COVID-19: Bone Marrow Failure and Infectious Disease

Webinar Summary

(transcribed from the AAMDSIF webinar on March 26, 2020 with Dr. Amy DeZern and Dr. Veronica Dioverti with Johns Hopkins University School of Medicine, edited for clarity and brevity)

Q: Where did this virus come from? Can you explain how it started and how it transmits from person to person?

A: Dr. Dioverti (infectious disease specialist): The coronavirus we are facing now is a bat coronavirus. It was initially transmitted from bats to humans and it is not the kind of coronavirus that typical infects humans therefore no one has really seen the virus and no one has developed immunity to it. As it went from bats to humans, it became very fit (strong) and goes from person to person which is why we are seeing such a huge outbreak. The virus is very fit (strong) and goes quickly and effectively from person to person through droplet or airborne transmission. When we cough, sneeze or exhale, we create large droplets that can travel up to six feet and then due to the weight of the virus, it falls to the nearest surface where it can live for many hours. The most common way of getting the virus is either touching someone or being in very close when someone sneezes or coughs and then inhaling the virus into your respiratory system.

Q: What are the symptoms for people infected by COVID-19? Who will get really sick from COVID-19?

A: Dr. Dioverti: The symptoms are very similar to a flu or influenza. Patients get a fever, diffuse body aches and a cough. About 80% of patients experience these symptoms. In about 15% of patients, the virus can turn a bit more aggressive and cause a complication called pneumonia which is a viral lung infection. About 5% of patients are probably going to need to be admitted to a hospital and need supportive care because the virus causes a life-threatening infection requiring critical care, even ventilation and intubation. Because of the unique characteristics of the virus and that no one has immunity to it, our higher risk populations are elders (over 60 – 65) and people who are immunocompromised with low white blood cell counts and people who are undergoing any kind of chemotherapy of immunosuppressive therapy. These patients are unable to mount a good defense. The best treatment we have current for the virus is really supportive, meaning that we don't have any

antiviral therapy or antibiotics that could potentially kill the virus.

Q: What medications are available to treat COVID-19?
A: Dr. Dioverti: There are certain medications that we're currently using mostly to dampen down that immune response that seems to be the cause of most of the damage. You may have heard about hydroxychloroquine and some antivirals that are under investigation but there is not clear evidence to date that any of those are directly or specifically working against the virus or transmission.

Q: What if I get the virus but only have mild symptoms?
A: Dr. Dioverti: The most important thing would be to stay home and keep from spreading the virus to other people. We've been talking about flattening the curve which doesn't mean that we're going to get rid of the virus but what we're trying to do is decrease the number of people that are infected at any point in time so that we allow the health system to treat the patients who are severely sick.

Q: Are there any benefits to being a bone marrow failure patient in the time of COVID-19?
A: Dr. DeZern: Our patients are exceptionally well suited to deal with this right now because I think that a lot of bone marrow transplant patients, patients with high dose immunosuppressive therapy or chemotherapy like the majority of marrow failure patients are very accustomed to social distancing and they pay lot of attention to cleanliness and avoidance of transmission.

Q: What preventative measures should patients be taking now?
A: Dr. DeZern: Social distancing and avoiding people not in your immediate family, careful handwashing and using hand sanitizer is important. If you are in a healthcare setting, you want to avoid hugging or handshaking your team and try to have video or phone appointments. Avoid travel and crowds. For our patients, it's important to not contract or transmit COVID-19.

It is important to keep your medical appointment and communicate with your healthcare team about protocols and practices – it is changing all the time. One thing to consider is that most healthcare facilities are limiting visitors which means that a caregiver or family member may not be able to go with the patient to an appointment. Be sure to bring a phone so someone can be another pair of ears for the appointment.

Q: If a PNH patient is supposed to start Ultomiris in mid-April at an infusion center where COVID-19 patients are being treated and is the sole care provider for her 89 year old mother, what measures can she take beyond handwashing, social distancing and limiting contact at the infusion center?

A: Dr. DeZern: The staff at the infusion center are not those who are actively treating COVID-19 patients, so as long as you practice those measures mentioned, avoid other patients, wear a mask and avoid touching anything, you'll be all right. Make sure alert the staff about your extra layer of complexity.
A: Dr. Dioverti: Highest risk patients with COVID-19 are kept in special rooms in a different part of the hospital, there's a special tent entrance for patients with COVID-19 symptoms go to get tested and they won't be in general treatment areas.

Q: Can the COVID-19 virus stay on your shoes for five days? Or does it stay on the floor and surfaces for just a few hours?
A: Dr. Dioverti: It varies depending on the material and can linger on some surfaces for up to four days. The problem with viruses is that if a drop falls on the floor, it can exist for hours. If you leave your shoes at the entrance to your home you can reduce the risk of bringing in the virus.

Q: Does Vidaza have an antiviral activity?
A: Dr. DeZern: In this case? We wouldn't think so. There's no reason to think that it would actively in some way inhibit the viral replication of this. We have a pretty good sense from a hematologic perspective of the way that azacytidine or Vidaza works. But I don't think it would have any activity here.

Q: Generally, would it be a good idea to have a white cell transfusion to help with your immunity?
A: Dr. DeZern: Actually, no. It's something we do very rarely, can actually cause other medical issues and doesn't last for more than 24 to 30 hours.

Q: Will an all-purpose cleaner such as Seventh Generation that claims to kill 99% of bacteria be sufficient for cleaning doorknobs, for example?
A: Dr. Dioverti: I think so. In fact, most of the products out there including Purell and all those other alcohol-based products that we have all kill most viruses as well. There are exceptions to that rule in terms of bacteria but not necessarily viruses. In general we ask that when you put chloride based products on surfaces that you keep them for at least 10 minutes and then rinse it off.

Q: A lab-based study indicated that the SARS virus remained suspended in the air for about a half hour. Is this true? Will this impact current recommendations?
A: Dr. Dioverti: The main way we contract the virus is through an airborne droplet and it doesn't stay suspended in the air for long periods of time.

Q: Will a freezer or refrigerator kill the virus? Is there a good way to clean groceries such as cans, produce plastic containers and cardboard?

A: Dr. Dioverti: Regular soap and water is actually the best way to clean every surface that you have. All chloride-based products are pretty good at getting rid of the virus. Freezing requires very specific temperatures and in some cases can prolong the life of the virus. Most of us have recommended that you keep non-perishable groceries in a dry, dark area for 24 – 48 hours and wash everything else with soap and hot water.

Q: Does being on a small maintenance dose of cyclosporine after ATG treatment make a patient more susceptible to the virus? Does being on a prophylactic dose of an acyclovir help provide protection from the virus.
A: Dr. DeZern: Maintenance cyclosporine is really important for patients who are treated with ATG to prolong the immunosuppression to treat the disease. It would by definition increase the immunosuppression to make a patient more susceptible to the virus. The acyclovir is intended for other conditions but I'll defer to my colleague.
A: Dr. Dioverti: Not for this virus for sure.

Q: If you need to have a weekly/biweekly blood draw, is it enough to wear an N95 mask, not touch anything and stay 6' away from everyone? What about lab staff?
A: Dr. DeZern: I think you need to make it known that you are immunosuppressed. Lab personnel are well-trained and exceptionally cautious, so just tell them and they'll work quickly and carefully to protect you.
A: Dr. Dioverti: Don't be afraid to request that the tech or the health care provider that is coming in contact with you to wear a mask for your own protection. And they really should be doing that without you having to ask them that. You should feel very empowered to ask.

Q: If a patient is taking hydroxychloroquine for rheumatoid arthritis (RA) (200mg x 2) should they increase it to three times a day?
A: Dr. DeZern: No, I wouldn't.
A: Dr. Dioverti: No, I agree. We are using it to treat those patients that have been admitted with severe COVID-19 infection in the hospital. However, we're still not 100% sure what the best dose would be. In addition to that, this drug does have side effects. So don't go ahead and increase it on your own.

Q: If a patient is neutropenic with aplastic anemia and also has PNH (treated with Ultomiris) but has no other comorbidities, could COVID-19 cause hospitalization or fatality?
A: Dr. Dioverti: I think it definitely can.

Q: Is anything being done about the lack of blood supply for transfusion-dependent patients? How can patients address this?
A: Dr. DeZern: Blood is always a limited resource. I don't want transfusion-dependent patients to feel they won't have access to what they need but if this pandemic continues, we are going to have to be exceptionally judicious with red cell transfusions, perhaps more so

than we had been in the past. Patients may need to consider maybe having a slightly lower transfusion trigger and wait an extra week. There is a lot of work going on to get blood donors out to freestanding donation sites.

(Note from AAMDSIF: The American Red Cross has put out a plea for blood donations from health donors. You can learn more about how to schedule an appointment using this link and you can share it with your own networks in your community.
https://www.redcrossblood.org/donate-blood/dlp/coronavirus--covid-19--and-blood-donation.html)

Q: Are stem cells still currently being harvested to provide marrow for bone marrow transplant patients?
A: Dr. DeZern: Yes, there are some policy changes and again, ongoing discussions really hourly right now, but so far I am aware of many transplants that have been able to go forward even in the current year.

Q: How should patients handle takeout food? What about canceled medical appointments?
A: Dr. DeZern: Make sure you know the restaurant has well-established good cleanliness practices in place.
A: Dr. Dioverti: It's almost impossible to know if takeout food is contaminated or not. Make sure that the people that are preparing food are taking precautions in terms of wearing gloves and such.
A: Dr. DeZern: Medical appointments are going to be a real time triage decision. We are moving to telemedicine for many patients. I am very close to my patients and I would like to see them all the time but if I can keep them out of the hospital because they don't need to be transfused and we can talk on the phone, I can wait a little while on labs. Have a good discussion with your treating hematologist/oncologist.

Q: Are 5+ year bone marrow transplant survivors with counts in the normal range at higher risk than normal people?
A: Dr. DeZern: I would say that this person is much more like normal people risk.
A: Dr. Dioverti: There are very few patients that are five years out of their bone marrow transplant who remain immunosuppressed and we tend to have a good idea of who those people are because they do come in with frequent infections. So if that's not you, then your immune system's probably quite close to that of the patient without a bone marrow transplant.

Q: What options are there for people whose hands are severely dry and itchy from the perfumed sanitizers and soap?

A: Dr. Dioverti: Try the mildest anti-bacterial, unscented soap and then use a non-perfumed emollient lotion like Aquafor or even Vaseline at night which will allow you to continue good hand hygiene procedures.

Q: Have there been any PNH patients that had been confirmed as having COVI19. If so, is there any available information as to how they have been reacting to the virus in comparison to non PNH patients with COVID 19?
A: Dr. DeZern: We are not (yet) aware of any US PNH patients with COVID-19.

Q: Are chlorine (bleach) based skin cleansers effective against the corona virus?
A: Dr. Dioverti: They are effective and even plain soap and water is pretty effective. As long as you're cleaning your hands and washing your hands consistently. There's no specific product to recommend, but regular tap water should be fine.

Q: Do you recommend patients wearing a mask when going to appointments? And if so, what type of mask?
A: Dr. DeZern: Yes is the short answer - as to the type, we should be honest with ourselves about what we have access to right now. And then what really protects against the virus. The truth is N95 masks more so than the surgical masks, which are the more thin sort of rectangular ones are what really prevent the transmission.
A: Dr. Dioverti: And to add to that, because of the shortage of N95, we're very limited with what we can do. So we were talking about how the droplet is the main mode of transmission. And so it's more important for those infected to be wearing those masks so that way they won't produce a droplet as opposed to somebody who's completely asymptomatic. And I'm only saying that because I know there's a shortage of the N95 and I've heard a lot of patients out there that can't get a hold of them and even us, us healthcare personnel has been very limited, um, in getting N95s.

Q: What advice would you have for patients with bone marrow failure regarding going back to work and normal activities? There is talk from the federal government and hopes that people will be back to work by Easter.
A: Dr. Dioverti: I think that's a very moving target and we just don't know - Easter is still several weeks away, but for immunocompromised patients, we have a blanket letter that we provide. They really should telework where feasible for as long as possible.

Q: If you are a low risk MDs patient routinely having blood counts monitored, is it okay to skip blood counts until the crisis is over?
A: Dr. DeZern: I would discuss it with your treating hematologist/oncologist but generally, we manage low risk MDS patients with 4 – 6 blood tests a year. If the last 2 – 3 were quite stable, pushing out the next test would be prudent

Q: If a patient had a bone marrow transplant 2.5 years ago, what is their risk related to COVID-19? Isn't a newly transplanted patient like a newborn? Wouldn't they react to the virus like a child?

A: Dr. DeZern: Donor immunity tends to come back to 80% - 90% by the first year and really close to normal after two years. We describe newly transplanted patients as having a newborn's immune system because they require all of the childhood vaccines again, not that you'll have the immune system of a baby. You have the immune system of your donor.

A: Dr. Dioverti: What's happening with children is actually quite interesting because kids are exposed so much to so many coronavirus viruses that they're very, very cross immunity with this particular strain of virus. Kids who contract the virus don't become as sick as adults or elders. Kids can also harbor and spread the virus which is why most states have closed schools.

Q: Is it okay for patients with PNH and aplastic anemia to go to the grocery store or should they have other family members and friends picking up items for them and how would they keep these items safe being brought into the home?

A: Dr. DeZern: We all have to eat so practically, someone has to go to the grocery store. Practice the measures we've already talked about. Wash fruits and vegetables with soap and water, let non-perishables sit for a period of time before bringing them into the house. If you have to go to the store, wear a mask, go at off-peak times and maintain a social distance of at least six feet.

Q: If an MDS patient is taking prednisone, does this suppress the immune system?

A: Dr. DeZern: Prednisone is a well-known immunosuppressant. Different doses have different amounts of immunosuppression.

Q: Is it safe for a bone marrow failure disease patient to provide childcare services for their grandchild when the parent is a nurse on the COVID-19 unit at the local hospital?

A: Dr. DeZern: This sounds like a higher risk situation because children can harbor the virus with relatively few symptoms. If there is someone else who can provide childcare, it should be discussed. If not, the nurse should adhere to all proper recommendations in the hospital, leave their shoes outside the home (or in the mudroom) and practice a lot of handwashing.

Q: Are there any over the counter or prescribed medications that would be helpful to have on hand in case an individual were to contract COVID 19?

A: Dr. DeZern: I think Tylenol.

A: Dr. Dioverti: Yes and you may want to keep some regular cold medicines with Tylenol and a cough suppressant available.

Q: Can I get the virus just passing by people going in and out of the grocery store?

A: Dr. Dioverti: You could certainly if you're not keeping that social distancing – at least six feet away.

Q: Will hotter weather kill the virus?
A: Dr. Dioverti: Okay, so that's a hard question. It's true that most coronaviruses are seasonal, meaning that they'll happen during the winter, then somewhat quiet down during the summertime. However, remember that this is a completely new strain from a different species from us and we're still learning. It seems that the virus is still pretty suited to be transmitted in colder climates. We are seeing a lot of COVID 19 viruses, for example, in South America, Brazil, Argentina, and they are having huge outbreaks all over. Those are much warmer climates and it's actually summer out there. So we're not necessarily seeing that it's slowing down so far.

Q: Does being on Ultromiris for PNH and also having aplastic anemia and a secondary adrenal insufficiency make someone more prone to getting COVID-19?
A: Dr. DeZern: Yes, primarily because the adrenal insufficiency requires some dose of steroids to manage and that makes a person more at risk.

Q: Do we know what the long term effects of COVID-19 in healthy individuals would be vs individuals with an immunocompromised illness even after being recovered from the disease?
A: Dr. DeZern: Not quite yet. We're still learning as we go. Long term outcomes of this are going to take quite a few months for us to get a handle on. Right now most of our resources are diverted into controlling the pandemic and so we're still waiting for a lot of studies to come out to see what's going on. So we don't have the answer to that one yet.

Q: Could you speak about access to Ultromiris and Solaris? There's some concern about patients not being able to have access to their medications.
A: Dr. DeZern: This is an understandable concern in this current environment, but I do not have any data or other information to suggest that that would be the case. We've been reassured thus far by the manufacturers of the drugs that our current patients received.

Q: Do we know for certain that COVID-19 always presents with a fever? Is it possible that some of us may already have a mild case but we're not just exhibiting any symptoms?
A: Dr. Dioverti: That is absolutely possible. Most people have very mild symptoms and not even know sometimes that they have the virus and may be completely asymptomatic. That’s why we’re asking for quarantine and social distancing because we don't have the capacity yet to test everyone, including those who don't have any symptoms. So we can't know for sure if there are people out there that have already been exposed and are spreading the virus without any symptoms.

Q: Do the benefits outweigh the risk of moving a 90 year old parent out of an assisted living facility that is already taking precautions?
A: Dr. Dioverti: I would have to know a little bit more about the person in that environment however older people are a very high risk, especially in some locations. You should talk with your parent's healthcare team.

Q: Is it known yet that patients who get pneumonia from the virus may have lasting pulmonary damage?
A: Dr. Dioverti: We don't know yet - we're going to see as people start recovering, but we don't know the answer to that yet.

Q: Can an N95mask be cleaned with a disinfectant. If so, what disinfectant?
A: Dr. Dioverti: There are very, very specific ways to clean an N95 mask and you need specific products, not necessarily stuff you have at home. Please check the CDC and the manufacturer's websites.

Q: Is there a reason to keep washing your hands if, if everyone has been home and in the house for a week?
A: Dr. DeZern: I would say you should still keep doing it just to make sure.
A: Dr. Dioverti: I agree.

Q: Can COVID 19 be transmitted through cigarette smoke?
A: Dr. Dioverti: If you're sharing the cigarette then definitely yes. Like I said before, it's really close contact with people that'll make you transmit the virus. So if they're sharing cigarettes, if they're smoking nearby, yes it could be transmitted but not necessarily through the smoke of the cigarette, but mostly because of the exhalation process. Smoking a cigarette will create those droplets that we've been talking about.

Q: Is now a good time to start a new treatment (for PNH) such as Ultromiris or Solaris, or would it be best to wait and just monitor levels?
A: Dr. DeZern: That's a pretty individualized question to discuss with the treating hematologist/oncologist. If a patient needs treatment, then they should discuss it. If the patient has a small PNH clone and is asymptomatic, then a discussion is warranted but that's an individual discussion.

Q: Should an MDS patient on Dacogen stop treatment because it is an immunosuppressant?
A: Dr. DeZern: We want our patients to receive the appropriate and best care for their active disease which includes not altering their treatment based on the fear of potential future infection. If you stop the hypomethylating agent for a while and then start up again, it is not always clear if the response will also come back. it is not always clear that the response

comes back. If the patient can safely continue to receive treatment, they should do so in consultation with their treating hematologist/oncologist.

Q: It is impossible to find sanitizing products like wipes and hand sanitizer. What else can we use?

A: Dr. DeZern: Soap and water? I think the old fashioned way, more or less.

A: Dr. Dioverti: I agree. There's no other way. If you're short on supply so you're still quarantined, regular soap and water detergent should also be good enough.

Q: Should we assume that everyone is a virus carrier?

A: Dr. Dioverti: It's impossible to know if everyone is carrying the virus because we cannot test everyone. Many more people are infected with the virus than we know for sure right now. There is no way to know for sure.