COVID-19 Updates

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COVID-19 Updates

• Variants
• Vaccines
• Therapeutics
COVID-19 Cases in the United States
Fig 8. United States: Number of COVID-19 Cases Added in Past Week for Children and Adults*
COVID-19 cases in children

Fig 6. United States: Number of Child COVID-19 Cases Added in Past Week*
AGE-ADJUSTED RATES OF COVID-19-ASSOCIATED HOSPITALIZATIONS BY VACCINATION STATUS IN ADULT AGES > 18 YEARS, JANUARY – DECEMBER 2021

Rate per 100,000 Population

Rate in Fully Vaccinated

Rate in Unvaccinated

Rate in Fully Vaccinated Persons

Rate in Unvaccinated Persons

Source: https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalizations-vaccination
### Variants

#### United States: 2/6/2022 – 2/12/2022 NOWCAST

<table>
<thead>
<tr>
<th>WHO label</th>
<th>Lineage #</th>
<th>US Class</th>
<th>%Total</th>
<th>95%PI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omicron</td>
<td>BA.1.1</td>
<td>VOC</td>
<td>73.2%</td>
<td>69.0-77.1%</td>
</tr>
<tr>
<td></td>
<td>B.1.1.529</td>
<td>VOC</td>
<td>22.9%</td>
<td>19.1-27.1%</td>
</tr>
<tr>
<td>BA.2</td>
<td>VOC</td>
<td>3.9%</td>
<td>2.8-5.3%</td>
<td></td>
</tr>
<tr>
<td>Delta</td>
<td>B.1.617.2</td>
<td>VOC</td>
<td>0.0%</td>
<td>0.0-0.0%</td>
</tr>
<tr>
<td>Other</td>
<td>Other*</td>
<td>0.0%</td>
<td>0.0-0.0%</td>
<td></td>
</tr>
</tbody>
</table>

#### Collection date, week ending

- 11/13/21
- 11/20/21
- 11/27/21
- 12/4/21
- 12/11/21
- 12/18/21
- 12/25/21
- 1/1/22
- 1/8/22
- 1/15/22
- 1/22/22
- 1/29/22
- 2/5/22
- 2/12/22
VARIANTS

- Variants for mRNA viruses are common (mutations during replication)
- Concerns for increased spread and false negative results
- Changes clinical disease
- Vaccines work against variants
OMICRON: SUMMARY OF DATA

• Remains the dominant variant worldwide and in the US
• Median incubation period of 3 days (may be as short as 33 hours)
  • Contact tracing or quarantine is not useful (i.e., spread already happened)
• High frequency of asymptomatic infections
• Increasing cases are largely due to Omicron’s escape from natural immunity and a primary series of COVID-19 vaccines
  • Diagnostic testing: Antigen tests of symptomatic persons may be falsely negative in the first 0-2 days
OMICRON: SUMMARY OF DATA

• Recent studies demonstrate that a primary series of COVID-19 vaccinations plus a booster are highly effective in preventing serious disease

• COVID-19 repeated testing is NOT a preventive strategy as demonstrated by multiple outbreaks in the community, cruise ships and professional sports teams
Immunization
How do mRNA Vaccines work?

Facts about COVID-19 mRNA Vaccines
They cannot give someone COVID-19.

- mRNA vaccines do not use the live virus that causes COVID-19.

They do not affect or interact with our DNA in any way.

- mRNA never enters the nucleus of the cell, which is where our DNA (genetic material) is kept.
- The cell breaks down and gets rid of the mRNA soon after it is finished using the instructions.

Nature 2020;580:576-577
In December, compared to fully vaccinated persons in each group shown below, the monthly rates of COVID-19-associated hospitalizations were:

**16x Higher in Unvaccinated Adults Ages 18 Years and Older**

- **8x Higher** in Unvaccinated Adolescents Ages 12-17 Years
- **12x Higher** in Unvaccinated Adults Ages 18-49 years
- **17x Higher** in Unvaccinated Adults Ages 50-64 years
- **17x Higher** in Unvaccinated Adults Ages 65 Years and Older

For more information about COVID-NET, please see


Rates of COVID-19-Associated Hospitalizations by Vaccination and Additional or Booster Dose Status

In December, compared to fully vaccinated persons with additional or booster doses in each age group shown below, the monthly rates of COVID-19-associated hospitalizations were:

- **45x Higher** in Unvaccinated Adults Ages 50-64 years
- **51x Higher** in Unvaccinated Adults Ages 65 Years and Older
Vaccine boosters

**Adults**

All previously vaccinated adults without severe allergic reactions to the vaccine should get boosters.

Use CDC criteria for timing. Adults (>18 yo) can get any FDA-approved vaccine as a booster.

**Children**

Children aged 12 and over should get boosters.

Use CDC criteria for timing. Only the Pfizer vaccine can be used as a booster.

**“Essential” workers**

Strongly recommend vaccination and boosters for those that are in customer-facing roles, crowded conditions or were vaccinated in early waves (e.g. essential workers)

Use CDC criteria for timing.

**Previously Infected**

No clear guidance. You can wait until after an isolation period (10-days) and after symptom improvement. For better immune response, some experts suggest waiting 30 - 90 days from infection to get a booster.

Discuss with your provider.
Vaccines for Children Under 5

- Pfizer is the only vaccine available for children < 18 in the United States
- Vaccine clinical trials assess 3 main questions:
  - 1) Does the vaccine cause side effects (safety)
  - 2) Does the vaccine generate antibodies (immunogenicity)
  - 3) Does the vaccine decrease COVID disease as compared to placebo (efficacy)
- Timeline:
  - EUA for 12 -15 (30 microgram dose): May 2021
  - EUA for 5 – 11 (10 microgram dose): October 2021
  - Trial for 6 months - < 5 ( 3 microgram dose) started summer 2021
    - In December, Pfizer announced that the vaccine met pre-specified immunogenicity outcomes in children 6 - 24 months, but NOT in children 2-4 years
    - There were no safety concerns
New Admissions of Patients with Confirmed COVID-19 per 100,000 Population by Age Group, United States

Aug 01, 2020 - Feb 01, 2022

Total Admissions
United States | 0 - 17 Years
104,840
Aug 01, 2020 - Feb 01, 2022

Current 7-Day Average
United States | 0 - 17 Years
669
Jan 26, 2022 - Feb 01, 2022

Prior 7-Day Average
United States | 0 - 17 Years
815
Jan 19, 2022 - Jan 25, 2022

Peak 7-Day Average
United States | 0 - 17 Years
914
Jan 10, 2022 - Jan 16, 2022

Percent change from prior 7-day avg. of Jan 19, 2022 - Jan 25, 2022

-17.9%

Percent change from peak 7-day avg. of Jan 10, 2022 - Jan 16, 2022

-26.8%

Based on reporting from all hospitals (N=5,235). Due to potential reporting delays, data reported in the most recent 7 days (as represented by the shaded bar) should be interpreted with caution. Small shifts in historic data may occur due to changes in the EHR Provider of Services file, which is used to identify the cohort of included hospitals. Data since December 1, 2020 have had error correction methodology applied. Data prior to this date may have anomalies that are still being resolved. Note that the above graphs are often shown on different scales. Data prior to August 1, 2020 are unavailable.

Last Updated: Feb 01, 2022

Unified Hospital Dataset, White House COVID-19 Team, Data Strategy and Execution Workgroup
Daily MIS-C Cases and COVID-19 Cases Reported to CDC (7-Day Moving Average)

Last updated with cases reported to CDC on or before January 31, 2022*

TOTAL MIS-C PATIENTS MEETING CASE DEFINITION: 6,851
North Carolina Percent of Population with Full Vaccination Status

[Image of line graph showing vaccination trends by age group with specific data points for 5-11, 12-17, 18-24, 25-49, 50-64, 65-74, and 75+ age groups.

COVID-19 Incidence and Death Rates in Unvaccinated and Fully Vaccinated Adults +/- Booster Doses (Delta and Omicron Variants)

- COVID-19 vaccines reduced risks for infection and COVID-19–associated death during Delta variant predominance and infection risk during Omicron variant emergence.
- Protection was higher among persons who were fully vaccinated and had received a booster dose than among fully vaccinated persons who had not received a booster dose in December.
- The added benefits of booster doses were especially prominent among persons aged 50–64 and ≥65 years.

COVID-19 Treatments

Before Infection
- **PrEP**
  - Tixagevimab/Cilgavimab (Evusheld)
- **PEP**
  - Casirivimab/Imdevimab (Regen-CoV)
  - Bamlanivimab/Etesevimab

After Infection
- **Treatment**
  - Casirivimab/Imdevimab (Regen-CoV)
  - Bamlanivimab/Etesevimab
  - Nirmatrelvir/Ritonavir (Paxlovid)
  - Sotrovimab (Xevudy)
  - Remdesivir (Veklury)
  - Molnupiravir (Lagevrio)


Slide courtesy of Dr. David Weber. UNC 2022
SARS-CoV-2 Variants: Reported in vitro Therapeutic Activity

- Omicron = B.1.1.529
- Available monoclonal antibodies with Omicron activity
  - Sotrovimab
  - Evusheld
- Available COVID-19 vaccines have reduced effectiveness against Omicron
- mRNA boosted persons have good vaccine effectiveness to prevent and/or ameliorate COVID-19

https://opendata.ncats.nih.gov/variant/activity
Two COVID Americas: The unvaccinated are less worried than the boosted, according to a recent poll.
Thank you.

For additional questions:

ica5@duke.edu
Resources

• https://www.cdc.gov/coronavirus/2019-ncov/
• https://www.who.int/emergencies/diseases/novel-coronavirus-2019
• Your Local Health Department

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