Jacqueline Tomei:

those that have been disenfranchised, disadvantaged and are in the underrepresented populations, who we'll talk about the social determinants of health and those that are at risk.

Clyde W. Yancy:

We'll talk about cardio c

And, as we've seen recently with some publications, the drugs that are being used and have been suggested, particularly the combination of hydroxychloroquine or chloroquine with, or without a macrolide antibiotic, now, is being called into great question with the recent publication of a retrospective analysis, and a review of nearly 100,000 patients that suggest that these patients are, in fact, at higher risk for mortality when these drugs are being utilized. And, again, heart failure confers an independent, very strong adverse risk profile to these populations of patients.

Mitchell T. Saltzberg:

I think from a treatment standpoint, we have been in a position to be testing in real-time many approaches and without a definitive treatment at this time, I think, many of us continue to struggle with what the ideal strategy is. But I think we're learning a tremendous amount. We have, certainly, continued therapy with our heart failure patients and, as we transitioned to virtual visits from face-to-face visits, and now heading back in the other direction, I encourage our patients to continue their routine therapies. We've not made any drastic changes as yet pending further data.

Mitchell T. Saltzberg:

So, I think at the moment, my concerns related to Clyde's initial questions have to do with the high prevalence of suspected myocarditis, that Dr. Chahoud had mentioned earlier. And I think we're only beginning to realize the full impact of this disease related to new onset cardiomyopathy and exacerbation of underlying heart failure. Both of which would be somewhat expected based on reviews of prior pandemics. But, generally, with other coronavirus subspecies that we've seen where the risk of myocarditis, both acute and even late, has been well-documented.

Clyde W. Yancy:

Mitch, that was superb, that really was a beautiful summation over just a few minutes about where we are with this. And I'll get back to a couple of themes there, particularly with regard to the ACE inhibitor story, but a great segue to go back to Georges, because Georges did mention originally about myocarditis and cardiomyopathy.

Clyde W. Yancy:

Georges, tell us what we know specifically about the coronavirus becoming the COVID-19 disease and that disease, in turn, impacting the myocardium. What do we know about this myocardial disease in a setting of COVID-19?

Georges Chahoud:

Great. Thanks Clyde. I mean, this is a very important question because as we learn more about it, it looks like there are several mechanisms for the injury that happens to the myocardium in patients with COVID-19. There is a lot of speculation that there is direct damage by the virus to the myocardium because, as we know so far, that the virus basically by and through the S14 to the ACE2 receptor, especially in the lungs. But also we know for a fact that those ACE2 receptors are available in the myocardium, as well as in the vasculature including the endothelial cells. And that way the virus is speculated to cause direct myocardial damage.

Georges Chahoud:

But also, at the same time, there has been a lot of reported cases of a cytokine release storm that happens in the late stages of the disease process with COVID-19, which causes the release of several

inflammatory markers, whether it's IL-6, IL-2 cytokines, which has been postulated to be one of the reasons for significant myocardial damage, which has led to significant decline in the myocardial function. And those are the patients that, on top of their ARDS, are developing acute hemodynamic compromise going into cardiogenic shock, along with a vasodilatory shock that they experience along with that.

Georges Chahoud:

But, on top of this, we've seen several patients, even in their early disease phase, being labeled as having myocardial injury by virtue of having elevated troponin levels. And whether this is related to type 2 MI from hypoxia induced myocardial injury or potentially increased demand [inaudible 00:23:27] supply during this acute illness, which could lead to the leak of those enzymes. And we have, currently, quite a bit of data that points out that the mere fact of positive troponins, above the 99 percentile for

So let's take a pause. A lot of information just in the first few minutes. And Georges, while you kind of regroup a little bit, let me go back to Mitch. Mitch, in the very beginning, we started with these

evidence-based therapies. There's just no reason to follow any other guidance. I think you would agree with that.

Mitchell T. Saltzberg:

I would agree. And I think that the reality is, as we're seeing these patients present, most of these are very acutely ill patients who had upwards of eight days of disease beforehand. And one of the questions that we just haven't had data to answer yet is what happens to the patients that convert from a relatively tolerable course of disease, lasting one to two weeks, to those who are destined for really adverse outcomes? And do we know enough in the absence of adequate testing to know the population

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of fulminant myocarditis, there has not been anything to support that. There has not been any documente

health care facility. I think that's been one of the things we learned very, very quickly as we can, that we just cannot abandon the care of these very sick patients who need our help.

Mitchell T. Saltzberg:

That's certainly lesson number one. Two is, we need to continue to work at a systems level to ensure that the infrastructure that previously supported these patients, including community resources that were very, very acutely affected and historically produce, I think, real risks of people decompensating, these are the social support structures. I think Clyde has sort of talked about the disadvantaged patient population that we often are forced to deal with and take care of, these patients are at the greatest risk because, of course, the resources that many of them rely on for basic necessities have fallen apart. We've continued to engage with our community support systems. Paramedicine programs that have been able to step up to the plate and provide care when necessary have been really pivotal for us to try to see these patients through.

Mitchell T. Saltzberg:

I think, finally, is working with our team, to remind our team that we do have a mission. We are here to take care of patients. This is what we are... Made our career choices and have not backed away from that. We've been continuing to provide, whether it's advanced therapies, transplants and LVADs, these patients still have urgent needs and we can't ignore those, but also the chronic heart therapy patients. It's a matter of engaging our staff, as well, to remind them how important our mission really is. As we've seen, numbers of heart failure patients decline in the acute hospital setting, we still know that they are there and need our support. I think those are the three pivots, is to engage work with the community and work with your staff to ensure that they all know that this is mission critical work and it's central to the outcomes of the patients that we take care of.

Clyde W. Yancy:

All that in number four there, Mitch, that was a great several thoughts that you shared with us. Engaging with the patient, depending on the paramedical help that's in most communities, being particularly attuned to those with least resources, the least amount of resources, and then really respecting our mission and finding a way. Along the lines of finding a way, number four, that I would add to that, is that we have engaged with the patients directly to find out what's the nearest facility? Is that a facility that is currently feeling the crush of COVID-19 patients? If not, most emergency departments have found a way to self isolate those suspected, versus those not, and still to provide acute care.

Clyde W. Yancy:

I've had a number of patients present to area emergency departments, I've been on the phone with emergency room physicians and we've cared for those patients. And yes, I've had several patients come in to the hospital, on our inpatient services, that we've gone out of our usual protocol to protect them and make certain that the environment is safe. And so if a patient really needs to come in, I would advise the person who raised this question to not allow that fear to resort to a less than ideal care practice. Georges, do you have anything to add to this question?

Georges Chahoud:

Yes, thanks Clyde. The one that point I would mention as well, and this is something that we've started in our system, which is exactly what you've been talking about, is creating a safe environment for the patients to be able to come in, especially for acute management. What we've established in our system

is kind of a rapid infusion center, or Lasix infusion, for those patients, because the majority are basically showing up with acute volume overload.

Georges Chahoud:

If they're not able to manage with titrating their oral diuretics, we have established a protocol where the patient can be directed, either to be seen physically in the office, or just basically cutting the chase short and sending them, either to the infusion center in a side that has not been overwhelmed with COVID-19,

Currently, we do have an age limit, which is 55 in our center, and ECMO support is limited to those patients who largely have single system disease. Most of these patients, we know, have severe pulmonary disease, but typically our best outcomes, and we've had about a 37% survival rate, have been in those patients who have, primarily, the hemodynamic instability that is well seen in this population, or in an isolated group of patients who have a need for V-V ECMO to support pulmonary function, and we've learned to do this much earlier. The select cases we've done for cardiovascular compromise, their mortality is extremely high. But in our center, what we've found is when there's multi-system involvement, we just are not seeing the survival for these critically ill patients. We have gone to V-V or V-A ECMO in those cases, particularly where there's pulmonary disease as the predominant factor, or primarily a cardiac manifestation, respectively. Those have been the populations where we've had, I think, data that is leading a bit in the national outcomes.

Mitchell T. Saltzberg:

I think, from our standpoint, having a 37% survival, while dismal by a lot of standards, in this particular disease, seems to be a bright spot, given the approaches. We continue to evolve our decision making week to week. Some of that's just based on our experience and where the resources of the hospital are, but the age criteria has held pretty fairly firm. As someone who's roughly in that sweet spot of age, I'd say it's a very difficult decision to make, as to what age you just consider the care of these patients less than ideal and can't justify the resources.

Clyde W. Yancy:

This is the most sobering aspect of any of these conversations. Several weeks ago, we saw the aggregate data from New York, demonstrating that in those patients whfirmstye5e oot 10.6 (10.le)3 (v5.4 (7.8 e5e 3 (3.2(e)3 ()1 (as)1

Clyde W. Yancy:

But that is the issue that you just highlighted. Many, many patients, let's be candid, take Plaquinel. that's the proprietary name, for appropriate indications, and do well with that and it relieves their symptoms. But in the patient who is ill from COVID-19 and has flux in the acid-base status, flux in the electrolytes, the exposure to hydroxychloroquine consistently prolongs the QT interval. Many publications now have validated this, and increases the risk for arrhythmias.

Clyde W. Yancy:

I'll go back to the paper that Mitch and I have been citing, the [MIRA 00:52:04] paper from the NEJM just a week ago, one table demonstrated the mortality risk associated with hydroxychloroquine and chloroquine, but the next table highlighted the ventricular arrhythmia risk. There is harm. There is a concern, particularly in those that have this condition. Mitch, I want to respect our time and keep going, because there's another important question that's come up here, and this is a tough one. How do you get your heart failure patients to come back? Do you need to advocate? Do you need to get on the phone? Do we need to have patient level webinars like this? How do you get your heart failure patients to come back? You have to be concerned, like I am, that they are home struggling.

Mitchell T. Saltzberg:

Yeah-

Jacqueline Tomei:

Just within that same vein, would you also be willing to answer one of the questions that came through the chat, is where are the patients? Are you seeing reduced numbers, like many of our other hospitals and colleagues?

Clyde W. Yancy:

Well, they haven't taken vacations. I'm sure they're home. How do we get them to come?

Mitchell T. Saltzberg:

[illegible]

populations. People with recent transplants, a recent mechanical, circulatory support devices, those patients, we just felt like we had to see these folks.

Mitchell T. Saltzberg:

For the chronic heart failure patients, we instructed our team. Everyone got a phone call. It was coming up in our schedules and patients were through a detailed questioning. You had any concern about, we brought them in for visits. As we've evolved and now we're into more of a recovery scenario trying to engage people in the community, I find that most of my phone calls are more to reassure the patient. One, your concerns about when speaking to the patient, you're concerned about being next to patients, other patients who might have the disease. We've separated the waiting room tremendously. People can not get close. Everybody's now wearing a mask in our organization. Patients can not walk in without one. That's a big step. We weren't initially there, but we have to get there. We have to be able to protect people.

Mitchell T. Saltzberg:

We are reminding people that they still have a chronic illua6 (n)2.3 (ll)-5.5 (e38Dt i)2.r)-3.6tl he3 (at2)2.3 (0)103.6tl gaglywn3.6 (i)

So that way, at least we can reduce potentially the exposure. The concern is going to come, not only now, because we don't know if this is going to be seasonal or not, we hope not, but it's going to be a

I'm going to close with the theme that we opened with and I did not develop deliberately during our conversation because I wanted to close with this. Don't let the clearly evident disparities become a factor in your local environment. Recognize that there are people, patients that we know well, we see them. They work in our hospitals. They serve our meals. They clean our operating rooms. They staff our cath labs. They're at a unique risk. The tragic stories that we've heard they come from these inner city communities, these at risk communities. Let's not let our local environment replicate those stories. Let's realize that now is a time to reach out, now is a time to be compassionate, now is the time to understand, now is the time to virtually embrace and help those patients that we've known all along needed just a little bit more of a boost, not a gift, just a boost to get them into a more equitable place.

Clyde W. Yancy:

This disease kills and it has disproportionately killed so many people that are at risk just for life and living. In that regard, it's become one of the cruelest experiences that I've seen in my 62 years of living and we shouldn't let that be the case any longer.

Clyde W. Yancy:

I want to thank everyone, particularly the HEA staff for setting this up. I want to thank all of those who stayed with us through the duration of our commentary. I hope you learned something. I hope you took things away with you. I hope that you are thinking of the American Heart Association kindly. If you recognize that what we do is all based on volunteer effort and you're able to volunteer, that's terrific. If you're able to maintain your heart failure registries and keep them up to speed, that's wonderful. But if you're just able to extend the mission of the Heart Association and help us look for a future with happier, healthier lives, free of heart disease and stroke, that would be ideal. Thanks very much for your time today. Hope you-

Jacqueline Tomei: