

Announcer: Welcome to Mayo Clinic's ECG segment Making Waves Continuing Medical education podcast. Join us for a lively discussion on the latest and greatest in the field of Electrocardiography. We'll discuss some of the exciting and innovative work happening at Mayo Clinic and beyond with the most brilliant minds in the space, and provide valuable insights that can be directly applied to your practice.

Dr. Anthony Kashou: Welcome to Mayo Clinic's ECG segment making waves. Today we have the pleasure of hosting an expert in Electrocardiography who is stepping into a pivotal leadership position at the Mayo Clinic. Our guests will delve into their inspiring journey in the field, highlighting the factors that fueled their specialization in electro cardiology and their forward-looking vision. We'll also delve into initiatives and strategies they aim to implement to enhance cardiac care. Today we are honored to welcome Dr. Abhishek Deshmukh, a cardiac electrophysiologist and researcher at the Mayo Clinic in Rochester, Minnesota. Dr. Deshmukh, is well known for his expertise in performing complex invasive procedures with a keen focus on ablation treatments for atrial fibrillation, ventricular tachycardia, infiltrative cardiomyopathies, and adult congenital heart diseases. As an active and dedicated researcher, he excels in utilizing extensive data sets to explore and enhance quality outcomes and risk assessment in various heart rhythm disorders. Dr. Deshmukh, is a co-director for the Electrophysiology Fellowship program and is now the recently appointed director of the Heart Rhythm Physiology Monitoring Lab at the Mayo Clinic in Rochester, Minnesota. Thank you, Dr. Deshmukh, or Abhishek for joining us today.

Dr. Abhishek Deshmukh: Thanks a lot, Anthony. Looking forward and excited to talk to you about this.

Dr. Anthony Kashou: Well, you know, first off, congratulations and, I mean, there's so many episodes I wanna do with you outside of this and mostly on education and where you see, you know, the field going. But first, you know, this one's about you and congratulations. I wonder if you could start by just sharing a little bit about your journey of how you got into this field. And, you know, many would say, you know, they really don't like it. It, it's a scary field to get into, but you took it head on.

Dr. Abhishek Deshmukh: Yes, no, thank you for that question. So, you know, my real journey with ECG started when I was probably four or five years old. You know, my father is a internist in India and in his clinic they would get ECGs for a lot of patients. And my job as I was learning craft and how to cut a paper with a scissor was to paste those ECGs in a folder so that he could see it and sign off in the evening at the end of his day. And, you know, I enjoyed, it was like a single lead long strip and I enjoyed, you know, pasting them properly and looking at them. But then I started getting more intrigued in that because I, I really thought the letters in the English language start from A, B, C, D, and I was wondering why the ECGs P-Q-R-S-T and why it didn't start A, B, C, D. And then my dad told me this lovely story about how P-Q-R-S-T was, you know, part of the ECG lingo rather than A, B, C, D. And I got really fascinated. And then through medical school and through my internal medicine residency, cardiology fellowship, EP fellowship, I have been really been very, very fortunate to train and work with some incredible cardiologists and internists who had a true passion for ECG. A case in point would be in like medical school, we would be taught how to kind of predict what the ejection fraction is looking at the ECG just by

looking at the R wave transition. And now, you know, lo behold we have an AI algorithm looking at that or how you can look at various levels of potassium from an ECG. And now, you know, there are so many different ways why we are doing this. And through my specific training in cardiology and EP, I got really trained by some incredible mentors like Dr. Hakan Paydak and Dr. Sam, who really, you know, really opened my eyes and my vision about how we can interpret ECG and take it to a completely different level. And so it was kind of natural for me to learn and love ECG and then finally teach ECG to other people, whatever I've learned from all my phenomenal mentors so far. So I really enjoy ECG and I really think ECG can give you a lot of insight into what is going on in a patient's life in their pathology, how they would respond to a treatment. And I thought this was really, really fascinating.

Dr. Anthony Kashou: So true. We stand on, you know, the shoulders of so many great, and from your, you know, personal story to all these mentors, it's amazing to see you not only in this position but leading it. And I, I think one thing you do very well that here myself as a fellow and many of our trainees see is, you know, educating. And when I saw that you took this job and were appointed, I I was very excited because of your role in that. How do you see, you know, your plans for continuing and enhancing education, giving back to, you know, trainees and other colleagues that, you know, may find you know this to be a scary thing?

Dr. Abhishek Deshmukh: No, it's a great question and really, you know, ECG education starts from when we, you know, kind of start learning a little bit about biology and enter medical school. But if you look at that is really, nobody takes the formal ownership of who is going to train a person to read an ECG. And that may may not be just a person who wants to do cardiology and electrophysiology, but anybody from a nurse, from a tech, from somebody who wants to internal medicine or neurosurgery or anything else, you know, I think ECG is really a key piece of a skill, what people need to people need to learn. And now beyond anybody in medical field, even people who have smart watches and various tools at home, when they get an ECG reading, you know, even if you're like an investment banker or a professional sports star, you still need to know a little about how to, you know, go about analyzing what you're seeing at home rather than, you know, googling a lot of these things. So I think ECG education is very, very important, but the main thing, it just becomes quite daunting for people to understand ECG because they have never been taught formally over the, you know, from the initial formative years. And my aim is really to try to see if we can make ECG understanding and reading much more fun. Like the way you have done in various, you know, roles, what you have played is how to make it more fun, more enjoyable, and finally really understand the, the beauty about what all is there behind this just P-Q-R-S-T, what we are looking at and how we can glean and understand more about that person and pathology, what the patient is going through. So in that set setting, you know, we are trying to set up several initiatives. We are starting up ECG conference for our cardiology fellows here. Hopefully we'll use some social media early next year and start posting some ECGs on Twitter and, you know, give some more in-depth analysis about how to analyze an ECG. You know, we have done several videos on YouTube about ECGs and congenital heart disease. Again, a topic which if nobody, you know, really gets enjoys reading those ECGs and people can get little bit scared when you have a patient with congenital heart disease. So a lot of our initiatives are in place, but we also wanted to make it more fun and interesting for our nurses and our allied health, so that they can also enjoy, you know, the ECG reading aspect of it.

Dr. Anthony Kashou: No, I, I'm excited to see it in and those initiatives have already taken off in our well received here and I'm excited for others outside of, you know, our institution to benefit from, from your teaching, you certainly know how to make it fun. I'll say that now, although it's still early in the phase and you know, you just had this new position and you're the now the director of the lab. Where do you see specific initiatives that you know, you wanna build on? You know, Dr. Noseworthy who is the, the former director and his contributions?

Dr. Abhishek Deshmukh: No, first of all, I have to acknowledge that Dr. Noseworthy has been an incredible mentor and friend for me right from my fellowship days. And I've personally learned a lot from him. You know, we all aspire to be like him, but there's only one doctor Noseworthy. So, you know, although there are big shoes to fill, I'm just hoping that I learn a lot from him and carve out my own niche. But, you know, Peter did an incredible job of really using the digital tools of ECG, the AI artificial intelligence part of ECG and how you can leverage that to again, have more in-depth analysis of ECGs. And I'm, I'm really looking forward to carrying forward some of his incredible work, what he has done. And a lot of times this work is, you know, obviously benefiting a lot of our patients at Mayo Clinic, but I'm hoping that we can potentially move this to any patient anywhere in the world if they have a question about their ECG or if they want to know how an AI algorithm can predict if they have a, a pathology such as say hypertrophic cardiomyopathy, cardiac amyloid or their ejection fraction. If we can make it a little bit more accessible to all the patients who are there anywhere in the world, if they could leverage some of these ECGs and we are working on few things to see how we can, you know, potentially leverage that. And from our own practice development, we want to try to see how we can, you know, develop the best care what we can provide to our patients here at Mayo Clinic. As always, the needs of the patients come first and we want to make sure we deliver the best Mayo Clinic level care to our patients and to make, you know, even the life of the people who work in the ECG lab much more, you know, gratifying and worthwhile and they enjoy coming to work every day. So I'm really looking forward to make sure that our ECG lab is the best in the world and we continue to, you know, follow the Mayo Shield of Practice education, research and innovation.

Dr. Anthony Kashou: Wonderful. And you know, I, I certainly, you know, want to hear and I'm excited to see all that you have planned now, you know, Abhishek you, you mentioned the role of including other places, like how do you envision us reaching out externally outside of the walls of Mayo Clinic and beyond to bring the services that our cardiovascular line really offers and the potential that we are so fortunate to have here at Mayo, but you know, to other places?

Dr. Abhishek Deshmukh: No, I think I'm really excited about trying to see how we can, you know, share some of the immense amount of knowledge and resources, what we have. You know, personally I trained at two other different hospitals before I came to Mayo Clinic, so I can really see the huge difference what, you know, we have and how fortunate we are here to work and practice and train. But few things we were exploring would be, you know, trying to see how we can enable our AI algorithms to see if we

can integrate them in some other practices if they want to, you know, use them. We can potentially, you know, have some arrangement or agreement with that. We are also really excited to use our mobile outpatient cardiac telemetry to try to see if we can, you know, use that or other practices can potentially use that so we can monitor those patients for those practices and give them a report. We are also trying to see if we can utilize remote device remote monitoring in our group. And then finally even the remote monitoring for telemetry. For example, if you're in a small ER somewhere and or a small hospital where you don't have the infrastructure to have your own telemetry, we are certainly exploring options to see whether we can provide remote telemetry to those hospitals so that we can do the monitoring so that at least the bedside nurse taking care of the patient and the provider is satisfied and comfortable dealing with some of our, you know, complex patients. I'm really looking forward to see how we can leverage our own infrastructure and knowledge base to share it with other people and providers.

Dr. Anthony Kashou: Yeah. And that that's our goal. Can we bring, you know, the Mayo Clinic experience that we're fortunate to have outside to these other groups?

Dr. Abhishek Deshmukh: Absolutely.

Dr. Anthony Kashou: But where do you see, you know, integrating with other departments? Because as you mentioned here at Mayo, we certainly try to bring in, and you've already mentioned it with the education allied health nurses and others. Where do you see the collaboration in other fields and areas here at the clinic?

Dr. Abhishek Deshmukh: You know, ECG lab is so uniquely placed that if you follow a journey of a patient at Mayo Clinic, the three places, which are four places which are most visited are the blood, the lab where they are going to give, they have a blood draw pharmacy cafeteria and the ECG lab. So everybody's going to go through these four places during their time at Mayo Clinic when a patient is visiting. And we wanted to see, you know, to announce the experience of the patient when they're visiting the ECG lab specifically, you know, where we can, you know, maybe do more advanced analytics, have more digital biomarkers developed in the ECG lab. Voice is one example. We are doing a study on facial recognition, which can predict a lot of the underlying blood pressure and oxygen saturation and all those things. So that can be something which the ECG lab can develop and, and participate in. Now as far as collaborating with other groups at Mayo Clinic, you know, that would be something we are working on. You know, for example, we are thinking of putting our own ECG machines at various key locations in the hospital. Say for example, in the heart rhythm clinic or in the, some of the pacu, which would do more ECGs or say consider a CCU unit or something like that. So we are trying to explore how we can, you know, partner with those groups so that we can provide more efficient care from our, from our group.

Dr. Anthony Kashou: Wonderful. Well thank you. And this episode we explored Dr. Deshmukh journey into Electrocardiography from his young days with his father at home when he was only four. We looked at his plans as the new director of the Heart Rhythm Physiology monitoring lab. His vision for enhancing the lab's educational legacy building on Dr. Noseworthy's work and integrating the lab with other departments hold tremendous promise to advancing care here at Mayo Clinic and beyond. Congratulations, Dr. Deshmukh on your new role and exciting journey ahead. We're very fortunate to have you in this position. I'm excited to continue to learn from you and we extend our best wishes for your success. Thank you so much for joining us today.

Dr. Abhishek Deshmukh: Thanks a lot Anthony.

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