FDA Virtual Town Hall Series – Immediately in Effect Guidance on Coronavirus (COVID-19) Diagnostic Tests

Moderator: Irene Aihie
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Coordinator: Welcome and thank you for standing by. At this time all participants are in a listen-only mode until the question-and-answer session of today's conference. At that time you may press Star 1 on your phone to ask a question. I would like to inform all parties that today's conference is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the conference over to Kemba Ford. Thank you. You may begin.

Kemba Ford: Thank you, (Courtney). Hello. I'm Kemba Ford of (CDRH)'s Office Communication and Education. I would like to welcome you to the FDA's 49th in a series of virtual town hall meetings designed to help answer technical questions about the development and validation of tests for SARS-CoV-2 during the public health emergency.

Today, Timothy Stenzel, Director of the Office of In-vitro Diagnostics and Radiological Health with the Office of (Products) Evaluation and Quality. And Toby Lowe, our Associate Director of the Office of In-vitro Diagnostics and Radiological Health from CDRH will provide a brief update. Following their opening remarks, we will open the line for your questions related to the development and validation of tests for SARS-CoV-2.

Please remember that during this town hall, we are not able to answer or respond to questions about the specific submissions that might be under review.

I will now turn the call over the Toby.

Toby Lowe: Thank you, Kemba and thanks everyone for joining us again this week. I have a couple of updates and I will go through some of the questions that we received by email. Then we can get started with live questions.

So first, I wanted to share with everyone that we posted a new webpage yesterday with information on the impact of viral mutation on COVID-19 tests. This is a follow-up to the letter to healthcare providers and clinical laboratory staff that we issued in January regarding the potential for false-negative results due to the impact of viral mutations on molecular SARS-CoV-2 tests.

The webpage includes information about viral mutations and the potential impact as well as listing specific molecular tests that are impacted or where we have seen the potential for impact by viral mutations and specific recommendations for those tests. Right now the webpage includes the three tests that were included in the January safety alert as well as new information on three (seitan) tests based on new information that we have received.

Going forward, we intend to include updates related to viral mutations and the potential impact on tests on this webpage and we will announce any updates through this venue as well as email blasts out to the email list and inclusion on the regular COVID update press releases. So we'll use that as a central location for those types of updates rather than individual safety alerts each time there are issues that we become aware of.

So that website, you can find that on our webpage and there's an email that went out yesterday as well that I believe most people on this call likely received.

Timothy Stenzel: Thanks, Toby. This is an effort to keep everybody updated on the current status of mutations and testing. It's there for easy access. So thanks Toby and the team for making that happen. As before, currently we do not know of any significant impact of mutations on overall test performance. That includes the new addition with (seitan) which is a multi-target assay. Only one target was affected by two different mutations as updated in the mutation update.

So that test and the others still remain, you know, strong options for fighting this pandemic. It's out of an abundance of caution that we make these updates and we know that users might spot potential problems ahead of developer and/or the FDA and we ask your assistance in identifying concerns and bringing them to us. Thank you. Back over to you, Toby.

Toby Lowe: Great, thanks, Tim. So we also had a couple of questions last week that we wanted to follow up on. One is regarding whether vaccinated people can be included or must be excluded from validation studies for molecular diagnostic and antigen diagnostic of CoV-2 tests. Generally, we do think that it's okay to include vaccinated individuals for validated an (unintelligible) population, but those should be analyzed separately from unvaccinated individuals.

Timothy Stenzel: I would add, if I could add something.

Toby Lowe: Yes.

Timothy Stenzel: I would add that there are now reports of breakthrough infections with some of the vaccines and what I've seen is no more that mild symptoms if any. But of course, we don't know if the viral levels in those patients who have been vaccinated are going to be any different than unvaccinated individuals who are infected for the first time. So that's just something to be aware of. Thanks, Toby.

Toby Lowe: Thanks for the addition, Tim. Another question that we had from last week is regarding the template for at-home testing. There was a question about the age inclusion in that template in one place it lists the lower end of the age range as 3 and in another place in the template it was 2. That is a typo, 2 is the age that should be included in both of those places in that template. We do recommend starting at 2 years old for nasal swabs. For saliva, we recommend slightly older to include school age, 5 to 6 because we have seen some usability issues with younger kids, but we do welcome you to demonstrate usability in younger kids with the usability study if you're design is conducive to that.

We also have heard from sites that had a difficult time enrolling kids for the clinical study and often are not getting any positives in that population. We are asking that either the usability study or the clinical study or both if possible include children if you're intending to include children in your indication.

Moving onto some of the questions that we received by email. We have one regarding seeking an EUA for an extended respiratory panel and whether EUA requests for extended respiratory panels will be prioritized or not because there have been some. This question is asking about a particular one that was deprioritized.

So we just want to clarify that there are many factors that go into our prioritization decision and some of those factors may not be publicly evident regarding the tests that are authorized.

We have previously stated that we prioritize review of the A requests for tests that increase testing accessibility such as point of care, home collection and at-home tests. Tests that would significantly increase testing capacity such as tests that reduce reliance on test supplies, high throughput, widely distributed tests to address the public health needs. We do recommend that if you have questions about a decision about your particular test that you reach out to ask that specific question.

Timothy Stenzel: I would add that at this time pandemic is very different. Our needs are very different as a nation than they were at the beginning of the pandemic and what was possible at the beginning of the pandemic. So we seek to focus review attention and prioritization. And basically call out to developers what the, to give incentive to develop tests that are really needed right now.

So high volume, accurate results, whether they're in the laboratory or they're at home or home collection or in point of care are the priorities right now. I just wanted to clarify that. Thanks, Toby.

Toby Lowe: Thanks, Tim. Our next question is about using an EUA comparator method for clinical study for a 510K submission and asking. We did talk about this last week that even though the biofire assay has been granted in de novo, that we still view intense you consider EUA, sorry CoV-2 assays to be an appropriate comparator for future 510K submissions.

However, this question is specifically asking about using an EUA assay as a comparator for the flu component or flu, RSV, other respiratory

(unintelligible) in a multi-analyte respiratory panel. We do want to clarify that for evaluating the clinical performance of your multi NIHS, we recommend that deduction of the non-SARS-CoV-2 analytes such as flu and RSV should be compared to a FI10K cleared molecular test. The EUA authorized test may be used as a (unintelligible) for SARS-CoV-2.

We received another question about at-home COVID tests asking why there are not more. We do have four at-home COVID tests that are currently authorized. We do continue to encourage the development and submission of at-home tests. We previously discussed that we do continue to support innovation in testing and providing support and flexibility to test developers with the goal of increasing the availability of accurate and reliable tests.

We do need to point out that FDA does not develop tests. We cannot compel test developers to develop tests for specific characteristics although we have indicated our priorities which do include tests for home use.

We're also not involved in the production or distribution of tests. So we do encourage the availability of tests that we have authorized but we are not involved in that. Our role is to determine whether the tests submitted by test developers for emergency authorization meet the criteria for authorization so that we can provide a level of assurance that they produce results that American's can trust.

We will continue to work with test developers to support the availability of more innovative testing options.

Timothy Stenzel: Yes, and unfortunately today with regards to molecular and anagen tests, specifically we simply have a positive of fully validated for home use tests submitted. So we do encourage test developers to come in with home use

tests and we've made it much easier now to get that OTC claim beginning without any data on any symptomatic prior to authorization. That pathway was outlined last week where if your performance meets a certain level, in-home user studies, for symptomatic patients, then you can simply agree to update your label with the serial testing claim and we will update your authorization for OTC and look forward to receiving a post market study showing adequate performance in the symptomatic population via that serial testing program. Thanks, Toby.

Toby Lowe: Yes, that's a good point that new pathway will hopefully speed things up for at-home tests.

Last week we also talked a little bit about the use of thermology tests after vaccination and we received a question about which thermology tests would show antibodies after you've gotten the vaccination. So we do want to clarify that the currently authorized SARS-CoV-2 antibodies are not validated or authorized to evaluate protective immunity and they're not specifically enabled for use after vaccinations.

So clinical significance of a positive or negative SARS-CoV-2 antibody test results in individuals that have received a COVID-19 vaccination is currently unknown. Not all the testable antibodies are protective and for other illnesses and SARS-CoV-2 antibody tests do not directly evaluate other components of the adoptive immune response such ad cellular immunity which may contribute to protection from infection after vaccination.

Additionally, since vaccines induce antibodies to specific viral protein targets, post-vaccination serologic tests results will be negative in persons without history of previous natural infection if the test that was used does not detect antibodies induced anything the vaccine.

Timothy Stenzel: Thanks, Toby. I would add all three authorized vaccines in the US have only (spiked) protein component in them. So obviously, a serology test that doesn't target a spike protein will not be a good measure of whether there is an immune response to the vaccine. We have received reports of false negatives when clinicians have ordered (unintelligible) protein serology tests following vaccination one of the three authorized vaccines. Thanks, Toby.

Toby Lowe: That's for adding that. We received a question about whether there are any 3D printed materials used in COVID-19 tests. We do have - we are aware of some manufacturers that have produced 3D printed swabs and we have additional information about that on our COVID-19 test at the G-page. There is a section on 3D printed swabs specifically.

Timothy Stenzel: I would add that the 3D printing can be applied to other components other than swabs and there's no prohibition against the use of 3D printing to say presets or other components. We would just simply ask to put that information into if it's a new test and develop, it's into the pre-EUA to ask any questions that might be relevant to that method of manufacturing. Back over to you, Toby.

Toby Lowe: That's a great point. The next question that we have is about the restricting of the diagnostic EUA webpage. I think we mentioned this last week that we broke it out so that there will be separate pages now for molecular antigen and serology. This was a function of the page getting too big with so many tests having been authorized. So separating them should improve usability and functionality of the page.

The question that we received is about why we removed certain information specifically to the date that EUAs were first issued. And so I want to clarify

that we did not remove that. There was no information that changed with the split. It was just split into separate pages, but the information that was on the original page is now on the separate pages for molecular antigen and serology.

As it was before I met the individual or a single page, there was - there is a column. The first column is the date of the latest update. And the date that the EUA was first issued is included in the column with the link to the letter of the authorization. So that remains the same as it was.

We have a question about an antigen self-collect over the counter on rapid diagnostic tests with a companion app where the companion app supports patients in understanding how to properly administer the test and also supports public health reporting. And the question is about what to do if the - if an over-the-counter customer does not own a compatible device and whether an employee mechanism must be provided for public health reporting.

So, if a test may be performed with either a companion app or an alternate form of instructions, we would expect to see validation with - validation data with both options. We generally recommend that you develop a test procedure that is easy to follow in the form of a quick lesson instruction and user instruction should be oriented to users that no higher than a seventh grade reading level.

It's highly recommended that you consider adding pictures and diagrams to facilitate performance of the test (unintelligible) user and that the instructions be limited to one to two pages. We do agree that where the mobile application-based material such as videos may be particularly helpful.

Regarding reporting to public health authorities we are, I mentioned on this call previously, we are not requiring a reporting mechanism at the time of

authorization for at-home tests. But we do encourage all test developers to consider and approach to facilitate the reporting of test results to public health authorities. Since this is not a requirement at the time of authorization, we can discuss further options during the review of an EUA request.

Our next question is regarding the development of rapid tests for antigen and antibody. Basically a few questions about at-home serology tests and whether there's a template available. We have not yet published a template for at-home serology tests and we're not able to speak to when or whether there will be one that is published.

However, we know that some test developers have received some draft feedback from the review team and that is a good starting point. If you have specific questions about your own validation or study design, you can reach out through the mailbox or to your review team if you already have one.

There's additionally a question about a test, a serology test that has already received an EUA to the point of care and what additional performance data is needed. So we would expect to see validation in an at-home setting if you are looking to have an at-home claim.

There are multiple questions about the transition from EUA to 510K and regarding study designs. So we do encourage test developers that are interested in feedback on studies for a 510K to consider submitting a pre-sub so that we can make sure that we're giving complete and appropriate feedback for your specific submissions.

Timothy Stenzel: I would include the number of samples of each type that we're recommended for validation. Thanks, Toby.

Toby Lowe: For asymptomatic claims and a point of care antigen test, we've received questions about the right proportion of symptomatic verse asymptomatic for inclusion in a clinical study. The antigen template for testing developers does include a recommendation that performance be confirmed by testing a minimum of 30 positive and 30 negative specimens in a randomized blinded fashion.

That if you're seeking authorization for screening individuals without symptoms or other reasons with respect to COVID-19 that you include the intended population in your clinical study. So in addition to the 30 and 30, we would recommend that you enroll at least 20 positive asymptomatic individuals. You may also want to consider the approach that we aligned in the recent issues supplemental template for serial screening that Tim also mentioned a little earlier on this call where you can request a serial screening clean based on only symptomatic validation data with a post-authorization condition to validate serial screening.

Timothy Stenzel: As you're doing the original pathway of testing asymptomatic patients preauthorization we will accept this year as 10 asymptomatic patients in the application to make a decision with the commitment after post-market authorization of completing the 20-hour requirement in the conditions of authority of authorization rather. Thanks, Toby.

Toby Lowe: Just to go a little further on the post-market topic, we have had some questions about if the clinical study was based on symptomatic subjects can the test developer add asymptomatic post-market and how many. And outside that is what we were just referring to both for the serial screening clean as well as if you have only 10 positive symptomatic, what with would consider authorization without that additional asymptomatic data with the post-authorization commitment. We will discuss the post-authorization study

during your review. Please submit your proposed post-authorization validation study in your supplemental EUA request to extend that indication.

We received a question about serology tests seeing point of care authorization and whether we can include - whether a manufacturer could include a subset of individuals who have received at least one dose of a COVID vaccine as long as they were previously identified as infected and then were subsequently vaccinated.

Generally, we recommend referring to our template for serology tests for recommendations for clinical validation and at this time, we don't have any recommendations on study designs to support these of serology assays as an aid to assessing an immune response of individuals that have previously been immunized with the SARS-CoV-2 vaccine.

Our last present question is regarding the manufacturing of a serology test in the US versus manufacturing in China. And it is asking for a list of government approved components. So we can clarify that we do not have a list of government approved components for use in manufacturing. We do review EUA request for the final, finished devices. And the EUA applicant would be responsible for all data manufacturing and other FDA requirements applicable to the finished device including any quality system requirements that are not waived per the letter of authorization.

And with that, Tim, if you have any other updates or we can go onto the live questions.

Timothy Stenzel: Let's go into Q&A. Thanks.

Coordinator: Thank you. We will now begin the question and answer session. If you would like to ask a question, please press Star 1. Unmute your phone and record your name clearly. Your name is required to introduce your question. If you need to withdraw your question, press Star 2. Again, to ask a question, please press Star 1. Our first question comes from (Wendy Chow).

(Wendy Chow): Hello.

Timothy Stenzel: Hi, (Wendy).

(Wendy Chow): Thank you. Can you hear me?

Timothy Stenzel: Yes.

(Wendy Chow): Okay, thanks. I have a question on the asymptomatic and symptomatic requirement for the study of the either antigen or molecular test. I have this question for a while. Because I think at the end it's the sensitivity or OD that matters regarding this symptomatic or asymptomatic because we know for some asymptomatic people their viral load is super high as well. In, of course, more symptomatic people have higher viral load. I think as (unintelligible) the study covers the whole spectrum of the viral load, it should be okay, right? Not like asymptomatic people have different (unintelligible) or respond differently to the testing. So that's a question actually in my mind for a while. Why should we activate different shape of two populations? Instead of just use the OD or sensitivity or in terms of molecular test, just use the safety distribution of the CT.

And so this is a related question is about LDT. So for LDT we actually put a lot of emphasis on the sensitivity on the LOD. We, really analytic part really don't care about the people come with symptoms or not. It's nice we have the

good sensitivity we can detect anyone. So that's my question here. What's the philosophy or what's the point behind (unintelligible) the shape of this population?

Timothy Stenzel: Yeah, so you know, asymptomatic carriers of the, you know, the DSL3 virus is unusual. And you know, and we're still learning about the biology of the disease. The data that we've seen are mixed is whether for a given device and a given population, whether viral loads and detection of asymptomatic are equivalent to symptomatic. And in other words we have seen differences between those populations and when we see differences the viral loads are lower for asymptomatic carriers.

And therefore, when you look at the whole test and how it's performed which is more - which is important and not just LOD because LOD assessment can vary from developer to developer. There aren't necessarily good ways to harmonize and also to translate that into clinical sensitivity. So we have really because there are EUA authorizations, we have the authority under the law to lower the recommendations for validation and you know instead of a couple hundred virus positive patients in a clinical study for full authorization, we have required only for symptomatic populations, 30 positive as a minimum.

Then to add an asymptomatic claim premarket again, only 10 positive symptomatic patients. So, with as appropriate with an agreement to complete more asymptomatic tests studies after authorization.

So the bottom line is that we look at the performance of the whole test not just in the laboratory LOD. Because that tells you how the test will perform and watch closely in the real world. And we have seen significant differences in viral load and detection, actual sensitivity or PPA between symptomatic and asymptomatic individuals in the same study.

(Wendy Chow): Because of yeah, the two population. Great like in the symptomatic there's a lot more people with a high viral load and instead of asymptomatic, they're much less people with higher viral load as we have more weak ones. I think that the problem recognize we don't really have an international standard to determine the LOD. The LOD everywhere you really can't rely on that number. Once we have an international standard to determine LOD and then it becomes to the use of the lab or developer or use as a standard. Then there's the common comparison.

Then it will be much important to - right now we just kind of use the live samples from people where these populations are population, their viral load distribution is different. So, of course, the result will be different or sometimes the sampling could be different maybe in the symptomatic they will have more in some specific anatomic side versus asymptomatic. What I'm thinking is that the lack of those international standard may push to go to kind of empirically to get all those populations.

So that's what I'm thinking here and I just trying to figure out what is an efficient way.

Timothy Stenzel: Yes, we're going to move onto the next caller. There are - there is an international standard available for molecular tests. And so that can be used at least for a truly quantitative test which most molecular tests aren't truly quantitative. They haven't been developed for that purpose. They haven't been calibrated for that purpose. Then, of course, we'll all want to see data, you know, when you have an international standard related quantitative molecular tests and look at CTs and look at things like impactivity.

However, to gather that data what's truly a level of infectivity even if you could harmonize the way samples are collected, because there is variable and there are many variables in determining the viral level with the respiratory with respiratory samples and it's not as easy as a HIV quant is and straightforward because that sample type is whole blood or a venous puncture and sample.

And it is more challenging with respiratory sample and very clearly APHL and CAP and the CDC has said that correlating CTs with infectivity or determining a level of below or above which you can make clinical decisions is very challenging. So we're going to move onto the next caller. Thank you.

Coordinator: Our next question comes from (Susan Sheldon).

(Susan Sheldon): Hi, Tim and Tony, thank you so very much for all your efforts in these town hall meetings. I appreciate them and learn a lot. I have two quick questions. One, if we have two sample types, can we include them in the same emergency authorization if we provide the data in one? Or do we have to have separate one for each sample, the in-home testing?

Timothy Stenzel: No, for in-home use, different sample types we would want to see performance and usability and user comprehension for both types of sampling.

(Susan Sheldon): I understand, but do you need them in two separate emergency authorization requests or can I put them in the same, in one?

Timothy Stenzel: They can go into the same solution.

(Susan Sheldon): Okay, the next question is that if we instruct the patient to cough and spit in a cup, would you be calling that specimen saliva splash sputum? What would

be the appropriate name regulatory-wise? That's the instruction to the patient. What would we call the sample?

Timothy Stenzel: Yeah, so that's a bit of an unusual sample collection method and I would invite you to reach to a pre-EUA to develop or to review staff to address that specific question since that's not going to be a hugely common sample type.

(Susan Sheldon): How would I do that?

Timothy Stenzel: You take the template for whatever test you're developing and you only have to ask the questions that you want in there and you would be asking how to, you know, whatever your question you have about that particular sample type, you can put into the EUA template and send it in. Since you're not submitting an EUA, you're not submitting data, you're asking questions. You classify that as a pre-EUA submission and you send it to the template's email address and they will log it in as a pre-EUA so we can track it and get responses back to you.

Coordinator: As a reminder, if you have a question, please press Star 1. If you can please only ask one question so we can get to everyone today. Thank you. Our next question comes from (Marcella Vasgrove).

(Marcella Vasgrove): Hello. Hi, I'm with (unintelligible) human factor specialist representing user-wide consulting. We have a client in South Korea who would like to conduct clinical testing for a COVID-19 antigen test kit in the Philippines. Are they required to seek IRB oversight and (unintelligible) for the study if they wish to submit this data for a EUA? Also theoretically if an international antigen test kid manufacturer desired to conduct a clinical study in a country with no IRB requirements, would they be able to submit this data to the US FDA after having no IRB oversight or no?

Timothy Stenzel: So, you know, we encourage developers to follow local, state and federal rules where the studies are done. It is not something that we're asking or reviewing for EUAs at this time. Is this a point of care or home use study?

(Marcella Vasgrove): COVID antigen test kit.

Timothy Stenzel: Yeah, so we're encouraging a point of care and home use antigen and other rep in molecular rapid tests, that the studies be performed in the US if possible. So that we are simulating and mimicking how the test are going to be used in the US. We've seen challenges with international studies for home and/or point of care where the sites, for example, really aren't point of care. And so this since the US market is very large, for these type of devices, we want to know how it's going to perform.

These are recommendations. If somebody wants to do this a different way, then we would encourage them to first check with the FDA on the study design to make sure that it would be acceptable for review and authorization if the data looked good.

(Marcella Vasgrove): So the (unintelligible) client would be required for IRBS oversight?

Timothy Stenzel: Again, we would, you know, encourage all developers to follow wherever the studies are done local, state and federal requirements for those localities. We are not regulating IRB documents for UA reviews. You know, if these studies are done in the US, typically there's IRB and/or consent that the local, state and federal rules would be required.

Okay, we're going to have to move onto the next caller.

Coordinator: Our next question comes from (Deb Payne).

(Deb Payne): Hi, can you hear me?

Timothy Stenzel: Yes.

(Deb Payne): Okay, hi Tim. Thank you for all the work that you're doing here. We're a lab where we want to have a prescription home-based collection that where the sample is collected and sent back to us. And we had tried to reach out to various manufacturers or groups the have previously gotten their collection device through right to reference them, but none of those suppliers are really too keen in providing us their particular collection device.

And there is one collection device where it was stated on the, I think, it's a foam collection that was stated on the templates that the right to reference was granted. Do we need to specifically, I think, it's, I can't remember the particular group, do we need to reach out and get a right to reference from that group that is stated in the templates already?

Timothy Stenzel: It depends. So there are some. We've now authorized over 50 at-home collection submissions. And there are a growing number of manufacturers who, you know, are providing opportunities for developers such as yourself to participate. Offline it would be great to hear from you. You can send it to the template's email address about just what the feedback you're getting from some of those are because we would like to understand the challenges faced by developers such as yourself in that and getting access to these previously authorized home collection kits.

There is one situation where there that I know of and Toby may know of others where there's a global auto reference and the individual developers

don’t have to go and get that. That's based on, and I'm forgetting both partners here, but it was a Gate-sponsored study where they did home collection using a nasal swab in a particular media. I'm not sure if it's both VTM and saline. The details escape me.

But if you were to mimic exactly what they did in their study which is totally acceptable, you know, that works and makes it easy for developers like you to them get that right to reference because you don't have to go to Gates to get it. It's just global.

So the best way to find out about all that is really to send a specific question into the template's email address asking about global right to reference for any home collection devices. And Toby you may know if those are also offered for other than this nasal swab opportunity. I'll pause for Toby to add anything.

Toby Lowe: Yes, I think what you may be referring to, (Deb) is in our FAQs where we do refenced this quantigen Gates data and the broad right of reference. That is to specific data studies that were done. It's not for a specific home collection kit. So as Tim was getting at, if you were to develop your own home collection kit, that use the same procedures as what they validated, then you would be able to leverage the data that they've already collected and have offered the broad right of reference to.

Timothy Stenzel: And you don’t need to go to them to get that permission. That's - they've always - they've already granted that globally. We have that documented. So you know, to get the particulars then, you know, of this then and about how you'd go about using that right to reference and what we would expect in a submission. You can come in with a pre-EUA.

And these home collection kits are a priority for our office.

(Marcella Vasgrove): And this would be prescription-based and I didn't know whether the bar would be lower for prescription-based.

Timothy Stenzel: So for prescription-based I believe the Gates quantigen study was on symptomatic individuals. And for prescription-based you don't need asymptomatic individuals. However, if the performance is good enough you can use the serial pathway when talking about for OTC is possible. But for prescription, the recommendations are less because we know that a prescriber is involved and is taking some responsibility for ensuring oversight as the testing and that allows us to be more focused in our review.

(Marcell Vasgrove): Okay, thank you so much.

Timothy Stenzel: You're welcome.

Coordinator: Our next question comes from (Ella Kiocore).

(Ella Kiocore): Thank you for taking my call. I appreciate your efforts in answering our questions. My question pertains to use of genetic algorithms and interpretation of the raw data to extract the result. How can one gain accessibility of that kind of approach? And if that is something that is a matter of the future, then my second question would be about using the same group of users for validating a test for individual use at the point of contact and by pooling. So these are my questions. Thank you.

Timothy Stenzel: So hang on, to clarify. Are you also developing a detection method for SARS-CoV-2 virus?

(Ella Kiocore): Correct, it's a molecular detection method, genetic molecular detection method with the original method of generating signals different from RTCPR that's related, simpler, cleaner, one-step direct and results in 20 minutes. So have submitted a pre-request for information and that in the belief that we need to refrain from using the IT and machine learning from generating the results. I want to verify that this is a correct approach for our future generations.

Timothy Stenzel: I'm not sure that I understand. You're adding on software. You have a detection method that can determine presence or absence of the SARS-CoV-2 virus in a sample. And you're adding an AI or machine learning software on top of it?

(Ella Kiocore): (Unintelligible), that would be something hidden from the user entirely. It would be the internal portion of the black box essentially.

Timothy Stenzel: Yes, so that's a very specific question about your device and why artificial intelligence or machine learning would be helpful and needed for your test. But and developers can choose to do what they want. And we would certainly accept it and review it, but there would be additional review questions around the use of such software. And that's where a pre-EUA with the specifics of what you're development program looks like and the specific questions you have around the use of AI or ML in your submission.

(Ella Kiocore): I see.

Timothy Stenzel: There's a software, I think most of the templates have a software section now. So this would be covered under the software and you know we have a white paper out on artificial intelligence from the CDRH center that gives some high level guidance about our current thinking. There are different kinds of uses

and ML. That is important for us to consider such as are you going to have a learning system? Are you going to use ML to establish your cutoff and then you're going to lock it down?

So there's a whole, it's a large area and we just need specifics so we can answer your questions that are important for you and your development process that are relevant only to your test. Okay, all right let's move onto they the next caller, please.

Coordinator: Our next question comes from (Tiawa Wella).

Timothy Stenzel: Hello. Can't hear you.

(Tiawa Wella): Hello.

Timothy Stenzel: Hello, can hear you now. Hello?

(Tiawa Wella): Yes, hello. Yes, I have a question on submission of a pre-EUA file. We're developing a (unintelligible) test a level kind of antigen test and we could submit our features and explanation of our topics and the elements into. Or we could wait a little bit and have more experimental data, limit of detection and the first usability study for (unintelligible) evaluation. What would the VA prefer to have that you will submit already or we wait a bit to have more valuable data to support that project or position?

Timothy Stenzel: Yes, well we're interested in getting a full EUA submission especially for home antigen in-home molecular tests as soon as you can get it to us for review. We have at-home template that's online that hopefully provides all they information you would require to or need to know how to - what our recommendations are for validation.

If you have any questions that aren't clear from the template, that's the reason to submit a pre-EUA. Otherwise if the template is very clear to you on what to do, then you know, I would encourage you to work on the studies to go ahead and demonstrate the performance of your test and submit that to us as soon as possible and as I said, you know, home molecular antigen tests that can be produced in high volumes and made available to the US consumers at home is one of the highest priorities right now for us.

Coordinator: That concludes our question and answer session. I would now like to turn the call back over it Kemba Ford.

Kemba Ford: Thank you. This is Kemba Ford again. We appreciate your participation and thoughtful questions during today's town hall. Today's presentation and transcript will be available on CDRH Learn webpage at www.fda.gov/training/ccrhlearn by Friday, April 9. If you have additional questions about today's presentation, please email CDRH-EUA-Template@fda.hhs.gov.

As we continue to hold these virtual town halls, we would appreciate your feedback. Following the conclusion of the virtual town hall today, please complete a short 13-question survey about your FDA CDRH virtual townhall experience. The survey is live and can be found on www.FDA.gov/CDRHwebinar.

Again, thank you for participating. This concludes today's town hall. We hope you'll join us again next week.

Coordinator: That concludes today's conference. Thank you for participating. You may disconnect at this time.

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