Good afternoon. I'm Commander Ibad Khan and I'm representing the Clinician Outreach and Communication Activity, COCA, with the emergency risk communication branch at the Centers for Disease Control and Prevention. I'd like to welcome you to today's COCA call, COVID-19 updates, Optimizing Strategies for Healthcare Personal Protective Equipment. The video recording of this COCA call will be posted on COCA's webpage at emergency.cdc.gov/coca a few hours after the call ends. Again, that web address is emergency.cdc.gov/coca. Continuing education is not provided for this COCA call.

After the presentation, there will be a Q&A session. You may submit questions at any time during the presentation through the Zoom webinar system by clicking the Q&A button at the bottom of your screen and then typing your question, If you are unable to ask the presenters your question, please visit CDC's COVID-19 website at www. cdc. gov/covid-19 for more information. You may also email your questions to COCA at cdc.gov. For those who have media questions, please contact CDC Media Relations at 404-639-2286, or send an email to media@cdc.gov. CDC's COVID-19 clinical call centers available 24 hours a day at 770-488-7100. Again, that number is 770-488-7100.

If you are a patient, please refer your questions to your healthcare provider. Also, please continue to visit emergency.cdc.gov/coca over the next several days as we intend to host COCA calls regularly to keep you informed of the latest guidance and updates on COVID-19. In add to our webpage, COCA call announcements for upcoming COCA calls will also be sent to you via email.

So, please subscribe to coca@cdc. gov to receive these notifications. Please share the invitations with your clinical colleagues. For instance, we intend to hold a COCA call on COVID-19 this coming Friday. Additional information will be shared via email call announcements after today's webinar and should be posted shortly on the COCA call webpage at emergency.cdc.gov/coca. I would now I like to welcome our presenters for today's COCA call. It is my honor and privilege to welcome our first guest speaker, Dr. Nancy Messonnier.

Dr. Messonnier is the director of the National Center for Immunization Respiratory Diseases and senior official for CDC's COVID-19 response. Our second presenter is Lieutenant Commander Grace Appiah who's a medical officer with the COVID-19 response clinical team. Our third presenter is Dr. Michael Bell.

Dr. Bell is the deputy director of CDC's Division of Healthcare Quality Promotion. And our fourth presenter is Dr. Kuhar. Dr. Kuhar is the lead for the COVID-19 Response Hospital Infection Prevention Team.

And our last presenter is Captain Lisa Delaney. Captain Delaney is representing the COVID-19 response Worker Health and Safety Team. Please note that the only side that will be displayed during today's webinar is a slide you will be viewing. The slides will not advance again until we begin the Q&A portion of the call.

And now our first presenter, Dr. Messonnier, you may proceed.

Thank you. It's a pleasure to speak with you today. As of this morning, there were more than 375,000 cases of COVID-19 worldwide. In the U. S.

, there has been a dramatic increase in the number of cases over the past week and we expect that we'll continue as testing at commercial and public health lab expands, and as the outbreak continues to

escalate here in the United States. As of last night, all 50 states, plus DC, and New York City reported more than 50,000 cases and sadly, more than 700 deaths. Across the country, people's families, schools, businesses, communities were all adjusting to a reality where we're focused on reducing the impact of this virus on all of us, collectively. As you know, many communities are already experiencing strain or will experience strain on their healthcare systems. These resources are likely going to be stretched to capacity at some point in many parts of the country.

Each of you knows that your tough jobs are only going to get tougher. I, and all the staff at CDC, want to thank you for the critical job you are doing. During any infectious disease outbreak, you, on the frontlines, are at higher risk for exposure because of the contact you have with people who are sick. Sadly, more than 100 cases among healthcare professionals have already been reported to the CDC. More importantly, you're the backbone of any pandemic response.

You, who care for all of us when we get sick. Today, CDC experts will be speaking with you about the guidance we've provided to help providers prioritize and respond to the pandemic. We've also worked with partners to develop tools to help you make really difficult but critical decisions. We understand that you will face many challenges in the coming days as the number of cases in the U. S.

rises. The health and safety of our medical professionals is our number one priority, as they, in turn, care for all of us. CDC and the entire nation are grateful for you for the invaluable role you will play in getting us through this response and the sacrifices you will make to do so. I'd like to turn the call back over to Commander Khan.

Thank you, Dr. Messonnier for your clinical perspective and the update. I would now like to welcome Lieutenant Commander Grace Appiah to present. Lieutenant Commander, you may begin.

Thank you. So, I'll provide a brief update and overview of the clinical aspects of COVID-19. CDC has updated guidance on discontinuing transmission based precautions and discharging hospitalized patients with COVID-19. This includes guidance for severely immunocompromised patients who may have prolonged viral shedding. This week, CDC also published information for clinicians on therapeutic options for COVID-19 patients.

Summarizing the current data on two drugs, chloroquine and hydroxychloroquine, and the investigational agent, Remdesivir, these can all be found on the CDC website. Healthcare providers and health department who have questions about COVID-19, as mentioned, can also access the CDC COVID-19 clinical call center 24 hours a day, that number is provided on the standing slide. And this call center is staffed by trained clinicians who can assist with questions about CDC guidance. So, I'll now present the clinical aspects of COVID-19. The incubation period for COVID-19 appears to be within 14 days of exposure, with most cases occurring within four to five days.

While symptoms vary, most patients will have fever, cough, myalgia, or fatigue at the onset of their illness. GI symptoms are uncommon, but some patients can have nausea and vomiting preceding their respiratory symptoms. Older adults and persons with medical comorbidities may initially have an atypical presentation with delayed onset of fever and respiratory symptoms. Of note, several studies have shown SARS SARS-CoV-2 infection in asymptomatic patients, so those who never develop symptoms, and in pre-symptomatic patients, those in whom detection of virus occurred prior to development of symptoms. While asymptomatic and pre-symptomatic infections have been reported, their role in transmission is still unknown.

Risk of transmission appears to be greatest when patients are symptomatic, as viral RNA shedding appears to be higher at symptom onset compared to later in illness. We know the clinical spectrum of COVID-19 can range from mild disease with nonspecific signs and symptoms to severe pulmonary disease with respiratory failure and acute respiratory distress syndrome, or ARDS. In a large cohort, so the largest cohort of patients in China, this was 44,500 patients with COVID-19 , illness severity ranged from mild in 81% of patients, to more severe in 14%, who required hospitalization and supplemental oxygen, to critical disease in 5%, so those with respiratory failure, shock, multi-organ failure requiring ICU admission. Overall, case fatality was around 2. 3% and no deaths were reported in noncritical cases.

Most fatal cases have occurred in patients with advanced age or underlying comorbidities. These include those with diabetes, cardiovascular disease, chronic lung disease, hypertension, and cancer. So, we know older age is a strong risk factors for severe illness, but individuals of any age can have severe COVID-19. In children, infections are more commonly asymptomatic or mild, although it's unknown if children with underlying medical conditions are at an increased risk of severe disease. In severely and critically ill patients, complications of COVID-19 have included ARDS, sepsis, cardiomyopathy, arrhythmia, and acute kidney injury.

In terms of laboratory and radiographic findings, lymphopenia is the most common laboratory abnormality, that's been seen in about 83% of hospitalized patients with COVID-19. Neutrophilia is also a marker potentially of more severe disease. These patients have also had elevated transaminases, so AST, and ALT elevations, and LDH elevation, so these also may be markers of more severe illness. On chest imaging, patients typically have bilateral ground glass opacity seen on chest CT, but patients with COVID-19 infection may also have normal imaging, particularly early in their illness. In terms of management and treatment, we know that not all patients with COVID-19 will require medical care.

Patients with a mild presentation and mild illness may not need to be hospitalized and these patients can likely be -- manage their illness at home with supportive care. Some patients though, after an initially mild clinical presentation, may worsen during the second week of illness, and progress to respiratory failure, and ARDS. The extent of monitoring for such patients should be made on a case by case basis, considering their age and chronic medical conditions that place them at higher risk for more severe disease. In terms of treatment, so currently, there are no licensed FDA approved drugs for COVID-19. Clinical management for hospitalized patients is focused on supportive care for complications, including providing supplemental oxygen for those with respiratory failure.

Empiric testing and treatment for other viral or bacterial etiologies may be warranted. Based on the available data, CDC recommends that corticosteroids should be avoided, unless indicated for another reason, and this is because of potential for prolonged viral replication that was observed in patients with MERS-CoV and influenza who were treated with corticosteroids. These patients were also more likely to receive mechanical ventilation and have higher mortality. Finally, Remdesivir, so nucleotide analog investigational drug has broad antiviral activity and inhibits viral replication through termination of RNA transcription, so it has activity in vitro against SARS-CoV-2 and it's currently available through three clinical trials or an uncontrolled compassionate use basis. It's worth noting that the manufacturer is currently transitioning away from individual compassionate use request to an FDA expanded access proto -- protocol.

So, with that overview of the clinical aspects of COVID-19, I'll now turn to Dr. Bell.

Thank you very much. I'm just going to say a few quick words before we talk specifically about protective equipment. There's a tremendous amount of attention to personal protective equipment right

now with well-recognized challenges in supply lines. And Dr. Kuhar and Captain Delaney will be talking about some options for prioritizing and extending existing supplies.

But before we go to discussions about personal protective equipment, I want to remind everyone that -- you know, just as always, this is not our first line of defense. And now more than ever, identifying ways that we can provide care for individuals, in -- in a manner that doesn't require protective equipment, everything ranging from telemedicine, to transparent barriers for triage, identifying systems of care that will keep our healthcare personnel safe, and prevent exposures from the get-go, rather than relying on personal protective equipment, is a crucial part of planning and implementation. In particular, places that don't traditionally use protective equipment need to be thinking about that type of administrative and engineering control. I'm sure both of our subsequent speakers will reiterate this point, but whether you're nursing home, a dialysis facility, or other location where patients are seen, but you don't ordinarily use protective equipment of the way we're needing to do now, identifying ways to both receive patients, assess them upfront, and then provide care in such a way that exposures are prevented altogether, if possible. And certainly, contained in a systematic way is very important.

We are seeing, increasingly, the impact of places like dialysis facilities on amplifying transmission and so, again, finding ways to flag individuals who might be infectious, and provide the necessary care, for example, at the end of the day in a specified location of the dialysis facility by individuals who are ready to provide care in a safe manner using the available PPE, that kind of approach is crucial. Similarly, strategies like cohorting patients and staff so that a limited number of staff need to use PPE for a concentrated episode of care is also an important aspect of this. I understand that there is a little bit of difficulty with audio for our other two speakers so I'm going to pause for a moment and see if they've managed to get on. Dr. Kuhar, are you there?

Captain Delaney and Dr. Kuhar, were you able to join us?

For our audience that might have joined us more recently, we are waiting for two of our presenters, Captain Delaney and Dr. Kuhar to join. Please stand by. Captain Delaney, were you able to join?

Hello, this is Lisa.

Hi, Captain Delaney, we can hear you. Thank you for joining us. Dr. Kuhar, are you available?

I am as well.

Thank you, Dr. Kuhar. Dr. Bell, were you at a point to turn the presentation over to our other colleagues, Dr. Kuhar?

Yes, thank you. Please move ahead.

All right. Well, this is a Dr. David Kuhar. So, personal protective equipment or PPE is used by healthcare personnel daily to protect themselves, patients, and others when providing care. Now PPE helps protect healthcare personnel from potentially infectious patients, laboratory samples, toxic medications, and other potentially dangerous substances that are used in healthcare delivery.

PPE shortages are currently posing a tremendous challenge to our healthcare system. Healthcare facilities are having difficulty accessing the needed equipment and are having to identify the safest ways to provide ongoing patient care during the pandemic. There are ongoing efforts across local, state, and

federal public health officials, coalitions, and governments to address these shortages. Now the CDC optimization strategies for PPE offer options for providing ongoing patient care when PP -- when PPE supplies are stressed, running low, or in some instances, even absent. Facilities need to understand their current PPE inventory, supply chain, and utilization rate.

They also need to communicate with local healthcare coalitions, federal, state, and local public health partners regarding identification of additional supplies, when needed. So, CDC offers some contingency options intended to be use first and which are aimed at stretching PPE supplies when shortages are anticipated, meaning when facilities have enough supplies now, but anticipate they may not soon, or may not be able to acquire more. Crisis options are also off that can be considered during PPE shortages and should be used with contingency options, when needed, to help stretch the supplies currently available. So, healthcare personnel and facilities within and across regions will have to work together to implement strategies that extend PPE supplies so that recommended PPE will be available, when needed. When using PPE optimization strategies and understanding of the limitations must be provided to healthcare personnel before the provision of patient care activities.

I'm going to talk about contingency and crisis strategies for conserving PPE supplies broadly, but I'm going to start by talking about controlling exposures in healthcare settings. So, controlling exposures to occupational hazards is a fundamental way to protect healthcare personnel. Conventionally, a hierarchy is used to achieve feasible and effective controls. Now this hierarchy of controls, in order from the most to least effective, commonly includes elimination, substitution, engineering controls, administrative controls, and finally, personal protective equipment, which depends on consistent and correct use. As patients with infectious diseases are cared for in healthcare settings, eliminating the disease, or substituting, or replacing it are not really options; hence, engineering and administrative controls of PPE are relied upon to reduce exposures.

So, first, facilities should be maximizing their use of engineering and administrative controls to help extend their PPE supplies. For engineering controls, maximizing use of physical barriers, like glass or plastic windows, can potentially eliminate the need for PPE use in selected situations. This is also about maintaining ventilation systems. Administrative controls include altering work practices, and they have the potential to reduce PPE use, and these include strategies, such as making ample use of telephone triage and telemedicine to reduce the numbers of patients going to healthcare settings where PPE might be used. Limiting the numbers of personnel providing care and the numbers of patient encounters might also reduce PPE use and just such as, you know, pairing food trade delivery, and take a patient's vital signs rather than having two separate encounters.

Exclude visitors from facilities can not only prevent some who are ill from entering, but also help ensure PPE is reserved for care related activities. As I said earlier, those expecting PPE shortages to be applying contingency strategies to stretch their supplies, so options include canceling elective and non-urgent procedures and appointments to limit patient provider contacts. Also, using reusable PPE that can be reprocessed has the potential to help, trying to shift supplies and use towards equipment that can be reused, such as long durable cloth isolation gowns, reusable goggles, instead of disposable items, and reusable respiratory protection, like powered air purifying respirators, or PAPRs, as the potential to preserve PPE availability, and reduce, or even eliminate the burn rate for disposable items. Additionally, introducing new disposable supplies, such as international gowns, or even coveralls, which aren't used in most healthcare settings, are an option, but personnel will need to be trained and demonstrate competency in the safe use of all new products. Source control or offering symptomatic patients of facemask remains recommended for patients who have respiratory symptoms but alterations in how this is implemented could reduce PPE use.

And facilities can reserve personal protective equipment or face masks for use by healthcare personnel and replace PPE in patient areas with other barrier precautions, such as tissues, and potentially save supplies. Expired personal protective equipment or personal protective equipment that's beyond the manufacturer's designated shelf life can still be useful. Healthcare personnel PPE training is needed. Expired items could be used for training, rather than using and discarding non-expired equipment that would be better preserved for patient care. Facilities can allow healthcare personnel to extend use of respirators, face masks, and eye protection, beyond single patient contacts.

Extended use of these devices to cover the face comes with challenges and limitations. Healthcare personnel have to take care not to touch extended wear facemasks, eye protection, or respirator. And healthcare personnel have to perform hand hygiene before and after adjusting or touching any used equipment. Damage or soiled equipment, such as a face mask, need to be discarded. Healthcare facilities experiencing actual personal protective equipment shortages need to consider crisis strategies with careful planning before implementation.

Crisis strategies may pose more risk for transmission between healthcare personnel and patients and need to be well thought out before they are used. Now among the possibilities, facilities can consider using intact personal protective equipment that is beyond the manufacturer's designated shelf life for patient care activities. If implemented, the equipment needs to be inspected prior for use for defects, such as degraded materials and visible tears. Facilities can carefully prioritize PPE use for selected care activities, such as reserving sterile gowns and gloves for urgent sterile patient procedures, like surgery, using respirators for higher risk activities, like aerosol generating procedures, and for caring for patients with other known airborne transmitted diseases, like tuberculosis, measles. Limited reuse of disposable PPE can also be considered.

Limited reuse of disposable personal protective equipment, the practice of using the same piece of equipment for multiple encounters with different patients, and removing it after each encounter, now not all personal protective equipment items are amenable to this approach, disposable face masks, or gowns with ties can be prone to ripping when untying is attempted. Additionally, there are potential risks for contact transmission for devices that might not be amenable to reprocessing. Allowed that some items, such as a disposable face shield, might be amenable to cleaning and disinfection, but there aren't typically manufacturer instructions for how to do so for disposable items, as this wasn't intended. A reprocessing strategy would need to be carefully developed. If no commercial PPE is available, facilities may carefully consider if alternative approaches, such as homemade masks, will reduce the risk of healthcare personnel exposures and or even safe for patient care.

Additional options and details are provided on the CDC website. I'm going to now hand things over to Captain Delaney.

I'm going to use my time to speak them in a bit more detail on strategies or options for reducing the demand for disposable and 95 filtering facepiece respirators, commonly called N95 respirators. As Dr. Kuhar mentioned, CDC issued guidance titled, Strategies for Optimizing the Supply of N95 respirators just posted on our website, along with a companion checklist which is intended to help healthcare facilities prioritize the implementation of the strategies outlined in the primary guidance. Both of these documents can be found on the COVID, CDC COVID website in the healthcare professional section. Our hope is that you will consider how you can implement the options presented in the guidance to extend your current respirators until more become available.

First, I'd like to start off by describing the difference between respirators and face masks. N95 respirators reduce the wearer's exposure to airborne particles from small particle aerosols to large droplets. N95 respirators are tight fitting respirators that filter out at least 95% of particles in the air, including large and small particles. Before using a respirator, workers must have a medical evaluation to make sure they are able to wear a respirator safely. Workers must pass a fit test to confirm a proper seal.

When properly fitted and worn, minimal leakage occurs around edges of the respirator when the user inhales. Unlike respirators, facemasks are loose fitting and provide only barrier protection against droplets, including large respiratory particles. No fit testing or still check is necessary with facemasks and most facemasks do not effectively filter small particles from the air and do not prevent leakage around the edge of the mask when the user inhales. Dr. Kuhar nicely described the administrative and engineering options of reducing the need for respirators but we are hearing that lots of respirators are being used in healthcare I want to just reemphasize that there are many options beyond focusing on respirators, like limiting the number of patients going to the hospital, utilizing telemedicine, or outpatient settings, excluding healthcare personnel not directly involved in patient care, excluding visitors to patients with known or suspected COVID-19, cohorting patients, and properly maintaining ventilation systems to provide air movement in a clean to contaminated flow direction.

Under conventional strategies, specific respirator conservation strategies have very limited impact to a facility, include limiting respirator use during training. So, for example, if you're training in fit testing are conducted in two separate steps, it's possible to allow limited reuse of the same respirator you use by individual during both of the steps. Using alternatives to N95 respirators, where feasible, that provide equivalent or higher protection than an N95, examples include using other disposable respirators. These include disposable respirators commonly used in industrial settings that have a filter nomenclature of N99, N100, P99, P100. Many filtering facepiece respirators have exhalation valves though and that should not be used in the surgical setting because the ability to allow unfiltered exhaled breath would compromise the sterile field.

Using elastomeric respirators, these are tight fitting respirators that are made of synthetic or rubber material, which allows them to be cleaned, disinfected, and reused. They are equipped with replaceable filter cartridges. So, you have to account for the additional pieces of equipment that go with that respirator. And there's powered air purifying respirators, which are another option. PAPRs are usable reusable respirators that are typically loose fitting and they do not require fit testing.

They have a battery power with a blower that pulls air through a filter or cartridge. So, under contingency and crisis capacity care, which are implemented when N95 supplies are running low or are unavailable, respirator conservation actions include using in N95s after their manufacturer designated shelf life for just training and fit testing. Extending the use N95s, and what we mean by this is repeated close contact encounters with several patients, the same respirator can be worn when caring for multiple patients without taking off the respirator between patient care. When using respirators approved under standards used in other countries that are similar to N95 or NIOSH approved N95s, other countries approve respirators for occupational use and approve respirators to these standards. And a list of respirators approved by other countries but expected to provide providers -- protect providers can be found in the optimization guidance using N95 respirators beyond the manufacturer designated shelf life for patients with COVID-19.

We recognize that respirators beyond the manufacturer designated shelf life may not perform to the requirements for which they were certified. Over time, components, such as straps and nose bridge material, may degrade, which can affect the quality of the fit and seal. However, many models found in

national or local stockpiles and stockpiles at healthcare facilities have been tested by CDC NIOSH and were found to continue to perform in accordance with NIOSH performance standards. Limited reuse of N95 respirators, when caring for patients with COVID, might become necessary, and what we mean here is that the respirator would be put on or taken off between patient encounters. We recognize that this [inaudible] challenges in handling a potentially contaminated device is unknown what the potential contribution of contact transmission is for SARS-CoV-2 and caution should be used.

And lastly, prioritizing use the use of N95 respirators and face masks by activity type for healthcare providers with the highest potential exposures, including being present in the room during aerosol generating procedures performed on systematic persons. The outbreak of COVID-19 has led to a disruption in the global supply chain of personal protective equipment, like N95 facemasks and gowns. CDC recognizes that healthcare facilities may experience temporary shortages, even if they do not care for patients with COVID. We know many of you are facing unprecedented challenges around these shortages and wanted to share work that's being done out of CDC's National Institute for Occupational Safety and Health. NIOSH is the federal agency that certifies respirators used in the U. S.

NIOSH carries out respirator testing, including ensuring filter efficiency standards are met by manufacturers of respirators, NIOSH is focused on supporting existing respirator approval holders by working with these respirator manufacturers to support efforts to increase their ongoing surge production. We're also pursuing ways to quickly evaluate new respirator applications to increase the inventory of respirators, providing up to date PPE guidance, and conducting research and evaluation to maximize the impact across the nation. This is just one hot off the presses update that I wanted to provide. Earlier today, we posted on our website a personal protective equipment Burn rate calculator.

This tool was developed to help healthcare providers and systems estimate the amount of personal protective equipment they are using over time, it's also referred to as Burn rate, and it can be used to assist healthcare and non-healthcare facilities to plan and optimize the use of PPE, this is just one example of tools that we're hoping can help you manage and understand your inventory of personal protective equipment. So, with that, I'll turn it back over to our operator.

Thank you very much. I want to thank all our presenters for providing our audience with such useful information on this rapidly evolving pandemic. We appreciate your time and value your clinical insights on this matter. We will now go into our Q&A session. Audience, please remember you may submit questions through the webinar system by clicking Q&A button at the bottom of your screen and then typing your question.

We have quite a few questions coming in about the clinical presentation so I'm going to sum them up.

What guidance would you have for our audience if they ask you that they want to know what they should know about when someone is infectious with COVID-19?

This is Lieutenant Commander Appiah. So, we know that people are likely most infectious when they're most symptomatic, but the onset and duration of that infectivity are still unknown. With MERS-CoV, and other SARS-CoV, we've seen that RNA can be detected in the respiratory tract for weeks after illness. But this RNA detection doesn't necessarily mean that it's infectious virus. We do know though -- and from the data we have available -- that the incubation period for SARS-CoV-2 likely ranges somewhere from 2 to 14 days.

But as said, it's also unknown those who have asymptomatic, pre-symptomatic infection, how does that play into transmission?

Thank you for that.

We have questions related to outpatient clinics and our audiences would like to know, at what point, would you recommend that outpatient clinics begin to cancel their routine visits?

I can repeat the question, if needed. In an outpatient clinic setting, at what point would you recommend that they cancel their routine or non-sick visits?

I'm sorry. This -- this is Dr. David Kuhar, can you hear me?

Yes, Dr. Kuhar, we can hear you.

Excellent. Now would be that time and facilities and clinicians should prioritize urgent and emergency visits and procedures now and for the coming several weeks. And doing so can preserve staff personal protective equipment and patient care supplies.

Thank you very much.

Along similar lines but more in a hospital setting, we have questions about, when can we discharge patients with confirmed COVID-19?

This is Lieutenant Commander Appiah. So, patients can be discharged from the hospital whenever clinically indicated. If discharging to home, while they're still on isolation precautions, clinicians should also consider the patient's ability to adhere to those precautions.

Thank you.

A follow-up question on hospital patients. Are there recommendations for how long a patient room should be shut down after seeing a COVID-19 patient, discharged from the room, that is?

Yes. This is a Dr. David Kuhar. So, the contribution of small respirable particles to close proximity transmission is uncertain. An airborne transmission from person to person over long distances is thought to be unlikely.

The amount of time that the air inside of an examination room remains potentially infectious it isn't known and may depend on a number of factors, like size of the room, the number of air changes per hour, and how long the patient was in the room, even if the patient was coughing or sneezing, and if aerosol generating procedures are performed. So, facilities need to consider these factors when deciding when the vacated room can be entered by someone who is not wearing personal protective equipment. So, for a patient who is not coughing or sneezing, did not undergo an aerosol generating procedure, and occupied a room for a short period of time with a few minutes, any risk to healthy personnel and subsequent patients likely dissipates over a matter of minutes. However, for a patient who is coughing, and remained in a room for a longer period of time, or underwent an aerosol generating procedure, the risk period is likely longer. And for these higher risk scenarios, it's reasonable to apply similar time period, as is used for pathogens spread by the airborne routes, like tuberculosis to restrict personnel and patients without PPE from entering the room, until sufficient time has elapsed for enough air changes to

remove potentially infectious particles and the infection control guideline for healthcare settings online has a link with table indicates those time periods.

Thank you, Dr. Kuhar.

Along the lines of PPE, we have a question, can I decontaminate a disposable respirator?

Great. That's a great question. I know we've been seeing a lot in the news and we've been receiving a lot of questions here at CDC. We know healthcare providers are interested in ways to decontaminate their respirators so that they can safely be re-worn. While a respirator may look like a very fairly simple device, they're -- they are actually quite complex, the designs, and the filter media vary by manufacturer, and this makes it challenging to develop a single disinfection method that would apply to all models.

And at present, there are no CDC approved methods for decontaminating disposable respirators prior to reuse. Disinfection methods can result in changes to the respirator that may impact its level of protection. The changes may impact performance of the filtering material or impact the pressure drop across the respirator, which would impact your ability to easily breathe through it. It may also degrade the straps, the nose bridge material, or strap attachments which could impact how well the respirator fits to the face. Only respirator manufacturers can reliably provide guidance on how their -- their materials may degrade by cleaning and -- and disinfection.

NIOSH and other researchers have investigated the impact particle penetration across the filter and facepiece fit of disposable respirators following various decontamination methods. The most promising methods are vaporous hydrogen peroxide, ultraviolet germicidal irradiation, and ethylene oxide. However, NIOSH cannot attest to the ability to reduce viable virus or bacteria on the respirator after decontamination. Several companies are scaling up the vaporized hydrogen peroxide and the ultraviolet germicidal irradiation methods to decontaminate respirators. One cautionary note is that any use of ethylene oxide should be accompanied by studies to ensure no off gassing into the breathing zone of the wearer, as ethylene oxide is a carcinogen in chronic inhalation ethylene oxide has been linked to neurologic dysfunction and may cause other harmful effects to the wearer.

Thank you for that.

Going back to our patients. We have a question that asks, when can transmission based precautions be discontinued? Do you have guidance for that?

Hi, this is Lieutenant Commander Appiah, and we do have guidance posted on our website. So, the question then is for hospitalized patients, when can transmission based precautions be discontinued? I think that decision is multifactorial, and it has to be made on a case by case basis. Some of the criteria though for consideration should include whether the patient's fever has resolved without use of any antipyretics, whether they're having improvement in their respiratory symptoms. And in particular, for hospitalized patients, using a more conservative test based approach should also be considered. And this is particularly if we think about patients who are going to have prolonged viral shedding and may be contagious for longer than others, so these are our hospitalized patients, including those who might be severely immunocompromised, or have close contact with others who are going to be at high risk for severe disease.

So, for these patients, a strategy that incorporates testing might be preferred. And again, there's guidance currently available on discontinuing transmission based precautions on the CDC website.

Thank you for that.

A follow-up question to what we were talking about earlier in the Q&A session. If the resources are available, do you recommend that patients are isolated in a private room that have fever and respiratory symptoms, regardless of exposure or travel history?

This is Dr. David Kuhar. The short answer is, yes. Even at times without pandemic, contact and droplet precautions, even including eye protection recommended for managing patients with an undiagnosed respiratory illness, if COVID-19 is on the differential diagnosis, then isolation and adherence to the infection control recommendations for COVID-19 is appropriate.

Thank you very much.

We have more questions coming in about personal protective equipment. And our next question asks about, is there things being done to expand the use of PAPRs and elastomerics in hospitals? And are you aware of any efforts by either the government or the manufacturers that you reference to either expand production or rely on other companies or other suppliers? Can you please provide some information on that?

Sure. This is Captain Delaney. NIOSH is in discussion with respirator manufacturers and -- and these manufacturers are encouraging customers to use reusable devices, PAPRs and elastomerics I mentioned earlier. In addition, NIOSH has been in discussion the Ford Motor Company on their efforts to produce respirators, and we're also working to provide information on component parts and material shortages manufacturers are experiencing. And this is a good opportunity to remind facilities using these elastomeric respirators and PAPRs that they should have up to date cleaning and disinfection procedures in place because these are essential part of use for protection against infectious agents.

Thank you for that.

Our next question asks, if we have a patient in our facility with a known cause of illness, whether it be influenza or something, should testing for SARS-CoV-2 still be performed?

So, there are sporadic reports of patients with SARS-CoV-2, as well as co-infection with other respiratory viruses. So, detection of another respiratory virus, for example, doesn't exclude the diagnosis of SARS-CoV-2 if you have suspicions. So, clinicians should use their judgment to determine if a patient has signs or symptoms that could be compatible with COVID-19 and whether they should be tested. And we continue to encourage that clinician should also -- for those you are investigating for potential COVID-19 look for causes of other respiratory illness, including influenza, particularly because it's treatable.

Thank you for that.

And the following question might have been answered during these presentations. However, I believe it merits repeating and our inquirer might have joined a little bit later. The question asks, do patients with possible or confirmed COVID-19 need to be placed in airborne infection isolation rooms?

Hi, this is Dr. David Kuhar. No, they do not. They can just be placed in a regular examination room or other patient room with the door closed. Airborne infection isolation room placement would only be recommended if -- for the performance of aerosol generating procedures on a patient.

Thank you. Follow-up question.

Should PPE be used when performing a nasal pharyngeal swab on a known or suspected case?

This is Dr. David Kuhar again. The -- the usual recommended personal protective equipment respirator or facemask, if a respirator is not available, eye protection, gown, and gloves should be worn when performing a nasopharyngeal swab on a known or suspected COVID-19 patient, and also note a nasopharyngeal -- performing a nasal stirring nasopharyngeal swab does not need to be performed in an airborne infection isolation room.

Thank you, sir.

A question about PPE's NIOSH had been mentioned earlier. Our inquirer is curious, if they cannot find NIOSH approve products, can they use products from other countries that are certified to those international standards?

Hi, this is Captain Delaney. Yes. CDC posted a table of standards and guidelines providing potential options for products designed to standards similar to NIOSH approved N95 respirators. Earlier today, the FDA also issued their emergency use authorization for non-NIOSH approved respirators approved in other countries. Standards and guidelines from Australia, Brazil, Europe, Japan, Korea, and Mexico are recognized.

The China standards are not on their list. In recent weeks, we have been receiving a lot of counterfeit products coming from China. We're also receiving inquiries about respirators previously approved by NIOSH that have been rescinded due to quality issues that are back -- these products are now being -- appearing back in the marketplace. So, consequently, we are considering taking China off of our list of suggested options when supplies are low given these concerns.

Thank you very much.

The following question might have also been addressed earlier. But we have questions about chloroquine and hydroxychloroquine. And can you speak to both if these are recommended for treatment of COVID-19? And can you also address any side effects associated with them?

Yes. This is Lieutenant Commander Appiah. So, hydroxychloroquine and chloroquine, they are both drugs that are prescription available, drugs that are used for treatment of malaria, and then inflammatory conditions, like lupus and rheumatoid arthritis. So, both drugs have in vitro activity against SARS-CoV-2, as well as other corona viruses. And hydroxychloroquine is thought to have higher potency against SARS-CoV-2.

That said, there's no available data from randomized controlled trials to inform guidance on using these drugs for either prophylaxis or treatment of COVID-19. There are several clinical trials planned, including some that are soon enrolling in the U. S. to investigate using hydroxychloroquine for prophylaxis or treatment of SARS-CoV-2 infection. I'm sorry, what was the second corollary question?

No problem, I'm happy to repeat it. **The second question was related to adverse events or side effects related to hydroxychloroquine?**

Yes. So, both drugs do you have known safety risks and the main concerns are cardiotoxicity, prolonged QT syndrome with prolonged use of these drugs, particularly in patients with hepatic or renal dysfunction and immunosuppression.

Thank you for that.

Next question related to cleaning agents. Can you please provide any guidance on how we can evaluate if our cleaning agent will work against the virus?

Yeah. This is Dr. David Kuhar. The EPA lists end agents meet EPA criteria for use against SARS-CoV-2 and this list is on the EPA website and it's updated, as needed.

Thank you.

Next question also has to do with similar topics. What kind of personal protective equipment do you recommend for environmental workers when they're cleaning rooms of hospitalized COVID-19 patients?

Yes. This is a Dr. David Kuhar again. It depends on the situation. So, if cleaning is performed with a COVID-19 patient in the room, then all of the recommended personal protective equipment should be worn, a respirator or facemask.

If a respirator is not available, eye protection, gown, and gloves. If the room is being terminally cleaned after the patient has left and enough time has elapsed that appropriate air exchanges have occurred to remove potentially infectious particles, then a gown and gloves could be worn. And it's important to note that for environment environmental services personnel, personal protective equipment is not just needed for potential pathogen exposure prevention, but also potentially for chemical ones. And so, the used personal protective equipment also needs to be appropriate for the products used.

Thank you for that answer.

If we are aware of nontraditional respirators and people kind of designing their nontraditional respirators, is there a way I can get information on how to make one that would be appropriate for healthcare settings?

I'm sorry. Could you repeat the question, please?

Yes. I'm happy to repeat it.

So, this question comes in as follows, I summarize it a little. If the inquirer is aware of individuals designing nontraditional respirators, can they get information on how to make one that would be appropriate to be worn in healthcare settings?

Yeah. Hi, this is -- this is Captain Delaney. As I mentioned earlier, CDC's National Institute for Occupational Safety and Health is the -- the U. S. agency that certifies and approves respirators through

a testing process where we ensure that the respirator needs certain performance standards, including filter efficiency.

If you are working on a design and think you wish to obtain a NIOSH approval for that, we suggest that you investigate our approval requirements, which can be found online. Designers and manufacturers of respirators seeking the NIOSH approval must prove that their device meets NIOSH requirements by submitting pretest data, either performed by the designer or manufacturer, themselves, or through the use of a third party laboratory. And those respirator performance requirements are contained in 42CFR 84 and all that information is on our NIOSH website.

Thank you so much for sharing that.

As hospitals start seeing an increase in patients and space becomes more limited, our next inquirer is asking, what is your recommendations, is it acceptable for patients with COVID-19 to share rooms?

Hi, this is Dr. David Kuhar. For patients with confirmed COVID-19 sharing a room or patient cohorting is acceptable. For those with suspected disease, they could actually have another disease process, so cohorting of suspecting cases is not ideal.

Thank you so much for sharing that distinction.

And it appears we have time for one last question. Our audience member asks, do existing commercially available respiratory virus panels detect SARS-CoV-2?

This is Lieutenant Commander Appiah. So, currently, no. These panels, they can detect a number of respiratory viruses, including other human coronaviruses, but not SARS-CoV-2. But hopefully, in the future, it's expected that they will have ability to detect SARS-CoV-2 in these specimens.

Thank you so much for that answer. And this concludes our Q&A session and on behalf of COCA, I would like to thank everyone for joining us today with the special thank you to our presenters, Dr. Messonioer, Lieutenant Commander Appiah, Dr. Bell, Dr. Kuhar, and Captain Delaney.

The video recording will be posted on COCA's web page at emergency.cdc.gov/coca a few hours after the call ends. Again, that web address is emergency.cdc.gov/coca. Please continue to visit emergency. cdc. gov/coca over the next several days as we intend to host COCA calls to keep you informed of the latest guidance and updates on COVID-19. In addition to our webpage, COCA call announcements for upcoming COCA calls will also be sent via email, so please subscribe to COCA at cdc.gov to receive these notifications. Please share the invitations with your clinical colleagues. As stated earlier, we intend to hold a COCA call this coming Friday at 2 p. m. Eastern Time.

Additional information will be shared via call announcements and should be posted shortly on the COCA webpage at emergency. cdc. gov/coca. I also want to put in a plug for the clinical call center than Lieutenant Commander Appiah had mentioned. Again, that information is the CDC's COVID-19 clinical call center is available 24 hours a day at 770-488-7100.

The number is 770-488-7100 for anyone that missed it at the top of the call. To receive information on upcoming COCA calls or other COCA products and services, join the COCA mailing list by visiting the COCA web page at emergency.cdc.gov/coca and click on join the COCA mailing list link. To stay

connected to the latest news from COCA, be sure to like and follow us on Facebook at facebook.com/cdc clinician outreach and communication activity.

Again, thank you for joining us for today's call and have a great day.