

Title: *Heavy Heart and Sudden Death: Who is at greater risk?*

November 19, 2007

Guests: Sumeet Chugh, M.D. and Sandy Kawamoto

Hosted by Andrew Schorr

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INTRODUCTION

Andrew Schorr:

Hello and thank you for joining us once again. I'm Andrew Schorr broadcasting Patient Power live from Seattle where it gray and raining day today. This is what happens around Thanksgiving time, but that's okay because we have a lot to be thankful for. I hope you do too. I hope this is a good season for you.

Hopefully you have good health to be thankful for. Sometimes we think we are in tremendously good health and going about our way, nothing is happening and then boom. Something happens, even sudden cardiac arrest. Unfortunately all too often that means death. We're talking about a couple of hundred thousand people that this will happen to in America this year. We'll give you the statistics as we go on, but it is terrifying. The prospect of it is terrifying. Can we identify people who are at risk? What are the things to look for? What tests do people need, and what interventions could they have if they are at risk to prevent this from happening to them? This sudden death. Who is at the greater risk?

SANDY'S EXPERIENCE WITH SUDDEN CARDIAC ARREST

Andrew Schorr:

We are going to look into that as we do Patient Power today, but I want you to meet someone; Sandy Kawamoto. Sandy is from Oregon City, Oregon, right outside Portland. Sandy let's go back to three-thirty in the morning a few years ago on September 2, 1990. You were in your home with your husband Jim and two young kids. You got up to nurse baby Amanda. What happened as best you know that early morning?

Sandy:

We had been remodeling our home and a pipe broke, so there was a real loud noise. With that loud noise it was a real startle to me, and I rushed to check on my son and Jim was hearing this noise too. Jim is my husband. He rushed to find out what was going on as well, and a pipe had broken in our bathroom. He got that all fixed and taken care of went back to bed, but I wasn't there. He knew that I had been with the baby, and he thought that I was still maybe up with her. He went into the other room to where our son was at, and he found me lying on the floor. At that point he checked to reassure me, number one, but I wasn't breathing, and there was no heartbeat. Immediately he started CPR and then went to rush and call 911 for help.

Andrew Schorr:

He saved your life.

Sandy:

He saved my life. He really did.

Andrew Schorr:

That's more of a love story. When you were finally worked up, what did it turn out was the villain in all this?

Sandy:

It took a long time to find out. It was a process of three weeks in the hospital, at different hospitals. They found out that I had long QT syndrome.

Andrew Schorr:

What's that?

Sandy:

It's an irregular heartbeat. It is a type of arrhythmia, and it required me to have surgery and have an implanted defibrillator so if that type of irregular heartbeat ever occurred again that it would shock my heart back into the proper rhythm.

Andrew Schorr:

Has that defibrillator had to do its job as best you know over the years?

Sandy:

I've never had to use the defibrillator again. I take a beta-blocker to help keep my heartbeat regular and then of course the defibrillator is there in case I need a backup.

Andrew Schorr:

There was another shoe that dropped. The good news is of course is that you have been doing great, and you have a device on standby to keep that heart beating or get it going again in a regular rhythm should it get out of whack or stop, but you found out something about your two kids. Tell us about that.

Sandy:

Yes. We found out that both of our children have long QT also. Initially, it was just an EKG that was done, but later they had some genetic testing available and we know the definite gene that causes this and both of them have it for sure.

Andrew Schorr:

This is Amanda and what is your son's name?

Sandy:

Daniel.

Andrew Schorr:

Is Daniel in college?

Sandy:

Daniel is in college. He is a senior in college this year.

Andrew Schorr:

So tell us about what intervention they've needed as adolescents so that they do well.

Sandy:

Every year we go to the doctor and they have a check up, but they are also on a beta-blocker to help keep their heart at a regular rhythm as well.

Andrew Schorr:

No implanted device?

Sandy:

No implanted device. What's good is that we've known when they have needed a dose increase with their growth. They would have a stress test done, and so we would know at that time that they would need an increase in their meds. That was always a positive that we'd know.

IDENTIFYING RISK FOR SUDDEN CARDIAC ARREST

Andrew Schorr:

Let's meet one of the experts in the field, Sandy. He is also in Oregon, Dr. Sumeet Chugh who is a cardiologist. He is an electrophysiologist. He specializes in these heart rhythm issues. He is Director of Oregon Health and Science University's Cardiac Arrhythmia Center in Portland. Dr. Chugh, here is the situation. We have someone who needs an implanted device, and we have children in this case. We had a genetic situation at work where they are on medicine as is their mom. We have maybe hundreds of thousands of people if not more in the U.S. who are at risk. How do we identify them, and how do we determine who needs what intervention so that this heart stopping and the great potential of death doesn't happen to them?

Dr. Chugh:

That's the 64 million dollar question Andrew. Clearly Sandy's story is remarkable. She had help at the right time, and I also believe she had the will to continue. The main issue is that there are going to be just as you said almost 250 thousand people even just in our country, in the U.S, who are going to have a cardiac arrest.

We know a few things about predicting their risk of cardiac arrest before it happens, but we are very far from knowing everything about predicting cardiac arrest.

Andrew Schorr:

What we'll do is we will learn of the government-funded study you have to try to identify people and know how to proceed. Also what we will do is after the break is we'll put it into perspective I think a lot of people, and I know I grew up thinking as I got older would I be at risk of a heart attack when the arteries to the heart get blocked, and the heart muscle can't do its job, and I wasn't thinking about electrical problems with the heart or it beating erratically. I know there is a lot to talk about there to put it in perspective for people when we talk about heart problems. Also the correlation between heart disease related to cholesterol and blockages and all that, and electrical issues as well and what you can do about it.

We'll continue our discussion on a very important issue and that is how to prevent this risk of sudden death for you or someone you love where the heart is not beating properly and can't go on. Certainly we want to avoid that, and we want to be thankful that there are people like Dr. Chugh who are working on it to give us knowledge on how to prevent it. It's all coming up live on Patient Power on HealthRadio Network. We'll be right back.

Andrew Schorr:

Welcome back to Patient Power as we discuss sudden death today and cardiac arrhythmias. We want to identify the people who are at risk. Sandy didn't know that she had a genetic abnormality, and it's probably a real give that she survived of course, and that it was identified in her children, and everybody's being followed closely and on medication to make sure their heart beats with regularity, and then Sandy has that implanted device, and we'll talk more about that too.

Who needs this? So, you have this image of people who drop dead, and unfortunately it's only five to 10 percent of the time when the CPR and the shocking and all these devices that we have now in shopping centers, on airplanes, on trains and busses, all that, that they can save a life. Now, it's worth doing. It's worth having all these resources distributed, but gee, if we could just identify people in advance.

IS THERE A CONNECTION BETWEEN CARDIOVASCULAR DISEASE AND ELECTRICAL PROBLEMS OF THE HEART?

Andrew Schorr:

With us is Dr. Sumeet Chugh who is Director of Oregon Health and Science University's Cardiac Arrhythmia Center in Portland, Oregon. Dr. Chugh, first of all as I mentioned before the break we have so much discussion over the years about lowering your cholesterol, getting rid of the bad cholesterol as much as you can, diet and exercise, stop smoking. My understanding is that relates to having your heart muscle be healthy and the arteries that supply blood to it be as clear as they can be. That relates to the sort of blockages, but you are sort of an electrical guy. It sounds like we have hundreds of thousands of people where that electrical system fails them. It's very scary and can happen very suddenly and often without warning. What are the signs of that? Is there any crossover, if you will, between cardiovascular disease and these blockages and narrowing of the arteries and electrical problems of the heart?

Dr. Chugh:

Andrew, of the roughly 800 Americans who will have a cardiac arrest every day about 400 will have a cardiac arrest as the first sign of heart disease. That is cardiac arrest without warning. Others will have chest pain before or shortness of breath. More importantly they have palpitations or may even pass out and have a cardiac arrest. So there can be a variety of symptoms, and also some people, about 50 percent, may not have any warning.

Regarding the crossover between blockages in the blood vessels of the heart that nourish the heart muscle that we call the coronary arteries as well as heart rhythm problems, there is a tremendous crossover. The main reason is that at least 80 percent of

individuals who will have a cardiac arrest will have coronary artery disease or this buildup of cholesterol and plaque in the blood vessels that nourish the heart muscle.

Andrew Schorr:

With all the things I've mentioned like stop smoking, exercise, dietary with a smart diet, etc. that would be a good thing in this case too then?

Dr. Chugh:

Absolutely. What I tell my patients is that I think of preventing cardiac arrest as sort of weaving a tapestry. You have the four corners of the tapestry already woven and those are lowering your cholesterol, exercising and keeping your weight down, smoking cessation and a more careful approach to prevention if you have a family history of cardiac arrest. We are weaving this tapestry as we weave more and more of it knowledge is a moving target and hopefully we'll get better at predicting who is going to get a cardiac arrest, but having said that these four corners of the tapestry come first.

HOW OFTEN IS SUDDEN CARDIAC DEATH ATTRIBUTABLE TO A GENETIC PROBLEM?

Andrew Schorr:

Of course, having a great foundation. Now Sandy had no idea that she had a genetic condition, this long QT syndrome, or her kids were born with it too. First of all when you talk about people who will eventually be affected by cardiac arrest how often when you look back on it was there a genetic problem that just had been undiscovered?

Dr. Chugh:

That has been recognized as a very important issue. In fact, Andrew, in your neck of the woods in the late 1990s a landmark study was performed by Dr. Siscovick and colleagues at the University of Washington in Seattle that was followed closely by a study called the Paris Prospective Study, and both of these studies informed us that if you have a first degree relative or a parent who had a cardiac arrest; now we're are talking about all comers; I'll get back to Sandy's situation that is somewhat of a special situation; but all comers who have a cardiac arrest say on the street if one first-degree relative; brother, sister, mother or father; had cardiac arrest, their risk of having a cardiac arrest is two-fold. If you are unlucky enough to have two parents who had a cardiac arrest or sudden cardiac death, your risk goes up nine-fold. So there is increasing recognition of the fact that genetics are important even in this rather complicated disease condition.

Andrew Schorr:

So I'm thinking about my family. On my mother's side my mother's brother, my mother's sister and my mother's mother all died of sudden death. Grandma was at an advanced age, but the other two were maybe in their late 50s. I remember when Uncle Mel died at an airport on his way to catch a plane. So was it a heart attack or a rhythm issue? This was years ago. Then you say to the family members well what workup do we have doctor so that we understand is there something going on in the family?

Dr. Chugh:

I think perhaps we could begin with just underscoring the difference between a heart attack and a sudden cardiac arrest. A heart attack is sudden blockage of one of the life-giving coronary arteries that nourish the muscle of the heart. A cardiac arrest on the other hand is a chaotic heart rhythm disturbance where the heart starts beating ineffectively and results in such a drop in the blood pressure that people pass out and have a high chance of dying.

There is a difference but then there is also an overlap. Let's say you have a 100 people who have a heart attack, perhaps 20 might have a cardiac arrest. Overall many, many people will have a history of heart attack before they have a cardiac arrest. That is sort of the important distinction of heart attack versus cardiac arrest. Now in a family also there are two thought processes. You can have a family that has coronary artery disease and cardiac arrest. There if you have a family history of cardiac arrest, I think you have to redouble or triple your efforts of prevention. You really have to take care of all the risks that you can take care of. In the end you can't change your genes; it is much too late; but you can pay careful attention to those four or five risk factors that we had mentioned earlier. That's really what we have available now.

In terms of Sandy's situation, which is actually a very important disease condition that has been studied very carefully the long QT syndrome, there it is passed on from generation to generation. Most people may not have coronary disease. There is actually a genetic test available, and as Sandy mentioned to you that has been done for her children, and we know for sure that they have the disease condition.

Andrew Schorr:

We're going to take a break Dr. Chugh. When we come back though I think people are saying, well gee, if I haven't gone to a cardiologist when should I, and are there other tests whether it's a genetic test or some special look at my heart to see what's going on because nobody wants the alternative and that is an undiagnosed situation, which unfortunately all too often results in sudden death.

We're discussing cardiac arrhythmia and we want to prevent this happening to you. We'll be right back with much more Patient Power after these messages.

Andrew Schorr:

Welcome back live on HealthRadio Network to Patient Power. Andrew Schorr here doing the only program of its kind in the world. I keep looking around to see who else is doing this. Nobody. These are medical and health issues from the patient's perspective with leading world authorities connecting you with them. If you are listening to this program live and you want to hear a replay of it, it is always there for you on both www.HeathRadio.net and www.PatientPower.info.

Today we are talking about electrical problems of the heart, if you will, where it's beating erratically and then suddenly it is not doing its job and you die. Unfortunately that happens to maybe 250 thousand Americans each year. They die from this, so it's rare that we have a spokesperson saying, 'Hey, I had a rhythm program in my heart, and I'm here to tell the story' as best as they know, and we do have Sandy Kawamoto with us from Oregon City outside Portland today. That happened to her when she got up to nurse her baby. Her husband did CPR, and she was able to survive. Unfortunately 90 to 95 percent of the time that doesn't do the job. Sandy has an implanted defibrillator now and that heads off that kind of event happening again. She takes medicine, a beta-blocker. It has been identified in her children that they were at risk for a genetic condition that it turns out she had that was undiscovered. They are all doing well, but it was very scary. What about if we don't have the genetic condition or it hasn't been discovered? There was no genetic test back in 1990 when this happened to Sandy. That has happened since then. Progress keeps moving.

Let's go back to Dr. Sumeet Chugh who is the Director of Oregon Health and Science University's Cardiac Arrhythmia Center in Portland. Dr. Chugh we want to predict who's at risk so where are we now with your tools to predict who should come see you and your colleagues and get a workup and some intervention so that they don't literally drop dead in the street? Help us understand where we are headed for the future with your research and your brother and sister experts.

Dr. Chugh:

Andrew we have come a long way for prevention of cardiac arrest but we still have many, many miles to go. I would say that there are several ways in which we can predict risk. The most important way is that if we find out that someone has a weakening of the heart muscle, particularly in the chamber that we call the left ventricle, that can be measured by non-invasive ways to image the heart most commonly by the echocardiogram. When we identify that people have a critical amount of weakening of the heart muscle, then what we can do to preempt this situation is to actually provide them with, that is surgically implant, one of the more remarkable discoveries of the last 30 years which is a

pocket defibrillator or the implantable cardioverter-defibrillator sometimes in common parlance called the ICD. So we do have ways of predicting risk in some people, and we have a therapy that can help them when this crisis arises.

APPROACHES TO TREATMENT

Andrew Schorr:

We talked about Sandy's kids who are taking beta-blockers. Can the medication be preventive enough in that case or in other cases? How often do you need the device implanted? How do you know when you can use medication, when to have something implanted, or when to do nothing? When do you determine that?

Dr. Chugh:

That is a very good question. In terms of Sandy's situation, just using that as an example, children with a long QT syndrome we are learning very often can benefit a lot from medications like beta-blockers. We can use those medications, and we can carefully follow them, and they very often will do quite well. On the other hand there are some high-risk situations even in families say with long QT syndrome where if they have had what we call syncope or passing out suddenly. That for example would be an important risk factor. Then we make err on the side of implanting the defibrillator, which really as you can understand is a very difficult decision in a child as compared to an adult. We do have two tiers. We have two fronts on which we can work. We have the medicines and then we have the defibrillator.

WHAT TESTS CAN DIAGNOSE A THICKENING OF THE HEART MUSCLE?

Andrew Schorr:

You mentioned about the thickening of the wall of one part of the heart. How is that diagnosed? When you go for a checkup to the doctor just listening to the heart won't do it. Will a typical EKG show it? How is it discovered?

Dr. Chugh:

What we have been doing in the last decade or so at here Oregon Health and Science University is that we have initiated a community-based research study which is underwritten by the U.S. Center for Disease Control and is currently funded by the NIH as well as a collaborative Reynolds Foundation Grant with Johns Hopkins. What we do is we really are working at shifting the paradigm from the community to the bedside because in the end any intervention we discover and we make will have to be in the community.

In the process we have discovered from years of doing this we have uncovered some potential risk predictors in addition to what is called the left ventricular ejection fraction, or the weakening of the heart muscle that I mentioned to you, and one of them is the fact

that when people have a thickening of the same chamber of the heart or the left ventricle, their risk of cardiac arrest can go up two-fold. This was first described in the 1990s from the Framingham Heart Study, and we have confirmed it in the general population in the Portland, Oregon metro area. I would say it is not ready for prime time yet because there are lots of people who are going to have a thickening of the heart muscle. What we are working on next is to say which ones or which specific sub group is at the highest risk of cardiac arrest so we can preempt this from happening.

WHAT DO WE KNOW ABOUT SUDDEN DEATH IN YOUNG ATHLETES?

Andrew Schorr:

Let's talk about something that happened in the news not long ago. The Olympic trials in New York were just before the New York City Marathon this fall and one of the top runners dropped dead and couldn't be revived. While it's inconclusive now, one of the things I heard at the time was his heart muscle large? I don't know if they have said yet whether maybe a wall or some part of it was thicker. That's scary because here is a guy in tremendous shape and then all of a sudden, sudden death. What do we know about that? That's what scares all of us.

Dr. Chugh:

Yes Andrew sudden death in the young athlete is one of the most devastating happenings in society. We look to these youngsters as being our healthiest, and so we cannot understand when something like this happens. As was with the incident on the fourth of November with this young U.S. hopeful for the 2008 Olympics, these situations do happened roughly between 200 to 300 times a year. There will be 200 to 300 competitive athletes who will drop dead suddenly. Most of these individuals will have some preexisting condition of the heart that leads to the cardiac arrest. In the U.S. most commonly this is a condition called hypertrophic cardiomyopathy where essentially there is a very, very prominent thickening, an exaggerated thickening of the walls of the left ventricle or the main chamber of the heart, and this leads to a high risk for getting a cardiac arrest.

There are other causes like some abnormalities that people can be born with in the structure of the heart. Finally, they can have a genetic predisposition like long QT syndrome. There are other names that one can bring up like Brugada syndrome but in the end what we are most thankful for is that these are quite rare but still devastating when they happen.

HOW EFFECTIVE ARE DEFIBRILLATORS?

Andrew Schorr:

We've made tremendous efforts throughout our country now to have electrical shocking devices around the country in shopping centers close by that can be used by lay people if need be. Not necessarily waiting until the emergency response people arrive. Also many of us have been trained in CPR but yet while we do save lives, and certainly Sandy's life was saved by her husband, this is such an important effort that we make we wish we could do better. What is the problem? Why is it so hard to get that heart beating well again even if we respond quickly?

Dr. Chugh:

I think we have to think of this problem as sort of attacking it on several different fronts. Clearly the most immediate one becomes resuscitation when it happens on the street. I think the main issue there is that when we rush to treat an individual like that we are treating the crisis not the condition. Clearly we provide life saving CPR and lifesaving shocks of defibrillation. What we have learned particularly from the public access defibrillation study that was published three or four years ago, that the automated external defibrillator of the kind that was first put in the airplanes, at casinos and airports clearly will improve chances of survival after a cardiac arrest. That's a good thing. We are still working on how and where it should be best deployed.

Since it is something that is now available over the counter, many of my patients ask me, 'Doctor, shouldn't I just get an automated external defibrillator?' My answer to them that, again, that's not ready for prime time because there are some studies ongoing particularly the HAT trial which is actually based at the University of Washington and uses other cities around the country where the home automated external defibrillator is being tested. The jury is still out. We will know in a little while. That's really the automated external defibrillator. Why can't we do better? I think usually by the time you get there no matter how quickly you get there it is much too late. If we really want to get at the bottom of this problem I think we have to prevent it before it actually happens.

ARE IMPLANTABLE DEVICES ENOUGH?

Andrew Schorr:

Right now then many people are getting these implanted devices. Maybe some people are getting them that don't need it, but a lot of people are getting it, so it seems like those devices are making a difference for sure. I know there was a girl who played up here in Seattle at the University of Washington, and she collapsed at the home where she and some of her teammates lived. They resuscitated her and then she did have an implanted device. I think maybe she started playing basketball at some point; I'm not

sure, but for a long time she didn't, but she was lucky like Sandy to have a second chance at life. You'd say well put in these devices and that's our best approach now. Can we just rely on that? As you said it is an expensive proposition and a big deal to do.

Dr. Chugh:

I would start by saying that it is really a remarkable advance in the field of cardiology. Instead of having to wait anywhere between three to ten minutes for the paddles to be put on depending on where you live in the U.S., between eight to ten seconds this device, which is implanted within a patient, can judge the fact that there is an abnormal heart rhythm and can provide the life-giving therapy. That really is a remarkable advance.

We also have to recognize that it is not just the device that helps decrease the risk of cardiac arrest, like we talked about changes in lifestyle, but also very importantly there are some key medications that we particularly give to people with heart failure like beta-blockers or ACE inhibitors; the angiotensin-converting enzyme inhibitors. These are medications that also decrease the yearly risk of cardiac arrest in a given patient but the maximum effect, maximum benefit does come from the implanted defibrillator. Why the question? Well just like you said today it does take us about 15 to 20 defibrillators implanted to save one life. You could argue that when you compare it to most medicines actually the ratio is not that bad; however, the difference is that yes there are expenses involved. So if we want to continue doing this, and we would really like to because these are invaluable for our patients, we have to be better at finding the patient who is going to benefit the most. That is sort of where there are lots of people working on this around the world. Our effort is one of the efforts in Oregon. Really the common goal is to decrease the number of people needed to treat with this device. That is if we can find folks who benefit the most, sort of find the maximum bang for the buck, that's really where we want to go.

AVAILABLE CLINICAL TRIALS

Andrew Schorr:

Doctor I'm a big proponent trials. I was in one for my leukemia and many people get the therapy that I received a number of years ago. In this area of cardiology are there people who should check in with a center and say, 'Maybe I'm identified at risk for this. How can I help you answer these questions and for me too?' What would you recommend?

Dr. Chugh:

The major trials for assessing the benefit of the defibrillator first is what is called a secondary prevention after the cardiac arrest has happened and secondly as a prophylactic therapy have been completed. There are many of them that have been

done, and we are grateful to the many, many patients who have participated. Those trials did show a benefit for the defibrillator.

The next wave of research that has to happen is that the research community will be very grateful if people who have defibrillators actually step up to try to understand and delve into the depths of who is at highest risk. For example what we do in the community we cannot do without the help of the residents of the community and our patients. Sometimes we ask for some blood, the permission to review their records, and permission to analyze their DNA because this is a black box, and the discovery of novel genetic targets is a black box; the discovery of novel markers in the blood is a black box. So, I think that we already have the therapy. Where it would be marvelous, and we have been very fortunate, and I know my colleagues are because people do step forward. That would be really where we could make a difference is in improving what is called risk stratification or ways of assessing risk in a new patient.

Andrew Schorr:

As I mentioned, Sandy, that the genetic tests that they have now for long QT syndrome they didn't have back in 1990 when you collapsed.

Sandy:

No

Andrew Schorr:

So you've seen the progress. Sandy what would you say to people who maybe have had this happen in their family or maybe they find that they have this thickening going on in their heart? What would you say to them because I know maybe the answer is obvious, and the alternative is not attractive at all, but how you say it?

Sandy:

You know you have to accept what has happened or what symptoms you are having. There is just no way around it. I guess having the defibrillator has given my family peace of mind. It's given me peace of mind. The other part of it I would have to say is to take each day like it's your last because you never know. It doesn't matter if you are healthy. I didn't know I had this heart condition. I would just say always tell your family and your friends that you love them. Don't leave things on a bad note. You just don't want to take things for granted.

Andrew Schorr:

I always give my kids a big kiss when they go off to school. If we are lucky enough to have any kind of warning, Dr. Chugh, it sounds like you want to take action really fast don't you? Don't ignore it. Don't deny it.

Dr. Chugh:

There are some simple things that can be done. For example when you see a cardiologist like for a physical examination and ECG and an echocardiogram that in many instances can be helpful.

Andrew Schorr:

Right. That's the discussion, and I think as our population ages too we are concerned about our heart. As you said the foundation of this, for at least a significant percentage of people, is all the other things we know we need to do to protect the heart muscle as well. So, we are still going to say don't smoke or quit, we are going to say have a good diet, do exercise and all of that is a good foundation as you said. We certainly wish you well with your research sir as you answer these other important questions. Yet I'm glad you do have some technology, medicine, implanted devices, etc., and I think when they make a difference and they often do, we wish it were more often, the devices that are in the community to help people.

Sandy we wish you all the best, and I hope I get to meet you and Jim some day down the road in Portland because I think that's a love story really and you must look into his eyes and the man saved your life. It's quite a story. Then you all were able to benefit from modern medicine and have the test for your kids. Hopefully they go on and have a long and successful life too. All of you together, and I'm sure every Thanksgiving, you look at each other and hold hands and it means a lot.

Sandy:

It does, it does.

Andrew Schorr:

Sandy all the best. Thank you for being with us.

Sandy Kawamoto:

Thank you.

Andrew Schorr:

Dr. Sumeet Chugh, the Director of Oregon Health and Science University's Cardiac Arrhythmia Center in Portland, Oregon, all the best to you sir and the others who are working with you around the country and around the world to answer these questions because certainly we want people to live long happy lives and want heart health whether it is unclogging the arteries or not letting them get clogged or having that electrical system work as it should throughout a long life. Best to you sir. Thank you for being with us.



because knowledge is the best medicine

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Dr. Chugh:

Thank you Andrew. I think this is a remarkable effort that you are making. Please keep it up. I think it is very helpful to our patients.

Andrew Schorr:

Thank you sir. This is what we do on Patient Power and as Dr. Chugh said I like to think it is a remarkable effort, and I hope people listen. Tell your friends about Patient Power. All our replays now approaching 500 hours and some other programs with leading electrophysiologists and cardiologists on more of this subject are there for you at www.PatientPower.info .

We are going to have some important programs coming up later this week. We are going to talk about integrated medicine with Dr. Brad Jacobs from the website www.RevolutionHealth.com. We've got people who have with problems with excessive menstrual flow when they have their cycle. We are going to talk about that on Wednesday. We are going to talk about posttraumatic stress disorder on Thursday, and then on Friday we are going to visit with some great doctors on just how you work with your doctor to get the best for you.

Knowledge can be the best medicine of all. That's what we say day after day in Seattle. Thanks for joining us. I'm Andrew Schorr. Have a great day.

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