbody>
</table>

### Hospitalization

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Vaccine Effectiveness (95% CI)</th>
<th>No. of Patients Unvaccinated/fully vaccinated</th>
<th>% Positive for SARS-CoV-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNT162b2</td>
<td>87% (85-90)</td>
<td>20,406/8,500</td>
<td>18.1/1.9</td>
</tr>
<tr>
<td>mRNA-1273</td>
<td>93% (89-97)</td>
<td>20,406/6,374</td>
<td>18.1/1.5</td>
</tr>
<tr>
<td>Ad26.COV2.S</td>
<td>68% (62-75)</td>
<td>10,761/707</td>
<td>18.6/4.2</td>
</tr>
</tbody>
</table>
Effectiveness of Covid-19 Vaccines in Ambulatory and Inpatient Care Settings


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

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
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
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.

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

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

Considerations in boosting COVID-19 vaccine immune responses
• Overview
• Who are the vulnerable groups?
• How long does natural immunity last?
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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; Kevin B. Spicer, MD, PhD; Douglas Thoroughman, PhD; Connor Glick, MSc; Kathleen Winter, PhD

• 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
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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

<table>
<thead>
<tr>
<th>Age Group</th>
<th>under 10</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80 &amp; older</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/24/21</td>
<td>7/24/21</td>
<td>...</td>
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</tbody>
</table>

**Count Cases Suppressed**

- 540
- 1,390
- 1,854
- 1,773
- 1,370
- 1,470
- 1,250
- 1,658
- 1,042
- 1,421
- 762
- 1,260
- 493
- 1,002
- 263
- 615
- 190
- 335

**Case Rate by Age per 100k by Week**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>under 10</th>
<th>10-19</th>
<th>20-29</th>
<th>30-39</th>
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**% Change in Cases**

- 157.4%
- 52.2%
- 7.3%
- 32.8%
- 30.4%
- 66.4%
- 103.2%
- 117.3%
- 230.6%

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

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**Count Hospitalizations Suppressed**

- 16
- 6
- 5
- 6
- 0
- 7
- 23
- 11
- 23
- 28
- 52
- 49
- 14
- 12
- 44

**Hospitalization Rate by Age per 100k by Week**

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**% Change in Hospitalization Rate by Age**

- 300.0%
- 70.2%
- 12.9%
- 17.7%
- 53.8%
- 10.3%
- 36.9%
- 31.2%
- 53.4%
- 48.7%
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

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/27848

- 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/27848
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
• 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
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.

https://www.medrxiv.org/content/10.1101/2021.10.05.21264581v1
• 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 5 day 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 6 mo; 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: 775 pts (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%)

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

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


Get Vaccinated
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.