COVID-19 Series for Free & Charitable Clinics

August 10, 2023

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AT THE FOREFRONT UChicago Medicine

Vaccinate with Confidence

A National Strategy to Reinforce Confidence in COVID-19 Vaccines

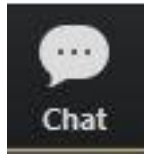
CDC's Strategy: **Empower Healthcare Personnel**: Promote confidence among healthcare personnel in their decisions to get vaccinated and recommend the vaccination to their patients.

Project Goal: Build and reinforce COVID-19 vaccine confidence among healthcare personnel in the safety net sector and, in turn, the patients they serve.

Partnerships: **The National Association of Free and Charitable Clinics** and **6 State Associations**: to consult directly with clinic personnel in highly vulnerable areas with low vaccination rates.

How: Provide tailored COVID-19 vaccine information to the free and charitable clinic sector through various channels and **give the FCC sector a direct line of communication to CDC**.

Reminders:

- Please use your first name and clinic name when you join the session
- Use the “chat” feature to ask questions 

- Please remember to mute your microphone 

- If you can’t connect audio via computer or you lose computer audio at anytime, you can call in to session at **(408) 638-0968, Meeting ID 932-6566-2201##**
- This activity has been approved for AMA PRA Category 1 Credit™ & Nursing CEUs

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Disclosures

- We have no relevant financial interests to disclose.

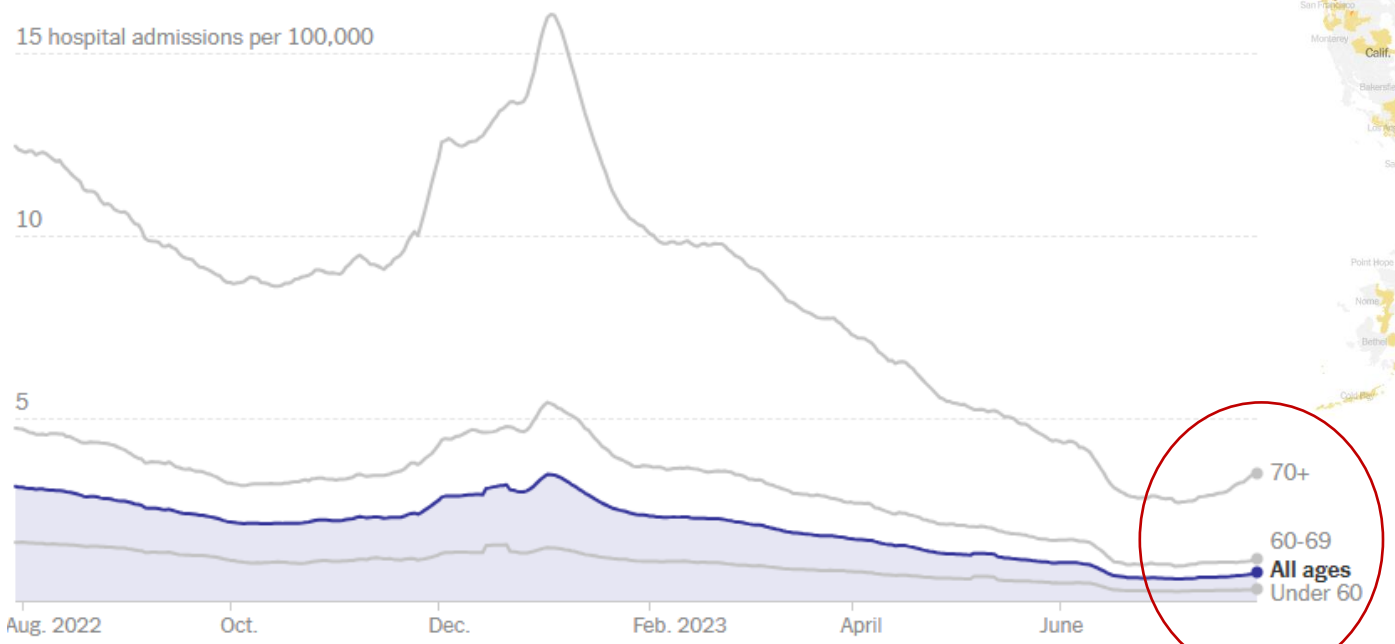
Track Covid-19 in the U.S.

Updated Aug. 9, 2023

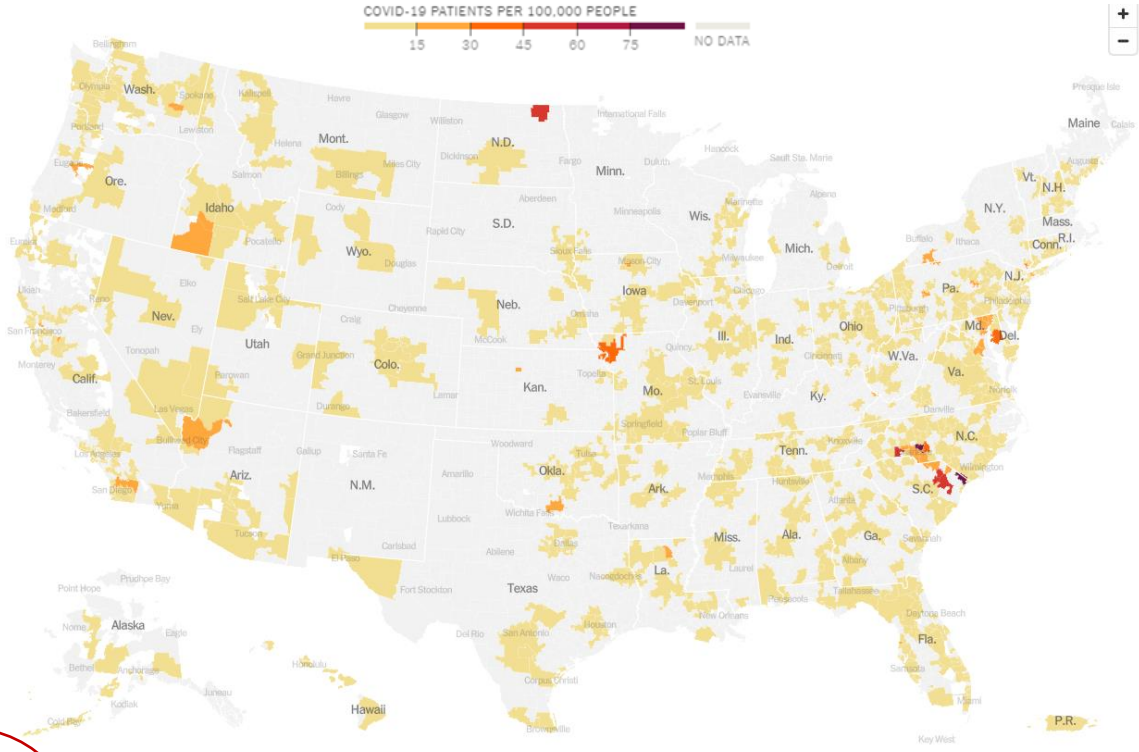
Daily Covid hospital admissions

Avg. on July 29: 2,477

14-day change: +16%



Current hospitalizations



Primary series vaccination rate

69% Total population

94% Ages 65 and up

Bivalent booster rate

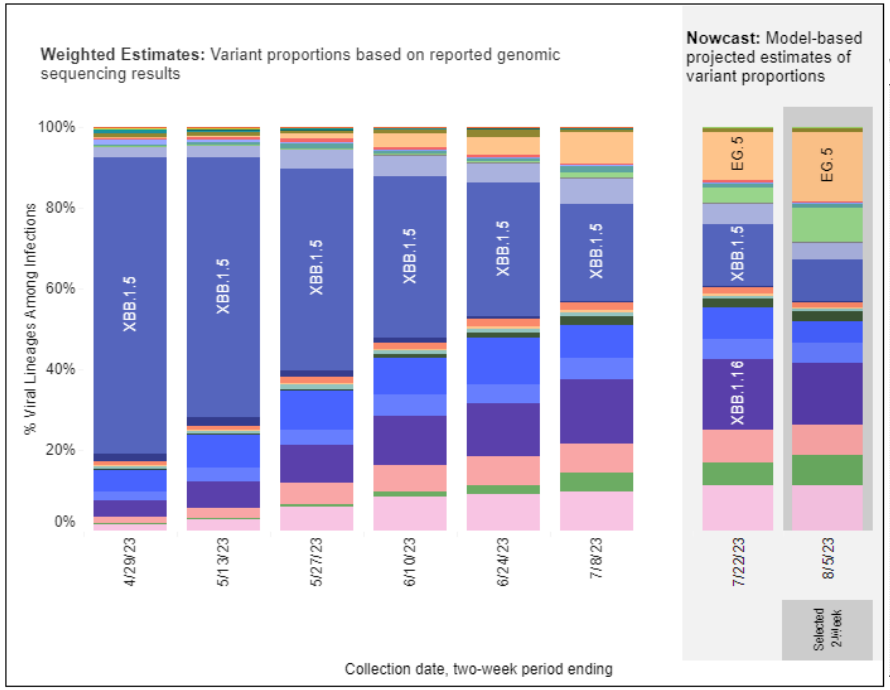
17% Total population

43% Ages 65 and up

https://www.nytimes.com/interactive/2023/us/covid-cases.html

Weighted and Nowcast Estimates in United States for 2-Week Periods in 4/16/2023 – 8/5/2023

Hover over (or tap in mobile) any lineage of interest to see the amount of uncertainty in that lineage's estimate.

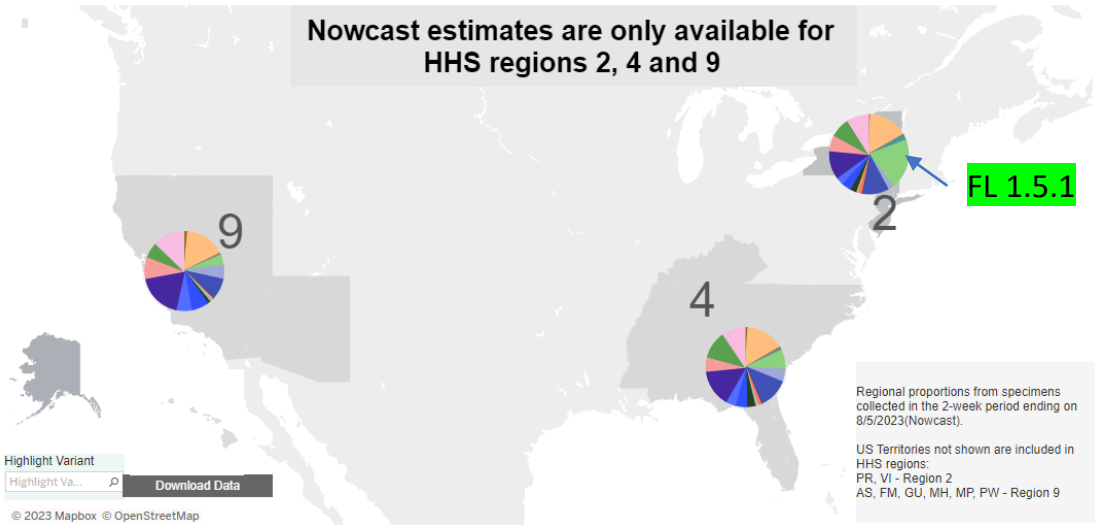


Nowcast Estimates in United States for 7/23/2023 – 8/5/2023

USA

WHO label	Lineage #	%Total	95%PI
Omicron	EG.5	17.3%	14.1-21.0%
	XBB.1.16	15.6%	12.5-19.2%
	XBB.2.3	11.2%	9.5-13.1%
	XBB.1.5	10.3%	8.6-12.3%
	FL.1.5.1	8.6%	4.2-16.1%
	XBB.1.16.6	7.7%	5.6-10.6%
	XBB.1.16.1	7.2%	6.0-8.7%
	XBB.1.9.1	5.4%	4.5-6.5%
	XBB.1.9.2	4.8%	3.5-6.6%
	XBB	4.4%	3.1-6.1%
	XBB.1.5.72	2.4%	1.6-3.7%
	XBB.1.5.10	1.2%	0.7-1.9%
	FE.1.1	1.1%	0.6-2.1%
	CH.1.1	1.1%	0.6-1.9%
	XBB.1.5.68	0.6%	0.4-1.0%
	XBB.1.5.59	0.4%	0.2-0.8%
	EU.1.1	0.3%	0.2-0.6%
	XBB.1.5.1	0.2%	0.1-0.2%
	BA.2	0.0%	0.0-0.1%
	BA.2.12.1	0.0%	0.0-0.1%
	FD.2	0.0%	0.0-0.0%
	BA.5	0.0%	0.0-0.0%
	BQ.1.1	0.0%	0.0-0.0%
	BQ.1	0.0%	0.0-0.0%
Other	Other*	0.1%	0.0-0.1%

Nowcast Estimates for 7/23/2023 – 8/5/2023 by HHS Region

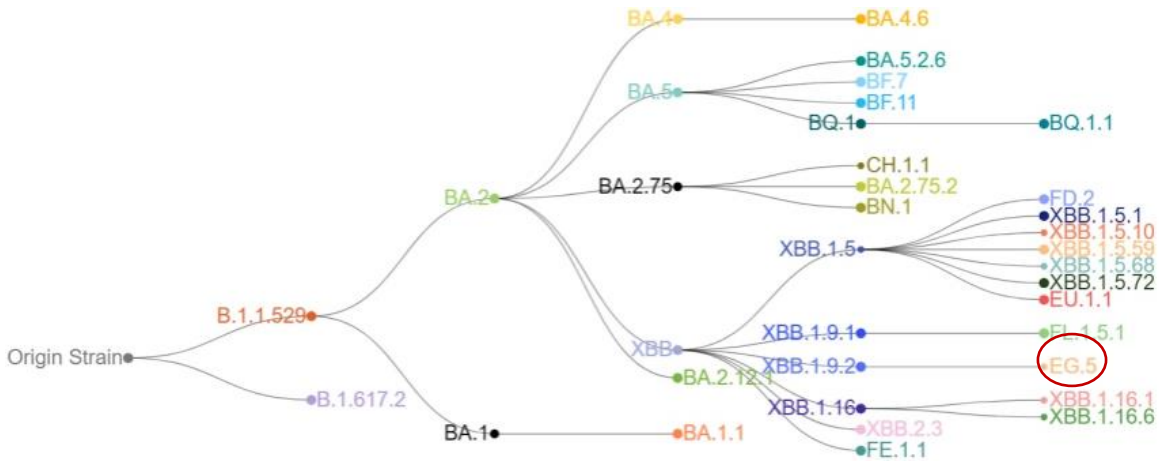


Lineages called using pangolin v4.3.1, pangolin-data v1.21 and usher v0.6.2.

Updated August 4, 2023

Omicron Continues to Evolve

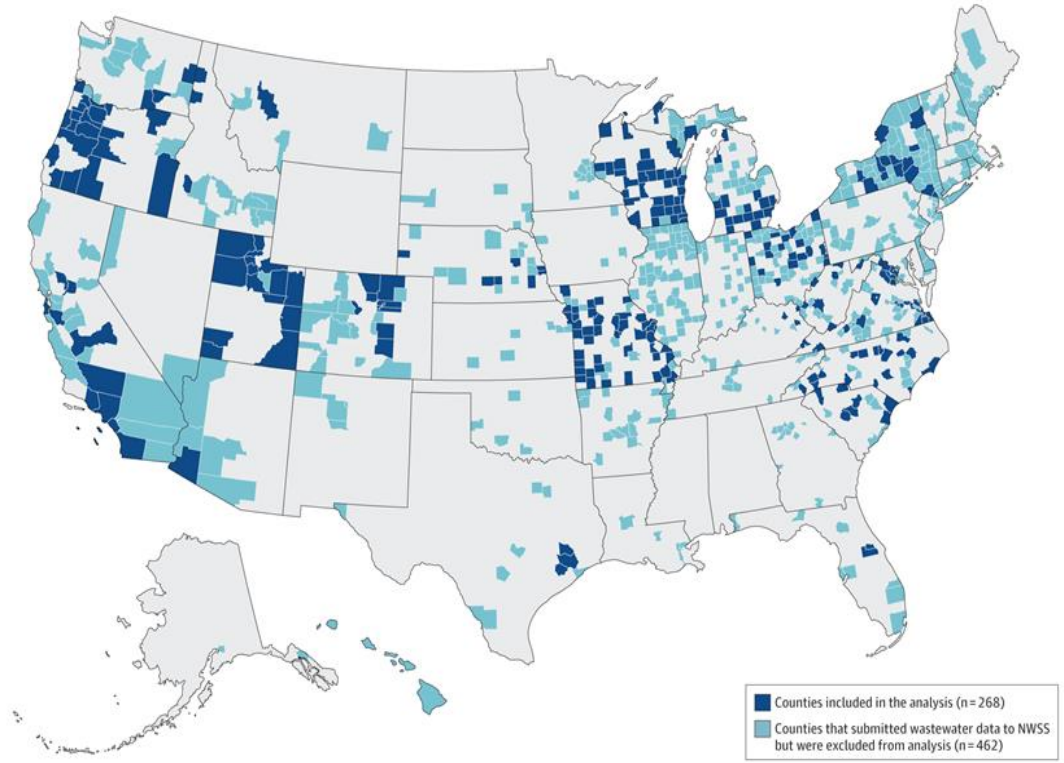
- Continues to have a wide variety
- EG.5 is an XBB offshoot
- Called “Eris” along the same taxonomy developed by Ryan Gregory (Greek Goddess of strife, discord, contention, rivalry)
- Both India and Australia saw this variant earlier this year, but it never gained a foothold
- Compared with its parent XBB.1.9.2, it has one extra mutation to its spike, at position 456. This mutation has appeared in other coronavirus variants before. Scientists aren’t sure exactly what new tricks it enables the virus to do, but variant hunters are paying attention because many of the new XBB descendants have adopted it. Some have opined that this mutation leads to more immune evasion than more effective site binding.
- The growth advantage compared to all other XBB appears to currently be on the order of 50% per week, doubling around every 2 weeks.
- The S:F456L mutation is present in about 35% of coronavirus sequences reported worldwide, including another that’s rising in prevalence in the Northeast, FL.1.5.1, suggesting that it is conveying some kind of evolutionary advantage over previous versions.
- The XBB directed vaccine planned for the fall should still convey some protection for this variant



Are wastewater surveillance metrics reported to the CDC's National Wastewater Surveillance System associated with high community case and hospitalization rates of COVID-19 across US counties?

- Cohort study in JAMA with a time series analysis of 268 counties in 22 states from January to September 2022, SARS-CoV-2 wastewater metrics accurately reflected high clinical rates of disease early in 2022, but this association declined over time as home testing and vaccination increased.
- These findings suggest that wastewater surveillance can provide an accurate assessment of county SARS-CoV-2 incidence and may be the best metric for monitoring amount of circulating virus as home testing increases and disease acuity decreases because of vaccination and treatment.

Figure 1. US Counties Submitting Wastewater Surveillance Data to the National Wastewater Surveillance System (NWSS) Between January 1, 2022, and September 30, 2022



JAMA Netw Open. 2023;6(7):e2325591. doi:10.1001/jamanetworkopen.2023.25591

New COVID Vaccine Available by End of September

- Will be monovalent against XBB 1.5
- No need for earlier vaccination prior to receiving this one
- Trying to streamline approach like we have with influenza vaccines

Why Some Have Asymptomatic Infection

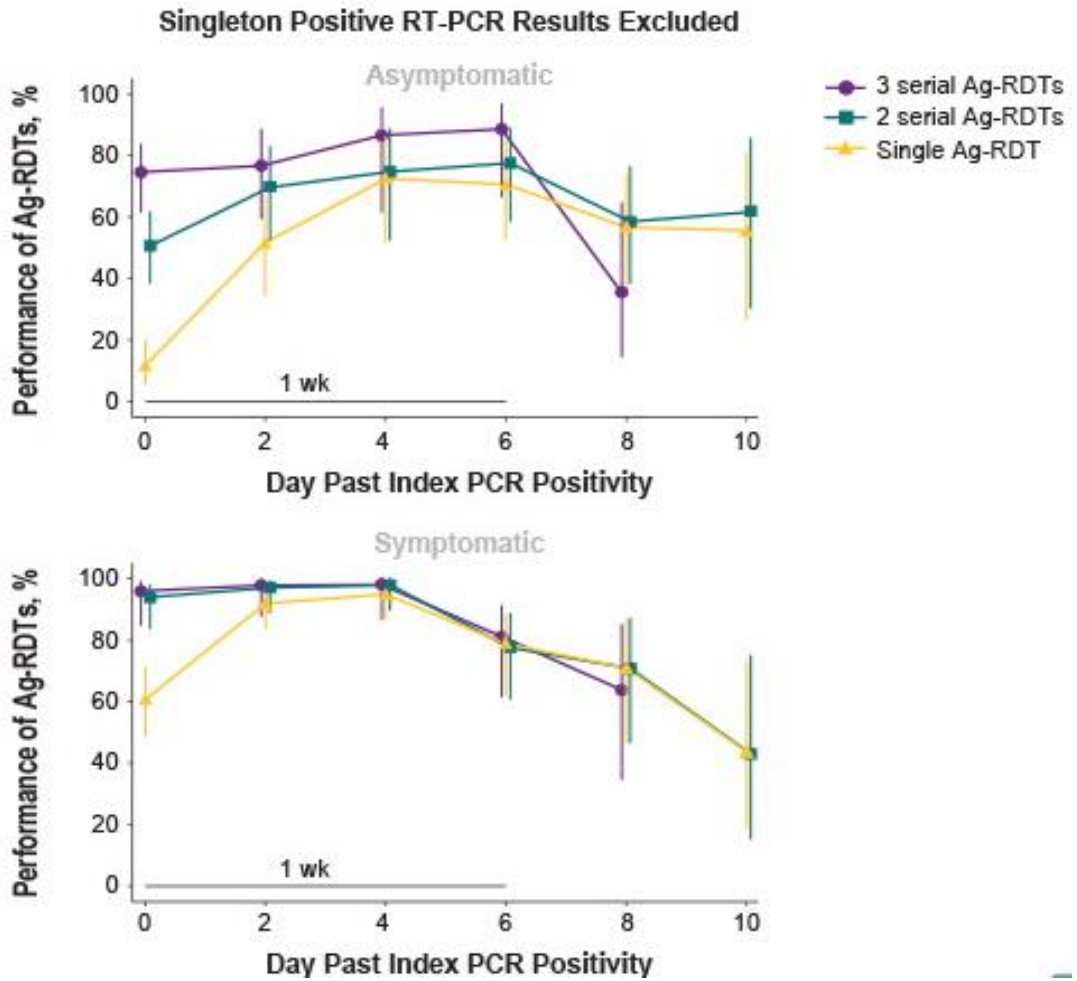
- Hollenback et al recruited nearly 30 000 people into the COVID-19 Citizen Science Study starting in 2020. The participants were potential bone marrow donors in the US whose HLA regions had been sequenced with a high level of detail. They were asked to track their COVID-19 symptoms and outcomes on their smartphones.
- 1292 participants had COVID-19 symptoms while 136 participants were asymptomatic. A common variant, or allele, known as ***HLA-B*15:01*** **stood out:**
  - This variant was found in 20% of asymptomatic participants but only 9% of participants who reported symptoms.
  - People with 2 copies of the variant, inherited from both parents, were more than 8 times as likely to not have symptoms than those who carried no copies.
  - The variant also had a strong association with asymptomatic infection in the 2 independent cohorts.
  - A meta-analysis of data from the discovery and independent cohorts found that asymptomatic infections were more than twice as common in people who carried the variant.
  - The T cell analysis revealed that before the pandemic even began, participants with the variant had killer T cells that could effectively target SARS-CoV-2.

- HLA-B is a human cell surface protein that presents virus proteins to T cells. The researchers found that the variant HLA-B*15:01 has an affinity for certain spike protein segments that are structurally similar in common cold coronaviruses and SARS-CoV-2. “When this particular HLA binds these pieces of the SARS-CoV-2 spike protein or a very similar piece from common cold viruses, they look very similar to T cells at a molecular level,” and are recognized by the same T cells, Hollenbach explained.
- The researchers concluded “individuals with HLA-B*15:01 who were previously exposed to seasonal cold viruses might develop immunological memory in the form of T cells that recognize SARS-CoV-2 during a later infection and rapidly kill infected cells.”
- **“In our cohort this genetic association accounted for about 20% of asymptomatic cases,” Hollenbach said. “So there are likely other genetic and nongenetic factors that are important.”**

doi:10.1001/jama.2023.14703
doi.org/10.1038/s41586-023-06331-x

Performance of Rapid Antigen Tests to Detect Symptomatic and Asymptomatic SARS-CoV-2 Infection

- Prospective Cohort Study in US enrolled 7361 participants between Oct 2021 and Jan 2022. Participants completed Ag-RDTs and reverse transcriptase polymerase chain reaction (RT-PCR) testing for SARS-CoV-2 every 48 hours for 15 days.
- Among 154 participants who tested positive for SARS-CoV-2, 97 were asymptomatic and 57 had symptoms at infection onset. The sensitivity of Ag-RDTs was measured on the basis of testing once (same-day), twice (after 48 hours), and thrice (after a total of 96 hours).
- Serial testing with Ag-RDTs twice 48 hours apart resulted in an aggregated sensitivity of 93.4% among those with symptoms
- 2-time serial testing among asymptomatic participants was lower at 62.7% (CI, 57.0% to 70.5%), but it improved to 79.0% (CI, 70.1% to 87.4%) with testing 3 times at 48-hour intervals.
- The performance of Ag-RDTs was optimized when asymptomatic participants tested 3 times at 48-hour intervals and when symptomatic participants tested 2 times separated by 48 hours.



https://doi.org/10.7326/M23-0385

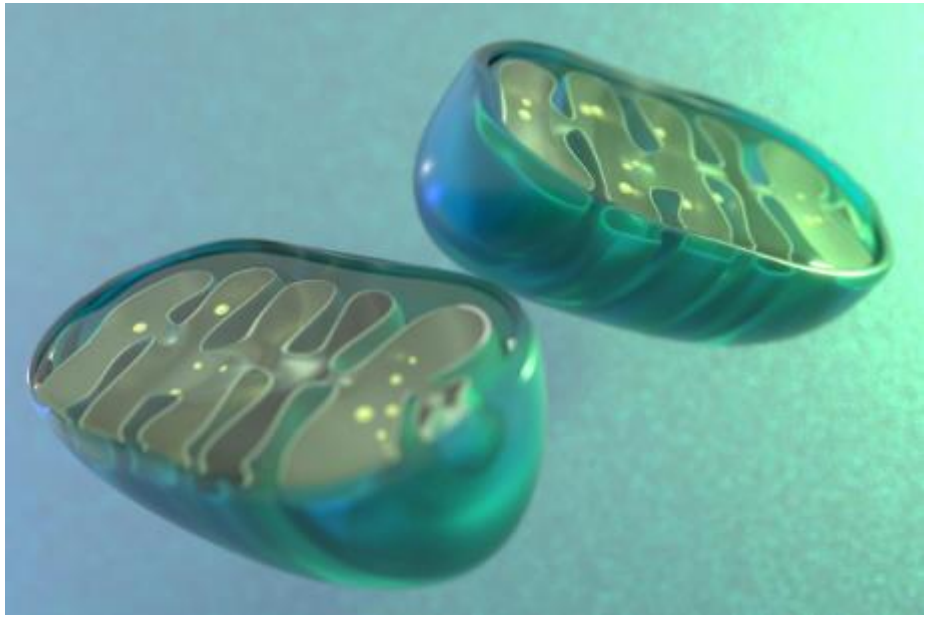
Bivalent COVID booster protects against poor outcomes better than 1-strain 4th dose

- Retrospective cohort study among Singapore residents aged 18 years and older who had received three monovalent mRNA vaccine doses and were eligible for a fourth dose, Oct 14, 2022, and Jan 31, 2023
- For the SARS-CoV-2-naive group, a fourth monovalent vaccine dose did not confer additional protection over three monovalent doses against symptomatic infection (HR 1·09 [95% CI 1·07–1·11]), whereas the bivalent vaccine did provide additional protection (0·18 [0·17–0·19])
- A fourth dose with the bivalent vaccine was substantially more effective against medically attended symptomatic SARS-CoV-2 infection and COVID-19-related hospital admission than four monovalent doses among both SARS-CoV-2-naive and previously infected individuals. *Boosters with the bivalent vaccine might be preferred in this omicron-predominant pandemic, regardless of previous infection history.*
- **This finding suggests that concerns over the limited effectiveness of bivalent vaccines due to immune imprinting is not validated epidemiologically.**

https://doi.org/10.1016/S1473-3099(23)00373-0

SARS-CoV-2 Can Damage Mitochondrion in Heart, Other Organs

- The COVID-19 International Research Team (COV-IRT) and the Children's Hospital of Philadelphia (CHOP) report that they have identified abnormal mitochondrial function in the heart, kidneys, and liver after SARS-CoV-2 infection, which leads to long-term damage and may help explain long COVID.
- The team analyzed mitochondrial gene expression in tissues from COVID-19 patients' nose and throat, along with tissues from deceased patients and hamsters and mice.
- Co-senior author Douglas Wallace, PhD, of CHOP, said that the study offers strong evidence that COVID-19 is a systemic disease that affects multiple organs rather than strictly an upper respiratory illness. "The continued dysfunction we observed in organs other than the lungs suggests that mitochondrial dysfunction could be causing long-term damage to the internal organs of these patients,“
- The results also identified a potential therapeutic target, **microRNA 2392**, which was shown to regulate mitochondrial function in the human tissue samples
- Data suggest that when the viral titer first peaks, there is a systemic host response followed by viral suppression of mitochondrial gene transcription and induction of glycolysis leading to the deployment of antiviral immune defenses. Even when the virus was cleared and lung mitochondrial function had recovered, mitochondrial function in the heart, kidney, liver, and lymph nodes remained impaired, potentially leading to severe COVID-19 pathology.



DOI: 10.1126/scitranslmed.abq1533

NIH launches long COVID clinical trials through RECOVER Initiative, opening enrollment

- National Institutes of Health launched and is opening enrollment for phase 2 clinical trials that will evaluate at least four potential treatments for long COVID, with additional clinical trials to test at least seven more treatments expected in the coming months.
  - **RECOVER-VITAL** will initially focus on a treatment targeting SARS-CoV-2 persistence, which could occur if the virus stays in the body and causes the immune system to not function properly or damage to the organs. The first intervention will test a longer dose regimen of the antiviral PAXLOVID (nirmatrelvir and ritonavir) than is used for treating acute COVID to see if it improves the symptoms of patients with long COVID.
  - **RECOVER-NEURO** will examine accessible interventions for cognitive dysfunction related to long COVID, including brain fog, memory problems and difficulty with attention, thinking clearly and problem solving. Interventions under this protocol will include a web-based brain training program called BrainHQ, developed by Posit Science Corporation in San Francisco, that has been used to improve cognitive function; PASC-Cognitive Recovery, a web-based goal management training program, developed by Mount Sinai Health System, New York City, that has been used to improve executive function; and a device used for home-based transcranial direct current stimulation developed by Soterix Medical, Inc., Woodbridge, New Jersey, which has been demonstrated to help brain activity and blood flow.
  - **RECOVER-SLEEP** will test interventions for changes in sleep patterns or ability to sleep after having COVID-19. A trial for hypersomnia, or excessive daytime sleepiness, will test two wakefulness-promoting drugs compared to a placebo control. A second trial for sleep disturbances, such as problems falling or staying asleep, will test other interventions designed to improve sleep quality to learn if these interventions may help regulate sleep patterns in adults with long COVID.
  - **RECOVER-AUTONOMIC** will examine interventions to help treat symptoms associated with problems in the autonomic nervous system, which controls a range of bodily functions including heart rate, breathing and digestive system activity. The initial trial will focus on postural orthostatic tachycardia syndrome (POTS), a disorder with a number of symptoms including irregular heartbeat, dizziness and fatigue, and will have multiple study arms. The first arm will evaluate a treatment used for immune diseases versus placebo. The second arm will evaluate a drug currently used to treat chronic heart failure in people with an elevated heart rate versus placebo.

https://www.nih.gov/news-events/news-releases/nih-launches-long-covid-clinical-trials-through-recover-initiative-opening-enrollment

Questions and Discussion

Thank you!

Last Session: Thursday, September 14th,12-1 pm CST

Resources & recording of the session

https://www.echo-chicago.org/resources/covid19/

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