

## Interventional Cardiology and Investigation Into New Procedures

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♪ [music] ♪ - [Dr. Ransohoff] Hello, I'm Dr. Kurt Ransohoff, the CEO and chief medical officer here at Sansum Clinic.

I'd like to welcome you to "Sansum Speaks," a speaker series presented by the Sansum Clinic Women's Council led by Julie Nadel and Bobbie Rosenblatt. The series demonstrates our commitment to providing not only the highest quality healthcare, but also informing and educating our community on important healthcare topics. These talks will be filled with valuable information presented by some of our most distinguished healthcare providers.

The more you know, the more you will get out of your healthcare experience at Sansum Clinic. So again, thanks for joining us. ♪ [music] ♪ Hello. We are here today to talk with one of Sansum Clinic's highly trained cardiologists, Dr.

Michael Shenoda. We're going to talk to him about his cardiology work and his important research. Dr. Shenoda joined Sansum Clinic in 2011. He is board certified in both internal medicine and cardiology and interventional cardiology. He grew up in Los Angeles area and then went eventually to medical school at Michigan State University.

And then he wised up and came back to sunny Southern California, where he did his residency in internal medicine at UCLA before going on to Cedars-Sinai in Los Angeles where he did his fellowship in cardiology, and then came back to UCLA to do interventional cardiology. So, Mike, welcome.

So glad to have you here. Let me start off with just pointing out that you are in a really intense surgical specialty, which means your days are really heavily focused on clinical problems. How did you get interested in cardiology?

- [Dr. Shenoda] Well, thank you, Kurt, for that wonderful introduction. You know, I was always interested in human physiology and that's what drove me to my biology major. And then when I went to medical school, I was even more interested in cardiac physiology. It wasn't until medical school in which I started to do my first cardiac care units rotation and subsequently watched my first coronary angiogram and angioplasty that I just thought, "Wait a minute, this person just had 100% blocked artery, we opened it up, they're symptom-

free, and they're going to go home in the next couple of days and we just rescued this person from a major heart attack," that I was like, "Sign me up for this career. I want to do this. I want to help people in this manner."

- I remember, Mike, I think I missed one of your degrees. I think after college and before medical school, you got a master's. Maybe you could remind us what that's in.

- Yes, I did a one-year accelerated master's program at Barry University in biomedical sciences, which once again, kind of drove home the fact that I really did enjoy the biomedical sciences and, in particular, you know, human physiology. And after obtaining that degree, I decided I really wanted to go to medical school and become a physician.

- You mentioned about that first case you saw with an angioplasty, were there any other specialties that you considered after medical school or were you pretty much sold on cardiology?

- Yeah, I was on the fence between cardiology, vascular surgery, and plastic surgery. But again, after watching that first angioplasty and angiogram, I really decided that I wanted to become a cardiologist and interventional cardiologist to try to help people with minimally invasive procedures rather than your traditional open-heart surgeries.

- You know, it's funny, Mike, as you know, I did my residency at UCLA and I remember...I was quite a bit before you, but I do remember that first time when angioplasties were brand new and just having that sense of absolute amazement at what could happen.

- Yeah, it is a fantastic technology that has continued to evolve in everyday practice.

- But what you're doing now with some of the valve work that you've done, maybe you could explain to our listeners about some of the, I think, equally astonishing stuff that is being done now by you and Dr.

Aragon and others.

- Yes, absolutely. I would say, you know, one of the things that I enjoy about being in this field is the rapid evolving technological advancements. And the best example of that is our approach to valve therapies. Over the past 10 years, we've had a revolution in the way that we treat patients with valvular heart

disease beginning with aortic stenosis, which is a narrowing of one of the major heart valves in the artery.

In the past, we'd have to send someone to open-heart surgery, put them on the heart-lung machine, stop their heart to cut out the valve and suture in a new one by a cardiothoracic surgeon. And now we have the ability to do that without open-heart surgery, usually with the patients who's maybe just mildly sedated and we're able to put in a new heart valve through a catheter through the leg and push the old valve out to the side with a balloon, put a new valve in its place.

And the patient usually stays about a day or so in the hospital and is able to go home within a day or two and have full functional recovery without the need for opening a person's chest or open-heart surgery. Likewise, we've advanced that therapy also to the mitral valve in which we're able to fix a leaking mitral valve, once again, without open-heart surgery or the heart-lung machine on a patient by placing a clip across the valve strategically placed so we'd stop the valve from leaking.

We also have a lot more transcatheter therapies for other valves within the heart as well that are coming down the pipeline, including ones that we've been using in the pulmonic position for patients with congenital heart disease. And we're also evaluating further therapies for another heart valve called a tricuspid valve on the right side of the heart in which we can either replace or clip the valve if it's leaking severely.

- Maybe it's worth it to explain to our listeners, before you could do these kind of aortic valve replacements, what patients were looking at in terms of recovery.

- So, with the traditional open-heart surgery, the patients would be put on the heart-lung machine. They'd spend a couple days in the ICU and then probably a five to seven-day visit in the hospital. And then I usually tell patients, most patients take about, you know, four to six up to eight weeks to have a full recovery, which involves some intensive rehabilitation, sometimes in a dedicated facility and other times at home.

With transcatheter aortic valve replacement, known as TAVR, patients don't have to go through that long hospital stay or rehabilitation process. Most patients get out within 24 to 48 hours and are back to functioning normally within about a week of the transcatheter valve replacement. Similarly, for mitral valve repair through a procedure called the MitraClip, patients usually go home

the next day, and within about a week or two, are back to functioning at their normal functional status or better than they were before.

- I know that you and Dr. Aragon have excellent reputations and have been bringing patients in from outside the area. Maybe you could just share sort of the volume of these aortic valve replacements that you guys are doing.

- Yeah. I mean, thankfully, we started from scratch and started building this program up back in 2013. And we've evolved this program to such a high standard that we've been able to attract a lot of patients from Santa Barbara, as well as outside of Santa Barbara. We have quite a bit of catchment area because of our volume.

We've easily become one of the highest volume centers on the Central Coast. And we've been able to advance our program to doing some pretty complex procedures as well because just like in open-heart surgery, there are routine cases and there are non-routine cases, and we're known to be able to take on the more difficult TAVR and MitraClip cases that are not so routine or are complex outside of most care facilities' abilities.

And we've kind of advanced our program to the level of most programs that are only seen in academic or tertiary and even some quaternary care referral centers and our volumes rival those of some of our nationally local academic centers.

- I talked in the introduction about some of the research you're doing. Maybe you could share with our audience, what areas of study are you doing research in right now?

- So, we're currently one of the few sites that has been approached and approved to do a new study looking at treating patients before they get to the point of having severe aortic stenosis and treating patients who have moderate aortic stenosis.

So, this is not waiting until the valve becomes severely degenerated and dysfunctional, but the question posed is, what happens if we treat these patients before the valve gets to that critical phase where it's just not functioning very well and patients are starting to have significant symptoms? What if we treat these patients at an earlier time point in the progress of their disease, will it change their outcome and affect their longevity?

So, we're going to be looking at that in a new and upcoming research trial in which we're evaluating those patients to see, do they do better if we treat them earlier upstream rather than waiting till it gets to the critical phase in the

progress of their disease? We're also looking at patients in terms of whether or not it matters if we fixed their arteries before or after the transcatheter aortic valve procedure.

That question has remained an enigma within the field of TAVR over the past decade. What do we do with these patients that have concomitant coronary artery disease? Is it better to fix the valve first and then fix the arteries, or should we be fixing the arteries first and then the valve? So, that's going to be another randomized trial in which we're going to fix the arteries before and after the valve and compare these two patient cohorts to see who does better in terms of long-term longevity and symptoms.

- That has the sound of a multicenter trial, I presume.

- These are huge multicenter international and national trials. Correct.

- But that's really something that our small community of Santa Barbara here was chosen to participate.

- Absolutely. And once again, it's based on our high volume numbers, our wonderful outcomes that we've had over the past five to seven years, as well as the complexity of the patients that we treat.

- So, does this mean that patients locally who are eligible could just participate right here in Santa Barbara?

- Absolutely. These are trials that normally would be seen only in a major academic center, and we have it right here in our backyard in our local community hospital. And these patients can get involved in these research trials and can be treated here for this.

- Perhaps a funny question to ask a doctor is, what advice can you give people so that they actually would never have to meet you professionally?

- That's actually a great question. And I always tell my patients, you only want to meet me in a social setting because if I'm walking into your room, there's something going on with your heart that needs to be fixed. So, you know, the current American Heart Association guidelines do advocate for a Mediterranean diet.

A lot of the current research that we're seeing now actually is pointing even more aggressively towards a plant-based diet as much as possible as we see that the body's inflammatory markers are greatly decreased with switching over to a plant-based diet. Even compared to being a pescatarian, a vegetarian, and even

patients who are vegan have much lower inflammatory markers which we think leads to lower incidents of heart disease.

In addition, the American Heart Association guidelines does recommend 30 minutes of exercise, moderate-intensity exercise, at least five days a week. So, I think following a good and healthy diet and exercising regularly, that takes care of about 80% of modifiable risk factors. Now, of course, there are patients that have a genetic predisposition to forming heart disease.

And in those patients, even with following the guidelines, they may eventually develop heart disease that needs to be treated because of the genetics that were passed on to them by their parents, but what we see even in those patients that have a genetic predisposition for forming heart disease, when they follow a heart-healthy lifestyle, it delays their onset of disease usually by about a decade or two.

So, I think regardless of what your genetics predispose you to, I think following the American Heart Association guidelines in terms of diet and exercise and weight loss or keeping an adequate BMI I think is the best way to avoid seeing a cardiologist or at least postpone it.

- As an internist, I often, of course, have been doing prescriptions to patients, and sometimes patients are really reluctant to take medications. Are there some medications that, you know, are very well known to perhaps have to only meet you in a social context and not in a professional context?

- Yeah. I think, you know, over the past few decades, probably statins have been one of the biggest medications that persistently been shown in multitude of studies over hundreds of thousands of patients to decrease the risk of advanced heart disease. And it's one of the few medications that's been shown to actually decrease mortality as well before and after the development of heart disease, especially in those patients with risk factors such as diabetes, cholesterol, and obesity.

I know they've gotten some bad rap in the media because of their association with muscle aches and pains and then there's been some rumors of earlier onset of diabetes and Parkinson's or Alzheimer's disease, which just hasn't bore out in any of the clinical trials to be honest with you, and that the benefits of these medications far outweigh their few risks.

- Are you finding patients using any kind of technologies, you know, Apple Watches or home EKG machines, you know, what's your experience with that?

- Yeah, absolutely. You know, I am a big proponent of technology. You know, I wear an Apple Watch as I'm a runner and I like to keep track of my heart rate and the amount of exercise and what my, you know, peak heart rates and capacity is. So, I'm a huge believer in wearable technologies.

And I think it's going to transform the way we make diagnoses, especially in cardiology and especially in the field of arrhythmia management. I think it's been huge in the sense of being able to detect things like atrial fibrillation, PACs, and PVCs, you know, extra heartbeats from the top and bottom chambers of the heart respectively.

I don't think they're quite at the level of being able to make, you know, a definitive diagnosis, but they're definitely helpful to physicians when a patient feels an abnormal heart rhythm and is able to send me through a MyChart message, you know, their ECG is recorded by their Apple Watch or their, you know, mobile app ECG like the Kardia app.

And I think that warrants us further investigating and/or confirming with our current technology that we have now such as our ambulatory monitors what the true diagnosis is. I think it's still early generation devices that is available to the consumer. But I think in the future as the future iterations of these wearable technologies improve just like our cell phones have improved dramatically over the past, you know, 15 to 20 years, I think wearable technologies are going to be a huge boost to our ability to make diagnoses not only over arrhythmias, but there are some indications that things such as early onset heart failure and also myocardial infarctions in the form of increasing or decreasing oxygen demands by certain wearable devices will be available to the public in the future and it'll be of great assistance to us as cardiologists.

- I know. Sometimes, you know, patients will bring their Apple Watch in and then ask me, you know, how do I use it? And then I realize that it's getting to be very different, the skills you need as a doctor.

- Right. It's almost humbling the technology that's out there and being able to keep up with it. I sometimes have to defer to my kids to explain to me, you know, how to work an app on my iPhone or iPad because they know exactly how to work this app or get this app to look a certain way, whereas I would struggle for hours and my kids could do it in 30 seconds.

So, that's helpful to me to have my kids around. They're my default for some of these apps. But with that said, I would say that, you know, the current wearable

technologies isn't 100% accurate. Again, I think it's a good screening method to allow your doctor to know that maybe something's going on.

I would say half the time when the Apple Watch reads the EKG's possible AFib, it's not, it might be just baseline artifact, but again, it alerts us that something's going on and it may warrant further investigation.

- Let's switch gears for a second. At the clinic, we do have a number of nurse practitioners and physicians assistants. And it might be helpful for you to explain to our listeners how it is that you as a cardiologist work with what we call APPs or advanced practice providers.

- Absolutely. I would say that the role that advanced practice providers has played over the past decade that I've been in practice has changed dramatically. They are an absolute invaluable care team member. You know, they serve as a bridge to physicians, if you will.

And they allow for daily and exclusive access to them immediately to patients. They round with us in the hospital. They participate in the daily management of a lot of our patients. And then when physicians such as I, who may be in the operating room or in the cath lab for prolonged procedures, they're able to check in on patients, make sure they're doing okay, come up with a care plan, run it by us, and get that patient on their way rather than having to wait for us to step out of the operating room to see or manage those patients.

In addition, a lot of these APPs form deep and meaningful relationships with these patients because they are involved in all aspects of their care, even some of the social aspects that, you know, physicians may not be aware or cognizant of because of the limited interactions that we have with these patients.

And it's usually at certain intervals that we see these patients, whereas, you know, patients have a much more direct line to the APPs, if you will. And so they get a better sense of what's going on with the patient as a whole, rather than just the independent disease states that we see as specialists.

- Yeah, thanks for clarifying that. I think it's important for people to know what valuable roles does individuals play at the clinic and really throughout the healthcare system. When you think about the future of cardiology, Mike, what are you most excited about?

- Well, as a structural interventionalist, I am most excited about, again, the minimally invasive procedures and the way that they're evolving. You know, we started out with only being able to treat one heart valve, and now we're



treating all the heart valves without open-heart surgery with minimally invasive techniques.

There is an evolution here in the works and some people see it as even a disruptive technology where we're doing so many procedures now without open-heart surgery that most of these valves eventually will all be treated for every disease state without an open-heart surgery requisite. There are certain disease states now that we still can't get to with a transcatheter because the technology isn't available, valves that are heavily calcified or have a ton of calcium around it on the left side of the heart, like mitral stenosis or rheumatic mitral valve disease is difficult to treat with our current transcatheter therapies, but there are valves that are being developed now that we can treat with a transcatheter therapy.

Likewise, severely leaky aortic valves that don't have any calcium, well, it's hard to put a valve stent there in that position because there's not much for the valve stent to hold onto. But again, we're currently in clinical trials evaluating newer style devices that can be placed and treat patients with a severely leaking aortic valve.

In addition, the right-sided heart valves continue to challenge us because of their location and anatomy. But again, transcatheter therapies continue to evolve to be able to treat those in different and unique ways. I also think that in cardiology, we're moving more towards personalized tailored medicines, even with the medications that we're prescribing to patients.

Looking at things like genetic predispositions and genes, and being able to tailor certain therapies to patients and their genes I think is a big gap that we right now at this point in time don't have the knowledge or know-how or ability to treat, but I think that we're moving towards that in cardiology.

- Switching gears a lot right now, you mentioned that your kids help you with technology. Maybe you could share what is it that you like to do for fun. Not that we give you any time to actually have fun, but when you do have some time, what are your hobbies?

- Yes. Well, I definitely enjoy spending time with my wife and three children. I'm an avid runner and I definitely enjoy running. I'm picking up tennis because my kids are all into tennis and they can all beat me. So, I got to get on the courts and get better at that. We also enjoy traveling internationally as a family.

So, whenever we have some downtime, we do enjoy, you know, the experiences that are afforded to us by international travel.

- Well, Mike, that sounds like a good note for us to end on. I really want to thank you for taking the time to talk with me and with our patients who are listening. You know, we like to talk about in Santa Barbara and at Sansum Clinic that we have big-city medicine with small-town convenience and small-town compassion. And I think that you're a great example of that.

So, thank you so much for all the work that you do and for spending some time with us this afternoon.

- Thank you so much, Kurt, for having me. I appreciate it.

- Thank you for joining us for "Sansum Speaks." We hope you found this to be valuable information. To view all of our talks, please visit [sansumspeaks.sansumclinic.org](https://sansumspeaks.sansumclinic.org). 🎵 [music] 🎵



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