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Cardiology Care Amid the COVID-19 Pandemic: Remote-Monitoring Technologies

Dr. Sorrentino:
There are a multitude of technological advances happening in the field of cardiology and one of those technologies leading the charge is cardiac devices enhanced by wireless remote monitoring. But what remote cardiac monitoring looks like amid the current COVID-19 pandemic and what obstacles we still need to overcome is what we'll be discussing, today. Welcome to *Heart Matters* on ReachMD. I'm Dr. Matthew Sorrentino and joining me to discuss remote monitoring in cardiology is Dr. Suneet Mittal, who's the Director of Electrophysiology for the Valley Hospital in Ridgewood, New Jersey and Director of Cardiac Research at Valley Health Systems. He also serves as the medical director of the Valley Hospital's Snyder Center for Comprehensive Atrial Fibrillation. Dr. Mittal, welcome to the program.

Dr. Mittal:
Thank you for having me. It's a pleasure to be on.

Dr. Sorrentino:
To start us off, Dr. Mittal, can you describe how remote monitoring has changed cardiac care and its impact on diagnosing and caring for our patients?

Dr. Mittal:
Well, remote care has been an important portion of cardiology for some time. In fact, I would argue that cardiologists were one of the first users of remote care by way of trans telephonic monitoring. Pacemakers have been around for nearly 5 decades and during that time trans telephonic monitoring has given us the ability to assess a patient's pacemaker function from a patient's home. But what's really changed over the last several years is the growing advent of external, physiologic monitoring technology such as heart rate monitors, ECG recorders, blood pressure machines, weighing scales that are Bluetooth enabled and can transmit physiologic data to physicians as well as a rapid advance in implantable technologies such as loop recorders, pacemakers, defibrillators that can wirelessly transmit their stored data to a physician with alert conditions being notified right away. The most recent advance to implantable technologies has been the advent of being able to transmit data using the patient's own smart phone so no longer are bedside communicators necessary but as a patient is moving around, their cell phone can transmit critical alert situation to physicians so that they can act on these arhythmic events as quickly as possible.

Dr. Sorrentino:
I understand there's a lot of different types of ways that patients can be monitored. Can you briefly, just describe some of the newer technologies that are being used now that patients can check in, even patients that don't have necessarily pacemakers to send information to their physician.

Dr. Mittal:
Absolutely. So, if we think about a patient who may be coming into my practice, we are interested in receiving vital sign data from these patients and so, as you know, many of the technologies are Bluetooth enabled, so patients can purchase blood pressure cuffs that, using Bluetooth, upload the readings to the cloud, so that I can access how my patients' blood pressure is doing. There are ECG monitors like the KardiaMobile device that turn a patient's smart phone into an ECG recorder and again, these data can be uploaded using Bluetooth into the cloud. IWatches or smart watches are now giving patients the ability to have continuous ECG monitoring with alert capability when they may have rhythm disturbances such as atrial fibrillation. And I think in the future, we're gonna see more of this and we're gonna be spending a lot of time and resources in educating patients on the value of this and developing the infrastructure in

our practices to be able to manage this wealth of data. And then there's a whole line of implantable devices, loop recorders, pacemakers, defibrillators, heart failure monitors that are able to wirelessly transmit the data to our offices.

Dr. Sorrentino:
You mentioned that patients are purchasing iPhones and I know there's Fitbits and many other different devices that record different data, and especially rhythm disturbances like atrial fibrillation, I guess the question many of our practitioners have is how accurate is that data? Are they gonna be inundated with poor data that is not going to really help in taking care of the patient?

Dr. Mittal:
That's a great question because one of the things that we don't wanna do is create false positive data which then relegates a patient to an assembly line of diagnostic tests that may then lead to other things and cause all kinds of problems. Now, one of the exciting things about some of the data streams that I mentioned is that they're incredibly accurate because we've you know, whereas a Fitbit couldn't potentially only show you that the heart rate is elevated, but really couldn't go beyond that, if we look at our KardiaMobile device or an Apple iWatch, the patient has the ability to actually record an ECG, albeit a single-lead ECG, and that can be viewed by a physician and that has a fidelity that's on par with anything we would do with a medical grade application. So, the ability to take that heartrate data and convert that to an ECG, allows you to really separate out what's real versus what's artifact or maybe a false positive and we're seeing that across the spectrum of devices. So, I think that these datasets will become more and more reliable and thus more and more actionable over time.

Dr. Sorrentino:
Since the onset of the COVID-19 pandemic, there's been a lot more attention on telehealth you know, across all disciplines, not just cardiology. Do you see remote monitoring becoming more and more a part of our daily care of patients allowing patients to check in to their practitioner without, going into the office and how do you see it growing in light of the pandemic and even beyond the pandemic in the future?

Dr. Mittal:
I think that's a great question. It's important to recognize that all the technologies for remote monitoring, whether it's with external devices or implantable devices, existed prior to the COVID-19 pandemic but what COVID has really done is it's really turbo-charged this endeavor and put it on warp speed where over the past year, physicians have become very comfortable about using these types of data in routine clinical practice, especially as many of the visits have occurred online or virtually. If we fast-forward to what the future looks like, I think that we will now find a balance, certainly healthcare cannot be delivered exclusively in an online setting, but we also know that healthcare can be delivered in settings other than the traditional in-person, in-office setting, so there will be definitely be patients whose ongoing care at times, can be delivered optimally using an online platform.

Dr. Sorrentino:
For those just tuning in, you're listening to *Heart Matters* on ReachMD. I'm Dr. Matthew Sorrentino and I'm speaking with Dr. Suneet Mittal about remote monitoring in cardiac care. What I'd like to turn our attention to is more a practical application of remote monitoring. How can we increase this type of monitoring, among our patients; how can we get many of our general practice patients into some sort of monitoring so we can better follow their heart rates, their rhythms, their blood pressures?

Dr. Mittal:
Dr. Sorrentino, I think the first thing is that we have to institute a paradigm shift in the way healthcare is delivered because many patients are used to a calendar-based, in-office follow-up of their patients. So, we are slowly starting to educate our patients about how these remote tools can be used in a complimentary way to the care that their provider provides in the office and that there's value in assessing these parameters, whether it's heart rate or heart rhythm or blood pressure or with COVID oximetry, measuring that, finding alert situations that have to be transmitted to physicians and other members of their healthcare team. And I think this is all very doable, but it requires a paradigm shift that starts with us educating our patients on the importance of why we're changing the way healthcare is being delivered. And as practitioners, we have to open to this paradigm shift and recognize that we have to change our practices in a way to be able to adapt to this rapidly-changing healthcare environment.

Dr. Sorrentino:
I'm, I'm thinking of the patients that I've had who get a blood pressure monitor and check their blood pressure 20 times a day or send me every day their Fitbit heart rate responses and they are concerned about every blip of the heart rate that suddenly jumps up. How do we teach patients to use these devices accurately to make sure we're getting accurate information and not just adding to their anxiety because now they're getting too much data?

Dr. Mittal:
Another great question. And I think as you will well-recognize, there, like everything else in medicine there is a bell-shaped

phenomenon that's observed here. What I have found in clinical practice that if you look at the hyper-focused patient like the one you described that with over time and with education, as they start to understand what the data points mean and they get explanations for what these datapoints mean and how they can start to learn what's real versus what is meaningless, much like a physician would, that over time, the anxiety starts to go down and their engagement with these devices become more and more appropriate. Now, will there be an occasional patient who continues to be obsessed by the data? Absolutely. They're probably no different than the person who's obsessed with their smartphone and is constantly turning it on to look at their Twitter stream or Facebook stream, but I think for most people, these technologies are used appropriately in a way that can really facilitate their healthcare management.

Dr. Sorrentino:
Yeah, fortunately, I think you're right. I don't think it's a lot of patients who become obsessed with it. To close, I have a question about the event monitors that we use on many of our cardiology patients. In our institution, there's kind of, two types of even monitors, there's these patch monitors that will monitor the rhythm for a week or two weeks and then they're sent into a service that downloads the data and then there's real-time monitoring where there's a service that will receive alerts and will alert the physician 24 hours a day, if need be, if there is a monitor that hits a particular criteria or a rhythm that hits a particular criteria. When would you use either of those type of monitors and, and is it okay to use these, kind of, offline monitors now or do we need some real-time monitoring for some patients?

Dr. Mittal:
Well, you've hit a question that's really near and dear to my heart and one that I've spent a lot of time thinking about. I think that Extended Holter Monitoring, non-real time has been a real game-changer in cardiology. The ability to move away from lead-based Holter monitors to patch-based Holter monitors that can record data continuously for 1 to 2 weeks, allowing a patient to engage in their activities of normal living after which the patch is removed and the data are analyzed, I think are here to stay not only in the United States, but worldwide and have been an important addition to our armamentarium. I think the controversy exists on the clinical utility of the other type of monitor that you mentioned, which we call mobile cardiovascular telemetry monitoring, or data that's streaming online is looked at, potentially, by a technician for an alert status online and then physicians are alerted immediately whether there's an issue. The role of these systems is a little bit more controversial. I think simple Extended Holter Monitoring can make the clinical diagnosis in a way that's a little bit more efficient and a little bit more cost-effective for more patients. But I think this is certainly an area that's going to have more and more research to identify the appropriate use-case scenario for each technologies.

Dr. Sorrentino:
That's great. Thanks for clarifying the different types of monitors. I wanna thank my guest Dr. Suneet Mittal for joining me to discuss the application of remote monitoring, not only in cardiac care, but really going to all of our patients as more of this technology becomes available. Dr. Mittal, thank you for joining the program today.

Dr. Mittal:
Thank you for having me. It's been a pleasure.

Dr. Sorrentino:
I'm Dr. Matthew Sorrentino. To access this and other episodes in our series, visit ReachMD.com/HeartMatters, where you can be part of the knowledge and thanks for listening.