Pandemic Medical Updates

APR 2021

CHRISTIAN RATHKE

Captain/ USPHS

NOAA Director, Office of Health Services

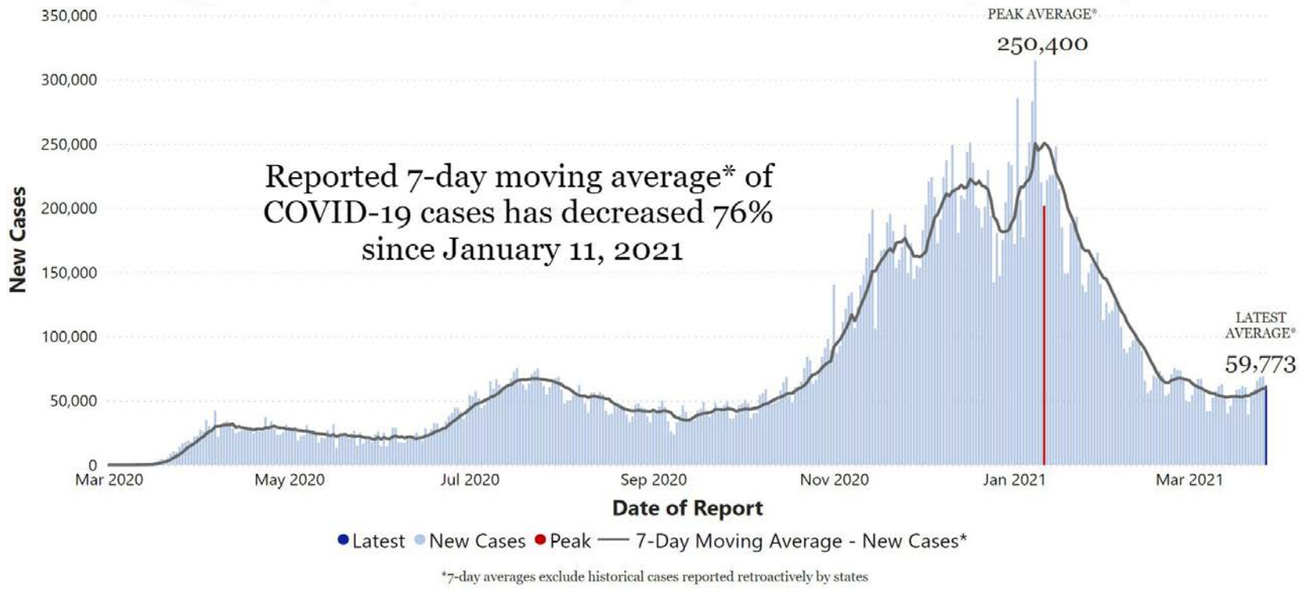
How Many COVID-19 Cases are There in the U.S.?

Change in COVID-19 Cases, U.S.

2, 2020 – March 27, 2021

- **30,038,363** Total Cases Reported Since 1/22/20
- **61,994** New Cases Reported to CDC on 3/27/21
- **+10.6%** Change in 7-Day Case Average
- **59,337** Current 7-Day Case Average (3/21/21-3/27/21)
- **54,030** Prior 7-Day Case Average (3/14/21-3/20/21)

	HIGHEST DAILY NUMBER OF NEW CASES	HIGHEST 7-DAY MOVING AVERAGE
Current	315,119 January 8, 2021	250,400 January 11, 2021
2nd Peak	75,319 July 17, 2020z	67,337 July 23, 2020
1st Peak	42,568 April 6, 2020	31,915 April 12, 2020



Source: Centers for Disease Control and Prevention

How Many People are Hospitalized?

New Admission of Patients with Confirmed COVID-19

August 1, 2020 – March 26, 2021

32,573 Patients Currently Hospitalized with COVID-19 (3/26/21)

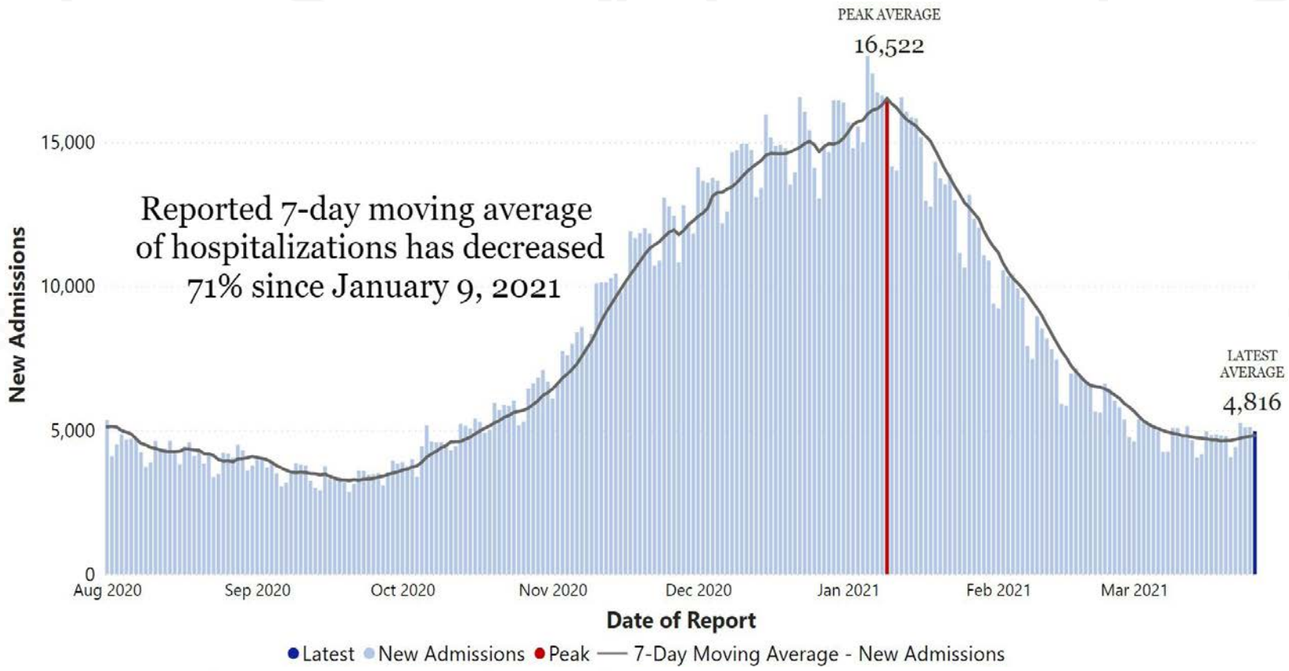
4,967 New Admissions (3/26/21)

17,993 Peak in New Admissions (1/5/21)

+4.2% Change in 7-Day Average of New Admissions

4,816 Current 7-Day Average of New Admissions (3/2021-3/26/21)

4,621 Prior 7-Day Average of New Admissions (3/13/21-3/19/21)



Source: Centers for Disease Control and Prevention

How Many COVID-19 Deaths Have There Been?

Daily Change in COVID-19 Deaths, U.S.

January 22,2020 – March 27, 2021

546,144 Total Deaths Reported Since 1/22/2020

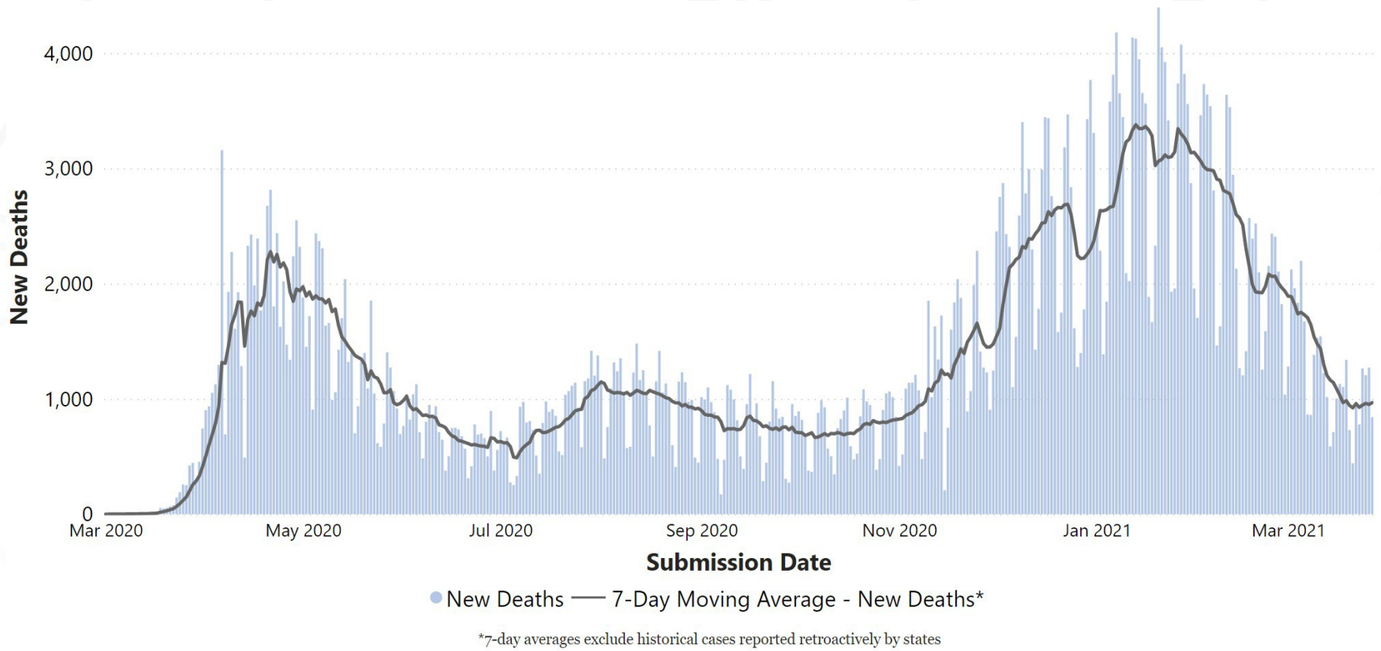
842 New Deaths Reported to CDC (3/27/21)

+2.6% Change in 7-Day Average

968 Current 7-Day Average (3/21/21-3/27/21)

944 Prior 7-Day Death Average (3/14/21-3/20/21)

558K – 578K Forecasted Total Deaths by 4/17/21



Source: Centers for Disease Control and Prevention

How is COVID-19 Spread?

Viral Load

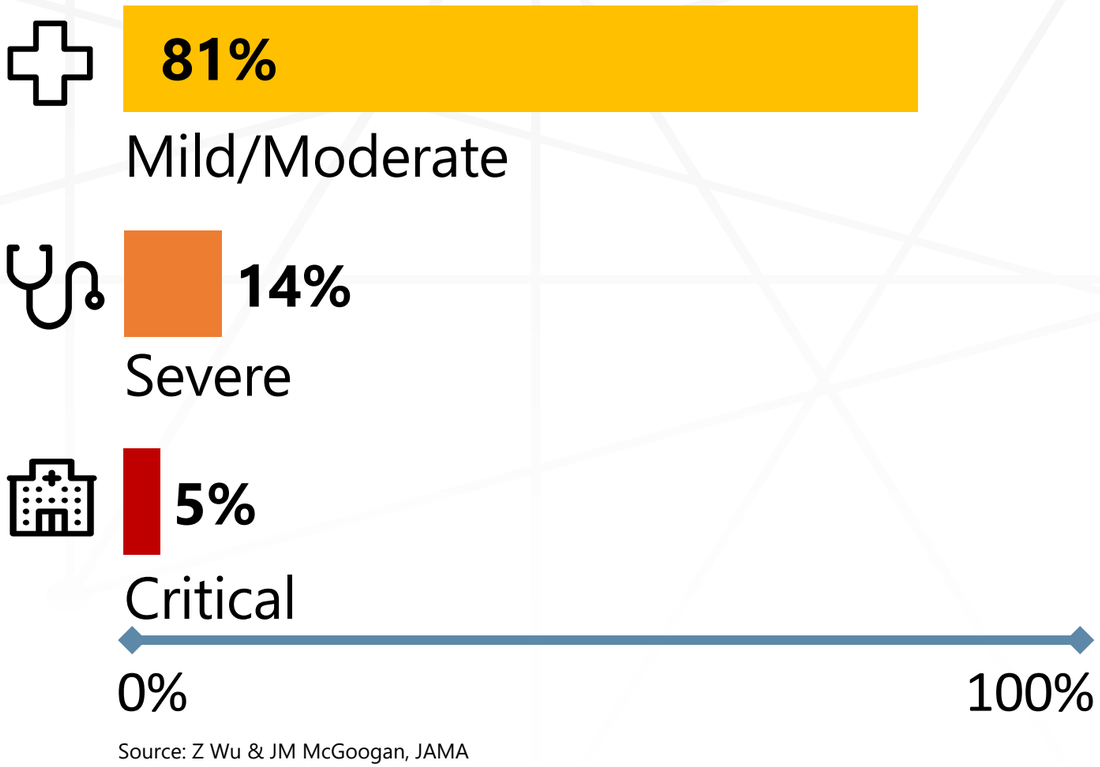
Colonization

Viral Particles, Water, Gravity

Viral Dose

How does COVID-19 Affect People?

Spectrum of Disease Among 44,672 Individuals with Confirmed COVID-19, China



Source: Z Wu & JM McGoogan, JAMA

The Proportion of SARS-CoV-2 Infections Are Asymptomatic

~33%

of patients with SARS-CoV-2 Infections **never develop symptoms**

~75%

of individuals with a positive PCR test who are asymptomatic at time of testing **will remain asymptomatic**

What are Some Complications of COVID-19?

Neurological Disorders

Hyperinflammation

Acute Respiratory Distress Syndrome

Multi-System Manifestations of COVID-19

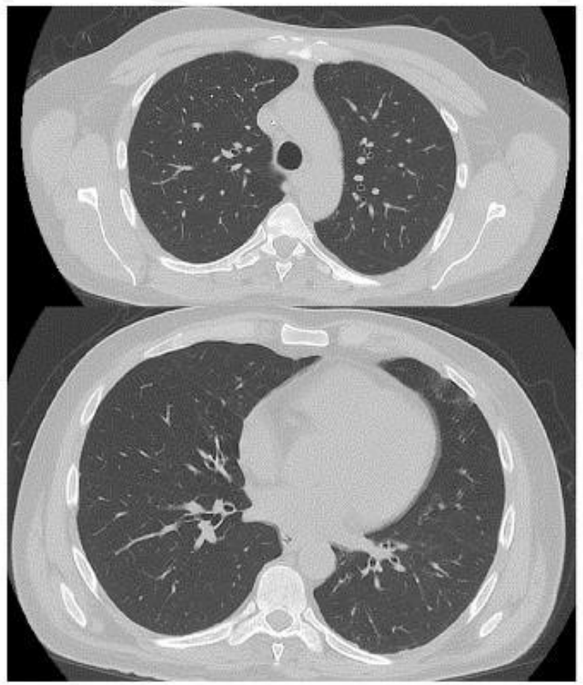
Cardiac Dysfunction

Hypercoagulability

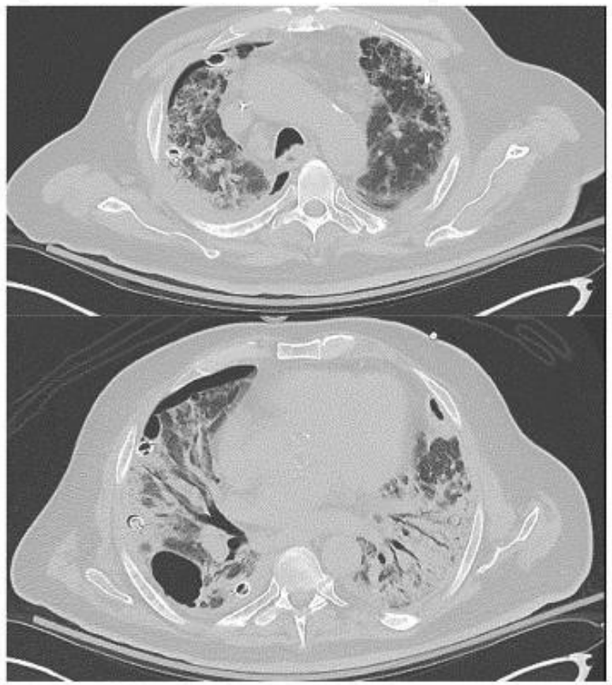
Acute Kidney Injury

Multisystem Inflammatory Syndrome in Children

Patient Without COVID-19



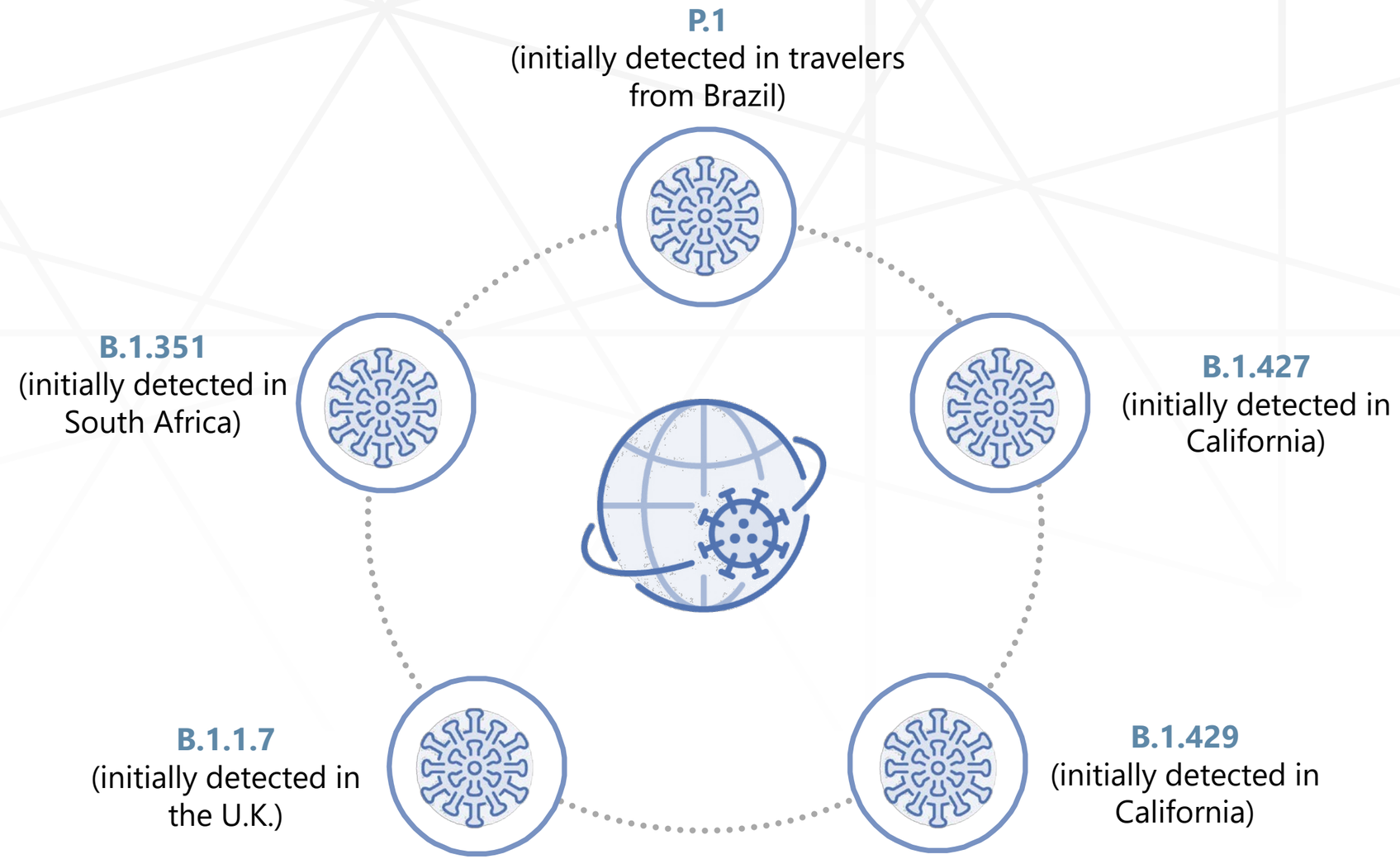
Patient With Severe COVID-19



What are COVID-19 Variants?

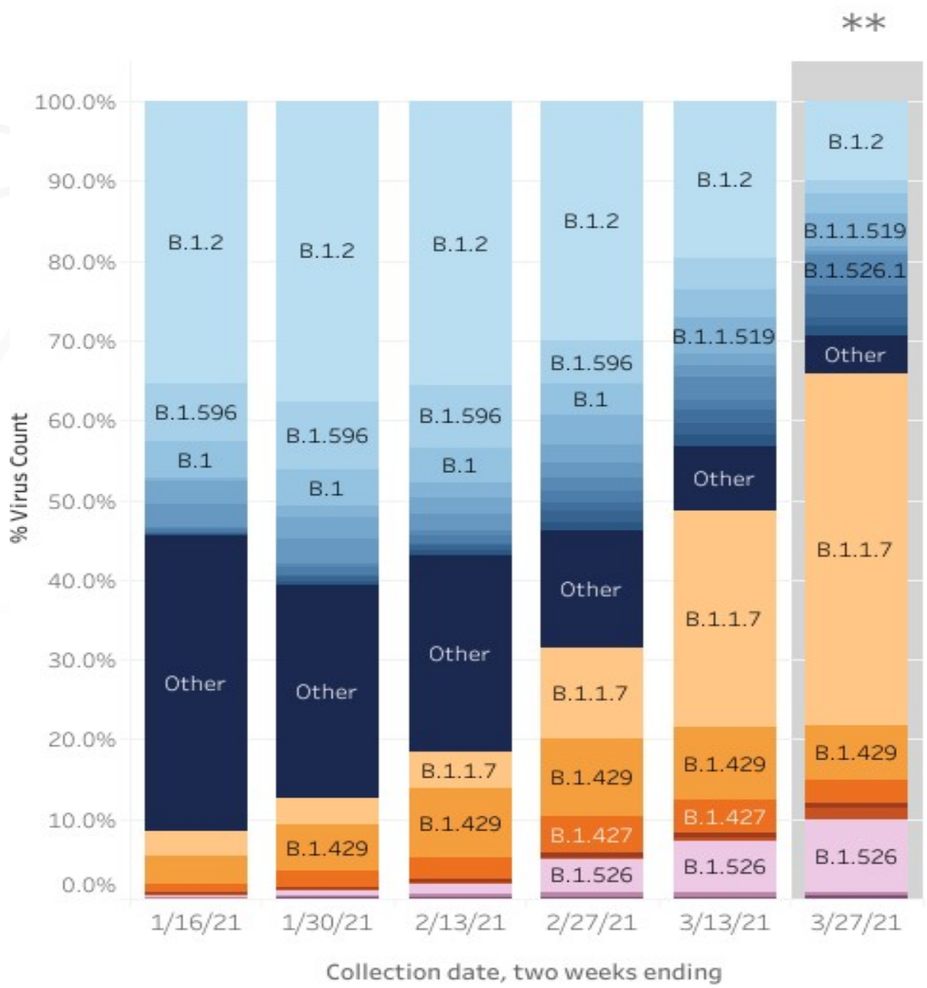
Multiple variants of the virus that causes COVID-19 are circulating globally and within the United States. The CDC established 3 classifications for the SARS-CoV-2 variants being monitored: Variant of Interest (VOI), Variant of Concern (VOC), and Variant of High Consequence (VOHC).

There are currently five VOCs in the United States.



How are the COVID-19 Variants Circulating in the U.S.?

SARS-CoV-2 Variants Circulating in the United States, January 3 – March 27 2021

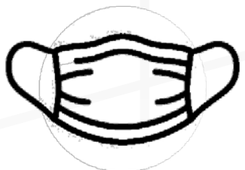


	Lineage	% Total	95%CI	Type
Most common lineages	B.1.1.7	44.1%	41.2-47.1%	VOC
	B.1.2	10.0%	8.9-11.2%	
	B.1.526	9.2%	7.2-11.7%	VOI
	B.1.429	6.9%	5.1-9.4%	VOC
	B.1.1.519	4.1%	3.4-5.0%	
	B.1.526.1	3.9%	3.3-4.7%	
	B.1.526.2	2.9%	2.3-3.8%	
	B.1.427	2.9%	2.2-3.9%	VOC
	B.1	2.4%	2.0-3.0%	
	B.1.596	1.7%	1.3-2.1%	
	P.1	1.4%	1.0-1.8%	VOC
	R.1	1.2%	0.8-1.6%	
	B.1.575	1.1%	0.9-1.5%	
	B.1.1	0.9%	0.6-1.5%	
	B.1.243	0.6%	0.4-1.0%	
	B.1.234	0.5%	0.3-0.7%	
Additional VOI/VOC lineages	B.1.351	0.7%	0.5-1.0%	VOC
	B.1.525	0.5%	0.3-0.7%	VOI
	P.2	0.3%	0.2-0.4%	VOI
Other*	Other	4.7%	4.1-5.4%	

Summary data that appear in the table include specimen collection dates from March 14 through March 27, 2021.
* Other represents >200 additional lineages, which are each circulating at <1% of viruses
** Most recent data (shaded) are subject to change as samples from that period are still being processed.

How is Transmission Prevented?

Public Health Measures



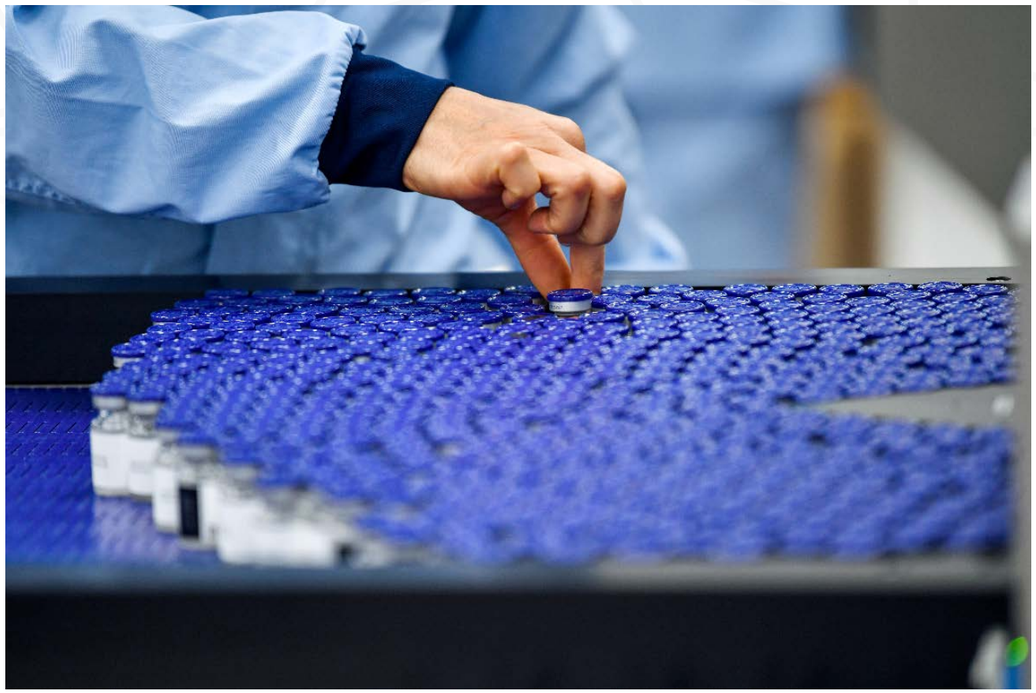
Mask Wearing

Physical Distancing

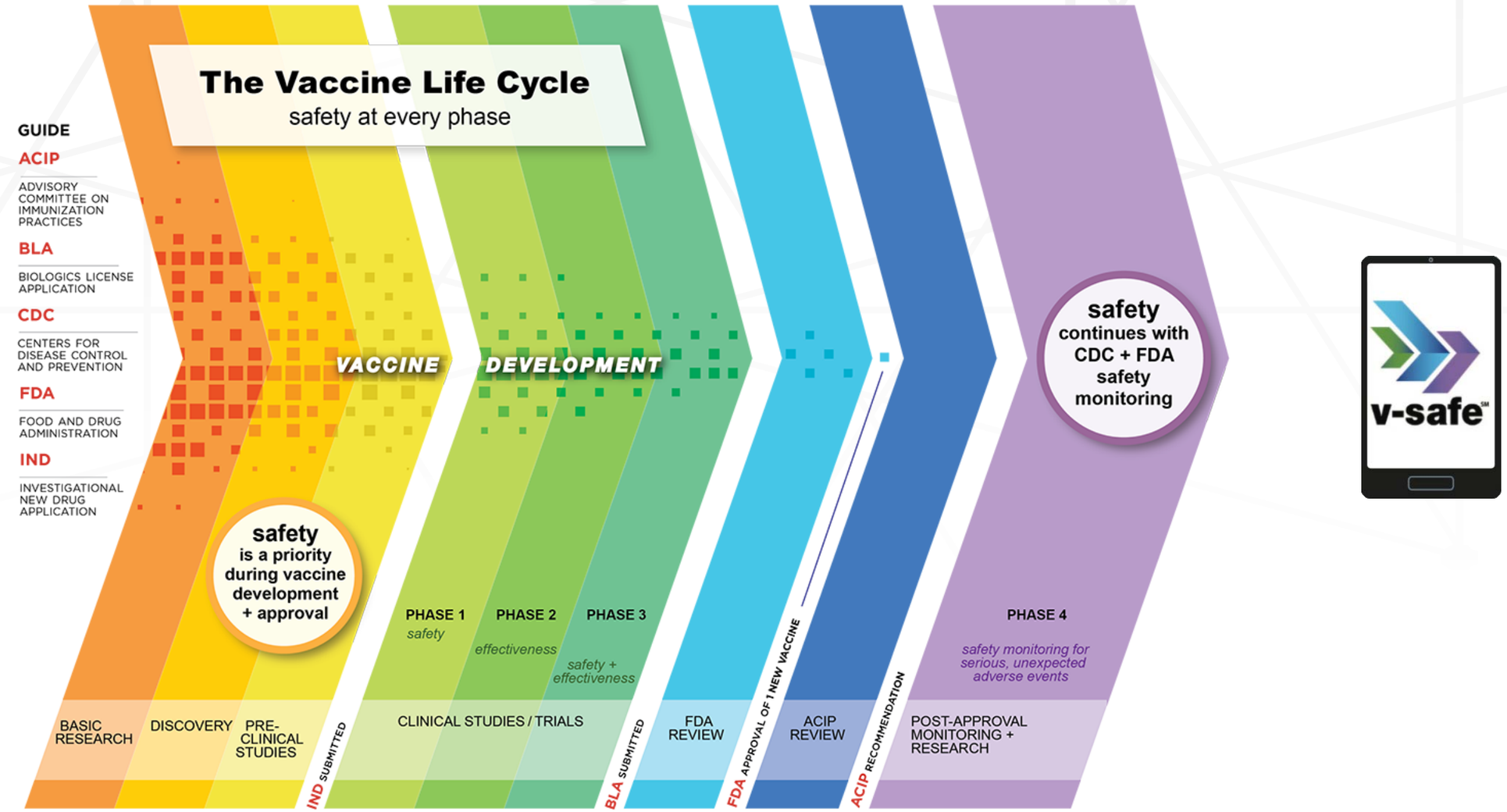
Avoid Congregated Settings

Hand Hygiene

Vaccination



Is the Vaccine Safe?



What are my Vaccine Options?

Pfizer-BioNTech

- **How effective is it?** 95 percent efficacy (less effective against South Africa B.1.351 variant)
- **How many shots?** Two shots, 21 days apart
- **Who is eligible?** Anyone 16 and older
- **Does it protect against variants?** Provides some protection against the UK B.1.1.7 and SA B.1.351 variants

Moderna

- **How effective is it?** 94.1 percent efficacy (86.4% for people ages 65 and older)
- **How many shots?** Two shots, 28 days apart
- **Who is eligible?** Adults 18 and older
- **Does it protect against variants?** Provides some protection against the UK B.1.1.7 and SA B.1.351 variants

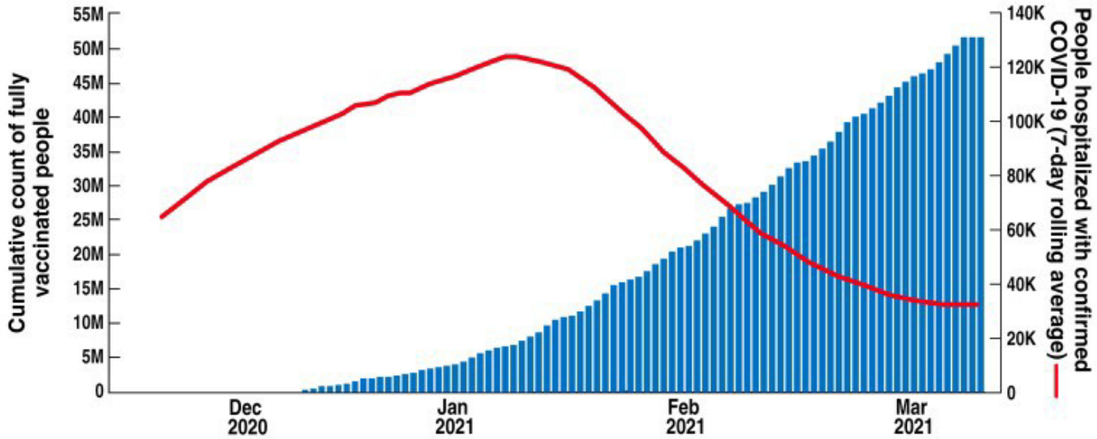
Johnson & Johnson

- **How effective is it?** 72 percent efficacy rate in the U.S. and 85 percent efficacy against severe forms of Covid-19
- **How many shots?** One shot
- **Who is eligible?** Adults 18 and older
- **Does it protect against variants?** 82% efficacy against severe disease in South Africa

How Effective Are the Vaccines?

	PROTECTION FROM COVID-19 HOSPITALIZATON	PROTECTION FROM COVID-19 DEATH
moderna	**~90%** (1 hospitalized in vaccine arm after 2nd dose)	**~ 100%**
BIONTECH Pfizer	**~ 100%**	**~ 100%**
Johnson & Johnson	**~ 100%**	**~ 100%**
AstraZeneca	**~ 100%**	**~ 100%**
NOVAVAX Creating Tomorrow's Vaccines Today	**~ 100%**	**~ 100%**

Number of People Fully Vaccinated Against COVID-19 and COVID-19 Hospitalizations, U.S.



Source: https://covid.cdc.gov/covid-data-tracker/

What Else Should I Know About COVID-19 Vaccines?

COVID-19 vaccines are are nearly 100% effective at preventing death and severe **symptoms**. 80-90% effective at preventing COVID-19 **infection**.	Vaccines are voluntary for the Federal workforce	**NO** mask needed outdoors when fully vaccinated except in certain crowded settings	All three vaccines have nearly 100% effectiveness at preventing death / severe symptoms	Once fully vaccinated, the CDC has modified recommendations on how you can safely socialize and travel
You should NOT get the COVID-19 vaccine and the Flu shot at the same time	It is NOT possible to get COVID-19 from the COVID-19 vaccine	You should get your second shot as close to the recommended interval as possible. However, your second dose may be given up to 6 weeks (42 days) after the first dose, if necessary	If you have medical conditions you are concerned about getting vaccinated, speak with your medical provider to get your questions answered	Follow CDC guidance and register with V-safe after getting vaccinated

What Should I Know About the J&J Vaccine?

1. On April 23, 2021, the CDC and FDA after a very thorough review, **lifted the pause of the J & J vaccine** determining the benefits of preventing COVID-19 outweighed the very rare risks.

2. There were **15 reported U.S. cases of a rare but severe type of blood clot** among women between ages 18-59 after receiving the Johnson & Johnson vaccine.
(**15 out of 8 million** doses in US)

3. **If you have had the J&J vaccine in the past 3 weeks**, look for symptoms of severe headache, backache, new neurologic symptoms, severe abdominal pain, shortness of breath, leg swelling, tiny red spots on the skin, new or easy bruising.

4. As of April 23, 2021, **no cases** have been reported among the **more than 200 million people** who received the Pfizer-BioNTech or Moderna vaccines.

How is COVID-19 Impacting Mental Health?

Wave of Pandemic Behavioral Health Impacts Predicted March 2020

- Stress
- Grief and Loss
- Fatigue and Burnout
- Anxiety
- Depression
- Substance Use
- Suicidal Thoughts

- According to CDC data in June 2020, 40% of U.S. Adults reported struggling with mental health or substance use *(reference 20-30% culminative for 2019)*

- 11% of U.S. adults seriously considered suicide *(reference 3-4% culminative for 2019)*

Am I Alone In Feeling This Way?

Harvard Business Review gathered feedback from more than **1,500** respondents in **46** countries, in various sectors, roles, and seniority levels in the fall of 2020, finding:

- **89%** of respondents said their work life was getting worse
- **85%** said their well-being had declined
- **62%** of the people who were struggling to manage their workloads had experienced burnout "often" or "extremely often" in the previous three months
- **57%** of employees felt that the pandemic had a "large effect on" or "completely dominated" their work
- **55%** of all respondents didn't feel that they had been able to balance their home and work life – with **53%** specifically citing homeschooling
- **25%** felt unable to maintain a strong connection with family **39%** with colleagues and **50%** with friends
- Only **21%** rated their well-being as "good" and a mere **2%** rated it as "excellent"

How Can I Help Myself?

Burnout: There are six main causes

Unsustainable Workload	Perceived Lack of Control	Insufficient Rewards for Effort
Lack of Supportive Community	Lack of Fairness	Mismatched Values and Skills

How to Beat Burnout

- ✓ Having a sense of purpose
- ✓ Having a manageable workload
- ✓ Feeling that you can discuss your mental health at work
- ✓ Having an empathetic manager
- ✓ Having a strong sense of connection to family and friends

How Do I Reverse Languishing?

Languishing the **the feeling of being somewhat joyless and aimless**. In this state and individual is **not flourishing or thriving**. Reversing this mental state takes deliberate effort focused on finding:

- New challenges
- Enjoyable experiences
- Meaningful work

Additional pointers: Set boundaries and start with small goals

FEHBP Participant Claims JAN – AUG 2020 Compared to 2019

Federal Employees Health Benefit Program (FEHBP) members' utilization of preventive care services has significantly decreased during the COVID-19 pandemic.

- Annual Wellness Visits fell 18.6%
- Colonoscopies fell 32.2%
- Mammograms fell 23.8%
- Pediatric Immunizations fell 16.2%
- Prostate Exams fell 16.8%
- Women's Preventive Exams fell 36.2%

https://www.fedweek.com/issue-briefs/deferred-preventive-care-raising-health-risks-to-fehb-enrollees-says-report/

Questions

Submitted Question 1

I have concerns about the vaccine. There are too many unknowns at this point. They just released a statement this morning that one of them “may” only last for 6 months, is this true?

The durability of a vaccine, how long immunity will last, is still being investigated and followed closely. There will likely be annual boosters similar to other viral vaccines like flu shots.

Submitted Question 2

What happens during cold and flu season when immunity defenses are down?

Coronavirus tend to thrive in colder drier weather (winter time). There is also evidence to suggest that the coronavirus is particularly sensitive to direct sunlight. Because people tend to socialize indoors during the winter months, we see higher infection rates of coronaviruses and flu. There is not necessarily a decline in immunity during this "season".

Submitted Question 3

Masks can be uncomfortable. Do you have any tips on how to make masks more comfortable when wearing them for long periods of time?

Fabric, fit or size, nose bridge, straps, and tightness all contribute to comfort.

Submitted Question 4

How effective are HVAC systems in removing COVID-19 from the air?

Research is still evolving on the role HVAC systems play in indoor air quality with regard to communicable diseases. Decreasing or eliminating the amount of recirculated air, opening windows, and doing activities outdoors vs. indoors are highly recommended by the CDC.

Submitted Question 5

Is there any data regarding the risk of transmission from a person in one office, with and without a mask, to a person in a neighboring office?

I am not aware of office-specific research, but there is research on the duration of exposure, room size, air volume, ventilation, and activities done by people in shared indoor airspace.

Submitted Question 6

What do community transmission levels need to be for businesses, such as daycares, to re-open?

Community COVID caseloads and population immunity get to the concept of "herd immunity". The bulk of research has not clearly defined the percentage of US or community population needed to achieve "herd immunity". Variants like the UK variant have been proven to have higher person-to-person transmission rates and thus might require a higher percentage of the population to be immune to achieve "herd immunity".

Submitted Question 7

Moderna and Pfizer both have had many deaths and disabilities due to their vaccines, according to the VAERS website. Why are Johnson & Johnson shots being stopped due to a small number of blood clots?

All reports are thoroughly investigated looking for correlations and trends. Over 189 million doses of COVID-19 vaccine have been administered in the United States with real-world safety reports indicating COVID vaccines being among the safest vaccines of any vaccines on the market. To date, VAERS has not detected patterns in cause of death that would indicate a safety problem with COVID-19 vaccines. See CDC vaccine adverse events web page.

Submitted Question 8

Can you please provide some guidance for parents who have unvaccinated children? How can parents, including vaccinated parents, minimize the risk of exposing or transmitting the virus to their unvaccinated children?

Early studies have shown COVID vaccines are likely between 80 – 90% effective at preventing COVID infection when fully vaccinated. For most families, the risk to the child is low due to the adults being vaccinated and the fact that most children have mild to no symptoms if infected. Because the risk in not zero, I recommend the adults and children continuing to wear masks and physical distancing per CDC guidelines when in public.

Submitted Question 9

What is the latest available information on the prevalence and impact of long-haul symptoms in those who contract COVID-19?

There is a great deal of research into symptoms (brain fog, fatigue, shortness of breath, decreased endurance) that persist long after an individual has recovered from COVID. You can be certain that as our knowledge evolves on this topic, you will hear more about it for years to come. There are a couple of working theories being looked into currently.

Submitted Question 10

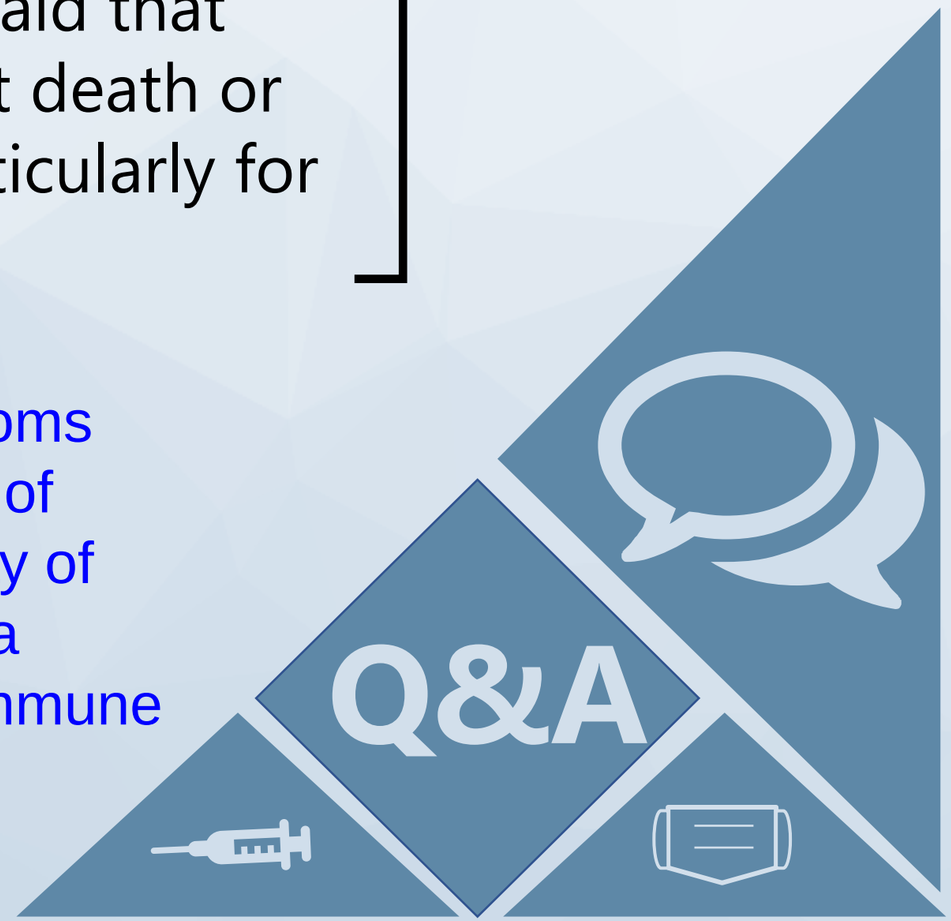
If I have COVID-19 symptoms or if I got COVID-19, how long should I wait before getting a vaccine?

You should wait to be vaccinated until after you have recovered from your illness and have met the criteria for discontinuing isolation; those without symptoms should also wait until they meet the criteria before getting

Submitted Question 11

I have elderly relatives who have been vaccinated but are periodically visited by friends or relatives who refuse to wear masks or get vaccinated. The speaker said that vaccines have 100% for effectiveness against death or severe symptoms, but is there still a risk particularly for the elderly?

They were nearly 100% effective at preventing symptoms and death due to COVID-19. There is a small amount of evidence to suggest that there may be a little variability of effectiveness for different ages. Also, individuals with a diminished immune system may not have as robust immune response to the vaccine and thus may be a little ness protected.



Submitted Question 12

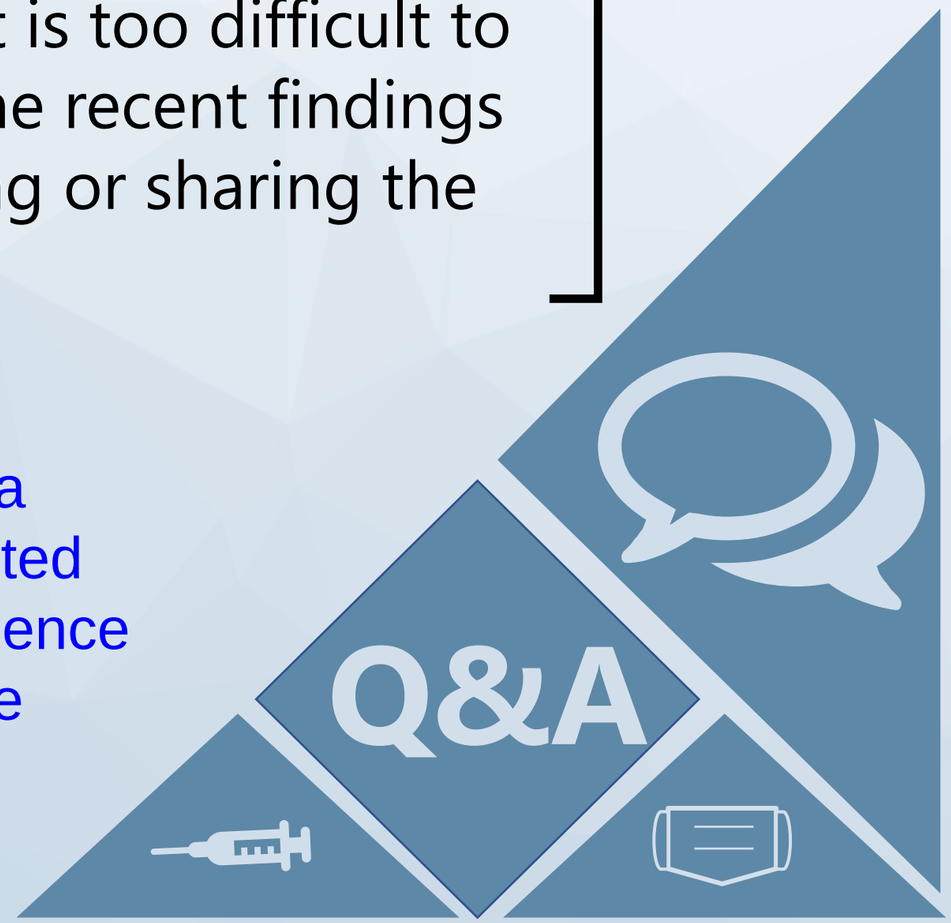
If I get a COVID-19 vaccine, can I still carry and transmit the virus?

Possibly. Though COVID vaccines do prevent infection, research is still evolving on how well they prevent people from getting infected with COVID.

Submitted Question 13

I'm of the impression that immunity is most probable as a result of exposure to the virus. Even more so than being vaccinated. Yet, people that fought the disease are considered to have no immunity until vaccinated. Is that because it is too difficult to track cases vs vaccination? Can you share the recent findings showing vaccinations help prevent contacting or sharing the virus?

In short, COVID vaccines are thought to give people a more substantial immune response than getting infected (particularly those with mild to no symptoms). The science data is beginning to validate that but more data will be available over the next several months.



Submitted Question 14

What are the best and worst-case scenarios we might be facing in the coming year(s) given the existing (and likely future) COVID-19 variants?

That is very difficult to say. What I can say is that it is likely we will be hearing about COVID-19 the rest of our lives much like the flu and that we will likely have annual COVID-19 vaccinations/ boosters to keep community spread low.

Submitted Question 15

Who cannot or should not get a COVID-19 vaccine?

People with underlying medical conditions can receive a COVID-19 vaccine as long as they have not had an immediate or severe allergic reaction to a COVID-19 vaccine or to any of the ingredients in the vaccine. Learn more about vaccination considerations for people with underlying medical conditions. Vaccination is an important consideration for adults of any age with **certain underlying medical conditions** because they are at increased risk for severe illness from COVID-19.

Submitted Question 16

Which COVID-19 test should I get and how do I get one? How common are false positives?

PCR testing is considered the “gold standard” in CIVID-19 detection. This test actually detects RNA (or genetic material) that is specific to the virus and can detect the virus within days of infection, even those who have no symptoms. The test can be done in a clinic, hospital, or even in your car. Sensitivity and specificity vary depending on the brand.

Thank you for attending.