



# COVID Epidemiology

**Jim Allen, MD**

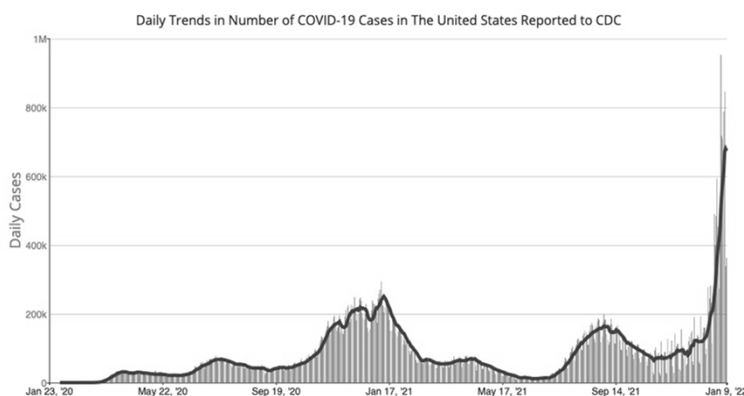
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**MedNet21**  
Center for Continuing Medical Education

**THE OHIO STATE UNIVERSITY**  
WEXNER MEDICAL CENTER

## Interpreting the data: Case numbers

- Single day
  - Not all states report daily
  - People often wait until after the weekend to get tested
- 7-day moving averages
  - More reflective of trends



No reports on:

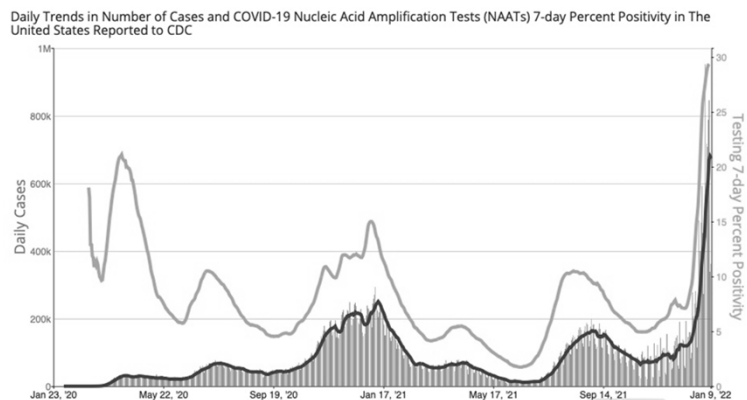
- December 23, 24, 25, & 26
- December 31, January 1, & 2

## The problem with case numbers data

- Always an underestimate
  - Not everyone gets tested
  - Home self-read tests are not reported
- Some geographic areas less accurate than others
  - Regional variation in test availability
  - Regional variation in culture of testing

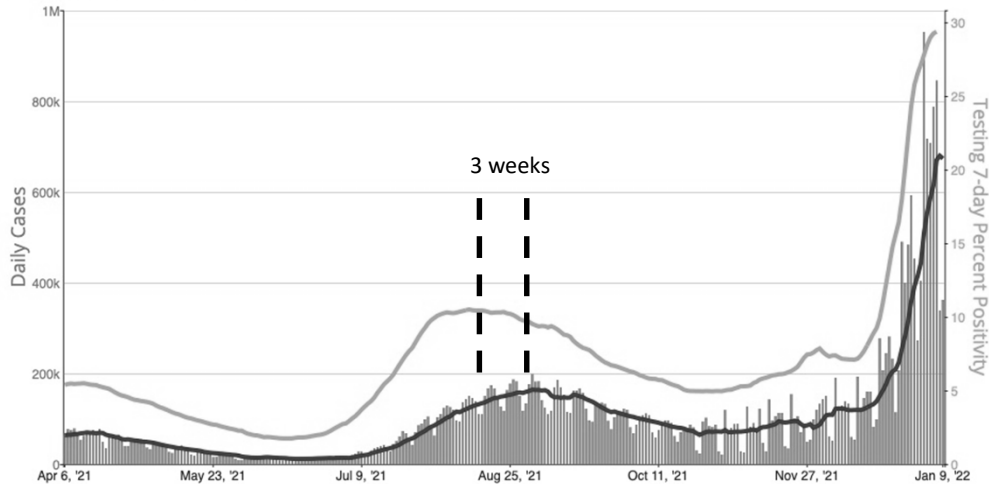
## Testing percent positivity data

- Correlates with surges
- Begins to rise 1-3 weeks before surges begin
- Can be affected by asymptomatic screening tests:
  - Pre-procedure testing
  - Employee screening



## Interpreting the data: Deaths peak 3-4 weeks after cases

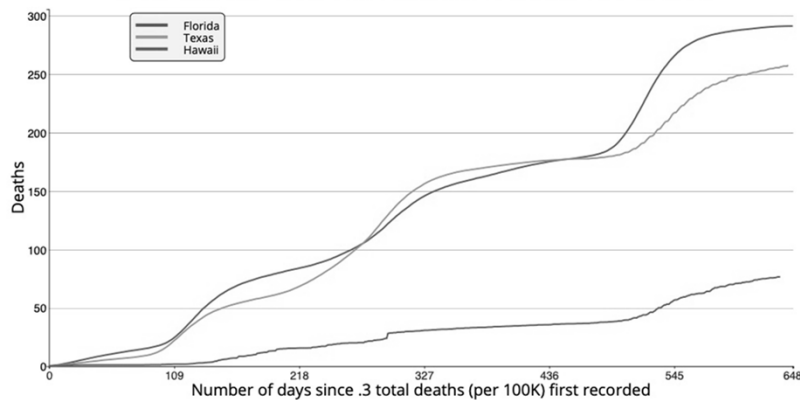
Daily Trends in Number of Cases and COVID-19 Nucleic Acid Amplification Tests (NAATs) 7-day Percent Positivity in The United States Reported to CDC



## Interpreting the data: Deaths per 100,000 allow better comparisons

Cumulative deaths attributed to Covid-19, reported to CDC, in FL, TX, and HI

Cumulative deaths (per 100K) by number of days since .3 total deaths (per 100K) first recorded



## The problem with case death data

- Reliance on death certificates
  - Physicians often do not know circumstances of death when patients die at home
  - If patients are not tested before death, COVID diagnosis goes unknown
  - Physicians sometimes purposefully do not list COVID
- Coroners do not always test for COVID

## Interpreting the data: Hospitalizations

United States | All Ages

**3,852,295**  
Total Admissions  
Aug 01, 2020 - Jan 08, 2022

**18,577**  
Current 7-Day Average  
Jan 02, 2022 - Jan 08, 2022

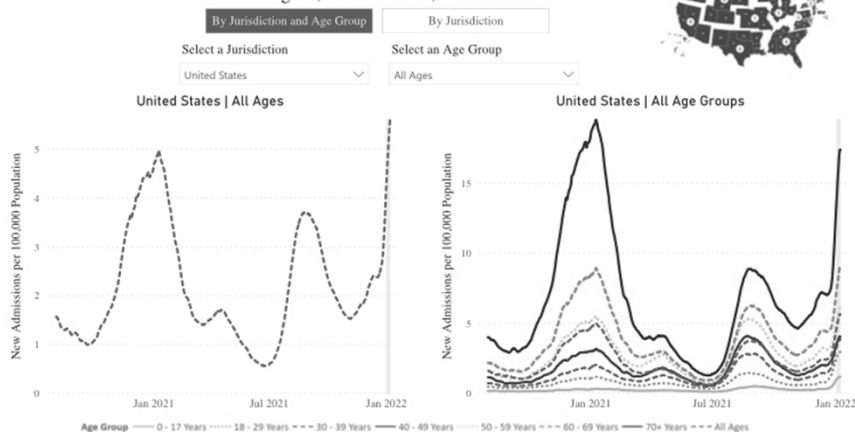
**14,004**  
Prior 7-Day Average  
Dec 26, 2021 - Jan 01, 2022

**18,577**  
Peak 7-Day Average  
Jan 02, 2022 - Jan 08, 2022

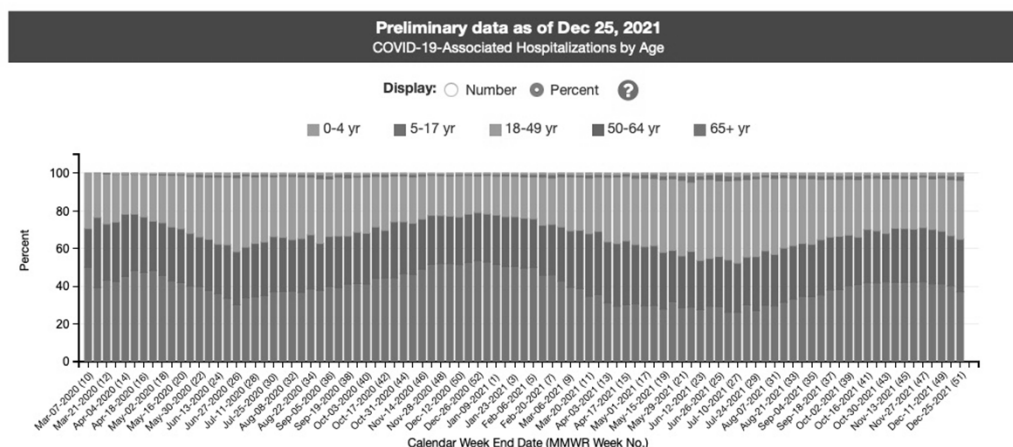
**+32.7%**  
Percent change from prior 7-day avg. of Dec 26, 2021 - Jan 01, 2022

**0.0%**  
Percent change from peak 7-day avg. of Jan 02, 2022 - Jan 08, 2022

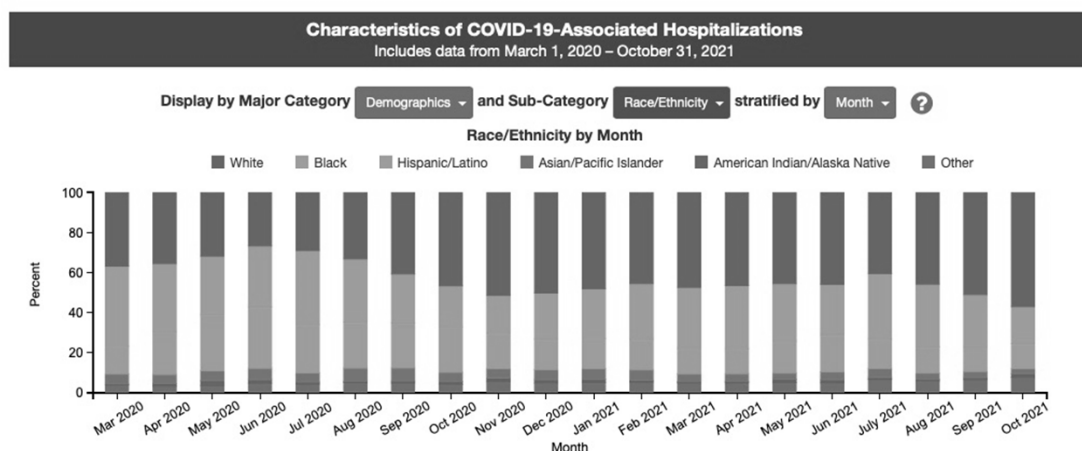
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, United States  
Aug 01, 2020 - Jan 08, 2022



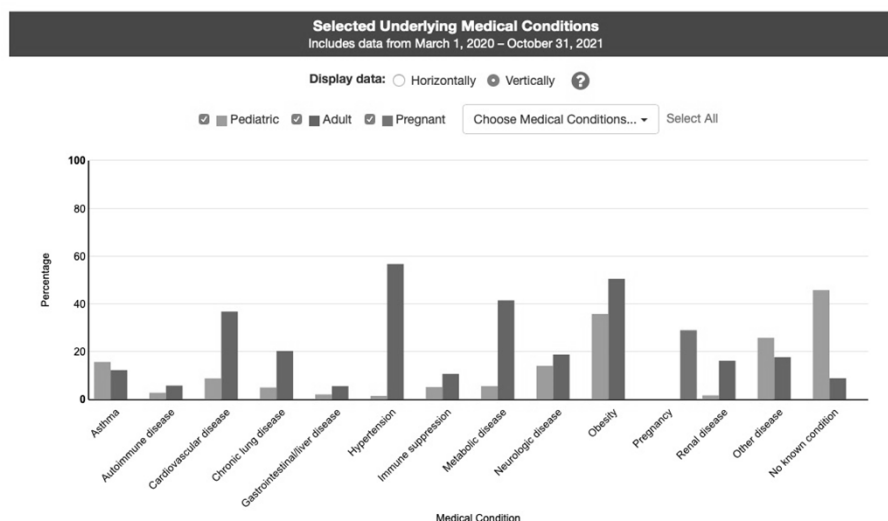
## During surges, the elderly comprise a larger percentage of hospitalizations



## During surges, minorities comprise a lower percentage of hospitalizations

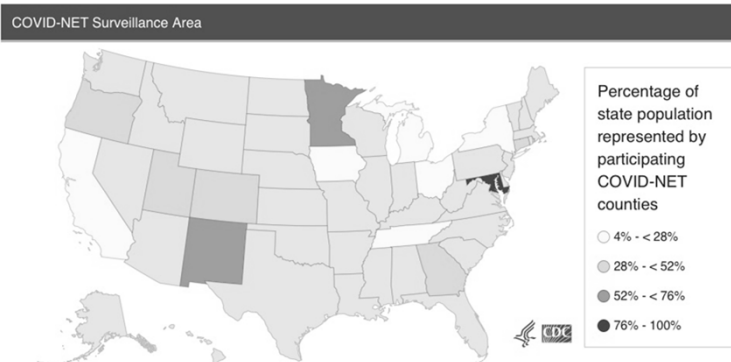


## Hypertension, obesity, diabetes, and cardiovascular disease are the greatest risks



## The problem with hospitalization data

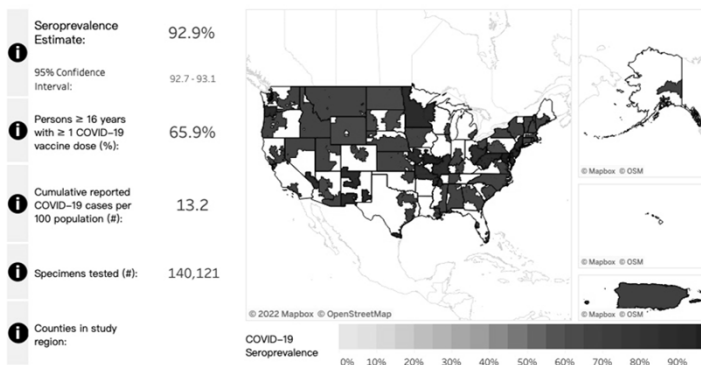
- Routine screening picks up asymptomatic patients during non-COVID hospitalizations
- CDC COVID-NET surveillance sample is small and results are based on calculations



## Blood donor seroprevalence program

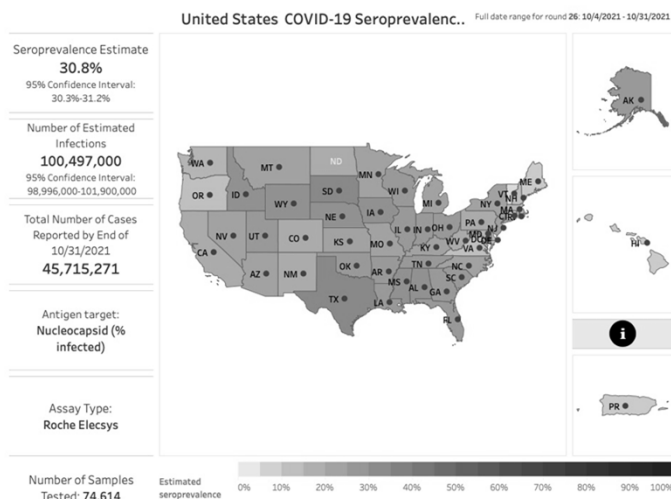
- Random testing of donated blood for COVID antibodies
- Detects antibodies from infection and from vaccination
- Blood donors are not representative of the U.S. population as a whole

October 2021 studywide (all regions) combined infection-induced seroprevalence estimates



## Commercial lab seroprevalence program

- Random testing of blood drawn for commercial lab testing
- Only detects antibodies from past infection (not vaccination)
- People getting blood tests are not representative of the U.S. population as a whole



## The bottom line...

- No epidemiologic data set is perfect
- Each variant has different epidemiology
- Know where to find your state and county data
- Trends are important
- Testing percent positivity increases predict surges
- Case number increases predict hospital utilization



## SARS-CoV-2 Vaccination

**Michael Haden, MD**

*Assistant Professor of Medicine, Division of Infectious Diseases  
The Ohio State University Wexner Medical Center  
Medical Director of Clinical Epidemiology - University East Hospital*



## Available SARS-CoV-2 Vaccines

- mRNA (preferred)
  - Pfizer-BioNTech
  - Moderna
- Adenovirus vector
  - Johnson & Johnson's Janssen

## mRNA Vaccines

- Have been studied for decades
- Rapid, inexpensive and scalable manufacturing
- First approved use was against SARS-CoV-2
  - Pfizer-BioNTech
  - Moderna

## mRNA Vaccines

- Lab developed mRNA encoding SARS-CoV-2 spike protein
- Dendritic cells (antigen presenting cells) phagocytize spike protein and present to T and B cells
  - T cells: immediate immunity
  - B cells: humoral (antibody), future immunity
- Given as 2 dose primary series, followed by booster
  - 3<sup>rd</sup> dose included in primary series for immunocompromised

## mRNA Vaccines

- No live virus
- Does not enter nucleus of the cell
- Preferred SARS-CoV-2 vaccine both for efficacy and lower side effect profile

## mRNA Vaccines – Adverse Reactions

- Pain, redness and swelling at injection site
- Headache, myalgias
- Fatigue
- Fever, chills
- Nausea
- Rare cases of myocarditis and pericarditis in adolescents

## Pfizer-BioNTech

- FDA approved for ages 16 years and older
- Emergency Use Authorization for ages 5-15
- Primary series: 2 shots, 21 days apart
  - Immunocompromised: 3<sup>rd</sup> dose 28 days after 2<sup>nd</sup> dose
- Booster: 5 months after primary series
  - Age 16-17: Pfizer BioNTech only
  - Age 18 and older: Pfizer BioNTech or Moderna (Janssen is alternative)

## Moderna

- Emergency Use Authorization for age 18 and older
- Primary series: 2 doses, 28 days apart
  - Immunocompromised: 3<sup>rd</sup> dose 28 days after 2<sup>nd</sup> dose
- Booster: 5 months after completion of primary series
  - Pfizer or Moderna preferred
  - Janssen is alternative

## Viral Vector Vaccine

- Recombinant, replication incompetent adenovirus vector
- Encodes SARS-CoV-2 spike protein
- Not preferred for SARS-CoV-2 vaccination due to risk of serious adverse events
  - Thrombosis with thrombocytopenia syndrome
- Alternative use:
  - Allergy to components of, or adverse reaction to an mRNA vaccine
  - Limited access to other available vaccines

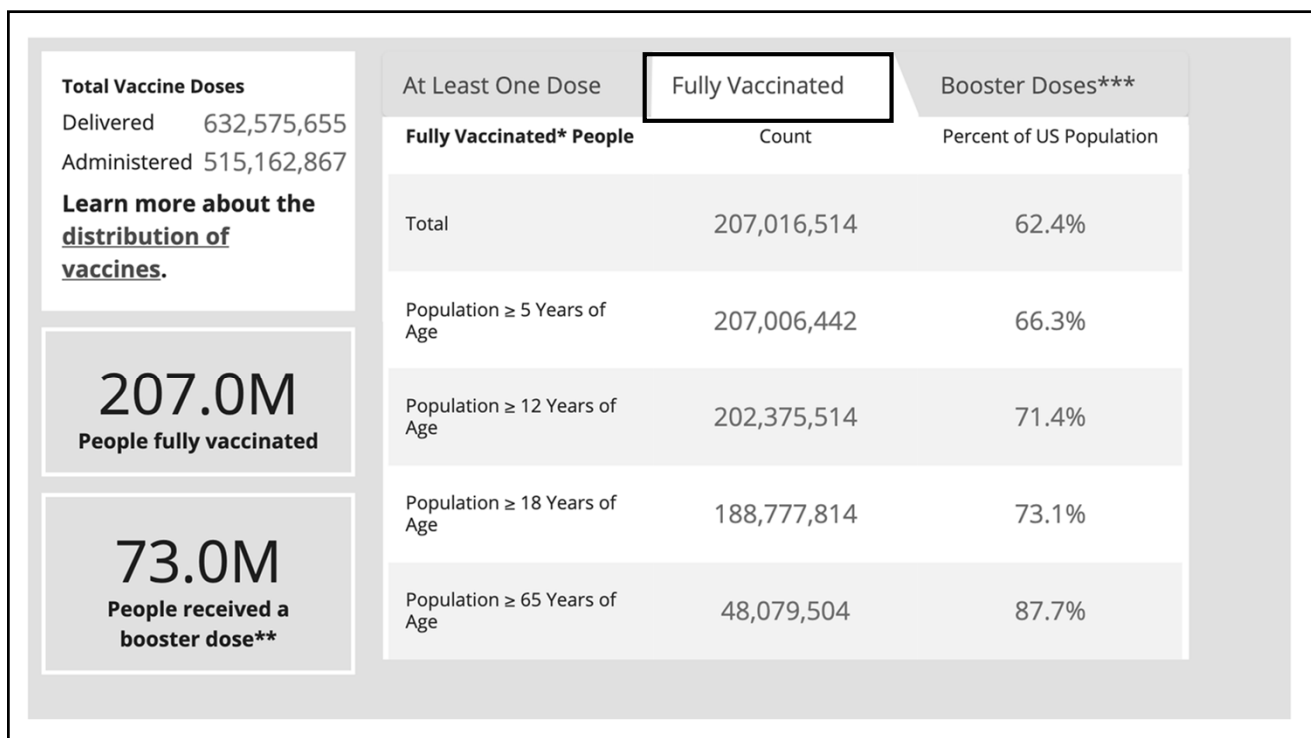
## Johnson and Johnson's Janssen

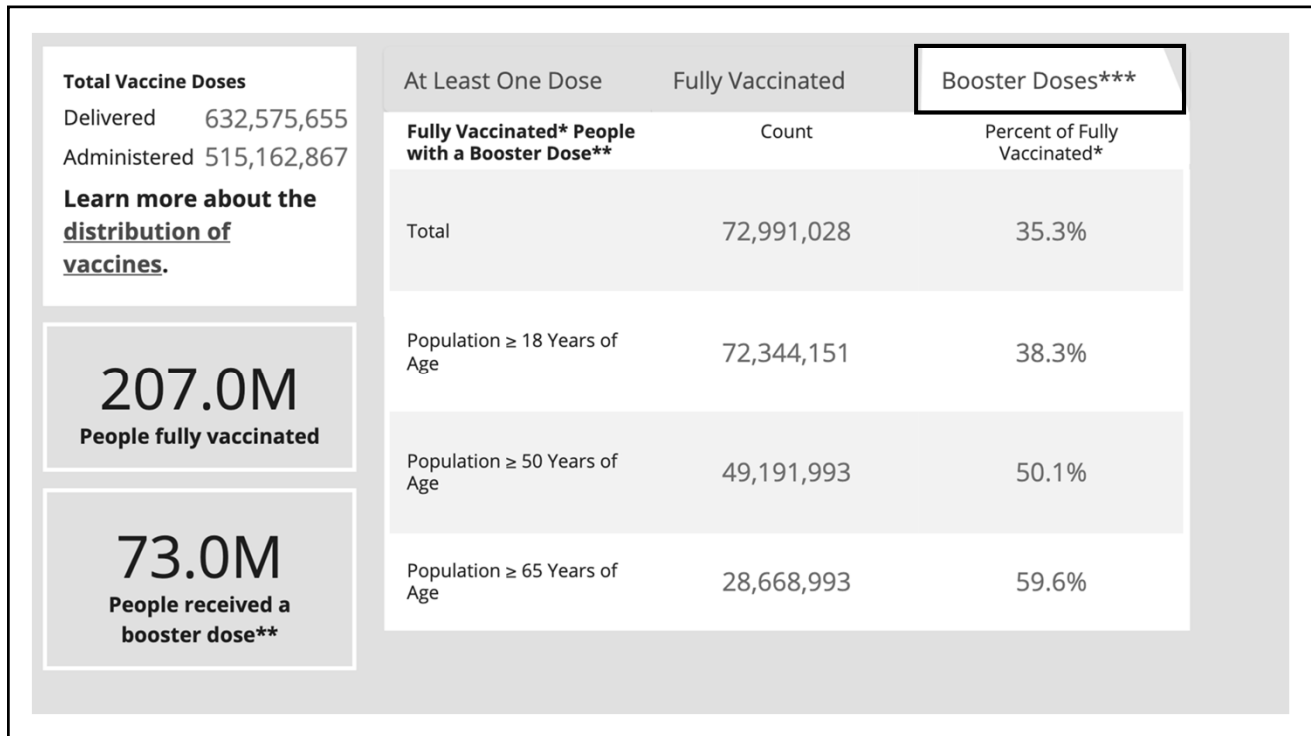
- Emergency Use Authorization for age 18 and older
- Primary series: 1 shot
- Booster: mRNA (Pfizer or Moderna) recommended 2 months after primary series

Pfizer-BioNTech <sup>[1]</sup>	Moderna <sup>[1]</sup>	Johnson & Johnson's Janssen <sup>[1,2]</sup>
<b>Ages Recommended</b> 5+ years old	<b>Ages Recommended</b> 18+ years old	<b>Ages Recommended</b> 18+ years
<b>Primary Series</b> 2 doses Given 3 weeks (21 days) apart <sup>[3]</sup>	<b>Primary Series</b> 2 doses Given 4 weeks (28 days) apart <sup>[3]</sup>	<b>Primary Series</b> 1 dose
<b>Booster Dose</b> Everyone ages 18 years and older should get a booster dose of either Pfizer-BioNTech or Moderna (COVID-19 vaccines) at least 6 months after the last dose in their primary series.  Teens 16-17 years old may get a Pfizer-BioNTech COVID-19 Vaccine booster at least 6 months after the last dose in their primary series.	<b>Booster Dose</b> Everyone ages 18 years and older should get a booster dose of either Pfizer-BioNTech or Moderna (COVID-19 vaccines) at least 6 months after the last dose in their primary series.	<b>Booster Dose</b> Everyone ages 18 years and older should get a booster dose of either Pfizer-BioNTech or Moderna (mRNA COVID-19 vaccines) at least 2 months after the first dose of J&J/Janssen COVID-19 vaccine. You may get J&J/Janssen <u>in some situations</u> .
<b>When Fully Vaccinated</b> 2 weeks after 2 <sup>nd</sup> dose	<b>When Fully Vaccinated</b> 2 weeks after 2 <sup>nd</sup> dose	<b>When Fully Vaccinated</b> 2 weeks after 1 <sup>st</sup> dose

# SARS-CoV-2 Vaccination

- Fully vaccinated defined as 2 weeks after completion of primary series



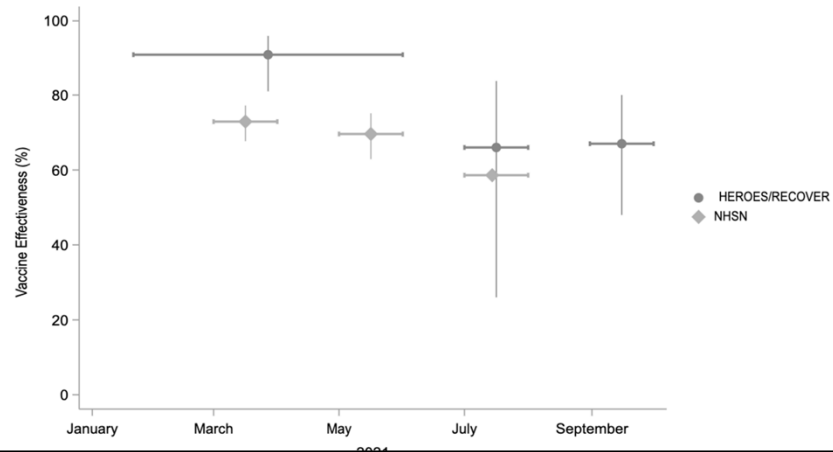


## Vaccine Efficacy

- Clinical Trial Data: Prevention of lab confirmed COVID-19:
  - Pfizer-BioNTech: 95%
  - Moderna: 94.1%
  - Janssen: 66.3%

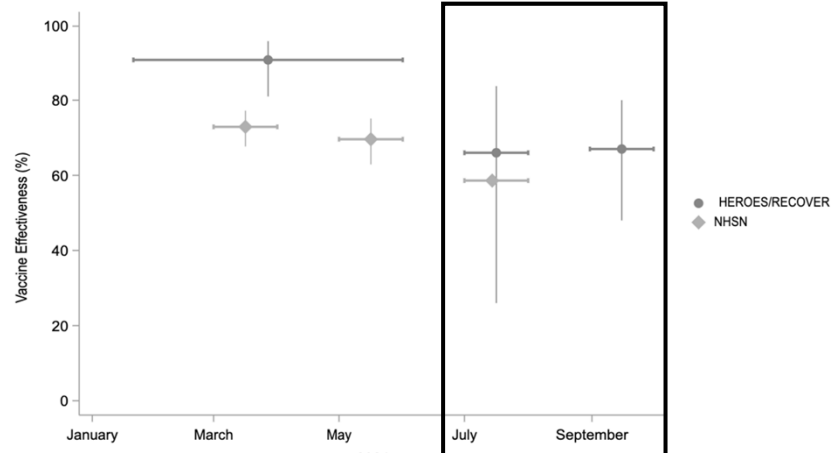
## Vaccine Effectiveness Against Infection Among Adults Ages 18 Years and Older

COVID-19 vaccines were less effective at preventing COVID-19 infection in July and August compared to earlier months. Time has passed since people got vaccinated, and Delta became the predominant variant during this time period.



## Vaccine Effectiveness Against Infection Among Adults Ages 18 Years and Older

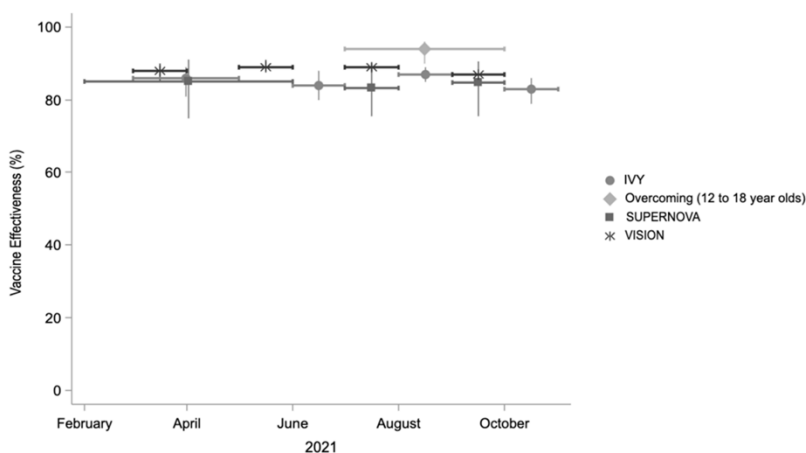
COVID-19 vaccines were less effective at preventing COVID-19 infection in July and August compared to earlier months. Time has passed since people got vaccinated, and Delta became the predominant variant during this time period.





## Vaccine Effectiveness Against Hospitalization (All Studies)

COVID-19 vaccines are protecting people from being hospitalized with COVID-19. The vaccines help protect against Delta and other variants and continue to prevent COVID-19 hospitalizations, even though many months have passed since some people got vaccinated.



## Risk Factors for Severe COVID-19 Outcomes Among Persons Aged $\geq 18$ Years Who Completed a Primary COVID-19 Vaccination Series — 465 Health Care Facilities, United States, December 2020–October 2021

Weekly / January 7, 2022 / 71(1);19–25

Among 1,228,664 fully vaccinated individuals:

- Only 2,246 developed COVID-19
- 327 of these were hospitalized, 189 with severe disease
- 36 deaths

## Omicron?

- Anticipate reduced protection from infection due to numerous changes in spike protein
- Vaccination continues to play a role in controlling spread, hospitalization and death
- Laboratory and epidemiologic studies are still needed

## SARS-CoV-2 Vaccination

*An ounce of prevention is worth a pound of cure*

## Summary

- Multiple vaccines widely available in the US
- Vaccines are safe and highly effective
- Even in setting of new SARS-CoV-2 variants and breakthrough infection, vaccines remain important tool in preventing spread, hospitalization and death



## Management Of COVID 19 In The Ambulatory Setting

**Randy Wexler, MD, MPH, FAAFP**

*Academic Vice Chair*

*Department of Family Medicine*

*The Ohio State University Wexner Medical Center*

## Symptoms

- Fever
- Cough
- Sore throat
- Malaise
- Myalgia
- Headache
- Loss of sense of taste or smell
- With Omicron, cough, headache, and sore throat without loss of sense of taste or smell are a common presentation

## Polymerase Chain Reaction (PCR) versus Antigen (Ag) Testing

- The Gold standard is PCR. With PCR a small sample of DNA is amplified making it easier to detect the desired pathogen in the sample.
- Ag testing is detection of viral surface proteins
- PCR testing is more sensitive than Ag in detecting coronavirus.
- The FDA has stated that the sensitivity of Ag tests may be decreased in the setting of Omicron. [SARS-CoV-2 Viral Mutations: Impact on COVID-19 Tests | FDA](#)
- PCR testing will be positive for more days over the course of an illness than Ag testing. This does not mean Ag testing is not useful, but it does mean the interpretation of a negative test should account for this.

## First Considerations

- Does the Patient need seen in person, or can they be managed by Telehealth?
- Outpatient the main treatment is supportive and assessing patients to see who is high risk and may benefit from monoclonal antibodies.
- It is important to advise the patient as to the need for isolation and provide information on how to do so as well as evaluate if others in the household need to quarantine.

## Isolation

- Monitor symptoms for progression
- Stay in a separate room from other household members if possible
- Use a separate bathroom, if possible.
- Improve home ventilation, if possible.
- Avoid contact with other members of the household and pets.
- Don't share personal household items, like cups, towels, and utensils.
- Wear a well-fitting mask when you need to be around other people.

[COVID-19 Quarantine and Isolation | CDC](#)

# Quarantine

## If You Were Exposed to Someone with COVID-19 (Quarantine)

### If you:

Have been boosted

**OR**

Completed the primary series of Pfizer or Moderna vaccine within the last 6 months

**OR**

Completed the primary series of J&J vaccine within the last 2 months

- Wear a mask around others for 10 days.

- Test on day 5, if possible.

*If you develop symptoms get a test and stay home.*

### If you:

Completed the primary series of Pfizer or Moderna vaccine over 6 months ago and are not boosted

**OR**

Completed the primary series of J&J over 2 months ago and are not boosted

**OR**

Are unvaccinated

- Stay home for 5 days. After that continue to wear a mask around others for 5 additional days.

- If you can't quarantine you must wear a mask for 10 days.

- Test on day 5 if possible.

*If you develop symptoms get a test and stay home*

<https://www.cdc.gov/media/releases/2021/s1227-isolation-quarantine-guidance.html?s=09>

# Triage

- When possible, patients with symptoms of COVID-19 should be triaged via telehealth visits to determine whether they require COVID-19-specific therapy and in-person care.
- Patients with dyspnea should be referred for an in-person evaluation by a health care provider and should be followed closely during the initial days after the onset of dyspnea to assess for worsening respiratory status.
- Management plans should be based on a patient's vital signs, physical exam findings, risk factors for progression to severe illness, and the availability of health care resources.
- Nonhospitalized Patients: General Management | COVID-19 Treatment Guidelines (nih.gov)

## Considerations For Who Needs To Be Seen In Person

- Dyspnea
- Chest Pain
- Mental Status Changes
- Low Pulse Ox (<94%, <90%)
- Pallor
- Underlying conditions that place the patient at risk such as those with cancer, solid organ transplant, or COPD (though this is not an inclusive list)

## Therapeutics

PATIENT DISPOSITION	PANEL'S RECOMMENDATIONS
Not Requiring Hospitalization or Supplemental Oxygen, As Determined by a Health Care Provider During an ED, In-Person, or Telehealth Visit	<p>Anti-SARS-CoV-2 mAb products are recommended for outpatients with mild to moderate COVID-19 who are at high risk of disease progression, as defined by the EUA criteria (treatments are listed in alphabetical order, and they may change based on circulating variants)<sup>a</sup></p> <ul style="list-style-type: none"> <li>• Bamlanivimab plus etesevimab; or</li> <li>• Casirivimab plus imdevimab; or</li> <li>• Sotrovimab</li> </ul> <p>The Panel recommends against the use of dexamethasone or other systemic glucocorticoids in the absence of another indication (AIII).<sup>b</sup></p>
Discharged From Hospital Inpatient Setting in Stable Condition and Does Not Require Supplemental Oxygen	<p>The Panel recommends against continuing the use of remdesivir (AlIIa), dexamethasone (AlIIa), or baricitinib (AlIIa) after hospital discharge.</p>
Discharged From Hospital Inpatient Setting and Requires Supplemental Oxygen <i>For those who are stable enough for discharge but who still require oxygen</i>	<p>There is insufficient evidence to recommend either for or against the continued use of remdesivir, dexamethasone, and/or baricitinib. Review the text below when considering the use of any of these agents after hospital discharge.</p>
Discharged From ED Despite New or Increasing Need for Supplemental Oxygen <i>When hospital resources are limited, inpatient admission is not possible, and close follow-up is ensured<sup>d</sup></i>	<p>The Panel recommends using dexamethasone 6 mg PO once daily for the duration of supplemental oxygen (dexamethasone use <b>should not</b> exceed 10 days) with careful monitoring for AEs (BII).<sup>c</sup></p> <p>There is insufficient evidence to recommend either for or against the use of remdesivir. When considering the use of remdesivir, review the text below for more information.</p> <p>The Panel recommends against the use of baricitinib in this setting, except in a clinical trial (AIII).</p>
<p><b>Rating of Recommendations:</b> A = Strong; B = Moderate; C = Optional  <b>Rating of Evidence:</b> I = One or more randomized trials without major limitations; IIa = Other randomized trials or subgroup analyses of randomized trials; IIb = Nonrandomized trials or observational cohort studies; III = Expert opinion</p>	

<sup>a</sup> In laboratory studies, some CDC SARS-CoV-2 VOC, VBM, or VOI that harbor certain mutations have reduced susceptibility to certain agents. However, the impact of these mutations on a patient's clinical response varies, as do the proportions of these variants in different geographic regions. See [AHS SARS-CoV-2 Monoclonal Antibodies](#) for more information. Updates on the distribution of bamlanivimab and etesevimab are available on the HHS Bamlanivimab/Etesevimab website.

<sup>b</sup> There is currently a lack of safety and efficacy data on the use of these agents in outpatients with COVID-19; using systemic glucocorticoids in this setting may cause harm.

<sup>c</sup> These individuals should receive oximetry monitoring and close follow-up through telehealth, visiting nurse services, or in-person clinic visits.

<sup>d</sup> In cases where resources (e.g., inpatient beds, staff members) are scarce, it may be necessary to discharge an adult patient and provide an advanced level of home care, including supplemental oxygen (whether patients are receiving oxygen at home for the first time or are increasing their baseline oxygen requirements), pulse oximetry, and close follow-up through visiting nurse services, telehealth, or in-person clinic visits.

**Key:** AE = adverse event; CDC = Centers for Disease Control and Prevention; ED = emergency department; EUA = Emergency Use Authorization; HHS = Department of Health and Human Services; mAb = monoclonal antibody; the Panel = the COVID-19 Treatment Guidelines Panel; PO = orally; VBM = variants being monitored; VOC = variants of concern; VOI = variants of interest

Nonhospitalized Adults: Therapeutic Management | COVID-19 Treatment Guidelines (nih.gov)

## Therapeutics For Those Who are High Risk

- Monoclonal Antibodies: With Omicron the predominant variant only Sotrovimab provides benefit.
- Pre-exposure Prophylaxis: Tixagevimab/cilgavimab
- Paxlovid (Nirmatrelvir and Ritonavir). Nirmatrelvir (Anti-viral) inhibits a SARS-CoV-2 protein to stop the virus from replicating. Ritonavir (P450 Inhibitor) slows down nirmatrelvir's breakdown to help it remain in the body for a longer period at higher concentrations.
  - Due to P450 action there are a lot drug interactions and dosage adjustments. <https://www.fda.gov/media/155071/download>
- Molnupravir is an anti-viral.

## High Risk Patients

- Cancer
- Chronic Kidney Disease
- Chronic Liver Disease
- Chronic Lung Disease
- Neurologic Conditions
- Diabetes
- Down's Syndrome
- Cardiac Disease
- HIV
- Immunosuppression
- Obesity
- Sickle Cell
- Pregnancy
- Solid Organ Transplant

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>



## Symptomatic Treatment – Non-Hospitalized

- Acetaminophen
- NSAID's
- Benzonatate
- Dextromethorphan
- Albuterol
- Inhaled Corticosteroids



## Inpatient Treatment of COVID-19

**Dustin Chase, MD, MBA, SFHM**

*Associate Professor of Clinical Medicine*

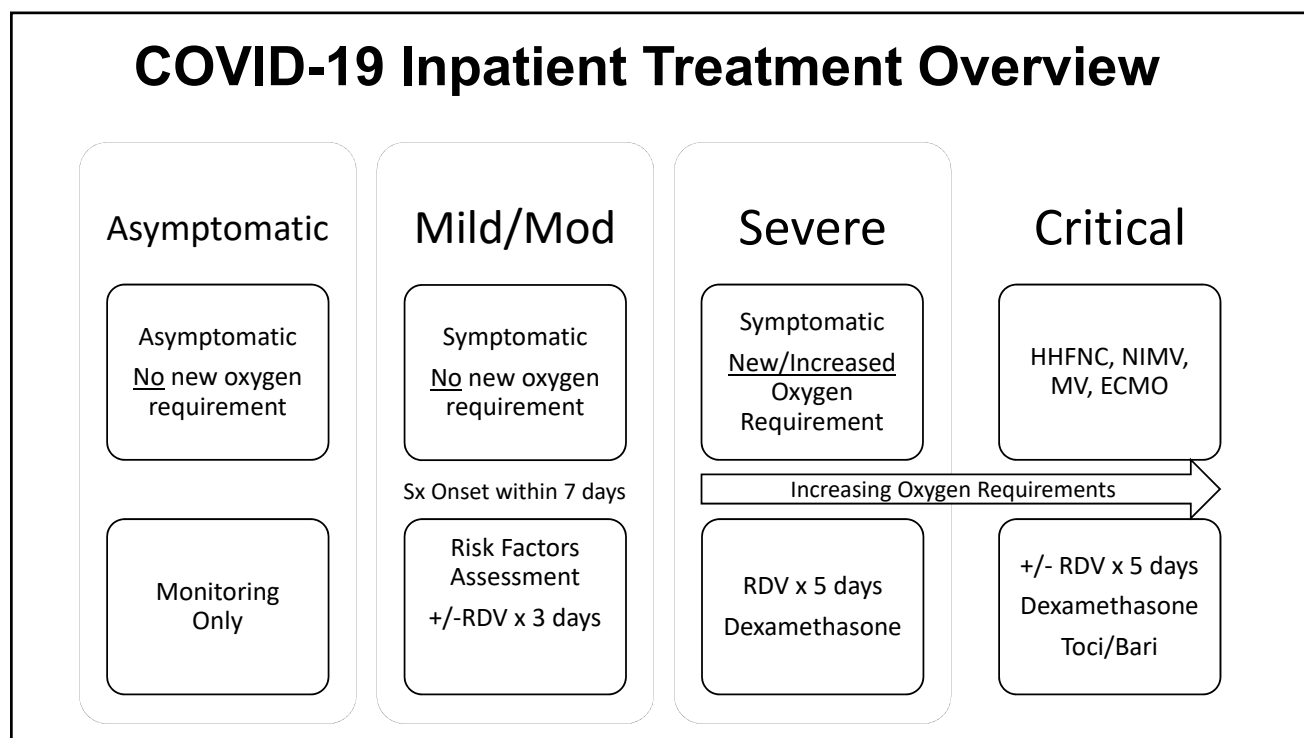
*Vice Chair of Inpatient Clinical Medicine*

*Clinical Operations Director, Division of Hospital Medicine*

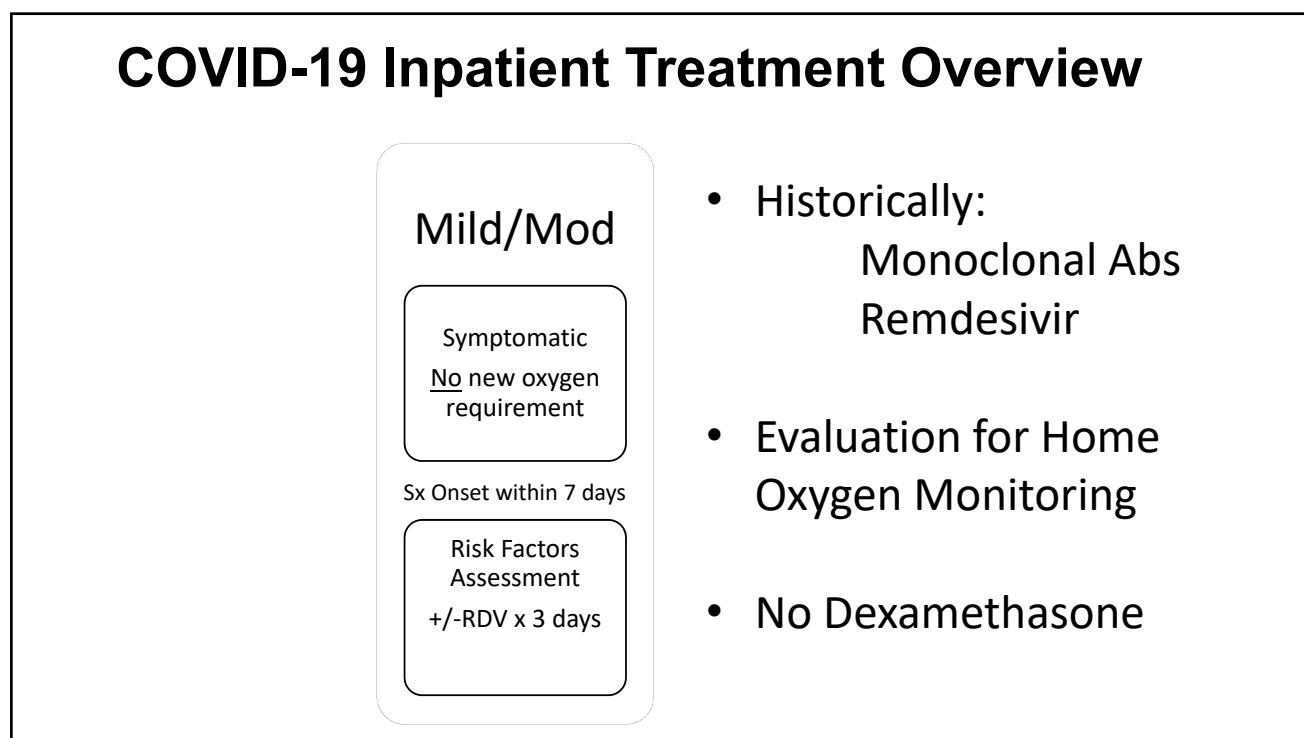
*Department of Internal Medicine*

*The Ohio State University Wexner Medical Center*

## COVID-19 Inpatient Treatment Overview



## COVID-19 Inpatient Treatment Overview



## COVID-19 Inpatient Treatment Overview

### PINETREE Trial (Outpatient)

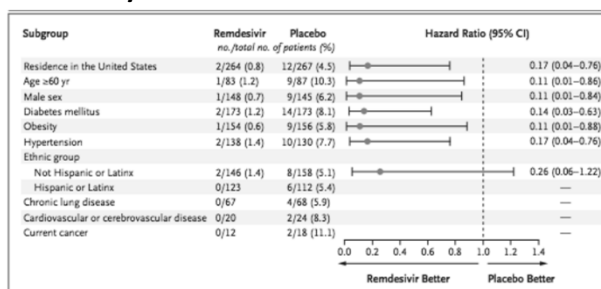
Mild/Mod

Symptomatic  
No new oxygen  
requirement

Sx Onset within 7 days

Remdesivir  
200mg IV Day 1  
100mg IV Day 2  
100mg IV Day 3

- Broader Usage of Remdesivir
- 87% Reduction in COVID-19 hospitalization or death at day 28



Gottlieb et al for the (PINETREE) Investigators. NEJM 2021 Dec 22.  
doi:10.1056/NEJMoa2116846. Online ahead of print.

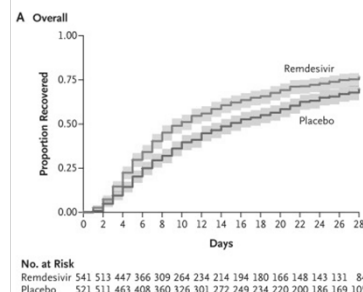
## COVID-19 Inpatient Treatment Overview

- Remdesivir 5 days for Severe
  - Median recovery 10 vs. 15 days
  - Mortality 6.7% vs. 11.9% at day 15
- 5 days as good as 10 days for most
- Dexamethasone (RECOVERY)
  - 6mg IV x 10 days
  - 17% lower mortality
- Discharge when patient ready

Severe

Symptomatic  
New/Increased  
Oxygen  
Requirement

RDV x 5 days  
Dexamethasone



BeigelJH, et al. ACTT-1 Study Group Members.  
Remdesivir for the Treatment of Covid-19 - Final  
Report. N Engl J Med. 2020 Nov 5;383(19):1813-  
1826. doi: 10.1056/NEJMoa2007764.

## COVID-19 Inpatient Treatment Overview

- Remdesivir
  - Lower Efficacy for Critically Ill (MV/ECMO)
  - Still utilized but evidence is weaker
- Dexamethasone
  - 6mg IV x 10 days
  - 34% lower mortality at 28 days
  - Consider DEXA-ARDS Dosing
    - 20mg IV x 5 days then 10mg x 5 days
      - ICU Mortality 19% vs 31% (noncovid)
      - Vent Free Days 12.3 vs. 7.5 (noncovid)
    - CoDEX Trial – vent free days 6.6 days vs 4.0

### Critical

HHFNC, NIMV,  
MV, ECMO

+/- RDV x 5 days  
Dexamethasone  
Toci/Bari

## COVID-19 Inpatient Treatment Overview

- Tocilizumab
  - One time dose but long half life
  - Presence of inflammation, CRP>75
  - More beneficial in rapidly progressive, early disease but carries risk of infection
  - Trend towards reduced mortality
- Baricitinib
  - 4mg daily dosing x 14 days
  - 44% mortality reduction at 60 days
  - Limited data

### Critical

HHFNC, NIMV,  
MV, ECMO

CRP>75  
Toci/Bari

## References

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## COVID and Travel

**Jim Allen, MD**

*Professor Emeritus, Department of Internal Medicine  
The Ohio State University Wexner Medical Center*



## First, the obvious...

- Delay traveling until you are vaccinated
- If you are vaccinated, get boosted before traveling
- Make sure your traveling companions are vaccinated
- Don't travel if you have COVID symptoms

## What Should You Pack?

- Rapid COVID test
- Extra face masks
- Hand sanitizer (< 12 ounces for TSA)
- Thermometer
- Oximeter
- Acetaminophen and/or NSAID
- Vaccine card
- Extra prescription medications

## Travel within the U.S.

- Check the websites first!
  - <https://covid.cdc.gov/covid-data-tracker/#datatracker-home>
  - Individual state & city department of health websites
- Car travel:
  - Consider packing lunch rather than restaurants
  - Wear mask whenever indoors and when outdoors in crowded areas
  - Keep hand sanitizer in the car
- Restaurants:
  - Check restaurant COVID policy for employees and guests
  - Visit at off-hours
  - Consider carry-out

## Vaccination & Masks Required Indoors



### Valid forms of vaccination proof include:

Valid Photo ID and

- Original, copy or picture of your CDC vaccination card
- or documentation from a healthcare provider
- or personal digital COVID-19 vaccine record issued by the State of California or by an approved private company
- or similar documentation issued by another State, local, or foreign governmental jurisdiction

For approved vaccine verification apps, visit



[sf.gov/VaxRequired](https://sf.gov/VaxRequired)



City and County of San Francisco

[sf.gov/GetVaccinated](https://sf.gov/GetVaccinated)



## New York City requires **you** to be vaccinated against COVID-19 to enter this business.

Those 5 years of age and older  
**must show proof of  
COVID-19 vaccination.**

To find out where to get a free COVID-19 vaccine,  
visit [nyc.gov/vaccinefinder](https://nyc.gov/vaccinefinder) or  
call **877-VAX-4NYC** (877-829-4692).



For more  
information, visit  
[nyc.gov/keytonyc](https://nyc.gov/keytonyc).



You have a right to be free  
from discrimination or  
harassment from businesses  
such as gyms and restaurants.  
Contact the NYC Commission  
on Human Rights at  
[nyc.gov/humanrights](https://nyc.gov/humanrights).

NYC may change recommendations  
as the situation evolves. 12.14.21

**NYC VACCINE FOR ALL:  
SAFE, FREE, EASY**

**NYC**

## Traveling to somewhere outside of the U.S.?

- Will the country let you in?
- Check the websites first!
  - <https://travel.state.gov/content/travel.html>
  - <https://www.cdc.gov/coronavirus/2019-ncov/travelers/index.html>
  - Government websites of countries you will be visiting
- COVID travel insurance often required for entry
- Rapid COVID or COVID PCR test < 24 or 48 hours prior to arrival
  - Retail self-read home tests not accepted
  - Many airports & pharmacies offer travel testing
  - Some countries require testing on arrival (bring cash!)
- Will you need a COVID certificate?





## Returning to the U.S.?

- Check the websites first!
  - <https://www.cdc.gov/coronavirus/2019-ncov/travelers/>
- Rapid COVID or COVID PCR within 1 day of return to U.S.
  - Retail self-read home tests not accepted
  - Some international hotels & airports offer testing
  - Home tests with telehealth video supervision accepted:
    - Abbott BinaxNOW
    - Ellume-AZOVA
    - Cue
    - Quered



## Minimizing COVID risks during air travel

- The airport is often riskier than the airplane
- In the airport:
  - Avoid busy travel days
  - Use hand sanitizer regularly
  - Maintain physical distancing whenever possible
  - Avoid airport restaurants and bars
- In the plane:
  - Turn on overhead air vent
  - Avoid or minimize eating/drinking
  - Wear a mask at all times



## Is It Safe To Travel?

### Traveler's Risk Factors:

- Age
- Obesity
- Diabetes
- Hypertension
- Cardiac disease
- Immunosuppression



### Travel Destination:

- Indoor crowds
- Restaurants
- Bars
- Outdoor crowds
- Cruises
- Hotel or Airbnb/VRBO
- Masking culture
- Vaccination culture