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HERESA MALIN: Hello, everyone. I'm Theresa Malin, a senior education specialist. And, on behalf of the Mayo Clinic School of Continuous Professional Development, we'd like to welcome you to the Mayo Clinic COVID-19 webinar series. Thank you for joining us today.

Before we kick off, I'd like to address two points. The first is claiming credit. To claim credit, after the webinar, we'd like you to visit ce.mayo.edu/covid0602. And you'll enter an access code. Prior to entering this access code, you need to be logged in. If you haven't visited the site before, you may need to create an account.

Today's webinar will feature the Q&A function. We'd like to thank you for the Slido questions that were submitted ahead of time. Slido has been closed.

We'd like to know if you have any questions as the webinar progresses. If you use the Q&A function, this will ensure that the panel members see those questions. We'd also like you to utilize the upvote function in the Q&A to raise the priority of the questions you'd like to ensure get answered.

For today's panel, leading and moderating is Dr. Priya Sampathkumar. She is the Chair for the Infection Prevention and Control Committee, and she also chairs the Mayo Clinic Infection Prevention and Control Specialty Council. Thank you for leading today, Dr. Sampathkumar.

PRIYA Thank you for this invitation. I'm excited to be able to talk with all of you virtually. I know you have a lot of
SAMPATHKUMAR: questions. So I'm going to go ahead and introduce my co-panelists and then jump into a few introductory slides that I've prepared and leave enough time for your questions.

So my co-presenters are Elena Beam. She is an infectious disease physician, Chair of the Transplant Infectious Disease focus group, Program Director for the Infectious Disease Fellowship, and has been working in infection control for about five years now.

ELENA BEAM: Thank you.

PRIYA Jack O'Horo is also an infectious disease physician. He chairs the Infectious Disease Focus Group with the
SAMPATHKUMAR: [INAUDIBLE] ID practice and has been active in the data analytics part of infection control and also chairs the PPE Task Force for Mayo Clinic.

JACK O'HORO: Thank you for inviting me here today.

PRIYA And then we have Dr. Aaron Tande. He is an infectious disease physician. He's not formally part of infection
SAMPATHKUMAR: prevention and control, but is very active in the practice side of infectious disease and has really been invaluable in supporting all of our infection control activities, both in the inpatient and the outpatient side. He also has a special interest in orthopedic infectious disease and chairs the Ortho ID Focus Group.

AARON TANDE: Thanks for having me.

PRIYA All right, so I want to make sure that you all have plenty of time to answer questions. So I'll just jump into a
SAMPATHKUMAR: very brief presentation just sort of outlining the basic principles of infection control, as it relates to COVID in the health care setting. And I know you have questions about the community setting also, but we'll jump into this part first. Theresa, can you advance?

So this is very, very basic, and I'm sure all of you are well aware of how SARS-coronavirus is transmitted. The primary mode of transmission is a droplet and contact. So, when an infected individual coughs or sneezes, particles of varying sizes are generated.

And these particles, the majority of them, tend to be fairly large in size. And, because they're large, they don't travel very far. They get-- they fall down to surfaces. And these droplets can then be infectious to others if you touch them with your hands and then touch your nose or mouth or if you're within range of these droplets when the person is coughing, sneezing, or even talking.

In addition to that, you can also have these much smaller particles called droplet nuclei. These are very light. And, by virtue of being light, they can remain suspended in the air for long periods of time until the air exchanges have removed them from the air in that space. And, these particles, it's controversial how much they contribute to the transmission of SARS-CoV-2. They probably do contribute a small amount, but this is not the primary mode.

And, based on these modes of transmission, what we in Mayo do is, for the patient, use an isolation category that I'll show in my next slide. So what we do in the hospital is use an isolation category called modified droplet precautions. We understand that the primary mode that we want to protect ourselves from is the droplet and the contact transmission. So everyone, all the health care workers who go into the room, need to wear a mask, have eye protection on, and gown and gloves for all activities.

In addition to that, if there are higher-risk procedures, things that will result in these small droplets being generated, what we call aerosol-generating procedures, we then require respiratory protection in the form of either an N95 respirator or powered air-purifying respirators, which will filter out those smaller particles. You can go on to the next slide.

And one of the things that has been unique about this COVID outbreak is that, all over the world, we've experienced shortages of PPE. So one of the things we have done here to educate our healthcare workers is come up with all the different combinations that can be used that will protect you.

So, for taking care of these patients in the hospital for routine care, these are the things that we recommend-- mask, eye protection, gown, and gloves. And, because our staff don't have a standard supply, and a lot of different supplies can be available, depending on where they work within the institution, we just have pictorials with the different combinations that can be used. Next slide.

And, similarly, for aerosol-generating procedures, we have some illustrations here on the different ways that you can protect the N95, both protect the N95 and also protect yourself, from splashes in addition to the respiratory aerosols. And, again, we have these posted in our inpatient units and also on our website for individuals to refer to.

These pictorials give you the basic things that you need to do. In addition to this, on the units where our COVID patients are housed, we also have detailed pictorials showing the order in which each of these pieces of PPE need to be donned and the order in which each item needs to be taken off, the different steps that you need to do hand hygiene at, and these are also available both as a pictorial and as videos for individuals to watch on their own time.

The outpatient settings are a little bit different. Now that COVID has been circulating in our communities, we can expect to see patients with COVID not just in the inpatient setting, but also in the outpatient setting. Sometimes, we know that they have COVID. Sometimes, patients are completely asymptomatic, but might still be able to transmit.

So, in mid-April, we moved to having all of our healthcare staff wear a mask all the time when they are in the health care facility. And this is both outpatient and inpatient settings. And then, a couple of weeks after that, we realized that we also needed to protect them by giving them eye protection.

So, for care of all patients in the outpatient setting, this is the PPE that is required-- some form of eye protection and a surgical or procedural mask that will protect you from coughing and will also serve as source control so that you don't transmit COVID to your co-workers or to patients.

In the inpatient setting, one of the things that has been very, very controversial and talked about a lot is what are the situations when you need N95s. The CDC says use an N95 all the time if possible, but we both have a supply issue with N95s and also the difficulty with health care workers' comfort if they have to wear an N95 or a PAPR all day long.

So what we did is convene experts that assessed the different types of procedures that we commonly perform in the hospital and risk stratified these procedures into the ones where the risk is highest to the health care workers. And then we recommended that these were the times when you would need to use the N95s.

These have been arrived at by consensus and also through literature review, the combination of the two. And this is a living, breathing document. We constantly revisit this. We meet once a week and update this once a week. So this is just a general framework, and this isn't intended to be something you necessarily use at each of your institutions, but it can serve as the basis for creating your own guidelines.

So, for the high-risk procedures, we recommend that you always use N95s. For the medium-risk procedures, we recommend that you take patient characteristics into account. If you think the patient could have COVID, either because of symptoms or X-ray findings, then use the N95. If you are very sure the patient doesn't have COVID, then those procedures could be performed without the N95. Next slide.

So one thing that all of you are probably interested in is, with all of this, what is-- how safe are health care workers while providing care to COVID patients? And I wanted to just very briefly go over the data in this cohort study that was just published within the last week. It's still in preprint, but I thought the way they did this study was really interesting.

Over 2 million individuals who were community dwelling and about 100,000 health care workers in the UK and US were enrolled in the study. They had a smartphone application that was downloaded onto their phones. They completed a short survey about their baseline characteristics and then, every day, were asked to log in and report on symptoms and also on results of COVID testing.

Over a five-week period, they found that over 5,000 individuals had a positive COVID test, both in the community dwellers and the health care workers. And, as you would expect, people who worked on the front line caring for health care work-- of caring for patients with COVID had a hazard ratio of 11.6 compared to the general population. So health care workers clearly have a much higher risk.

And, when you looked at the levels of PPE, the risk was lowest if health care workers reported that they had adequate PPE. Something that we've all been doing during this outbreak is reusing PPE. And the hazard ratio was slightly higher if you reuse PPE. And that went up even further in areas where health care workers reported inadequate PPE.

So, again, I can't underscore the importance of PPE in protecting yourself, using the PPE correctly. And, even when you have adequate PPE, there are other human factors that go into how well they protect you. So the PPE itself I think works, but health care worker behavior sometimes still allow you to become exposed.

So, if you are really tired or if you are rushed and have to perform care delivery under stressed circumstances, then you make mistakes. And that's probably how transmission still occurs, even if you have adequate PPE.

Next slide.

So what do we-- so all of us will have health care workers who are infected with COVID. And I wanted to show you some guidance that is out there for when these health care workers can come back to work. So there's two strategies that you can use, a symptom-based or non-test-based strategy and a test-based strategy.

At Mayo, we use the test-based strategy, and this is very similar to what the CDC recommends, except that we added the 14-day rule. So we do not allow any of our health care workers to return to work until 14 days after the onset of symptoms. In addition, the fever should have resolved. The initial symptoms should have improved. And we also required two NP swabs collected at least 24 hours apart.

We have encountered health care workers who can shed for extended periods of time. And I'm sure you'll have questions about that. So we can talk about that during the question and answer session. Next slide.

All of us are now in the phase where we are slowly coming out of our lockdowns, and we're sort of on this continuum of trying to reopen our practices and decide what's best, what the best way to do it. And here, at Mayo, what we do is we have introduced symptom screening of all patients and visitors. We've restricted the number of visitors that can accompany patients in the outpatient setting. And then everyone gets a symptom screen, and they're not allowed in if they have a fever or if they have any other symptoms.

Once you're within the building, all of our patients are required to mask while on our facility. Our outpatient areas, we have made some modifications to our spaces so that there is adequate physical distancing between patients. And all of our health care workers, as I said earlier, are required to be masked and wear eye protection. Next slide.

And then, in the inpatient setting, it's very similar. We limit the number of people on campus. We had a no visitor policy for several weeks, and we've just relaxed that to one visitor per patient. All our patients are screened with PCR on admission. And we cohort the COVID-positive patients in two different locations in the hospital, depending on whether they need ICU care or not.

And, the one thing, we had a lot of training of health care workers in PPE use. And what we're actually doing now is retraining because a lot of our workers who were working from home are returning to care. And we need to ensure that they are as up to speed on PPE use as the others. We have a similar universal masking policy of patients, visitors, and staff in the hospital. So I'll stop here and open it up for comments.

THERESA MALIN: Thank you. So the first question we have here is, do prescriptive eyeglasses suffice for eye protection against COVID?

PRIYA So, a great question, Jack, do you want to take that one?

SAMPATHKUMAR:

JACK O'HORO: Sure thing. As a rule of thumb, they're not going to be adequate protection in and of themselves. However, there are plenty of adaptive devices that can be used or shields on the side. What you look for to make sure it's adequate is the ANSI Z87+ marker on the product. That tells us that the American National Standards Institute said that it has a fluid protection level that's equivalent to safety glasses that we use in health care.

THERESA MALIN: Thank you. The next question we have is I have a patient who has tested positive and recovered, but, when they're ready to go back to work or get elective surgery, they continue to test positive. How long can a person test positive after recovery?

Are they infectious during this time? May they test negative before I can clear them to go back to work or get surgery? There's a few other questions. The last piece says, do I have to tell them to self-isolate due to the positive result, even though they have recovered, and the CDC criteria have been met?

PRIYA I will take a stab at answering this, and then I'm going to ask Aaron to step in because he has a lot of

SAMPATHKUMAR: experience with this. So, in general, it appears that most people are only infectious for the first few days after the onset of symptoms. When there have been studies culturing the virus from these patients, the longest that the virus appears to have been viable is about eight days.

But, when you use PCR, there can be shedding that is detected by the PCR for many, many days. And I think the longest has been about 90 days. So a small proportion of patients, health care workers can shed for a very long time.

Does this mean they are infectious or not? That is really an unknown. When you have virus particles that are present, these may be dead or maybe live. And, unfortunately, not many places can actually perform cultures of the virus, nor do you want to because this could be a hazard to your lab staff.

So what we do here is assume that they are still infectious, but, if you're in a situation where you desperately need these health care workers back, you may need to make some practical decisions about, after a certain number of days, whether that is 14 or 21 or whatever you want to use, you may have to bring them back to work because we have experience that shedding can go on for a very long time. And I know Aaron will probably have some comments to add to that.

AARON TANDE: Yeah, so I think that this is a really important question and, unfortunately, one where the data is still emerging. As Dr. Sampathkumar mentioned, there's some data that says that the infectiousness of the virus, even if it's detected, is highest in the first week or in the pre-symptomatic phase and then wanes after that.

This is based on a couple pieces of data, one the *Nature* study out of Germany that looked and found no infectious or culturable virus after eight days. The second piece of information that's emerged in the last couple of weeks is from Korea. And this is available freely to all on the Korean CDC website where they looked at what they call the re-positives, so patients that were known to be positive, who were under isolation for the appropriate amount of time, and then had negative testing and were released from isolation, but then became positive again.

This was about 2% of overall patients. And, among at 285 patients, when they looked at it, they did viral culture in 108. And they found no infectious virus among those re-positives.

And so I think we can use this as starting to help us answer the question that these patients are likely not infectious. However, I think the caution needs to be that the data is not yet firm enough to make this recommendation system wide. And so, as Dr. Sampathkumar mentions, we have continued to approach these minority of patients as potentially infectious.

THERESA MALIN: Thank you. The next question we have here is, is there any evidence of COVID-19 reinfection or co-infection at Mayo Clinic?

PRIYA So I think that reinfection question Aaron touched on. We have not seen anyone test positive after an extended
SAMPATHKUMAR: period of time that we could call it a real reinfection. Most of the people who retest after an initial negative test we think is just differences in the way the test picks up the virus.

The second question was about--

THERESA MALIN: Co-infection.

PRIYA Co-infection, yes. So we have now not been testing as actively for co-infection, but, during the initial phase of
SAMPATHKUMAR: testing, when the COVID tests were taking a while to come back, up to 72 hours or longer, we were testing with our BioFire respiratory PCR panel. And approximately 25% of patients did have another virus detected by the PCR panel.

So we certainly did see co-infection or at least lab evidence of co-infection. And there was a *JAMA* article about two months ago that showed the same thing across the US that about 25% of patients had another virus also detected at the same time as COVID-19. What drove these [INAUDIBLE] is not clear. It could be that these are viruses that we're just picking up. But there were things that we consider pathogens, like RSV and influenza, detected from a number of patients with COVID.

THERESA MALIN: Thank you. Our next question is, what is your opinion of using the pulse oximeter to possibly detect suspected COVID-19 infection in areas where testing is not widely available?

PRIYA I'll take that one maybe. I think that it can be a very useful tool. We have been seeing in patients admitted with
SAMPATHKUMAR: COVID-- we are real fortunate that we have adequate testing facilities here. But we are seeing a number of patients who look relatively well when they present with COVID and have very low oxygen saturation. So they appear comfortable, much more so than you would expect with oxygen saturations in the 70s and low 80s.

And so I think this can be a useful tool, both in maybe identifying COVID cases, but also in following these patients with COVID in the outpatient setting. And this is actually part of our monitoring program for patients who are being managed at home. And I don't know if, Aaron, maybe you want to add something to that, the home monitoring program.

AARON TANDE: Oh yeah, I think that, the home monitoring program, that's really an invaluable tool for managing patients with this illness because it really can incorporate the ideal status of really trying to maintain isolation for infected patients, but still keep monitoring on them. And that can run the gamut from Bluetooth-enabled technology to try and do this in an automated fashion to as simple as over-the-counter oxygen saturation with reporting over the phone.

THERESA MALIN: Thank you. I'd like to remind the attendees or ask them to use the upvote function within the Q&A. We currently have 42 questions. So, if you'd like to get some of these answered, go ahead and upvote them to raise the priority of that question.

Our next question is asking for an update. So they're wondering if there's an update on airborne transmission and air filters, noting that the detection of RNA in environmental samples based on PCR assays is not indicative of viable virus that could be transmissible. So is there an update around that?

PRIYA I haven't seen any recent updates. There's increasing a body of evidence showing that, while COVID can
SAMPATHKUMAR: become aerosolized, because the aerosol particles are so small, the amount of virus in each particle is very, very small and may not be enough to cause infection in those exposed to that air. So this is something that will continue to evolve over the next few months. And I think that, at this point in time, just based on our practical experience, aerosols are probably not the major mode of transmission. They may play a role, but a very small role.

THERESA MALIN: Thank you, Dr. Sampathkumar.

PRIYA I'm just going to follow up on that. So why do leading bodies like the CDC still recommend N95s? The reason
SAMPATHKUMAR: for that is an abundance of caution. We know that COVID is a very serious infection, that it can cause serious illness in both healthy and immunocompromised or otherwise ill patients.

And, because we don't have any effective, any definitely effective, therapies or vaccine, we just want to limit transmission using all modes possible. So the addition of the N95 to the rest of the PPE is sort of a safety measure. It may or may not be strictly necessary, but we really don't want to take chances, especially when it comes to our health care workers.

THERESA MALIN: Thank you. Next-- oh, go ahead.

PRIYA Well, I see some questions about N95s. I'm going to just read one of these out. How are you using N95s? How
SAMPATHKUMAR: long to reuse? Are you re-processing N95s? Any hope that N95 supplies will improve in the next week? And I'm going to ask Dr. Beam who's been doing a lot of work on reuse and reprocessing of N95s to address that question.

ELENA BEAM: Thank you. Yeah, so this remains a big issue for us, like everywhere else, to use our N95s safely and employ reuse when it's appropriate. So one of the key things that we've started is identifying frequent users of N95s to work with those groups to see how we can work and reuse safely.

One thing that we've identified that we have a good supply of that helps our program is full-face shields. And, Priya, you had mentioned this in the PowerPoint where the full-face shields provide that protection against droplet spread, but also provide additional protection for the N95.

So we went through the education of reusing an N95 in that scenario for our frequent users. Most of the time, it would give them that one-day period where they can continue to use this process. We also had to realize that we needed to give them new education on how to don and doff the N95 with the assumption is, despite all that we are recommending, assuming it is a contaminated N95 and ensuring that we specified hand hygiene anytime they come into contact with it.

Like other areas that you may have heard about, we are also using the plastic storage containers as a way to help our healthcare workers to don and doff with least potential for contaminating themselves as they do so, including the rubber straps. Most of our units that are high-frequency users have started to do this. And that includes patient care units, anaesthesia, and even surgical practices.

And we've had really good feedback in terms of how it works for these areas, including respiratory therapists and others. So that's a major way that we've gone into the reuse of an N95. So we're kind of extending its life for a full day where someone may have been using it seven, eight times a day, but also making sure we outline a process for it to be done safely and giving that education to our areas, storage, making sure they know when to do it, when not to do it.

If, for example, it becomes soiled, despite your efforts, we would not want to reuse that. If the user seal check fails, we would not want to reuse that. So outlining when it's appropriate and when it's not appropriate was one of the big things.

And, again, so far, we've had good feedback on all the areas that have implemented it. And none of them have wanted to discontinue because of any concerns about the process. So that's been really great.

Reprocessing is something that's being done in certain facilities. And, again, it depends on what is your supply in terms of N95s available for your health care workers and as far as when do you go to the next step outside of reuse. When do you go to using it for more than one day?

I think those are probably different based on the facility and knowing how many procedures you're doing, how many masks you have, and how long you can continue to supply. But, whenever going to that next step, I think reaching out to the staff and making sure that what you think is safe makes sense to their practice is important when you're considering those above and beyond measures from our routine practices that, in the past, we were not employing.

PRIYA So thank you, Elena. I know you've been working really hard on this. So there are a couple different things that **SAMPATHKUMAR:**we, at Mayo, have been doing. As Dr. Beam outlined, we've been coming up with guidelines for what we call extended use, so repeated use of the same N95 throughout the day.

We also have been looking into reprocessing. And the two methods that we have looked at here are the hydrogen peroxide method and the UV disinfection method. And we have reprocessed masks using these.

Right now, we haven't put those back into circulation yet. There are still some concerns about whether fit will be preserved with the reprocessing method and how long-- how many times we can reprocess. So we're still working on doing some validation of these methods.

The last method for really reusing the masks is the lowest tech method, which is taking the mask off, putting it in paper bags, and waiting five days or four days in order for any virus on the mask to literally die. And Dr. Beam has also been working on that. Do you want to say a couple of things about that?

ELENA BEAM: Yeah, so I-- the method is an ideal method. It is low cost and seems to be something that we should jump to. But we were very surprised to find the logistical challenges in storing five bags of N95s for each individual person. So it's kind of interesting that, in theory, simple to use and seems like something to go straight to.

However, in certain areas where you know you have a very small supply of a specific N95 that your staff is fit-tested to, this may work really, really well. And that's what we went with. Actually, our anaesthesia department reached out to us interested in doing something like this where we have staff that are fit-tested only to a very low supply N95 mask, meaning, once we're out of those, they have no options. And so I think there was a lot of motivation on the staff as well to work with us.

And, again, simple, like you said, we use brown paper bag one time and then you throw it away when you're done. It's vented and making sure that they know the start date of when they used it and when it's safe to use it again. Again, we're using that five-day period. So each employee ended up getting five masks.

And that extends-- from a discussion with our safety colleagues, we expect each of those masks is probably going to be used about five times before the user seal check fails. So the same rules apply in terms of when they no longer use it, but really that means we now have months and months of supply for these employees, whereas, before, it would have been one month, and we're stuck with using something like a PAPR, which is not an ideal situation for anesthesia who's in the operating room and concerns about exposure to the patient there.

So far, it's been a very targeted area that we've applied it to, but, like you're saying, there's a lot of interest in the fact that it's so easy to implement and the cost. And you don't have to come up with ways to use hydrogen peroxide and all of these different things, so a lot of benefit in certain areas out there that I'm sure are still going to be implementing in the future.

PRIYA And then, Theresa, I'm just going to do one more question on this theme because it's on my screen. And this is **SAMPATHKUMAR:** from Karen who says, why have I been asked to wear a paper mask over my N95?

And the reason is really to protect the N95s. So, remember, COVID is transmitted primarily through droplets. So you still need to make sure you're protecting your mask if you're going to reuse it from those droplets. And that's why a paper mask.

At Mayo, instead of the paper mask, since you also need eye protection, as Dr. Beam said, we use a face shield or a visor. They've been locally manufactured and in better supply than any other part of our PPE supplies. So this saves the N95s from direct splashes and contamination.

THERESA MALIN: Thank you both. Our next question is, could you please comment on the rationale for loosening restrictions and reopening when the number of cases continues to rise, and some reports say that the peak is not expected until September? This seems counterintuitive.

PRIYA So the reason to reopen is really economics. People are really hurting because of all the closures. Small **SAMPATHKUMAR:** businesses especially are suffering.

And what these initial lockdowns have done is give the hospitals time to prepare, put protocols in place that ensure the safety of patients and staff. And now, depending on outbreaks, I think that you're absolutely right. Cases across the world are continuing to rise. There are multiple hot spots throughout the US, but locking down the whole country is something that people don't seem to have too much of an appetite for. So it's really the public asking for this in certain instances.

I hope that local leaders will play a role in saying that this is a local hot spot, and we need to implement stricter measures in our local community when there are outbreaks in communities. I think that we're opening up in Minnesota, where we are, starting yesterday, but this isn't opening up to pre-COVID times. So we're not going to be seeing large crowds in movie theaters and ballparks and football games. We're opening up, but, hopefully, people will do it in a responsible manner.

And, in addition to that, people will use face masks, be careful about continued social distancing, and, most importantly, be very good about hand hygiene and staying home when sick. And we're hoping that the lessons we've learned over the last few weeks will continue to protect us, as a country, as a state, as an institution.

THERESA MALIN: Thank you. Our next question is, is there any benefit to employer-based health care worker PCR and/or serology testing on a wide-scale basis? Might this be applied at Mayo Clinic?

PRIYA So there are a lot of different serology tests out there. I saw another question about sensitivity and specificity **SAMPATHKUMAR:** about the commonly used tests. So they vary widely, and you really need to look at the specifics of each test to know what the sensitivity and the specificity is. Even LabCorp and Quest change the platforms frequently based on new data and FDA EUA authorizations. So I think that I can't give you a general number, but the tests vary very widely from sensitivities, especially for the serology tests, anywhere from 70% to 99%.

I think that there is a role for widespread testing of health care workers with serology to get a sense for what proportion of your health care population has been exposed and infected with COVID-19. There are some caveats to what you do with that information. We don't have enough information at this point to know how long these antibodies will last and whether they're truly protective.

So, knowing that you're seropositive does not give you, as an individual, sort of a blanket immunity that you can go out and do whatever you want, not wear a mask, or not use PPE when you're taking care of COVID patients. So, on an individual level, it's not very useful.

On a population level, it can kind of tell you what proportion of your population is still at risk for COVID and can help you make some decisions around opening up practices, et cetera. So there's some use, but we're still kind of learning how to use serology.

Widespread testing by PCR is probably not very helpful. It might inform you at one given point in time what the proportion of asymptomatic individuals is in your community, but it's an expensive test. If you've ever had an NP swab, you'll probably never want to have another one. So I'm not so sure that mass testing with PCR is very useful. I think targeted testing, testing people around an index case or testing contacts, testing people who-- household contacts especially, may have a role.

THERESA MALIN: Thank you. Our next question is a scenario. So my exam room places the patient three feet from my face. Appointments last 45 minutes. Is a standard mask enough? Or should I be wearing an N95? And I'll add if you also have any recommendations for eye protection.

PRIYA So the eye protection part is easy. And I'm actually going to give that over to Jack to answer. So I have to
SAMPATHKUMAR: remember not to jump in and answer everything.

JACK O'HORO: Sure thing. So, for this one, I would say that for most work that you do, even for an extended period, a standard mask will be adequate protection. This does depend on whether or not you're doing an aerosol-generating procedure and such, but just to have an extended visit is not, in and of itself, something that makes me think you need aerosol protection.

We have moved to universal eye protection. And I think that's very appropriate in this setting. We say that, overall, it's lower risk if you have both eye protection and a mask, especially if you have to unmask the patient for any portion of the procedure.

In reality, it's probably not critical that your eyes are covered the entire time. But, when we look at the number of opportunities we have where it could be missed, it just makes it easier, from a human factor standpoint, to say just wear your eye protection through that entire process just so there's fewer gaps in PPE.

AARON TANDE: I would just--

ELENA BEAM: And I'll just jump in.

AARON TANDE: Oh, go ahead, Elena.

ELENA BEAM: Thank you. Yeah, so, apparently, a very interesting question that all of us have feelings for. But my idea here is that you state that the exam room is such that you're three feet away. And I think that's what we need to rethink. And it takes a village. Every exam room is different. Every waiting room is different.

But how do you optimize that going forward, right? We know the distancing is huge in it. The masking depends on the wearers. And the patient may contaminate themselves.

But how do you make each appointment safer? And that's where reaching out and saying can I push that a little bit more. And that can be in the exam room, in the waiting room, and all the other areas that, previously, this was not something we were really worried about, so just a side comment there. Go ahead, Tande.

AARON TANDE: And I was-- I was going to just comment. And I think that this is the time where we don't accept the current status quo. We don't accept what is given. And so, as an example, if your exam room is three feet, you question can we make it not three feet. Or, if that's not possible, you question what activities are you doing in your outpatient practice that do not need to be done face to face.

So I think that the idea, again, as you're hearing through all these things, is risk mitigation, multiple layers, from PPE to distancing to masking of patients. What things, if you can't get away from three feet, what else can you do, as far as decreasing that risk? So that would be the other-- from an outpatient practice standpoint, that's the other key thing to think about.

PRIYA The other thing I would say is there's only a finite amount of time that most people can tolerate wearing a
SAMPATHKUMAR:mask continually. So, for our psychiatry practice, for instance, where it's a lot of talking going on, we have recommended that people take frequent breaks.

There are some neurocognitive testings that can take up to four hours. So it's really not practical to expect either the provider or the patients to wear the mask an extended period of time. So we recommend that you schedule breaks where one person leaves the room, and the other person can take off the mask and do hand hygiene or just get a drink of water or whatever else they need to do.

THERESA MALIN: Thank you all. Our next question states that it was stated that, since Mayo has instituted universal masking, that there has been a 90% reduction of transmission of COVID-19 between staff. And they're curious how were these numbers derived.

PRIYA So I can speak to that. I worked closely with occupational health on identifying employees who have been
SAMPATHKUMAR:exposed. So what we were seeing early on during our COVID outbreak was that we were very good about using appropriate PPE when it came to patients with known COVID. There were some exposures from patients prior to our making the diagnosis of COVID. So the patients weren't masked, and health workers were exposed.

The other really common thing we were seeing was asymptomatic or pre-symptomatic health care workers transmitting infection to one another. And that's where the universal masking really helped. Once we instituted the mask for all at all times policy, the number of health care worker to health care worker exposures decreased dramatically. And that was the majority of that 90% reduction.

And that has stayed sustained over the last four to five weeks. So those numbers were derived from looking at the number of employees who were quarantined because of exposures, the number of employees who tested positive after an exposure.

THERESA MALIN: Thank you. Our next question is asking for your thoughts on the *Science* article May 27. And they quote, "a large portion of the spread of COVID-19 appears to be occurring through airborne transmission of aerosols produced by asymptomatic individuals during breathing and speaking."

PRIYA I haven't seen this article. So I would have to refer back to it. And I can get back to the person asking the
SAMPATHKUMAR:question unless one of the other panelists is familiar with this article.

AARON TANDE: If I'm understanding right, I think that this was an editorial or a commentary. So I think it was referencing some other work. Like you, Priya, I would have to look into what the references that that article was citing before giving an educated comment.

PRIYA There is another article that talked about this, which was-- which got a lot of press. I think this happened in
SAMPATHKUMAR:February in Washington state where a large number of people who were at a choir practice acquired COVID. And the theory there was also that this was due to aerosols since many of these people were not directly in contact with each other. They were in a large room, and I think they were 61 people in the room.

So I think that was a unique circumstance. We do know that singing, in particular, generates a lot more infectious particles into the air. Singing loudly, like you would at choir practice, definitely generates more particles. So what we're saying is, if you're seeing a patient who is masked and who's able to contain their secretions, that you don't need an N95 for routine care of that person.

If that person is going to be in-- but, in the community, when people are getting together in groups to sing, that's a different situation. And I think it's been controversial about whether places of worship should be opened up and whether people should get together and, especially, sing in choirs. And that's still being discussed, but those are unique situations.

THERESA MALIN: Thank you. So we have about 10 minutes left, and I'd just like to remind the attendees, if you'd like to use the upvote function within the Q&A, we have 75 questions currently. We will not be able to get to all of these during the webinar. So, if you'd like to upvote the ones you'd like to see addressed, now is a good time for that. Our next question is, what prompted the screening guideline to reduce temperature from 100.5 to 100 degrees?

PRIYA Is there anyone on the panel that wants to take it? I'm not sure that this was really guided by science. Like a lot
SAMPATHKUMAR: of things that have been coming out recently, it's expert opinion.

What is true that, if you use any one, single factor in all the different screening tools we have, you will miss cases. And I think lowering the temperature was an attempt to make it more sensitive, but, yes, that does mean that you lose something in specificity. So 100 degrees is, for a lot of people, not a very high temperature. So you're going to catch a lot more people with that screening tool. Whether they truly have COVID or not remains to be seen.

And there's data coming out that perhaps fever is not a useful tool at all, that other things like fatigue and myalgias are more predictive of COVID. The problem is, in a general population, a lot of people have fatigue. A lot of people have muscle aches and pains all the time. So, just coming up with the best screening tool, everyone is just trying to do their best. I don't think there's any scientific data, though, supporting temperature going from 100.4 to 100.

AARON TANDE: And just to-- just to jump in, I think the questioner is a Mayo employee. So they may have wondered, at Mayo, why was it changed. And I would say that was based on the CDC change in guidance as well. But, yeah, I think-- I don't know the data behind that CDC guidance change.

THERESA MALIN: Thank you both. Our next question is, what are your thoughts about recent reports that COVID-19, the virus SARS-CoV-2, is less likely to be transmitted from surfaces relative to what was reported earlier about the virus' survival on surfaces?

PRIYA Does anyone else want to take that?

SAMPATHKUMAR:

ELENA BEAM: I'll jump in a little bit. I think it comes down to our early literature focusing on PCR-based testing and making a lot of conclusions about viability of the virus. And so early reports suggest that, OK, up to two or three days, it can survive on this kind of surface or this kind of surface, but, again, there was a lot of conclusions made because that's the best test we had at the time.

We do know that a majority of our hospital-grade disinfectants are active against it. So we don't have to use any special changes to our hospital practices for cleaning, including room turnover in the clinics and things like that. So we haven't had to drastically change that. Of course, there's the List N of type of disinfectants that are active against coronavirus.

But we realized that early on where it's doing what we should be doing is all we needed to do in terms of hospital cleaning, clinic room cleaning. We haven't had to employ anything different. So I guess that would be an example of how I look at that question and what we've seen in the practice and maybe going back to our understanding of PCR and viability of virus may not be the same thing and the limitations on that.

THERESA MALIN: Thank you. So, for our next question, they'd like to know if there's a plan-- what the plan is at Mayo for resurgence. And, perhaps tied to that, do you expect restrictions on visitors to stay in place until a vaccine is widely available?

PRIYA So I can speak to that, and I'll have Dr. Tande chime in too. So one of the things that we, at Mayo, are taking **SAMPATHKUMAR:**very seriously is safety of our patients and our health care workers. So we are actually monitoring whether or not we have any hospital-acquired cases of COVID in our patients, what the number of employees with COVID is in our facility.

And, thirdly, we're looking at process measures. How good are we at social distancing? How good are we at not crowding waiting areas? How good we are enforcing our masking rule for both staff and patients?

And we're collecting all this data and looking at it regularly to guide decisions about whether or not to ease up on some of the things that the questioner asked about. Will we open up more appointments? Well, we will if we can prove that what we're doing is safe at this point in time. And we look at every request to increase availability of appointments and the type of appointments very carefully.

The visitor restrictions will likely stay for a while because they are the largest-- the most difficult group to manage. So we had a very open-door policy previously with visitors. They could come and go as they like. And we're realizing that that was probably problematic in a number of ways, not just for COVID.

And I think that this is the reality that we will have visitor restrictions in some form for months to come, possibly forever. And, definitely, for the immediate future, we're not anticipating relaxing our visitor policy in the hospital anymore than we have.

And we're one of the few institutions that actually allow visitors. There are still many, many institutions across the country that don't allow any visitors for any reason. We've all seen these heartbreaking reports of patients dying alone in the hospital, et cetera.

So we have been fairly flexible in making exceptions to our visitor policy. We'll continue to do that. But, as a general rule, I don't think we're going to be relaxing visitor policy anytime soon.

THERESA MALIN: Probably our last question, do you have any evidence of what viral load is needed to become infected relative to other viruses, for instance, the common cold or influenza?

PRIYA So, unfortunately, most of our PCR tests are not really quantitative. So it's hard to know what exact viral load is **SAMPATHKUMAR:**necessary, but, just extrapolating from various sources of data, it appears that COVID is about twice as infectious as [INAUDIBLE]. So, when you have an infected person, you [INAUDIBLE] twice as many people around them to become infected if no precautions are taken.

So it appears to be more infectious than influenza and much less infectious than things like measles, which are true airborne infections. So it's estimated that measles is about 15 times as infectious as COVID, which is what also leads us to believe that it's not truly an airborne infection, which measles is.

THERESA MALIN: OK, so we have about two or three more minutes. We can try and get one more question in. So this one is, do you have any recommendations for dental offices? Should all procedures that use a dental drill be considered in the high-risk category for the health care workers?

PRIYA Jack or Aaron, who wants to take this one?

SAMPATHKUMAR:

JACK O'HORO: I can take this one. So, in our dental practice, we did decide that we would address these as higher-risk procedures or, actually, in a medium-risk procedure for us, which is to say that there was a promotion of a screening beforehand. But, due to the proximity to the mouth and the aerosol generation and potential for coughing, a lot of dental procedures, especially those with the drill, were considered higher risk.

The only exceptions we really made to that are some of the more routine oral examinations. So dental work does seem to be in that area that we're right now saying proceed with caution, mostly based on the lack of available evidence and extrapolating from other procedures than because of any clear-cut evidence that it actually is an increased risk.

PRIYA And the CDC actually came out with some new guidance. So they have the aerosol-generating procedures. And **SAMPATHKUMAR:** they've created a new list of high-risk procedures. Anything that involves working on the mouth or upper airway, they've just put a blanket term higher-risk procedures for that.

THERESA MALIN: Thank you. Dr. Sampathkumar, do you have any final comments as we wrap up?

PRIYA So I want to thank everyone who attended today. The questions were certainly very, very interesting and got **SAMPATHKUMAR:** us all thinking. So thank you for that. We're all learning as we go. So we are-- things that were unthinkable a few weeks ago are now routine practice. And I think that things are going to continue to evolve.

And I look forward to hearing from all of you about new and innovative things that you're doing at your hospitals too in future webinars. So thank you for attending, and thank you for the really great questions. And thank you to all the wonderful panelists who all bring their own expertise and point of view that informs all of us.

THERESA MALIN: Thank you all. I'd like to just bring this back up for all of our attendees. In order to claim your credit, you'll need to visit ce.mayo.edu/covid0602. You'll need to log in. If you haven't visited this site before and made an account, you'll need to create an account in order to access this.

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