

Episode 12 - Point of Care Ultrasound (Live at Ohio ACP)

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Host: Dr. Christopher Chiu, Director of Education, Division of General Internal Medicine, The Ohio State University

Guest: Dr. Paul Shaniuk, Director of Inpatient Medical Services, Louis Stokes Cleveland VA Medical Center

Episode Summary:

In this episode of Everyday Medicine, hosted by Christopher Chiu, Dr. Paul Shaniuk discusses Point of Care Ultrasound (POCUS) during the Ohio chapter of the American College of Physicians' Annual Conference. Dr. Shaniuk, a hospitalist at the VA Northeast Ohio Healthcare System, explains POCUS, which is performed by clinicians at the bedside for real-time diagnostic interpretation. He describes the evolution and significance of POCUS compared to the traditional stethoscope. The conversation covers practical applications, including assessing dyspneic patients, cardiac evaluation, and volume status assessment, as well as the differences between POCUS and formal ultrasounds. Dr. Shaniuk also talks about how clinicians can obtain training and credentialing in POCUS, the integration of POCUS into daily practice, and the importance of developing robust POCUS programs within medical institutions.

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Show Notes:

Introduction

In this episode of Everyday Medicine, Dr. Christopher Chiu interviews Dr. Paul Shaniuk, a hospitalist and POCUS educator at the VA Northeast Ohio Healthcare System, about the evolving role of point-of-care ultrasound in clinical practice. Dr. Shaniuk draws an interesting parallel between the historical introduction of the stethoscope and today's adoption of POCUS, suggesting that ultrasound represents the next evolution in bedside diagnostic tools.

Understanding POCUS vs. Traditional Ultrasound

Point-of-care ultrasound differs fundamentally from traditional ultrasound studies in its workflow and application. While POCUS doesn't replace formal ultrasound studies, it serves as an extension of the physical examination, performed and interpreted in real-time by the clinician at the bedside. This immediate availability not only aids in rapid clinical decision-making but also enhances the doctor-patient relationship by providing an opportunity for direct visualization and explanation of findings.

Practical Uses in Hospital Medicine

In the hospital setting, lung ultrasound emerges as the most frequently used application, particularly in evaluating patients with acute dyspnea. POCUS can readily identify conditions such as pneumothorax, pleural effusions, pulmonary edema, and pneumonia with higher sensitivity and specificity than traditional stethoscope examination and sometimes even chest x-rays. Cardiac POCUS follows as the second most common application, useful for assessing ejection fraction, identifying severe valvular abnormalities, and detecting pericardial effusions. The addition of IVC assessment provides valuable information about volume status, particularly helpful in managing heart failure patients.

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POCUS in Outpatient and Primary Care

The applications extend into the outpatient setting, where POCUS proves valuable for:

- DVT assessment, particularly useful for Friday afternoon presentations
- Musculoskeletal examinations and guided injections
- Cardiac and pulmonary evaluations in clinic
- Procedural guidance for various interventions

Training and Credentialing

For practitioners interested in developing POCUS skills, several pathways exist:

- Medical society programs (ACP, SHM, CHEST)
- University-based courses (e.g., Cornell's week-long program)
- Local institutional training programs
- Portfolio development with supervised image acquisition
- Quality assurance programs with regular review

Building a POCUS Program

Implementing POCUS into clinical practice requires careful consideration of several factors:

1. Equipment acquisition - from handheld devices to full-scale machines
2. Institutional approval and protocols
3. Image storage and documentation systems
4. Quality assurance programs
5. Ongoing education and credentialing

Integration into Clinical Practice

While some clinicians advocate for universal POCUS use (similar to stethoscope examination), a more targeted approach focusing on specific clinical questions may be more practical in busy clinical settings. The key is developing a systematic approach that enhances rather than impedes workflow while maintaining high diagnostic standards.

Future Directions

The field continues to evolve, with potential inclusion in internal medicine board certification, similar to emergency medicine and critical care. The growing adoption of POCUS in residency programs suggests its increasing importance in future medical practice.

Conclusion

POCUS represents a significant advancement in bedside diagnostics, offering improved diagnostic accuracy while maintaining the personal connection of bedside evaluation. As programs continue to develop and training becomes more standardized, POCUS is likely to become an increasingly integral part of routine medical practice across both inpatient and outpatient settings.

Transcript:

This transcript has been edited for clarity

[00:00:00] Introduction to Everyday Medicine

[00:00:00] **Christopher:** Welcome to Everyday Medicine. I'm Christopher Chiu. This is a podcast from the Division of General Internal Medicine at The Ohio State University, where I'm the Director of Education for the Division. This podcast is focused on primary care and aims to provide current information to medical professionals from experts in Ohio.

We're graciously sponsored by collaboration with the Ohio chapter of the American college of physicians. And with that sponsorship, I'm actually here live at the Ohio chapter's Annual Conference.

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[00:00:37] Introducing Dr. Paul Shaniuk and POCUS

[00:00:37] **Christopher:** Here at this conference, I recently went to a great discussion and talk by Dr. Paul Shaniuk on POCUS. And I think that the title of his talk was the bedside diagnosis journey from stethoscope to POCUS. For those who don't know what POCUS stands for you're going to learn from this episode. Dr. Shaniuk is a hospitalist and the Director of Inpatient Medical Services at the VA Northeast Ohio Healthcare System in Cleveland, Ohio.

He is board certified in Internal Medicine and Pediatrics. He serves as the core POCUS educator for the UH CMC Internal Medicine Residency. His academic interests include medical education, quality improvement, clinical problem solving, and high value care. Outside of work Dr. Shanik. enjoys spending time with his wife and four children playing piano, grilling, following Cleveland sports, hiking, biking in the Cleveland Metro parks. Welcome to the show.

[00:01:28] **Paul:** Thanks. Appreciate it.

[00:01:28] **Christopher:** So can you first, introduce yourself and then give us a brief overview of what you talked about during your session here at ACP.

[00:01:34] **Paul:** Sure. I'm a hospitalist. I initially was a Med-Peds hospitalist. I've shifted to just internal medicine. I work at the Cleveland VA and the Cleveland VA was really lucky to have a tremendous amount of ultrasound resources. So POCUS stands for Point of Care Ultrasound, which is essentially ultrasound done by a clinician at the bedside with real time interpretation. I got phenomenal training in Point of Care Ultrasound and then started teaching it. And teaching anything makes you better at it. And I just really started to get interested in the topic.

[00:02:03] **Christopher:** Excellent. When you first start talking about um, POCUS, you start off with talking about the stethoscope and I think most of us who are history snobs about medicine, you start off talking about René Lennec and his initial iteration of the stethoscope. Do you mind explaining why you started off with that story and that analogy to where we are today?

[00:02:20] **Paul:** Yeah. The reason I mentioned the story of Dr. Lennec and his stethoscope, which is a fascinating story that I don't know if we have time to go through, but essentially he innovated and developed a new medical technology at the bedside.

And this became, and believe it or not, like any technology, it was criticized at the time for adding something between the physician and his or her patient. The reason I mentioned the stethoscope is because I believe point of care ultrasound represents a similar technology. It's something that adds a physical exam adjunct, a tool that we can use, a new technology. I do think that the stethoscope is due for an upgrade, and I think POCUS is that upgrade.

[00:02:58] **Christopher:** So one question I think people ask is what exactly is the difference between POCUS and say, I'm going to order a technician to come do an ultrasound and have that read by a radiologist. How do those differ in terms of application?

[00:03:11] **Paul:** Yeah. So the biggest difference is essentially the workflow. And I don't really think POCUS replaces formal ultrasounds. The POCUS is an extension of the physical exam. It's something done by the physician or the clinician at the bedside with real time interpretation instead of, especially as a hospitalist, or as a primary care doctor, you're doing it in the room as opposed to sending the patient down or out to get an ultrasound done by a sonographer read by a radiologist.

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If you're looking for a quick answer to help. Basically change your differential diagnosis or make certain diagnoses more or less likely. I think POCUS is a faster tool. That's a lot simpler. And, it also provides some doctor patient bonding. I think it gives patients, you spend a little more time with them.

And I think it's a chance to do some teaching and show them the images. And a lot of them think it's interesting to see their heart or their lungs or things like that.

[00:04:04] Practical Uses of POCUS in Hospital Medicine

[00:04:04] **Christopher:** Yeah, I agree. So basically you're saying it keeps you by the bedside, which is, I think where most feel we're actually doing the most amount of work and we're able to develop better rapport with them.

Can you tell me what are your favorite applications of POCUS and where we might find it? What are the great go to as a generalist, whether I'm let's start with as a hospitalist.

[00:04:23] **Paul:** As a hospitalist, I actually use POCUS of the lung probably three times as much as any other application.

And that's because, really, I want to do this in a patient who's dyspneic most of the time. I'm using POCUS a lot in acute dyspnea or in patients who I know they have heart failure when I'm tracking response to diuresis. So being able to quickly look at a patient's lungs and you can diagnose pneumothorax, you can diagnose pleural effusion, you can diagnose pulmonary edema, you can diagnose pneumonia, with a fairly high sensitivity specificity and much, much higher than the stethoscope, which we can talk about. And even higher than x-ray in some cases.

So the opportunity to really narrow that differential diagnosis, especially certain patients, physical exams challenging, whether due to the environment or body habitus or just the noise of the room, auscultation is less of an effective tool, I think, than being able to physically see the various findings.

So I use lung POCUS most probably followed by cardiac POCUS.

[00:05:24] **Christopher:** So with lung POCUS, you're, mostly looking at the back, but maybe some, interior superior views of the lung through that you're able to see whether there's fluid, whether there's lack of lung, whether there's pneumothorax. So tell me a little bit more about cardiac POCUS and how that might be useful in the inpatient setting.

[00:05:40] **Paul:** So in the inpatient setting, I use cardiac POCUS, not necessarily to replace echo. I actually had a conversation with the chief of cardiology at my institution and he was like, hey, you're not replacing echo. I'm like, no, I'm actually not. This is focused cardiac ultrasound. This is not echo.

And so what I'm really doing is similar to the stethoscope, you're trying to get a sense of, does the patient have heart failure? Do they have a murmur? I'm looking for things like unexpected or severe heart failure. So you can check a patient's ejection fraction. You can rule out major valvular abnormalities, although I don't feel confident saying mild to moderate, but severe.

I think I feel confident. And then pericardial effusion being a big thing. And we have had some clinical surprises on our wards where we have patients who we thought had heart failure, And we looked at their heart and we found a moderate to large effusion and we're calling cardiology to help out. So those are the

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ways I use cardiac POCUS would be to look at a quick look at the EF and rule out other serious cardiac pathologies.

[00:06:39] **Christopher:** And in a similar vein as the cardiac in your talk, you also looked at some IVC as well. Maybe that helps you with some volume status in conjunction with your EF as well.

[00:06:48] **Paul:** So looking at the inferior vena cava and essentially looking at the size and the collapsibility with spontaneous respirations, that helps you sort of estimate the right atrial pressure, which we sometimes use as a surrogate marker for volume.

I'm always looking for something to help me figure out the patient's volume status. There are studies that show that even experienced cardiologists, nephrologists struggle when it's not obvious hypovolemia or hypervolemia. IVC is a bit of an imperfect tool for volume, but it does help when taken into account, especially at the extremes.

If I have a patient and they have signs of pulmonary edema on their lung POCUS, they've got heart failure with reduced ejection fraction and a large IVC. That to me is very consistent with ADHF, acute heart failure.

[00:07:33] **Christopher:** One thing that I've been seeing ultrasound used for most recently is there was a study coming out looking at using ultrasound for JVP. Is that something you have used in your practice?

[00:07:43] **Paul:** That is. So actually, I do a lot of teaching at the VA and that your students sometimes teach you things.

And so one of my students at one of the hospitals at the VA. Had been really excited about uJVP or ultrasound JVP and he really got me excited about it, too, because I do struggle to estimate JVP. So when I'm doing a volume assessment, I'll usually look at the IVC and I'll look at the JVP with ultrasound.

[00:08:05] POCUS in Outpatient and Primary Care

[00:08:05] **Christopher:** Going into my primary care mode, I know this may not be an area that you're as familiar with, but obviously you're familiar with POCUS and you do a lot of teaching with your residency, they will obviously be in the clinic as well. Where are some areas where you think POCUS could be used for outpatient practitioners?

I know for me personally, I've seen POCUS used for looking at DVTs. You have that Friday afternoon patient, you're trying to figure out, do I need to send to the ED or should I just do an ultrasound as an outpatient that can wait a couple of days? I think heart and lung also fantastic.

As you've already described, and then, from a diagnostic standpoint, sometimes some of the soft tissue stuff might be super useful. Are there any other places where you would consider that useful for outpatient practitioners?

[00:08:43] **Paul:** For outpatient, primary care cases, definitely think about DVT, exactly what you mentioned. You have faster diagnosis, maybe being able to start anticoagulation faster and holding off on getting the ultrasound for a few days, although I would still get the formal ultrasound. Musculoskeletal is what a lot of my colleagues talk about. I have a colleague that does knee and shoulder injections in primary care, and she's interested in learning this.

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She feels comfortable with physical exam landmarks, but wants to get better and use POCUS. And then, I do teach some primary care residents in the primary care track, and we talk a lot about lung and heart because you use your stethoscope in the clinic, you can use the ultrasound in the clinic. It's the same sort of thing just to help you really make better diagnoses with your exam skills.

[00:09:24] **Christopher:** And of course, I think we haven't talked about this much because I think this is where most of our trainees know the most is using ultrasound in terms of interventions like placing their central lines, placing their arterial lines. We already brought up some musculoskeletal injections and stuff like that.

Are there any other interventional areas which aren't so obvious that we may be able to use POCUS.

[00:09:44] **Paul:** Yeah, so I presented in the lecture, my story where I was terrible at A lines and somebody, one of my colleagues taught me to use POCUS for arterial lines, and then I got a lot better.

As a hospitalist, I do a lot of paracentesis, I do a lot of thoracenteses, and I do arthrocentesis and your safety margin goes up significantly when you use POCUS.

You can look not only at the pocket, I think we've all been fooled by a protuberant abdomen and we think there's a lot of ascites, there actually isn't a lot. And you can also look at blood vessels to actually see, okay, I think that there shouldn't be any blood vessels there, but you can actually look and see if the anatomy is tortuous and things like that.

So I think paras and thoras, certainly the inpatient side, are ways you can use POCUS to make procedures safer.

[00:10:26] **Christopher:** I think one other procedure that I remember learning when I went to a workshop with AIUM, and we'll talk about workshops and training in a bit, was doing ultrasound guided LPs. Is that something that you employ in practice?

[00:10:40] **Paul:** So it's not, I got training in ultrasound guided LPs also through SHM, but I have struggled to incorporate that into my practice. We don't do a ton of LPs at my hospital. There are protocols for it. It's just something I haven't gotten good at yet.

[00:10:57] Training and Credentialing in POCUS

[00:10:57] **Christopher:** All right. So now we've talked about how cool POCUS is and hopefully we've got some people interested if they're not already interested in doing POCUS.

I want to start talking about some of the practical aspects. Let's say we have a listener or someone who's interested in POCUS. How does, and they've never had any experience with it outside of, they went through training and they know how to place their IJs by ultrasound, but they weren't really trained on a bunch of these other diagnostic procedures. How does one go about getting quote unquote certified or credentialed or competent in these areas?

[00:11:29] **Paul:** I'm an associate program director and a lot of residencies are incorporating POCUS in their residency training. Like, if you look nationally, a lot of the residents are getting a lot of this training in their curriculum.

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For people like us who graduated without this training, A lot of the medical societies have programs for it. I was really fortunate because the VA had something local in Cleveland and I was able to get trained locally, and the VA has its own pathway for credentialing here in Cleveland. The American College of Physicians has workshops. Cornell University has a week-long course that's really good. I know some of the faculty. And SHM and CHEST have a very robust Certificate of Completion. I think each of those has various levels of work that's done. I feel like SHM/ CHEST is almost like the gold standard, which I actually have personally not done, because the VA has a pathway.

So if you look around all, most of the major societies within internal medicine, you mentioned AIUM, I think they have one too, have, workshops at the bare minimum, or even like full on courses where you can learn and then you go back and you make a portfolio and you have to practice, and usually you have to tell your patients like, hey, I'm doing this to get better at it and get their permission.

[00:12:35] **Christopher:** Yeah, that was going to be one of my questions because I think one thing that happens is we have a lot of residents who are trained to at least a degree, oftentimes there may be only a couple of internal medicine practitioners, but majority of them are probably critical care, the critical care attendings, because they're always using POCUS in the ICUs, I feel like.

And then when they go to, say, outpatient procedures, or other places, then they have no faculty that are even trained. So even if they pull out the POCUS, they have no way to do any QA or whatnot. So I definitely feel you in terms of trying to, I think our biggest issue right now is getting faculty trained up so that they can continue to precept and supervise residents.

And so we end up with this, like they get trained and then they fall off a cliff and they never continue. And now they've been attendings for 10 years and then they haven't touched POCUS again. And so I'm glad to hear about these other pathways. Can you describe a little bit what's.

So you said a little bit about portfolio, so it sounds like many of these workshops you may be going for a half a day workshop or even several day workshop. You get trained up. We have hands on with probably standardized patients and maybe some high fidelity models. And then building a portfolio.

So what does a portfolio look like? And some of these pathways, how does that portfolio then play into the next step?

[00:13:52] **Paul:** Right. So it depends on your institution, depends on the technology you have. But for example, if your hospital program has POCUS, all of these machines have the ability to save images.

And then you can extract those images to a secure server, whether it's your institutions, just their personal drive or other security. The VA has a secure server, it's the government. So we got to make sure that everything is approved and with IT.

So for example, the credentialing I went through, I had to do a certain number of scans. So I had to scan, I think 20 hearts and, several different lungs and abdomen and save those images, and then I had to send them to a colleague who already was credentialed, and he actually went through SHM and CHEST, and he did the QA.

So then he signed off and said, yes, Paul knows what he's doing. He can do the, and then so I have to go through an ongoing credentialing process at my institution where twice a year I have to get reviews. If you're going to practice this at the bedside, there needs to be quality assurance, there needs to be the ability to certify training, which it's interesting because we don't do that with the stethoscope, we take

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people at their word when they say, yes, I heard a murmur, but again, it's a technology, you have to be able to save the images, you have to be able to have somebody available to over-read them.

[00:15:07] Building a POCUS Program

[00:15:07] **Christopher:** You talk a little bit about, what are some other barriers that providers might come across in trying to start developing a POCUS practice by the bedside?

[00:15:17] **Paul:** Yeah, I think it takes years to develop a POCUS program, so if you're working at a clinic or a hospital that doesn't have an ultrasound, the first step is to get an ultrasound. Even if you have to check with your institution, make sure they're okay with you doing what I call educational scans, which are scans just for your own skill set. You can't use those images clinically.

So if you find, say, a pericardial effusion accidentally, like you've got to get an echo and you've got, you have to say, you don't document that you did that. So the first thing is you get an ultrasound, right? You need to make sure that you have ultrasound. I have colleagues who are not as lucky as I am where their institution didn't have one, and eventually they just decided to buy one. And there's various models out there, which I won't mention the brands or the names, but they're easy enough to find. And they all have their pros and cons. And so if you have to buy your own, a handheld is usually a good start because it's something portable.

[00:16:06] **Christopher:** Yeah. I think that's one of the big areas that, Places that don't already have a pathway like you are fortunate enough.

I think many other places are at least working on trying to get this. I think even going through posters at this session, there are even some students and residents here talking about their different POCUS curriculums as they're still developing all their different institutions.

[00:16:24] **Paul:** I hope it becomes part of the Medicine Boards, like ER and critical care, it's part of their boards. You're board certified in those fields. My hope is that one day it'll be the case for Internal Medicine. I don't know if that will happen.

[00:16:36] **Christopher:** I have quite a few EM colleagues and I've been talking through that with them throughout the years.

They were sort of where we were 10 years ago and that's why they even have their own ultrasound fellowships, which now that they've expanded the use of ultrasound in their regular residencies, those ultrasound fellowships are going unfilled. In fact, my Internal Medicine and Family Medicine colleagues are actually.

Building some of those, they're applying for them, right? They're applying for those fellowships, which is cool. So I guess that's another pathway that people can think about if they're still early in their training.

One thing I wanted to ask you about was looking at using POCUS as not being a substitute for formal ultrasound or formal echo, but using that more as an extension of the physical exam or other testing. You sort of brought up a little bit about sensitivity, specificity. It's still a test that you really need to think about using at the right time.

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Can you speak a little bit to that and then also, how do you routinely integrate into your practice? Because I remember you answering someone's question that you don't POCUS every single patient at the door. But you do have a colleague who does. So can you talk about that a little bit?

[00:17:40] **Paul:** Yeah. So I think that to answer the first question about the rational clinical exam, right? And so I think everything we do, any procedure, whether it's a physical exam, a POCUS, a CAT scan, a test, it has a sensitivity and a specificity. And, a lot of these things I don't know, so I order the troponin for an MI, like I think I know the sensitivity specificity, but things like elevated JVD is that how sensitive or specific is that?

So ultrasound is the same. And in a lot of cases it has higher specificity and sensitivity than a physical exam. And in a lot of cases, it's similar to a CAT scan. So it's like for a pleural effusion, for example, a CAT scan is a gold standard test, but it comes with about two years of background radiation exposure.

Whereas ultrasound, you're doing it at the bedside. You still have very high sensitivity, specificity, and you get to avoid the CAT scan. When I was a resident, I had to get a lateral decubitus chest x-ray to see if it was quote unquote free flowing, but before anyone could do a thora, now we have ultrasound.

We don't need to do that. But yeah, to talk more practically, I jokingly needle my colleague whose rounds are about a lot longer than mine because he scans every patient and he does that because he thinks it's as important as a stethoscope. And he said, if I'm listening to everyone's heart, I need to POCUS everyone's heart at me.

I'm a little more focused on how I do. I'm thinking about specific diagnoses. Like I'm thinking about, or symptoms even like dyspnea, heart failure, pneumonia, and there's other applications too, like abdominal and things like that, but I really found that it's impossible to POCUS anyone, and so my residents insist that rounds are done in about two hours, maybe two and a half, and you have to try to do a lot on rounds.

Are there some patients that I'll go back to later in the day with or without students in ultrasound. So

[00:19:24] **Christopher:** I think you bring up a funny point and you know it's outside this episode, but yeah, do you really need to listen, put the stethoscope on the heart every single day? If they're here for other reasons, they have no other issue.

That's another test that your sensitivity drops if you have a decreased pretest probability. Thinking of every physical exam skill as also having a pre and post test probability, sort of something to think about as well.

[00:19:45] **Paul:** Yeah, there's a great series, the JAMA rational clinical exam, that if you're a nerd like that, like maybe you are, and I definitely am. It's really fascinating to read that.

[00:19:54] Final Thoughts and Takeaways

[00:19:54] **Christopher:** So looking back at this Ohio ACP conference and some of the questions that you've been asked. What are your favorite takeaways that you want to leave our listeners with?

[00:20:01] **Paul:** Yeah, so I think a lot of the questions I received were like I set out with an idea of hey, I think you need to develop a program like this. I think this is really important and a lot of the questions I didn't need to convince a lot of the audience like I felt like there was no need to convince.

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Many of the people who were there. They were asking a lot more practical questions like, how do you build this? Like, how do you round it? And to me, that's really exciting. Cause I've been doing this work for about five years. And to see that evolution into instead of saying why are you doing that? To like, Okay. I know we have to do it. How do we do it? To me, that's exciting. And those are the questions I received were very specific. Tell me how you guys built your program. It was really exciting to see that evolution.

[00:20:45] Closing Remarks

[00:20:45] **Christopher:** Well, thank you again for spending a little time this afternoon to speak with me. I think our audience will really enjoy this talk and hopefully we've convinced some more POCUS converts.

[00:20:52] **Paul:** Yeah, I hope so.

[00:20:57] **Christopher:** And for the rest of your listeners, Thank you again for listening to another episode of Everyday Medicine, OSU's Division of General Internal Medicine. Please consider subscribing to our feed on your favorite podcasting platform so you don't miss out.

You can also get our show notes and transcripts soon from our Division web page at <http://medicine.osu.edu/GIM>. This has been Chris Chiu. Thanks for listening along and I'll catch you on the next one. Have a good day. Bye.