Transcript Details
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Leveraging Wearables for Pulmonary Arterial Hypertension Care

Announcer:
You're listening to *Clinician's Roundtable* on ReachMD. On this episode, we'll hear from Dr. Daniel Lachant, who's an Associate Professor of Pulmonary Diseases and Critical Care at the University of Rochester Medical Center. He'll be discussing the role of wearables and sensors in pulmonary arterial hypertension care.

Here's Dr. Lachant now.

Dr. Lachant:
Wearables and sensors that patients can wear at home allow us to get a look in terms of how much movement they're actually achieving, what they're doing at home, and if what they're telling us in clinic agrees with what we actually see at home. It provides us an extra layer of assessment that can complement our in-person assessments.

Using the current wearable devices, we can measure how many steps a patient takes during the day. We can measure the bouts of activities. We can see the cadence of steps, in terms of the number of steps per minute they're moving. We even have the ability to do unsupervised home six-minute walk tests with wearable sensors.

And, once again, this just provides an added layer of assessment to see how patients are doing after they're seen in clinic. If we're worried about whether additional testing is needed, some wearable data may push us one way or another. When we're thinking about titrating up medications, the same thing: seeing how much somebody's moving may push us to say, no, they don't need a medicine, or, actually, things aren't as good as we thought they were, and repeating a right heart catheterization or adding another medication may be helpful. And in very compensated patients, we actually encourage exercising and incorporating wearables to help monitor heart rate and other metrics, which provides a way for them to increase their activity at home safely.

Our team has been very interested in understanding what metrics are best to look at home, and how it relates to pulmonary hypertension variables that we care about, so risk assessment, right ventricular function, and one thing that we found to be very helpful—it seems to be that heart rate changes during activity's a good metric to study.

And for pulmonary hypertension in general, when the right ventricle is not functioning as well as we'd like, the only way they can increase their cardiac output is to increase heart rate. So, therefore, when we look at what someone's given workload is, whether it's steps—whether it's distance during their six-minute walk test—we get a better understanding of their cardiorespiratory function efficiency based on heart rate relative to a given workload.

And so tracking it over time allows us to see, well, six-minute walk distance or activity hasn't changed, but their heart rate's going up for a given distance. That tells us that maybe things aren't as good as they were, and we can intervene at an earlier point before they truly become decompensated.

On the flip side, we've also seen it where people don't move more. They still do the same six-minute walk distance, whether it's in clinic or at home. Their activity doesn't change. But the stress on their cardiopulmonary system goes down, and therefore, we see less heartbeats to achieve a similar workload, which tells us things are improving. And then in the perfect scenario, when we add a drug and people are doing better, we see an improvement in workload with a decrease in heart rate. And so merging those two metrics together allows us to detect this cardiorespiratory fitness with activity, and we like to call it cardiac effort.

Announcer:
That was Dr. Daniel Lachant talking about how wearables and sensors can improve care for patients with pulmonary arterial

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