

Agenda
Clinical Laboratory COVID-19 Response Call
Monday, April 18 2022 at 3:00 PM ET

- **Welcome**
 - Jasmine Chaitram, CDC Division of Laboratory Systems (DLS)
- **Opening Remarks**
 - Dr. Rochelle Walensky, Director, CDC
- **Medical Laboratory Professionals Week**
 - Alexandra Mercante, Division of Laboratory Systems, CDC
- **Infection-Induced and Hybrid Immunity**
 - Jefferson Jones, Division of Viral Diseases, CDC
- **SARS-CoV-2 Variants Update**
 - Natalie Thornburg, Laboratory and Testing Task Force, CDC
- **FDA Update**
 - Tim Stenzel, US Food and Drug Administration (FDA)

JASMINE CHAITRAM: Thank you for joining us. I'll start over since my audio was muted. I'm Jasmine Chaitram. Maybe you all know me. We've been doing these calls since about 2020. And we're grateful that you're here with us today. I'm showing the agenda, which will start off with some opening remarks from the CDC director. I'll get to that in just a second. Of course, I've got a few housekeeping things I want to mention and then a little bit of background on the [Division of Laboratory Systems](#), the division that I'm actually associated with.

And we've been the ones that have been hosting these calls. The DLS's vision and mission are both to support clinical and public health laboratories, and we've been doing that in a number of ways and specific goal areas around quality and laboratory science, supporting a competent laboratory workforce through safe and prepared laboratories and accessible and usable laboratory data. And so that's our informatics program.

And in the area of safe and prepared laboratories, we've been supporting the COVID-19 response and all of the laboratories that are doing testing for COVID-19 since 2020 by providing testing guidance, LOCS messages, and other information through our [CDC Preparedness Portal](#), which is where you can find the archives of all of these [Clinical Laboratory COVID-19 Response Calls](#). There we have the transcripts, audio, and slide decks from past calls.

So if you missed one, you can always go there. We also have an archive of all the emails that we send out from LOCS. That's our [Laboratory Outreach Communication System](#) (LOCS). We also have links to all of the [CDC Laboratory COVID-19 pages](#) so that you can have an easy resource, or access to resources, for testing guidance, as well as reporting guidance. Our next call will be scheduled for May 16th, from 3:00 to 4:00 PM. We mentioned, I believe it was on the last call, that we are transitioning from biweekly calls to monthly calls.

And also, on the topic of transition, this is the last call that I will be hosting for a while. Sean Courtney who is also with the Division of Laboratory Systems, will be hosting the call starting May 16th. So we welcome him in participating in these calls. We do want to hear from you, anything related to training and workforce development. You can send your ideas and needs to labtrainingneeds@cdc.gov. And I do want to remind you all how to ask a question.

Hopefully, you're experts by now. But please use the Q&A button in the Zoom feature and not the chat. We do ask you to do that so that we can have a record of the questions that are asked for a number of reasons, first, so that we can use those questions to help determine topics for future calls. And secondly, if we're not able to answer your question during the session today, we can always come back and send you an email.

A lot of times we may not have the right subject matter experts on the call to answer your question. So it is important for us to have a recording of that question. And we will try our best to get an answer for you and send that to you later, or get that topic answered on a future call. Sometimes we also don't get questions answered because there are so many, and we only have limited time to get to all the questions. So thank you in advance for submitting those questions and appreciate your patience in getting a response.

One other reminder that if you do go to our [Preparedness Portal](#), or even if you're watching presentations live during the call, that the material that is presented for panelists that are not affiliated with CDC do not necessarily reflect CDC's official position on that topic. And with that, I think we are ready to go to our first speaker for today, Dr. Rochelle Walensky, the CDC Director. We had planned for the CDC Director to be with us here today live, but unfortunately, she had another engagement.

We do have a recording of some words that she had for all of you. And so we were going to play that now, and appreciate your patience, again, with us playing this live video for the first time.

ROCHELLE WALENSKY: It's my honor to speak today with the nation's laboratory and testing community. CDC is grateful. I am grateful for the dedication and commitment you bring to your work, most especially during what has been an unprecedented time. Thank you for coming to this work every single day with care and commitment, for not giving up, for bringing your knowledge, your expertise, and your concern for our nation's health.

This past year, I have had the chance to visit some of you where you work, in the labs, on the front lines, responding to COVID-19. Recently, I toured a COVID-19 testing site in New Jersey. It was a 24/7 operation dedicated to doing the work quickly and doing the work well. What I saw in that lab was reflective of what I see in each of you, a group of talented individuals working every day to improve the lives of others, a group that should be proud of themselves for their contributions every day, a group I am honored to recognize today.

Throughout the pandemic, laboratory professionals have endured surges in testing and sequencing and have remained nimble to keep up with the testing, reporting, and surveillance guidance, which has evolved as the science evolves and as we have learned more about COVID-19. From the beginning, the nation's response to the pandemic has relied on the work of our laboratory and testing community, work that has involved long hours and often grueling, repetitive tasks at a pace that has often felt unsustainable.

Yet, you stayed the course, knowing that public health was depending on you. Your service has been nothing short of heroic, and you have been our critical partners in protecting the public's health. Now, after asking so much of you, we want to step back and acknowledge your tremendous dedication and tireless efforts. We are here for you, with support, with resources to help you meet the demands of your daily duties, especially as we continue to face this public health emergency.

I know the trauma over the past two years has had a lasting impact, not just on our communities but also on our laboratory professionals. It's important that while you are taking care of others, you do not neglect yourselves. Lab Week reminds us to stop and celebrate your work, recognizing the essential services laboratory scientists perform to protect public health, not just during a public health emergency but every single day. I open with gratitude, and I will close on the same note. I am personally grateful.

CDC is grateful, and the public is grateful for your stellar work and continued dedication to improving public health. Thank you for your continued partnership and for playing such an essential role in ending this pandemic. And now, I will turn things back over to Jasmine. Thank you.

JASMINE CHAITRAM: Very excited that we could have Dr. Walensky here with us. Even if she wasn't live, her recorded video there was a really nice touch to the Lab Week to start off the week. And next, we have Alex Mercante from the Division of Laboratory Systems, who's also going to tell us how we're celebrating medical laboratory professional week here at CDC.

ALEXANDRA MERCANTE: Thank you, Jasmine. And thank you for the invitation to speak with you all today. Next week, April 24th through April 30th, marks the [47th Annual Medical Laboratory Professionals Week](#), also known as Lab Week. In the Division of Laboratory Systems, we observe Lab Week every year to honor the work of clinical laboratory professionals for their essential contributions to public health and patient care. And this year, DLS selects giving the gift of health as our Lab Week theme.

We celebrate diversity among clinical laboratory professionals who give the gift of health by improving public health and patient care, driving innovation, and fostering health equity. Like Dr. Walensky mentioned in her remarks, we also recognize the generosity and service of clinical laboratory professionals, whose devotion and expertise strengthen public health and patient care by ensuring accurate, reliable, and timely test results. Please join us in celebrating clinical laboratory professionals during Lab Week by using, adapting, and sharing resources that we have created in the [Lab Week Digital Toolkit](#), which you can access in the link that's shown in the chat.

DLS is especially excited about our digital graphics found within the digital toolkit, which showcase the creativity and authenticity of public art. You can use content found in the digital toolkit to increase public awareness of the amazing and important contributions of clinical laboratory professionals. We encourage you to show your support by sharing or adapting the sample social media messages and digital graphics found in the toolkit.

You can use the Lab Week hashtags in your social media messages, download a Zoom or Teams background to showcase at a virtual meeting, like the one I'm using today, or share a newsletter blurb or stakeholder email with your partners and communities. Remember, Lab Week begins in one week, on April 24th, and in DLS, we look forward to celebrating laboratory professionals with you. Thank you, and now I'll pass it back to Jasmine.

JASMINE CHAITRAM: Thank you so much, Alex, and it's great work that DLS has done to highlight this important week. All right, our next speaker today is Jefferson Jones. He is with the Division of Viral Diseases at CDC. And I will turn it over to Jefferson right now. Jefferson, are you there?

JEFFERSON JONES: I'm here. Thanks for having me today. Can you hear me all right?

JASMINE CHAITRAM: Yes.

JEFFERSON JONES: All right, thanks. I was asked to talk on infection-induced and hybrid-induced immunity today. Next slide. The reason that we are looking at this is there may be differences in the protection offered from infection versus vaccination. Infection may offer a breadth of immune response that might offer mucosal immunity, target diverse targets of the virus. However, limited data suggests that there's a more variable response that is based on the severity of disease.

At least, there's a number of papers based on antibody responses. On the other hand, vaccination seems to produce more predictable and consistent immune response, with higher titer antibodies, compared to mRNA vaccines at least. There may be a limited breadth of the response and early waning of immunity, at least against infection, as opposed to severe disease. Next slide.

We produced a website back in October, 2021, a scientific brief discussing this and the literature up to that point. We included both preprint and peer reviewed literature. And some of the summary points are that the immune response to infection varies, especially by disease severity, that the mRNA vaccines tend to produce more consistent titer antibodies, as mentioned. So if you look at the figure at the right, this is a receptor binding domain binding antibody titers.

And this was for the Moderna vaccine. So looking at both various doses on the left, you can see that the antibody titers, after several weeks, in passing the second dose, have very consistent high titers. On the very right of that figure is convalescent titers. Those are within approximately 60 days of infection, and you can see that there's a much bigger range in antibody titers. In multiple large epidemiologic studies, protection following infection was somewhat comparable to protection following vaccination.

At this point, this was pre-Delta data. And many studies have shown that vaccination provides additional benefits to those with a history of SARS-CoV-2 infection. Next slide. So looking at more recent data since then, I don't have time to go over the large number of in vitro studies, but I'd like to focus on one in particular. So this was published in the New England Journal, and this shows neutralizing antibody titers to Alpha, Beta, Delta, and Omicron variants.

On the top are various combinations of vaccination and shows that neutralization is decreased substantially among individuals in rows A through D against Omicron, compared to the other variants. At the bottom, it shows those E, F, and G on the left, shows those who have been infected with Alpha, Beta, and Delta. And you can see that for Alpha, Alpha, neutralization is the highest, Beta with Beta, Delta with Delta, as you might expect.

But all of those have quite low Omicron neutralization. And the bottom right are those with hybrid immunity, with the left being those that were first infected then vaccinated. Then on the right side, that box H are those that were vaccinated and then had a breakthrough infection. And we could see that for those, they have the highest anti-Omicron neutralization antibody titers among all the groups. And these are those that were infected pre-Omicron. Next slide, please.

So if we're looking at antibody titers, they may not perfectly align. So this is a study on correlates of protection and shows that they might differ on infection versus vaccination. So this was a large population-based study in the United Kingdom. And if you look at the charts, you can see in red is for the ChAdOx1 AstraZeneca vaccine. Blue is the Pfizer vaccine. And then in the light tan color are those that are unvaccinated but have previously been infected.

So if you look at a given antibody titer, so I'm just going to look at 100, if you can read that on the x-axis, and it's pretty similar for all three boxes, which show various definitions of infection, that the protection against subsequent infection for approximately 100 binding antibody units per ml was about 70% for both vaccination groups. But if an unvaccinated person had the same number, same titer of 100 BAs per ml, they had a much higher protection, at near 90%. Next slide.

This is real world epi data, which I'll focus on for the rest of the presentation. This was published in the MMWR, and this included Delta but not Omicron. So on the left is hospitalization rates. And you can see that in the top that is no vaccination or previous infection had the highest hospitalization rates. Those that either had a previous infection, or previous hospitalization, or both had much lower rates at the bottom. If you look at the graph, sorry, the table on the right-- I can't point it with my mouse, but I'm looking at the far-right column in parentheses.

Both California and New York, if you look at the cumulative incidence in the parentheses on the right, among the highest is, again, those that are unvaccinated and had no previous diagnosis. So for California, that's 128.5 per 1,000 population. Now, the next highest, and this is the rate of infections, was

those that were vaccinated only, did not have previous infection. Lower were those that had a previous COVID diagnosis but were unvaccinated at 5.0 infections per 100,000.

And then the lowest was those with hybrid immunity. Again, this California is to be the top row there with 3.6 infections. So we actually found during Delta, there were slightly lower rates among those that were previously infected than those that just had vaccination, but the lowest rates overall were those with harbored immunity. And all of these were much, much lower than those that were both unvaccinated and had no previous infection, showing that either infection or vaccination made big differences during the Delta outbreak.

Next slide, please. Next slide is a study that helps to show differences in waning over time. So on the x-axis is confirmed infection rate per 100,000 risk days. And we have three groups here, showing over time how that current infection rate changed. So the top are those that have recovered, and we do see waning rates. So during this period, which was August to September, 2021, 2001 we see that the rate of infections goes up, whether you had an infected within the last six months, versus a year.

And B, the next group, is vaccinated. And we see much quicker rates of waning here, that those that had their second dose-- the gray are the second dose and the turquoise is with a booster dose. So among those that had their second dose had something close to 20 infections per 100,000 risk days. By the time it went up to six to eight months prior, that had more than quadrupled in size. If they got their booster dose, their third dose, then it went back down.

And other studies have shown that waning has occurred with that, as well. And then at the bottom, we have hybrid immunity, whether they had recovered then vaccinated at the darker blue on top. And at the bottom of that box C is those who were vaccinated, then recovered. And we do see evidence of waning, but it does, again, to be slower than vaccinated alone. Next slide, please.

This is the study of the United Kingdom, the SIREN cohort. That's a cohort of health care workers. And this is looking at the vaccine effectiveness (VE) or the infection-induced effectiveness for the unvaccinated over time. This is pre-Omicron, as well. So if we look on the left, this is VE among those without previous infection. And we see a lot of waning over time. Then it goes from about 90% within the first 73 days to quickly nearing 50% by close to 265 days after dose two.

On the right is among those with previous infection. And they have been split on the top of those that have been somewhat recently infected within one year. And even among the unvaccinated group, compared to those without any previous infection or vaccination, had something like 87% VE. And then as among those with hybrid immunity, compared to those that didn't have any previous infection, we actually see a maintenance of high VE over time.

Those that were more remotely infected, if they had no vaccinations, on the very left, in the gray, those that were more remotely affected had protection but had waned quite a bit, close to 69%. If they are vaccinated on top of that, they maintain the highest level. And this is so hybrid immunity maintaining well

over 90%, so, again, showing that both infection and vaccination provide protection. It wanes over time, and hybrid immunity seems to be superior. Next slide, please.

Reinfection rates really increased during the Omicron wave. South Africa was first to report it, showing 2.5 times the increase in hazard ratio, if you're looking at those that had reinfection versus prior infection during Omicron, as compared with earlier waves. UK data, that is national. It's not specific to the SIREN cohort of the last slide. But it showed that a two dose VE went almost negligible, to 0% to 19%.

That was both for AstraZeneca and Pfizer vaccine. If you are boosted, it did go up to 55% to 77%. And those that only had prior infection, but otherwise were unvaccinated, also waned a lot, down to 19% protection. New York, this is a screenshot of their reinfection website. And most, close to 85% of the reinfections were reported after December 13, 2021. Next slide, please.

This is pre-print data, but it's national data of the Czech Republic. And they looked at both infection and hospitalization, looking at various combinations. So first, I'm looking at the top and going to focus on Omicron in blue. Delta is in red, and this is effectively VE, or protection from infection. And so on the left there is infection at less than six months, and it's close to 70%. But by over six months after previous infection, it goes close to 10%.

And similarly, vaccination within two months is not great, a little above 40%, but it wanes quickly down to 10%. If they've had a boost, it is able to get them briefly above 50%, but as time passes, it goes down to 20%. Again, this is against infection, not severe disease, which will be on the next slide. At the bottom are various groups of hybrid immunity, looking at infection and vaccination. And I won't go through all of them but to show it is greatest.

But if you look at the bottom right, even if you're boosted and have been previously infected, if it's been more than two months since the booster or six months since prior infection, it had gone down to 48% protection. Next slide. So this is the same data set, except protection against hospitalization. You'll see across the board, it's much higher than it is against infection. So again, I'll focus on Omicron at the top. This is either infection or vaccination alone.

And that vaccination alone wanes to 29% after two months. If you get a booster, it's increased quite a bit, and they probably don't have as much follow-up. But at least after two months, it's maintained a 79%. Infection also doesn't show much waning, with 92% protection against hospitalization, even for more remote infections. Hybrid immunity, at the bottom, is the highest and no real signs of waning, including a close to 97% protection among those that were more remotely infected and boosted.

So boosting plus infection offering the highest, and waning appears to be less, at least slower compared to protection against infection. Next slide, please. This is similar data, except it's from Qatar. So on the top is BA.1. The bottom is BA.2. On the left is infection, and on the right is hospitalization and death. So if you go from order, you see the greatest protection are those that have had three doses of vaccine, the booster, plus prior infection.

Next is three doses, but it's fairly close whether you've had three doses and prior infection or two doses and prior infection. For those that have just been vaccinated with two doses and hadn't yet been infected or gotten their booster, pretty negligible effectiveness against infection. However, if you looked against severe disease, BA.1, quite high protection for all the groups. BA.2, they did see lower numbers for prior infection or two doses.

But if you either get your dose or have hybrid immunity, you have much higher protection. Next slide, please. So in summary, SARS-CoV-2 infection appears to cause severe disease, death, and long-term morbidity, whereas the vaccination is safe and effective at preventing severe COVID-19 disease. A history of infection appears to provide protection that is at least equivalent to a primary series vaccination. And immunity following both vaccination and infection wanes over time.

Both people who have received a primary series or those that were previously infected provided much lower protection during Omicron than during prior COVID-19 waves. However, vaccination can boost the immune response in previously infected individuals. Hybrid immunity appears to be longer lasting and appears to have resulted in greater ability to neutralize Omicron than either vaccination or infection alone. And I believe that's the last slide. Next slide, please.

JASMINE CHAITRAM: Thank you so much, Jefferson, for that great presentation. There were a few questions that came through in the Q&A box while you were speaking. So I was going to ask you a couple now if that's OK.

JEFFERSON JONES: Yeah, please.

JASMINE CHAITRAM: The first one, the first one says is there any data on Moderna versus hybrid immunity, so specifically for that vaccine, I guess.

JEFFERSON JONES: There's a lot of the data that was presented, like the MMWR data, CDC, its national data, or that was that, sorry, California, New York data. So that includes quite a bit of Moderna data, as well. Although, Moderna appears to make higher antibody levels than it does for Pfizer, there are in vitro studies that still show much higher antibody levels. And certainly, when you broaden antibodies to not just the spike protein but other elements, such as envelope, membrane, nucleocapsid, then you see a higher antibody levels with hybrid immunity versus Moderna, as well.

I'm trying to think if I know of a specific study that just looks at Moderna outside of in vitro studies, and I don't believe I know of one.

JASMINE CHAITRAM: Thank you. There are two questions related to the monoclonal antibodies. The first one says any data on persons testing positive but given the monoclonal, versus those infected and not giving the monoclonal? That's one question. Then I'm going to go ahead and tell you the other one. Was any research done to correlate hospitalization rates with monoclonal antibody infusions? And there's

a comment. I suspect monoclonal antibody infusions might have done more to keep patients out of hospitals than vaccination, at least with the Delta variant.

And these are in the Q&A box if you need to read them again just to be able to answer them.

JEFFERSON JONES: So none of the data that I'm aware of have looked directly at monoclonals versus vaccination. In general, CDC, and I'm not speaking on behalf of CDC, but most of the policies suggest the vaccinations are safe, cost effective. They last much longer than monoclonal antibodies. And monoclonal antibodies are not meant to be a substitute for vaccination. If we think of, particularly if we're thinking of pre-exposure prophylaxis, then this is-- so those that are not infected, they're not sick, then Evusheld is the monoclonal antibody that has an EUA for pre-exposure prophylaxis.

And it's targeted towards those that either are unlikely to have a strong immune response and be protected after vaccination, and so you get your vaccine series, and then you get Evusheld after that, or those that for a severe allergic reaction or another reason cannot receive a vaccination. So I don't know of any studies that directly compare the two.

JASMINE CHAITRAM: Thank you. The next question, are there any data correlating specific antibody level in a person post-vaccination or post-infection with vaccine effectiveness in the studies you cited in your presentation?

JEFFERSON JONES: So there, uh-- I didn't have time to go over too many studies, but there are several studies that have looked at-- and I'll try and put these in the chat, some of these that have looked at the VE versus the level of neutralizing antibodies afterwards in patient trials. And there's a strong correlation, if you look at the various trials that are published, that Moderna and Pfizer with the highest neutralizing antibody titers, having the highest VE.

And some of the inactivated vaccines that have lower post-vaccination neutralizing antibody titers and VE that there is a very convincing correlation between those two. There's less data on post-infection antibody titers. And I showed there may be a different correlation when you're talking about hybrid immunity infection versus vaccination. But a decent amount of literature on that, not much, but most of that is pre-Delta and certainly pre-Omicron.

JASMINE CHAITRAM: Thank you. Here's another question. Will eventually be an option for those with a prior infection to be eligible for a booster dose without needing the primary series?

JEFFERSON JONES: So this is a policy question, rather than a data question. And I could say, as of now, it's not. And it's ultimately up to FDA and ACIP, in conjunction with CDC, to make that decision. So I would have to be-- nothing that I know of, but I can't speak on behalf of these groups.

JASMINE CHAITRAM: OK, here's another question for you. This is actually two. I'm going to put them together. Other immunizations like measles last for years, why are the vaccines good for only two to four

months? Is this a function of the vaccine not really giving a lasting immunity, or is it a function of the changing nature of the virus? And how can we make a vaccine that's more effective? And then does the waning of vaccine suggests the need to take an additional booster dose? What are the recommendations?

JEFFERSON JONES: So several questions within there, as far as the difference between measles and SARS-CoV-2, and Natalie may be able to speak more to this than I, but measles generally has to circulate longer before it causes disease. And certainly severe disease, that gives more time for the immune system to react. Certainly for mild infections that can be transmitted to others, it can happen and the upper respiratory tract. So to have true sterilizing immunity, to be able to block infection, block transmission, likely requires high levels of mucosal immunity, which has been found to be very difficult for multiple respiratory viruses, influenza, RSV, et cetera.

And it may be difficult, if not impossible, to achieve that, at least with the current technology. And I'm forgetting what the question after that was. Booster, so as far as needing a booster, I won't go over all the booster vaccinations. It certainly depends on group and age, but most ages and most populations in the United States are recommended to get a booster dose. I think the data presented today, which is very small sample of the data that suggests, whether you had just two doses, or you've been infected, or even if you've had infected and two doses, that a third dose is beneficial.

After these slides were created, an MMWR was published just last week on the benefit of a third dose among people previously infected on preventing hospitalization. And that was a US-based study. So I think the data is pretty convincing that a third dose is beneficial to all those who can get it. I won't be talking about a fourth dose much. That's a more nuanced discussion. But there are, both for immunocompromised people over age 60, and we can put the link in for the booster dose vaccinations for the second booster dose.

But there are differences, whether you're trying to prevent infection, versus severe disease. And depending on your age and your underlying risk factors, your need for a booster dose or a second booster dose, like--

JASMINE CHAITRAM: All right, this is the last question I'll ask you today. When you reference antibody levels over time, was this against a challenge or just normal circulating levels?

JEFFERSON JONES: So if it's asking if these people were given a viral challenge to see if they got sick, I know of only one study that's ever looked at that in humans. There is additional animal data, but the vast majority of these studies is purely you take a sample, you measure either the binding or neutralizing antibody titers in those. And as far as the correlates of protection, it's a whole different topic, just give some brief data on that.

But then correlative protection for Omicron, in particular, both against infection or severe disease, it needs further study. We didn't talk about cellular immune response or memory B-cell response. I don't think we'll have time. I have some extra slides on that if you're interested.

JASMINE CHAITRAM: Yeah, thank you so much, Jefferson. In the interest of time, I'm going to move to our next speaker, but I did want to let you know that there were a few questions still in the Q&A that I didn't ask you live during the call. But you're welcome to go in and type an answer if you want to and are able to. And we appreciate you, again, for being with us today and for the great presentation. Thank you for your time.

JEFFERSON JONES: Thanks.

JASMINE CHAITRAM: OK, next, our next speaker today is Natalie Thornburg with the Laboratory and Testing Task Force. Natalie, I believe you're going to share your slides, or share your screen.

NATALIE THORNBURG: Yeah, I'll go ahead and share my screen. Although, it says I cannot start my screen sharing while another participant is.

JASMINE CHAITRAM: Yep, I just paused mine.

NATALIE THORNBURG: Awesome, thank you.

NATALIE THORNBURG: It's still giving me that message. I'll keep clicking this and start talking. It's allowing me to do this. So my name is Natalie Thornburg, and I'm just going to briefly touch on the weighted estimates and predicted estimates on our [COVID data tracker genomic surveillance site](#). There we go. Thank you, Jasmine. And so this was updated last Tuesday, the weighted estimates for the week ending March 26th and predicted estimates for the week ending April 9, 2022.

So for the past, through March to currently, BA.2 has been increasing in proportion nationally. And for the week ending April 9, 2022, it reached a proportion of about 86% of all circulating viruses. All of the circulating viruses that were detected that week were all Omicron lineages and sublineages. And there was no Delta viruses detected. What that looks like regionally-- I'll scroll down here is regionally.

All regions also had predominant BA.2 Omicron lineages, with the highest region being HHS Region 2, which has New York. And that proportion was about 93% of circulating viruses. And the region with the lowest proportion of BA.2 was Region 7, there in the middle, with about 73% of circulating viruses. And the surge in BA.2 circulation was occurring at a time of rapidly decreasing case counts, nationally.

Although, that picture has changed a little bit in the past two weeks. The past one to two weeks, we've seen an increasing seven-day average of case counts. Now, it's not been as dramatic as the original Omicron surge in December and January. So for example, at the peak of the Omicron surge, we saw a

seven-day average of about 800,000 case counts nationally, and we hit a low of about 25,000 case counts.

And right now, we're in about 35,000. That's really been driven by some regions. In New York, there's been a more dramatic increase of cases. So in New York state, not counting New York City, at the peak of Omicron surge there were about 33,000 cases on seven-day average, with a low of 976. And it's now at about 3,500 per day. And so what that means is that BA.2 has really increased in predominance. But because it's during a time of generally lower case counts, nationally, and in most regions, that the cumulative case count for BA.2 has been much lower than what we observed for other Omicron sublineages, like BA.1.1.

Now, this is going to update tomorrow. And Pango, the software that we use to define lineages, has released an update last week that has a lot of new sublineages. So we start-- we're expecting diversification of the Omicron lineages and sublineages over the next coming months, just like we saw with Delta. If you think back to the fall, we started seeing many, many different kinds of Delta sublineages, lots of different AYs.

And so our tracker might change if we see some of these sublineages, as they're newly defined. If they reach a greater than 1% threshold, then we'll go ahead and update the tracker to show those sublineages that are greater than 1%. The good news is lots of these sublineages, they have very similar mutations to each other. BA.4 and BA.5, which was recently identified in South Africa, have evolved separately from BA.2, but they have a very similar mutational profile to be BA.2.

And therefore, protection against infection with Omicron one virus should protect fairly well against other Omicron viruses. And I think that is all for the genomic surveillance update this week.

JASMINE CHAITRAM: Natalie, thank you so much. There was a couple of questions I think I can ask you. The first one is will the CDC variant proportion tracker start reporting out distribution of BA.2-- oh sorry, I lost it, sublineages of BA.2, basically?

NATALIE THORNBURG: Yes, tomorrow, one of the updates, the BA.2, one of the sublineages will be broken out on the data tracker, yes.

JASMINE CHAITRAM: OK, and then there's a number of questions about home tests, home antigen tests, and how we're calculating percent positivity and tracking cases. And so I'll go ahead and take that one. So CDC has moved from, as well as many state health departments, from counting every single case. But what we are still getting is laboratory data that is reported from laboratory testing. And we are still using that information. This is coming to CDC through something called electronic laboratory reporting.

And there's still millions of tests being performed every day. There is some tests, over-the-counter test, or self-administered test, reporting that is also coming to CDC. And what we're seeing is that it's just a

fraction of the overall testing that's occurring with laboratory testing. So CDC is still using that laboratory testing. It's still being posted in the COVID tracker, and that's what we're using to understand trends right now in percent positivity.

OK, the next question is will the summary slides of the presenters presentations be available? And I did mention that we do have all of our slide decks available after the call. Usually, it takes about two weeks, and we post them on our [Preparedness Portal](#). Natalie's slides today, she wasn't actually showing slides. She was showing information live from the [CDC web pages](#). So we can put that link in the chat. I think George already did that.

And that's where you can see the information as it's updated, as well. OK, Natalie, I think that was it for you today. Thank you so much for being with us, really appreciate you taking the time. OK, and now, we're going to go to our last speaker, Tim Stenzel from the Food and Drug Administration. Tim, thank you for joining us again for this call.

TIM STENZEL: Oh, you're very welcome Jasmine. And a happy upcoming Lab Week to everyone. So the question that I wanted to start out with came in previously more than a week ago. And the question is rumor has it that the public health emergency may not be extended past the current expiration date. If the renewal does not occur, will there be orders issued extending the EUAs of the various testing systems past the current expiration date?

So this is actually a good question, and the situation is a bit confusing. So I'm going to walk through this. First of all, the secretary did, last week, on April 12th, [extend the emergency declaration](#). That extension goes for three months. And so it was renewed, and it can be renewed every three months, per the secretary.

But there are actually two declarations, and that's what I wanted to go through. And it can help answer, I believe, this question. And hopefully, I can explain this well. But there is the emergency declaration that the secretary makes that there is an emergency. There is a secondary declaration that gives the FDA authority to issue EUAs. This authority allows the FDA to basically lower the bar for what is typically required for reauthorization so that it's much easier to get an EUA reauthorization than a full reauthorization.

It being easier, there's less work to do, and it can happen much more quickly. The likely benefits still need to outweigh the likely risks. That's wording from the statute. But still, that authority is given to the FDA. And the two declarations are independent of one another. And that's the confusing thing. So for example, the EUA authorities for Ebola and Zika are still in existence. And Ebola can always hit us.

And Zika, there's current concern about potential mutations that could cause another outbreak of Zika in the US. So the FDA still has authority to issue EUAs for Zika and Ebola. And so again, these two declarations are independent from one another. Then the FDA has no interest in restricting the access to

needed tests for COVID, or for any other emergency. And therefore, all the tests previously authorized for Zika and Ebola are still authorized for those diseases.

And while we can't predict when the secretary will no longer renew the emergency, the authorities for EUA use given to the FDA may extend beyond that date. Nevertheless, the FDA has issued a draft guidance that is going to spell out, in the final guidance extension, or a transition period, when those EU authorities might go away for COVID, when a test developer needs to come in with a full application.

So the current draft of the [transition guidance](#) gives a time frame that when the EUA declaration is removed, should it ever be removed, and the amount of time that developers have to get a full reauthorization submission into the FDA. The current plans and the current draft guidance says that as long as developers make that deadline, then they can remain on the market, continue to sell their COVID tests, until the FDA makes a final decision.

And if it's obviously in favor of a full reauthorization, then they convert to the fully authorized reauthorization. If it would fail to achieve full authorization, it would then be asked to be removed from the market. So this is just the very long version of there is no urgent situation where the EUA authorities will go away. Nor is there an urgent situation for tests to go away. So not interested in that, and we are interested in encouraging any developer who holds an EUA to submit an application for a full reauthorization.

And we're welcoming what's called a pre-submission, or a Q-Sub. It's free of charge to developers. They can ask the FDA, or they can state their plans for seeking full reauthorization and have the FDA comment on that and seek advice from the FDA on those reauthorization and validation plans. So with that, I think I did put links to all these in the chat. Looks like someone posted them already, thank you, or at least some of them.

And yeah, so can go to any other questions that may be out there.

JASMINE CHAITRAM: Oh, well, Tim, there's one that's come through here while you were speaking, just asking about a particular date for this transition, I guess, from EUA to full authorization and what would the cost be associated with full authorization of an assay.

TIM STENZEL: So I don't have the scheme for those conversions. It depends on whether it's de novo or a 510(k), and it also depends on whether it's an institution that gets a discount for a submission. So typically, first time submitters, especially from small organizations, can get a discount, a significant discount on the first submission.

JASMINE CHAITRAM: All right, must be a good FDA discount. The next question I want to throw at you, Tim, is this general question about if you could just make a comment about why a particular vaccine might not be available in the US.

TIM STENZEL: Oh, well, I don't work in the biologics center, CBER [Center for Biologics Evaluation and Research]. They would have that. And I would refer the question to CBER on that one.

JASMINE CHAITRAM: Understand, thank you so much, Tim. I don't see any other questions for you today, but I appreciate you, as always, for joining these calls. And with that, I think we will go ahead and wrap up today's session. And again, I want to thank everybody for joining us and for submitting some great questions. I want to thank all of our speakers. And I'm not going anywhere. I'll still be at CDC, but just passing the torch and the mic over to someone else in my division to host these calls in the future.

And we'll see you on May 16th. Happy Lab Week, everyone.