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in terms of care delivery related to COVID and the pandemic that we're all living through.

Sandeep Das

[02:32](#)

Well, fantastic. So let's get right into it. Early on in the

of the appropriate precautions with use of PPE as a protective measure, not only for the patients themselves and patient to patient transmission, but obviously our frontline healthcare workers to mitigate their risk of getting infected as well.

Sandeep Das: [07:46](#)

Yeah, excellent. We're doing the same in Dallas. We have dedicated entrances, dedicated elevators, all that other kind of stuff. So once you're being investigated for potential COVID you're segregated from the other population until you're definitively ruled out, which I suspect is what probably most hospitals are doing. Some variant of that. You mentioned also in terms of direct myocardial injury, is that the classic conventional MI like platelet mediated coronary thrombus, or is it some direct viral involvement of the heart muscle?

Ty Gluckman: [08:20](#)

So it's a phenomenal question. And what's been recognized early on including reports that came out of China and the United States early on is that markers of myocardial injury, most commonly troponin, whether the standard sensitivity or high sensitivity, there's been a notable increase in the numbers of individuals that have elevated troponin levels. And in fact, for COVID19 related respiratory illness and not COVID19, there are reports out there that as many as 40% of individuals may have elevated troponin levels. We know prognostically that those individuals that have elevated troponin levels fair worse. A challenge that we have is many of these same individuals have many of the same risk factors that may increase their risk for a worst prognosis as well.

I think the general prevailing theory is there is no question that individuals may come in with COVID related illness and happen to have plaque rupture or a type one myocardial infarction. But the lion's share of individuals that come in with an elevated troponin level, either have a demand supply mismatch, a so called type two myocardial infarction, or may in fact have myocardial injury without a true rise and fall of troponin levels, and may have just direct myocardial injury. Sorting those issues out really become the challenge for the frontline clinical teams in trying to piece together the story and thus the underlying or prevailing pathophysiological mechanisms that underlie that elevated troponin level.

Sandeep Das: [09:52](#)

Thanks. Great answer. And totally that's exactly what we're seeing as well in Dallas. Now you talked about not seeing a ton of acute coronary syndromes, secondary to the virus. But you did earlier mentioned pro thrombotic complications. So are

otherwise don't have an indication provide value. I think we'll learn more in the future in this regard.

Sandeep Das: [18:34](#)

Great. Yeah, that's one thing that was ... I liked was the consistent messaging from all the relevant specialty societies to continue [inaudible 00:18:45] that came out early and clearly and consistently, which is a refreshing change in the time of mixed messages. What do you think is the impact of the mixed public health messaging on your ability to care for patients up in the Pacific Northwest?

Ty Gluckman: [19:04](#)

Yeah, I mean I think none of this has been intended and it's always ... You can play Monday morning quarterback, we all can in this. I think, and this is one of the things that worries me today, so many people listening may be in the midst of either a 10.5pace38me or athirc2e,denendinnnpæhertheye r ofthe(h)5.3 (a82.7 (n)5. (d)5.e [(m)-3.3 (i)13.c (.)13 (i)2.7 (n)5.7 (th)16.1

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And if it hasn't come from patients, it's probably coming from family members and maybe a topic of a virtual discussion over the Thanksgiving holiday is what should I be doing about this? And I think our best knowledge right now is if you're asymptomatic, the answer is probably nothing. If you are symptomatic, you should be seeking medical attention from your primary care team. And if there are questions that are lingering about cardiovascular involvement, a good history and

think they've been thoughtfully done in trying to take into consideration symptoms and signs and again, history and physical and electrocardiogram. And if appropriate, an echocardiogram is your first bent towards imaging.

Also just add, we don't know what the cardiac manifestations in an unselected population of influenza look like at scale. So you and I both would see people every year who have influenza who have seemingly recovered, may have some lingering symptoms, where it fits in terms of their types of testing. So I think a lot will be learned over time in terms of what ~~the~~ near term and

