COVID-19 Update

Paul J Carson, MD, FACP
NDSU Department of Public Health
You There! Boy!
What Variant is it Today?
Increased SARS-CoV-2 Growth Advantage, Fitness, Immune Escape AND Stronger Immunity Wall Built
### United States: 5/1/2022 – 8/6/2022

#### NOWCAST

<table>
<thead>
<tr>
<th>Collection date, week ending</th>
<th>% Viral Lineages Among Infections</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/7/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>5/14/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>5/21/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>5/28/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>6/4/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>6/11/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>6/18/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>6/25/22</td>
<td>BA.2</td>
</tr>
<tr>
<td>7/2/22</td>
<td>BA.4</td>
</tr>
<tr>
<td>7/9/22</td>
<td>BA.4</td>
</tr>
<tr>
<td>7/16/22</td>
<td>BA.5</td>
</tr>
<tr>
<td>7/23/22</td>
<td>BA.5</td>
</tr>
<tr>
<td>7/30/22</td>
<td>BA.5</td>
</tr>
<tr>
<td>8/6/22</td>
<td>BA.5</td>
</tr>
</tbody>
</table>

### United States: 7/31/2022 – 8/6/2022 NOWCAST

#### USA

<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.5</td>
<td>VOC</td>
<td>87.1%</td>
<td>85.8-88.3%</td>
</tr>
<tr>
<td></td>
<td>BA.4</td>
<td>VOC</td>
<td>6.6%</td>
<td>6.1-7.2%</td>
</tr>
<tr>
<td></td>
<td>BA.4.6</td>
<td>VOC</td>
<td>4.8%</td>
<td>3.9-5.8%</td>
</tr>
<tr>
<td></td>
<td>BA.2.12.1</td>
<td>VOC</td>
<td>1.5%</td>
<td>1.4-1.6%</td>
</tr>
<tr>
<td></td>
<td>BA.2</td>
<td>VOC</td>
<td>0.1%</td>
<td>0.1-0.1%</td>
</tr>
<tr>
<td></td>
<td>B.1.1.529</td>
<td>VOC</td>
<td>0.0%</td>
<td>0.0-0.0%</td>
</tr>
<tr>
<td></td>
<td>BA.1.1</td>
<td>VOC</td>
<td>0.0%</td>
<td>0.0-0.0%</td>
</tr>
<tr>
<td>Delta</td>
<td>B.1.617.2</td>
<td>VBM</td>
<td>0.0%</td>
<td>0.0-0.0%</td>
</tr>
<tr>
<td>Other</td>
<td>Other*</td>
<td></td>
<td>0.0%</td>
<td>0.0-0.0%</td>
</tr>
</tbody>
</table>

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

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

# AY.1-AY.133 and their sublineages are aggregated with B.1.617.2. BA.1, BA.3 and their sublineages (except BA.1.1 and its sublineages) are aggregated with B.1.1.529. For regional data, BA.1.1 and its sublineages are also aggregated with B.1.1.529, as they currently cannot be reliably called in each region. Except BA.2.12.1, BA.2 sublineages are aggregated with BA.2. Except BA.4.6, sublineages of BA.4 are aggregated to BA.4. Sublineages of BA.5 are aggregated to BA.5.
Omicron is intrinsically less severe than Delta, but the reduction in risk is much smaller than that provided by vaccines.

Risk of a 70-year-old being admitted to ICU with Covid after testing positive, by variant and vaccination status (log scale):

- Delta Unvaccinated: 8%
- Omicron Unvaccinated: 2%
- Omicron Two doses: 0.5%
- Omicron Boosted: 0.25%

Risk for an unvaccinated 40-year-old with Delta: 1%
Covid has grown gradually less lethal over the pandemic, mainly due to immunity, and is now slightly less lethal than flu on average.

Evolution of Covid-19’s infection fatality ratio* in England, relative to seasonal flu:

- 20x flu
- 10x flu
- 5x flu
- 2x flu

**IFR for seasonal influenza**

*Attack Rate COVID >>> Influenza*

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* Covid IFR calculated using ONS death cert. mentions and ONS infection survey. **IFR for seasonal flu calculated by applying age-specific IFR from CDC to English age structure, and assuming 67%-75% of flu infections are asymptomatic.
Source: ONS. Based on prior work by Dan Howdon

FT graphic: John Burn-Murdoch / @jburnmurdoch
© FT
2-Dose Vaccine Effectiveness Against Breakthrough Infection

Tseng. Nature Medicine, 2022
Effectiveness of Prior Immunity Against BA.2 Hospitalization and Death

Altarawneh HN. NEJM, Jun 2022
Vaccine Protection Against Long-COVID in HCW Cohort was Dose Dependent

Azzolini E. JAMA, July 2022
Immunosurveillance and Experiences of COVID-19 in ND Project – May, 2022

COVID-19 Antibody Results

<table>
<thead>
<tr>
<th>City</th>
<th>No Antibodies</th>
<th>Antibodies to Virus</th>
<th>Antibodies to Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bismarck</td>
<td>1%</td>
<td>65%</td>
<td>34%</td>
</tr>
<tr>
<td>Grand Forks</td>
<td>0%</td>
<td>66%</td>
<td>34%</td>
</tr>
<tr>
<td>Fargo</td>
<td>0%</td>
<td>69%</td>
<td>31%</td>
</tr>
</tbody>
</table>
Key Points and Takeaways

1. Virus less virulent but more transmissible
2. Vaccine effectiveness less over time against infection
3. Vaccine effectiveness still good against severe disease
Most faculty and students are vaccinated (at least 2 doses)

Approximately 70% of North Dakotans have had infection

Much better place due to “immunity wall” and therapies
## Survey of NDSU Faculty, Staff, Students in Feb 2022

<table>
<thead>
<tr>
<th>Category</th>
<th>% Vaccinated</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td>98%</td>
<td>100</td>
</tr>
<tr>
<td>Staff</td>
<td>93.3%</td>
<td>165</td>
</tr>
<tr>
<td>Undergraduate students</td>
<td>74%</td>
<td>570</td>
</tr>
<tr>
<td>Graduate students</td>
<td>96.5%</td>
<td>142</td>
</tr>
</tbody>
</table>

Personal communication: Mary Larson, PhD, NDSU Dept. of Public Health  
Megan Orr, PhD; Murphy Anderson, MPH
What to Expect This Fall?

- Cases rising now (maybe plateauing), possible spike further after start of classes
- Vast majority of these infections will be mild cold or flu-like illnesses
- Expect absenteeism and potential need to pivot to virtual offerings
- In classroom transmission not likely the major source of transmission
  - Most campus rooms now have markedly improved ventilation
  - Prior studies showing classrooms not a major source
  - Role of masks??
N95 VS KN95 VS Surgical
NDSU Vaccine Education Project

Sarah Swartz, MPH
NDSU Vaccine Education Project Manager
Aldevron Tower 640M
NDSU Vaccine Education Project

**Goal:** Increase confidence in vaccines among students, faculty, and staff

- Outreach & Education
- Vaccine education training modules
- Social media outreach
  - Immunization Ambassadors
- Campus-wide survey
NDSU Vaccine Education Project
Current planned interventions

- COVID-19 test kit distribution across campus
  - NDSU Library
  - NDSU Bookstore
  - Student Health

- Influenza (flu) vaccine clinic
  - Faculty and staff
  - Memorial Union
  - October 11th and 12th from 10am-2pm
  - COVID-19 boosters will be available
  - Registration link sent out a week before
ANY QUESTIONS?
Prevalence of Mask Wearing

When in contact indoors with those who are not part of your household, how often do you wear a mask or face covering?
When do you expect to return to your normal, pre-Covid-19 life?

July 18, 2022
- Already have: 41%
- Within the next one to six months: 4%
- Within the next year: 12%
- More than a year from now: 19%
- Never: 23%

Change:
- +9%
- -8%
- -7%
- 0%
- +5%

April 4, 2022
- Already have: 32%
- Within the next one to six months: 12%
- Within the next year: 19%
- More than a year from now: 19%
- Never: 18%

Change:
- +16%
- +6%
- -1%
- -16%
- -4%

January 17, 2022
- Already have: 16%
- Within the next one to six months: 6%
- Within the next year: 20%
- More than a year from now: 35%
- Never: 22%

Change:
- +16%
- +6%
- -1%
- -16%
- -4%

Source: Annenberg Public Policy Center ASK Survey, July 12-18, 2022
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