

The background of the slide features a microscopic view of COVID-19 virus particles, which are spherical and covered in characteristic spike proteins. The particles are rendered in shades of blue and cyan, with some appearing in sharp focus in the foreground and others blurred in the background, creating a sense of depth. The overall color palette is monochromatic, dominated by various tones of blue.

# COVID-19 Update

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Medical Director NEBGH

Monday, March 20<sup>th</sup>, 2023

# Current Situation in The US

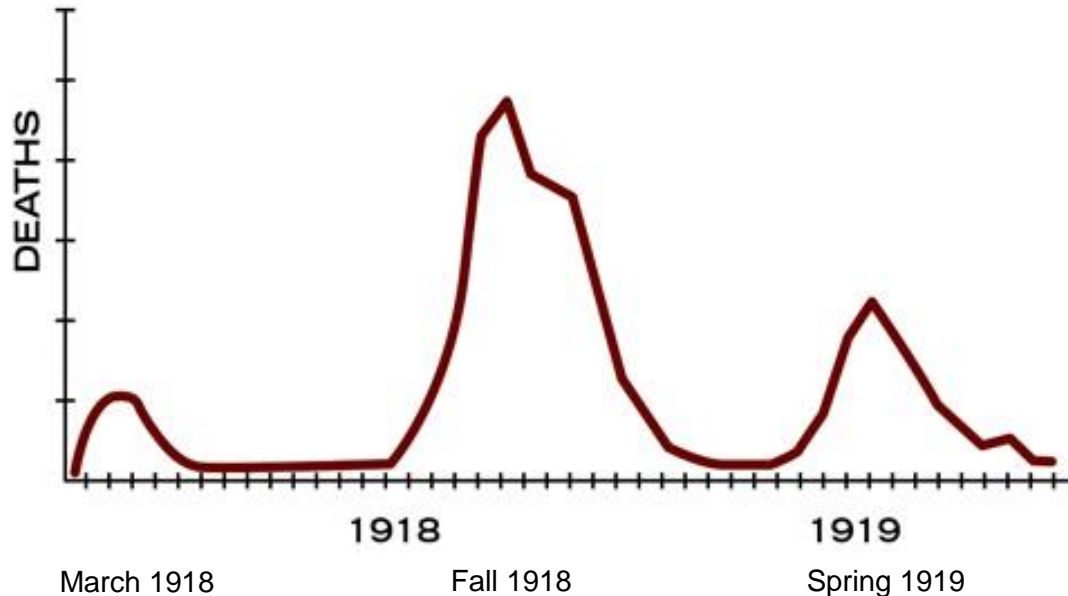
	DAILY AVG. ON MAR. 18	PER 100,000	14-DAY CHANGE
Cases	23,049	7	-32%
Test positivity	7.2%	—	-15%
Hospitalized	22,522	7	-14%
In I.C.U.s	3,013	<1	-11%
Deaths	334	<1	-38%

# COVID what comes next

- Historically, most pandemics end within 2 to 3 years as the virus mutates into a less virulent pathogen and the population builds up immunity.
- Latest variants of Omicron do seem to cause less severe illness in most (but not all) people
- While there is always the risk of new more aggressive variants, Omicron which has changed constantly over the last 18 months is surviving on increasing infectiveness and immune evasion rather than increasing severity
- Other coronaviruses and influenza viruses have transitioned to be less pathogenic:
  - OC43 transitioned from a pandemic in the 19<sup>th</sup> century to a common cold now
  - 1918 Influenza pandemic

# 1918 Influenza Pandemic

**More people died during the 1918 pandemic than the total number of military and civilian deaths that resulted from World War I.**



# INFLUENZA MILESTONES

1917 - 2009



1917

United States enters World War I. U.S. life expectancy is 54 years for women, 48 years for men.



1919

Third wave of pandemic flu activity occurs. Pandemic subsides, but virus (H1N1) continues to circulate seasonally for 38 years.



1957

H2N2 flu virus emerges to trigger a pandemic, replacing the 1918 H1N1 pandemic virus.



1968

H3N2 flu virus emerges to trigger a pandemic, replacing H2N2 virus.



2009

H1N1 viruses distantly related to the 1918 virus emerge to trigger a pandemic.

1918

Spring and fall waves of influenza ("flu") activity cause the average life expectancy in the United States to fall by 12 years.



1930

First isolation of influenza, proving that flu is caused by a virus not a bacterium.



1960

The U.S. Public Health Service recommends annual flu vaccination for people at high risk of serious flu complications.



2005

Genome of the 1918 pandemic flu virus is fully sequenced.



# Immunity

- The world has developed a “wall of immunity” from vaccinations, infections and a combination of both
- The virus has spread to every corner of the planet – the virus reached Kiribati and the Pitcairn islands in Jan 2022
- So fewer people for the virus to infect who have never had any exposure to the virus before.





# Babies and Infants on the COVID Front Line

- As more babies have been born into a SARS-CoV-2-ridden world, the average age of first exposure to this coronavirus has been steadily dropping
- This might be a ‘good thing’:
  - Children generally have the most adaptable immune systems – immune systems that peak around puberty and then go into steady decline
  - Most children’s immune systems protect them well resulting in mild illness (Great but not infallible)
  - First few months maternal antibodies help protect, then vulnerable for 6-12 months, then low risk until late teens – risk then gradually increases)
  - Children tend to have less comorbid conditions



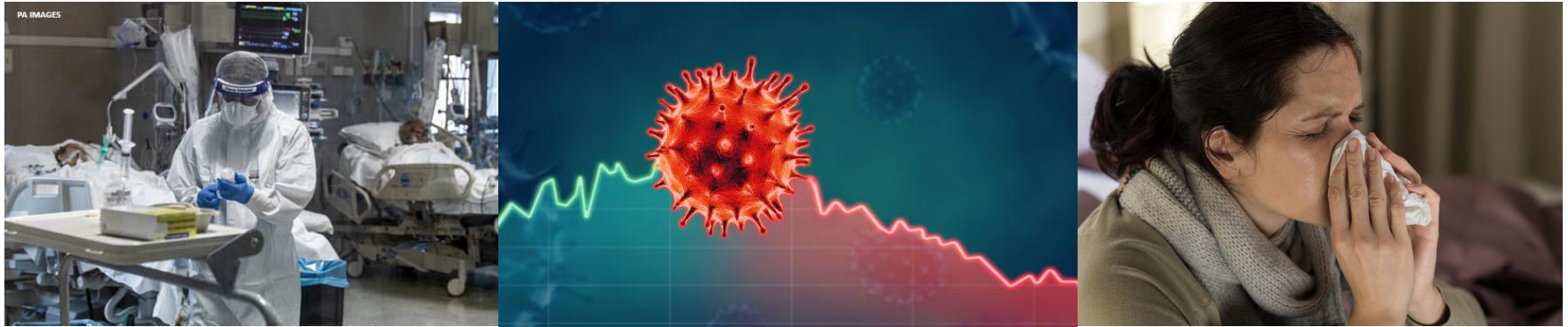
# But.....

- While second illnesses tend to be milder studies have shown the more COVID infections can lead to potential of increased long-term organ damage
  - What will be the lifetime toll of organ disease from multiple infections?
- As these children age their immune systems get less efficient, less adaptable making them potentially vulnerable as they age
- Over time the virus will continue to evolve and likely have increased immune evasion
- New vaccines will likely cover multiple strains of COVID and if this is the first exposure to COVID (versus infection) this will help set up kid's immune systems to effectively fight infections ..... but vaccines have to get into children's arms or up noses to be effective
  - 9.2 million US children ages 5-11 completed the 2-dose vaccination series (32%)

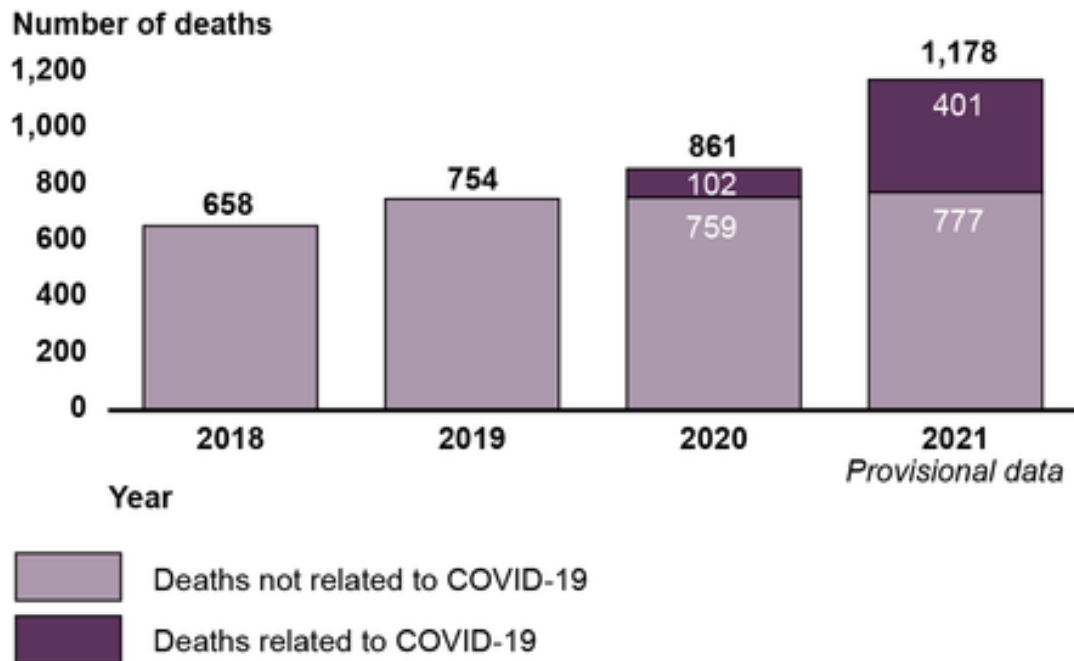


# Risk to the elderly

- We know from other viruses that risk is still present for the elderly
- During the pandemic COVID was a new virus humans had little immunity against – age of first exposure makes a big difference
- However, COVID is the first coronavirus that we have a vaccine for, and by proactively protecting populations the future might really mean that over years SARS-CoV2 transitions to just causing a common cold or less



# Special call out for pregnant women



Source: GAO analysis of Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS) data. | GAO-23-105871

# COVID and Pregnancy

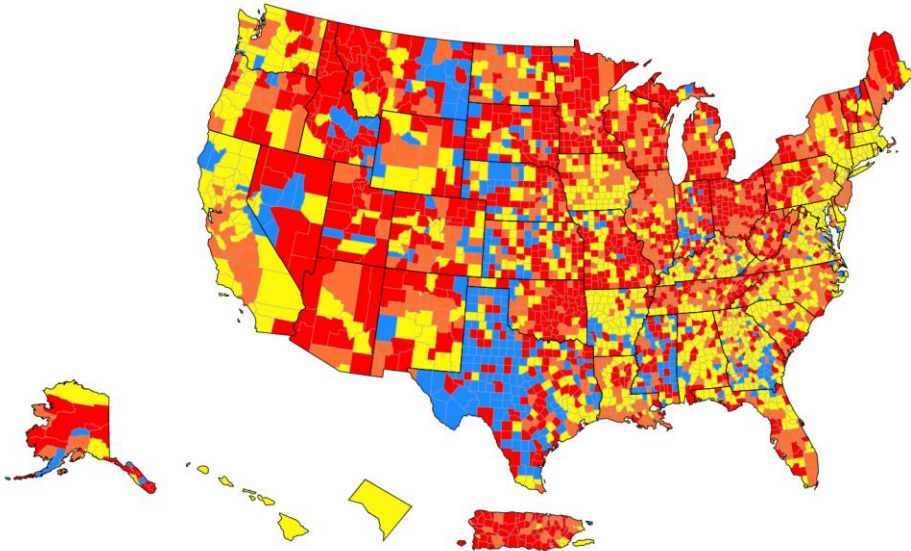
- Pregnancy increases risks for pregnant women, amplified if there are also comorbid conditions
  - US reported a rate of 25.1 maternal deaths and 11.6 late maternal deaths per 100,000 live births, a 33% and 41% relative increase over pre-pandemic years respectively<sup>1</sup>
  - Increase occurred across all women however:
    - Black women rose to 69.9 deaths per 100,000 live births in 2021, 2.6 times the rate among white women, and
    - Mortality rates doubled among Native American and Alaska Native women
- COVID in pregnancy increases risks of:
  - Mortality
  - Complications
  - Premature birth and need for NICU care
  - Slightly increased heart and respiratory issues in babies born to infected mothers<sup>2</sup>
  - Post partum women remain at increased risk for several months

1. [https://journals.lww.com/greenjournal/Fulltext/9900/Changes\\_in\\_Pregnancy\\_Related\\_Mortality\\_Associated.721.aspx](https://journals.lww.com/greenjournal/Fulltext/9900/Changes_in_Pregnancy_Related_Mortality_Associated.721.aspx)  
2. <https://epicresearch.org/articles/development-of-infants-born-to-covid-positive-mothers>

# When are we going to need another booster?

- Federal health officials have not yet authorized a second bivalent booster, even for elderly or immunocompromised people
  - Note some European countries have authorized a second bivalent booster for high-risk (mostly 75+)
- For those people who had their bi-valent booster last September it is now 6 months, and many are anxious to know when to get another booster
- Studies show the bivalent booster gives strong and broad protection and while still probably providing reasonable protection against severe disease, protection against symptomatic disease likely waning

# CDC Transmission Map



Community Transmission in US by County

	Total	Percent	% Change
High	1129	35.04%	- 5.87%
Substantial	726	22.53%	- 3.79%
Moderate	986	30.6%	4.87%
Low	381	11.82%	4.78%

# Likely Recommendation

- A bi-valent booster will be recommended for most people in the fall
- One booster shot for most people but may be two shots for those over 65 and/or at higher risk
  - Could this be both in the fall or one in the spring and then the second 6 months later.....
- Combination vaccines (Flu+COVID or Flu+COVID+RSV) theoretically possible but clinical trials may mean that it will be 2-3 or more years before they are available

But where did it all start?







# Animal vs Lab

## Animal (Zoonotic Spillover)

- Happened many times before
- Genetic mapping
- Geographical clustering of the earliest known COVID-19 cases
- Proximity of positive environmental samples to live-animal vendors
- Two lineages A and B from two separate events a couple of weeks apart

<https://zenodo.org/record/6299116#.ZBhSFXbMK5d>

<https://zenodo.org/record/6291628#.ZBhS7HbMK5c>

## Lab Leak

- Labs leaks have occurred
- Wuhan Institute of Virology
- US Dept of Energy conclusion
- Republican Health Committee
- Lack of transparency from China
- Amplified by politicians and conspiracy theories

<https://www.nytimes.com/2023/02/26/us/politics/china-lab-leak-coronavirus-pandemic.html>

# Conclusion

- We may never know!
- Most likely a result of zoonotic spillover
- However, this doesn't mean that there shouldn't be a review of:
  - Types of experiments that are conducted on infectious agents, and
  - The controls put in place to minimize a leak into the community

# Pandemic Emergency End Declaration is May 11, 2023

## Action Checklist for Employers

- Encourage employees and dependents who are eligible to get **vaccinated now** while COVID vaccines are Federally funded
- If not done review **COVID workplace policies** (Testing, masking, vaccinations, contact tracing, RTW etc.)
- Review your **health plan** terms for COVID-19-related coverage
- Plan for a **fall COVID and Flu vaccination** effort
- Prepare **employee communications** for the above
- Conduct an **after-action review (AAR)**
- Develop a **pandemic preparedness plan** as a starting place for the next pandemic!



MONDAYS WITH  
D R **MARK** & D R **MICHAEL**



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# Questions

## Upcoming NEBGH virtual events

- **March 21** – Hot Flash! Trending Topics in Women’s Workplace Health
- **March 29** – Find Quality Treatment for Substance Misuse
- **April 3** – Monday with Dr. Mark and Dr. Michael
- **June 15** – 12<sup>th</sup> Annual Health & Wellness Benefits Conference