

The Journal of Electrocardiology And A Future Glimpse

Announcer: Welcome to Mayo Clinic's ECG Segment: Making Waves, continuing medical education podcast. Join us every other week for a lively discussion on the latest and greatest in the field of electrocardiology. 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. Kashou: Welcome to Mayo Clinic's ECG Segment: Making Waves. We're so glad you could join us today. Today We're gonna look at one of the leading journals in the field of electrocardiology. We'll be joined by a special guest that will have some of the best insight into this and what the future of the ECG looks like. Before we get started, I'd like to introduce you to my co-host Dr. Peter Noseworthy. Dr. Noseworthy is a Professor of Medicine and Cardiac Electrophysiologist. He serves as the Director of Mayo Clinic Heart rhythm, and Physiologic Monitoring Laboratory. Dr. Noseworthy welcome. I'm so glad you're here with us today. Let's get started.

Dr. Noseworthy: Great to be here, Anthony. Thanks a lot.

Dr. Kashou: Since 1968, 'The journal of Electrocardiology' has been documenting the evolution of the field. This peer reviewed medical journal, remains a go-to resource for clinicians around the world. Today, we'll hear from the Editor-in-Chief himself, who will help us understand why and how the ECG has stood the test of time, provide insights into the journal, electrocardiology, and share where he envisions the field is heading. Dr. Noseworthy would you please introduce our special guest today?

Dr. Noseworthy: Yeah, of course. Thank you very much, Anthony. Yeah, it's a real pleasure today to have Dr. Baranchuk here. He's a Professor of Medicine at my Alma mater Queens University in Kingston, Ontario, Canada. As you mentioned, he serves as the Editor-in-chief of "The Journal of Electrocardiology" and he's also the Vice President of the International Society of Holter and Noninvasive Electrocardiology. Dr. Baranchuk is the President elect of the Inter-American Society of Cardiology and his contributions to the field are vast. He's published over 600 articles. He has over 50 book chapters, 10 books. And those of you who follow him on Twitter have been learning about his recent interest in producing wine. And I don't know if we'll have time to talk about that today, but if not, we'll have him back to talk about it at another time. So Dr. Baranchuk, it's a true honor to have you with us today and thanks a lot for joining.

Dr. Baranchuk: Thank you so much, Dr. Noseworthy and Dr. Kashou for the opportunity to we share some thoughts about the role of clinical electrocardiology with your audience.

Dr. Noseworthy: Great. Our audience I'm sure is very excited to have you with us today. I wonder if you could just tell us a bit about your journey in cardiology, how you ended up where you are today and where your interest in electrocardiology has arisen?

Dr. Baranchuk: Well, thank you. I was born in Buenos Aires, Argentina where I did my med school, my training in internal medicine and cardiology, my fellowship in EP and after working

for five years, that was coincidental with one of the subsequent major economic crisis in South America. So I immigrated to Spain where I spent one year mostly doing animal research in Fundacion Jimenez Diaz, which is well known for having advanced a lot in the field of anatomy for cardiac electrophysiologist and insights into atrial fibrillation domains. And through a connection with professor Carlos Morillo, who was at that time, Chief of Electrophysiology in McMaster University, we decided to take the chance of a retraining in an Anglo-Saxon country. So I still have problems with this language, but at that time I had major problems. So I had to go there, end up spending two and a half years in Mac. And then I decided to do a solo flight and accepted a position at Queens University in Kingston, Ontario, initially as an assistant professor. And then through a research program, I progressed into an associate professorship and finally in 2014, 15, maybe as a full professor and I had the opportunity to start the EP Training Program back in 2007 here. And I'm super happy because several graduates are practicing high level EP all around the world. And my involvement, my deep involvement with electrocardiology started from basically the same way that most of electrocardiologist or electrophysiologist enter into this field with some curiosity about the signals and understanding mathematical of formulas and trying to determine how something printed in a paper would say about the heart. And particularly that was very useful for my career as an EP to have a deep understanding of electrocardiology, which started with the old masters from the Latin American school back when I was a med student. And then I got involved with the International Society of Electrocardiology and I hosted in 2011 a meeting in Kingston, where people from all around the world came to our place and discussed cases in deep. And I've seen the passion of these guys of going after the meeting and having their real cases and at that time all printed in paper and as measuring and I found it fascinating. And then I got involved in a heavy research production on different domains of electrocardiology. And when our late Galen Wagner who was Editor-in-Chief for "The Journal of Electrocardiology" for so many years and put the journal in a high visibility place with full indexation in all databases unfortunately got sick. So he decided to make a call for an Editor-in-Chief replacement. And I have no idea Peter, Anthony, what I was getting into, I have no backup of someone saying, "Hey, this is a good candidate." So I applied for the position and my in-person interview got canceled 30 minutes prior to that and I was-- this was attached to one of the ACC meetings in the south of Florida. And I thought, yeah, of course I didn't get it that's why they canceled 30 minutes before the meeting. My only support was professor Wojciech Zareba for the University of Rochester that he saw me developing a career in the International Society of Electrocardiology. So I asked him to send a letter, but that was all. And two, three days later, I got a phone call directly to my office with a member of Elsevier apologizing for not showing up for our appointment back in Florida. And I said, well, no, I fully understand. Sometimes these things happen and nobody text me or send me any explanation, but they were very apologetic and they really wanted me to have a full meeting with the selection committee. So we planned for that and he said, "well, I hope this time you guys showed up." I think this was the time of Skype or we did it in the phone it's way before the time of Zoom and the ability for us to connect. And we had a meeting, and I was so convinced that I was not the person for the job that I was ultra natural and I said exactly what I thought, without that profile that you get when you are truly interested in getting the position because I thought I'm not gonna get it so let's be 100% honest. And to my surprise, two days later, they called me saying you got the position. So of course I was so sure that I was not the right person, that I did not negotiate any protected time in my university. So well, to make the story a bit shorter, I took this with maximum responsibility. I mean, inheriting this from Galen Wagner was to me a major sense of responsibility because as an

author and as a reviewer of The Journal myself, I knew how detail he went on many different topics. The second part was that, by then I knew who were the other applicants and there were super respectful colleagues that I had the opportunity with most of them to have a one to one interaction to say, okay, I am taking this possibility, but you are invited to join, to bring your expertise, to bring your view on how to handle this journal and see what else can we do to make it better, more inclusive, to be sure that there is female representation that all people that has interest doesn't matter what language you speak, what's the color of your skin or anything else you have the opportunity to participate. And I am now in the first few months of my second term, these are five year terms. I was delighted that I was invited to renew my term after the first five years. And this is the journal that represents both the International Society of Electrocardiology, ISE and the ISCE our brand of computerized electrocardiology, where our mathematicians, biologists, people modeling new platforms and now more importantly, artificial intelligence getting into the field, have their space and we reshape their participation. And I'm not sure if you're interested, but we have to reshape it again during 2021 for this to be applied for next year. So in 2021, there is a supplement dedicated to the to the ISCE papers. From next year on, we will have a guest editor in each one of our six volume career with a section allocated for the ISCE content. In this way, the papers, for example, today if you have a paper accepted in March or April, you have to wait until November for the supplement. I don't think this is fair. This is a field of permanent evolution. We need those papers to publish immediately. So rather than having a separate volume, we're going to collide the ISCE style papers within the regular volumes with a section dedicated to that with a guest editor that will be handling those papers. So these are good news. I'm super happy to partner with my ISCE colleagues and they bring to electrocardiology a sense that clinical electrocardiology alone cannot do.

Dr. Kashou: That's super exciting. I know for myself and Dr. Noseworthy because all of our, we see it on my research in the computerized electrocardiography. So what exciting stuff and amazing how, an opportunity kind of almost a blessing in disguise. I know we're all blessed by all your contributions and leadership in the journal. Again what have you kind of found as the Editor-in-Chief struggles or kind of problems you've faced to ensure that it remains one of the leading journals in the field?

Dr. Baranchuk: Dr. Kashou this is a great question because basically I enter to this position with the expectation for "The Journal of Electrocardiology" to have the similar impact factor than circulation of JACC.. I was super excited. I said, I can do this. I will have each one of them citing articles. And then you start learning the process and adjusting your expectations. So what I want is high traffic of readers and authors through the electronic platforms. I want the impact factor to increase. So I can't tell enough to authors in general for electrocardiology to consider site in their own work in future publications. That is a way of increasing visibility and to securing that Elsevier will continue to fund this journal because without their commitment we have nothing. However, I admit that electrocardiology has a specific audience, mostly composed by cardiologist, by computer science individuals interested in heart electrical signals and by electrocardiologist and electrophysiologist. And our competition is fierce. 'Cause you still can publish a wonderful ECG in circulation. So how am I going to convince if you have that great case Anthony, to send it to us at 1.5 impact factor versus send it to circulation at 20 impact factor. So once you learn, what is the role and the place of your product in the market, then you can make it better. But that took me years of adjusting my expectations and realizing in which

segment of the audience we are going to work. And from there to be creative to attract individuals to our field. And in that and you highlighted this, the role of social media and having a social media editor in the journal who is young, who is totally familiarized with the different platforms. It created a new perspective for us because now the circulation during, for example, the pandemic of people through the website, has tripled than before the pandemic. And that had to do with a coincidental explosion of our presence in the social media to the point that I am super happy to see that other journals with much higher impact factor are copying the model that we established three, four years ago in social media. And that made us very proud. So after a few years, so now a med student in Australia passed the torch to Kiera Liblik who is a Queens med student that is taking care of building up our presence basically in Twitter, which has been transformed as a vehicle to disseminate knowledge. And the cool part is the papers are being discussed not only during the meetings, not only during the presentations of people that take those papers to be discussed, but also in the social media and with their limitations, I think that it help us bring in high level knowledge to different parts of the world that may have less access to other formats. Remember that the journal is a paid journal. And for example, one of the good things is, through the International Society of Electrophysiology website, we've been able to negotiate without severe the two papers of each volume that were not open access. So you have to pay to have access to them. Through the website, you can access the PDF for free that may be perceived as a small gesture, but for a company that makes money selling the journal, giving us access for us to select the two papers that we think they need to be highlighted, it's a major thing that has increased the traffic and the download of those papers tremendously.

Dr. Noseworthy: You know, watching the engagement with this material on social media, particularly on Twitter has been amazing. And the amount of interest that this generates is incredible. It's remarkable to me that the ECG has not changed much over decades, but it still fascinates us. And I will wonder if you go back to your early days and how it drew you into cardiology, what do you think it is about the ECG that's so fascinating? And why has it had such an enduring role in medicine for so long?

Dr. Baranchuk: Well, thanks Peter. That's a lovely question. So first of all, we have to remember that as we speak, the most used at the world level cardiology diagnostic tool is the surface ECG. There will be thousands of more ECGs than cardiac MRI's and angiograms than across the world. So the ability of the ECG initially when you were talking about the early times to be associated with the diagnostic capacity for a myriad of conditions, conditions that can be cardiovascular or let's say cardiac and non cardiac, for example, the value of ECG for diagnosis of pulmonary embolism has been demonstrate profoundly through literature. And there are several conditions that can be diagnosed, suspected or to guide initial management based on the simple surface ECG, but the evolution of the ECG move from the diagnostic capacity to the prognostic capacity. So now with an ECG, I can predict if the CRT that you're going to implant later today is going to have an impact on the evolution of your patient. I can tell you if your patient got limb claudication. This morning, I had the opportunity to present Cardiology Ground Rounds for the John Hopkins University before coming to you guys. The ECG can tell us whether in the longterm the patient may require a pacemaker or not. So, and it could be spending minutes and minutes with you telling you in which capacity the ECG now is prognostic. We give an antithrombotic drug and we do an ECG or cardiac monitoring. To determine whether the patient is responding well or not, I give you a specific antithrombotic and we measure the QT. So we move from

the diagnostic angle to the prognostic angle. So, and that I think is one of the keys of why it persisted over time. The second thing that needs to be mentioned is the simplicity of performing an ECG. And I don't want to be pejorative to the great technicians that put the electrodes in the right place, and they take the perfect ECG without interference, right? They deserve credit for doing that, but between you and me, it's much easier to teach somebody how to get a proper ECG than how to do a proper angiogram or a proper electrophysiology study. And the third component is the reproducibility. So if we compare your EP study to mine, we will find differences. We both trained in North America and you may include some measurements that I don't include and vice versa. However, for the ECG, there is a 99% chances that we obtain the identical ECG if we are both applying the proper technique. And finally, and before is transmissibility. Today you have a paramedic arriving to scene, getting an ECG, why complex tachycardia transmitted this to you? The patient arrives to your ER already in sinus or in tachycardia and the plan is there. The patient gets a VT ablation done within 24 hours. So it is a common practice in my life to receive ECGs from all around the world every single day. And sometimes I say, "Hey, I'm happy to provide a free, friendly opinion, but you know what, the quality of this kind of ECG doesn't allow me to say much. Can you prove that before I provide my opinion?" And sometimes people get mad and say, "Hey man, I'm asking you, you know what, just send me a good one." But the truth is we can have an ECG in a fraction of seconds from any part of the world and we can guide provide opinion. So these features I think, are the reasons for the persistence of the surface ECG over 100 years, despite the evolution of imaging in cardiology. We have echo, we have strain, we have cardiac MRI, we have CT angio and nothing seems to replace the old-friend surface ECG. At the same time also, Peter, I recognized that there is some stuff that didn't evolve in the same direction. We still need better filters to have access to more complex ECG features that could help us distinguishing incomplete right bundle branch block from ARVD or things like that, where you need a more precise imaging on the filter. And the second thing that did not evolve at the same pace of other features are the automatic detections. And I know this is in each EP lab in the world, in each EP group. It's part of our teaching. I am sure that Anthony has heard this from you several times, do not rely on the measure of QT measure yourself, do not rely on the P wave duration, do it yourself because still the automatic detection, and there's lots of research in this domain is suboptimal. It was not able to replace the human eye, the advance of semiautomatic calibrates where now they became part of our daily practice. I still walk with my white coat and a calibrate in my front pocket, that's part of my tradition. I want to be perceived as the guy that all of the sudden will take the calibers do some measurement, right? But the truth is that in clinical practice, 85% of my ECGs are digitalized. And I use semi-automatic calibers to do measurements if necessary. So major advances, still room to improve. The point is where will artificial intelligence, where is going to be all this knowledge in 50 years from now? And that is a question that remained to be answered, or maybe we can meet not in 50, but in five years and to see where are we at, once artificial intelligence start coming into our clinical practice.

Dr. Kashou: I wish I could replay that all the time maybe I should do that before I go to bed, because I always talk to my wife about the ECG. And some people think I'm crazy that I wanna make a career out of it, but you give me hope that there's still a future for it. And you know, now that we are even getting different forms of actually recording electrical signals from the heart, it shows that the field still has a long way to go. And that cardiac bio-signal, the signature from the heart does not seem to be ever going away. Now, before we end, I do wanna kind of get your

thoughts in, what are the research that you're taking on today? What excites you? I've read a lot of your work and you know if you could end, we mentioned a lot about a social media. I want our audience to know where they could find you to ensure that we help distribute like-minded topics to our colleagues, because you mentioned, how do we know where to submit? Well, your journals one of my favorites, because I wanna submit my work to a audience that's gonna read it. And we need to-- my goal is to always bring in more like-minded colleagues to join it and join in on the excitement. So if you could just mention a little bit of what you're doing now, your research, I know you have your hands full with the editor position and where we could find you.

Dr. Baranchuk: Well, thank you very much, Anthony, for this question. First, I have to say that I echo your comments. So I have a personal experience, when we published in 2017 in circulation our paper on alcohol and cardiovascular health, I was ecstatic because we got 2,500 downloads in the first three months. But then the conversation invite me to do a podcast similar to this one, and that was taken by the Washington Post. And they did a full two pages, central two pages on the topic and quoting some of the citations from the paper, et cetera, et cetera, and that got 75,000 reads in two days. And then you ask yourself, what do I want as a researcher, as a person of science trying to advance knowledge? Do I want to talk to the 2,500 people that is committed to learn about this and to keep moving? Do I want to talk to the 75,000 people from the community that may benefit from learning some aspects of what you do? And I think that it is multiple hat approach. What brings you to positions of leadership as Peter is now? Is investing the same passion and energy to teach your five EP fellows or your 20, 25 you are in a big center, 100's of cardio fellow or teaching the community or teaching at Inter-American level so you can go with your perspective through the continent. And this has amplified the way that I see promoting high quality science either from my lab or from your lab. So or from any lab that is producing high level science is, I don't think that I want to target this to the 200 guys that love the ECG as I do. I want to have every cardio fellow, every EP fellow fill in the same passion in the ECG and constructing their knowledge about the heart electricity with a good fundamental basis. And that comes from the understanding of the ECG. I have no doubts that you can have a perfect abalator for atrial fibrillation, a guide that mechanically can reach the LV summit to abalator PVC. However, that PVC you can't recognize where it's coming from by reading the ECG. So the ECG is your fundamental basis to construct the proper career in electrophysiology and topics that had to do with electricity of the heart. So if I can contribute to be sure that electrocardiology persists as a fundamental basis for any cardiologist, remember recognizing an ST elevation, in an small town of Arizona can lead to saving that life and recovering that myocardium if you do a PCA within 120 minutes, if that person is fooling around with an ECG with ST elevation because it's not familiarized with that pattern, that life is over. So if we engage into this educational idea that the ECG plays a major role in identifying conditions that internist, neurologists, cardiologist, electrophysiologist will use to develop their clinical practice and their academic career, I think that we can secure the that the ECG is alive for the next 50 years as you were posing in your email. I am delighted to see young individuals taking the torch. We have a position in The Journal of Electrocardiology called junior editor. The current junior editor is Goksel Cinier from Turkey. And initially we take papers together. We go through the papers together. We identify what papers should not be sent for peer review and being evaluated for desk rejection. What papers should go into peer review? We review our list and how to contact worldwide reviewers to understand this process, and once the junior editor understands how to play this role, then they get independency. And to the point that now I may get an email in the

middle of the night, because of the discrepancy of time from Goksel Cinier saying, Dr. Baranchuk you didn't send me anything in the last 10 days. I say, okay, well, hold on. It's coming. So and through this opportunity, I want you to pay attention to that, Anthony, because it's so encouraging to see a young fellow wishing to develop part of his academic career in this field and domain, that I'm pretty sure that after Goksel completes his position, and you're still in your early time of your career, that is something that you may enjoy joining and doing yourself. So I am publicly here committing you to, sorry, someone is going to accuse me of making business live. But I think it's a perfect opportunity to have you signed for the near future. How's that?

Dr. Kashou: Well, I don't know what to say. That was not expected or planned.

Dr. Baranchuk: But say yes and then you negotiate.

Dr. Kashou: Yeah. You know, This is one of my passions. And when we get together with Dr. Noseworthy and someone like you and the whole crew, it's so fun to just rub ideas off each other and see how we can actually advance the field to ultimately benefit our patients. What an honor. I always feel like I'm standing on the shoulders of giants. Even when I teach, I feel like, yes, it's amazing to do so. And you love to see the joy in those when it finally clicks, but these are things I'm teaching because I've learned from those that have kind of spearheaded the field. Thank you so much. Dr Baranchuk, where can everyone find your work?

Dr. Baranchuk: Well, "The Journal of Electrocardiology" has its own website, and I invite you the audience to go there, to navigate the website, to see what patient what papers are there, you know, open access that can be access for free. Then @jelectrocardiology is the hashtag for Twitter to see what the journal is posting, @adribaran is my personal Twitter. And I invite people to follow and we'll insist on many different topics, both in English and Spanish. So also I try to maintain a balance when I talk to different parts of the audience. There is something that I want to highlight before living you guys. Anthony, you mentioned the role that your mentors have played in shaping the cardiologist that you want to be. That to me is a tremendous final message for your audience. Keeping in mind the people that has made different but significant contributions to the doctor that you want to be is essential for you then to transform in the mentor for those younger individuals that are going to be learning from you. I can't emphasize enough how important is in your career to identify that people that is going to pave the way for you, that is going to be there for you when you have concerns, when you have doubts, when you have to decide important steps in your career, important steps in your academic profile, right? Is this paper ready to be published or I'm jumping too soon, right? So thank you for highlighting that. You are in great hands there in the Mayo Clinic. And I'm sure that Peter would also recognize the role that his mentors play in the developing of his own career. I tried to maintain direct contact with my mentors today during the presentation for the Johns Hopkins. I got a phone call from Barcelona, from professor Bayes de Luna at his 86 years of age. He continues to communicate with me every day and to be sure that I understand how to do things. So I cannot emphasize enough your concept, Anthony. I'm super proud that you brought this up. Thank you.

Dr. Kashou: No, thank you so much. And yes, I couldn't leave here without saying Dr. Noseworthy I owe a lot to him and all my work I've done over just the few years he's certainly

couldn't have asked for more. So the way we record and analyze cardiac bios-signals continues to evolve, and there's no evidence of innovation in the field slowing down. "The Journal of Electrocardiology" remains a premier resource documenting advances in this exciting field. Dr. Baranchuk what an incredible work you've done and continue to contribute to the field. You're an inspiration to myself and to many. On behalf of our team, thank you for taking time out of your day to join us. And thank you, Dr. Noseworthy for helping out with this. It's been a true pleasure to share this moment with both of you.

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