

Preventive Cardiology

For more than a decade, the Preventive Cardiology Clinic at Children's Mercy has been providing comprehensive evaluation, risk factor counseling and management for children with familial dyslipidemia, lifestyle-induced dyslipidemia and chronic diseases that associated with development of atherosclerosis.

Each year, the clinic sees approximately 300 patients.

The Preventive Cardiology Clinic began tracking patient outcomes in 2008 and has built a database that includes demographic, anthropometric, blood pressure, clinical and laboratory information on more than 610 children with dyslipidemia and other atherosclerosis-promoting factors.

Geetha Raghuvver, MD is here to explain how the database has been used as a resource for patient screening and research studies.



Featured Speaker:

Geetha Raghuvver, MD

Dr. Raghuvver is a Pediatric Cardiologist and Children's Mercy Kansas City and a Professor of Pediatrics at the University of Missouri-Kansas City School of Medicine. She attended medical school at Mysore University in India before completing a pediatrics residency at Montefiore Medical Center/Albert Einstein College of Medicine in New York. Dr. Raghuvver completed her Pediatric Cardiology Fellowship at the University of Iowa Hospitals and Clinics.

[Learn more about Dr. Raghuvver](#)

http://www.childrensmercy.org/Clinics_and_Services/Clinics_and_Departments/doc=4054

Transcription:

Dr. Michael Smith (Host): Welcome to Transformational Pediatrics. I'm Dr. Michael Smith and our topic is "Preventative Cardiology". My guest is Dr. Geetha Raghuvver. Dr. Raghuvver is a pediatric cardiologist at Children's Mercy Kansas City and a Professor of Pediatrics at the University of Missouri Kansas City School of Medicine. Dr. Raghuvver, welcome to the show.

Dr. Geetha Raghuvver (Guest): Thank you.

Dr. Smith: Tell me about the typical type of patient that is referred to the Preventative Cardiology Clinic.

Dr. Raghuvver: Sure. We take care of children up until 18 years of age. A typical patient would be, maybe an 11 year old who, had cholesterol testing done as part of a wellness checkup or family history of someone having had a heart attack at a young age and, as a result, has had cholesterol testing done. They are found to have a high LDL--which is the bad cholesterol level--or sometimes a high LDL and also a high triglyceride, which is the measure of your blood fat. A lot of the times, I see kids who have

not just one elevation in their blood level but maybe two or three abnormalities. That's the typical population. A lot of them are overweight and have other risk factors such as being exposed to tobacco smoke, which is not good for your heart or hypertension, which is not good for your heart, either. Or, they may have early signs of diabetes which is a rising concern in this population. A typical patient, to answer your question, comes with not just one problem but maybe three to five so-called risk factors, which can promote early heart disease in this population.

Dr. Smith: When you mentioned if a child has a family history of somebody with – I'm assuming a first degree relative – who has had a premature cardiac event or premature cardiac death – what are we calling "premature"? What is the age range there for that to be a positive history?

Dr. Raghuveer: That's a good question. It is typically an adult relative who is less than 45 years of age, especially if they are male; somewhat of a later age, maybe less than 55 years of age, if they are female. That's what is premature. But, a lot of the times in these kids who have extremely high LDL and cholesterol level because of genetics, they have events in the family that even at a younger age-- it could be a 28-year-old dad who had a heart attack or maybe the 40-year-old grandfather had a heart attack. We do go into not just their family history because a lot of the times these parents could be quite young and not have clinical disease themselves. Some of them do already, but we look into the grandparents, also.

Dr. Smith: When you do a typical work up with these patients--you've mentioned a few lab values that you're going to be checking – how often do you do more of these advanced cholesterol tests where you're breaking down the LDL subtypes, the HDL subtypes. Do you do those types of tests as well?

Dr. Raghuveer: No, I don't. I know that there are some doing that and some of my lipid specialist colleagues in the adult world do that. I have not initiated that testing. It's important to remember that, in kids, we want what is called "primary prevention". We want to promote good practices. Looking into these types of details may help in a particular kid but, generally, with a run of the mill kid who comes in with several risk factors and has some behavioral issues that can be modified, the focus should be on modifying behavior and optimizing lifestyle. So, to answer your question, I don't do those routinely.

Dr. Smith: In your clinic, how many patients are you guys seeing every year?

Dr. Raghuveer: Last year we saw about 325 patients. That was inclusive of new patient visits and repeat visits. Fifty percent of the patients who come to my clinic have what we call a "familial hypercholesterolemia". That is, they have a genetically based elevation in their bad cholesterol--LDL cholesterol--levels. The other half are lifestyle induced. Lipidemia is typically associated with obesity. But, I'm starting to see a very concerning trend – a lot of these familial patients are also these with a double whammy. They have bad genetics plus they also have acquired risk factors due to bad lifestyle.

Dr. Smith: Right. Right. Walk us through a typical work up, a typical office visit for one of your patients.

Dr. Raghuveer: Sure. A lot of the time these referrals come from pediatricians, sometimes my endocrinology colleagues send insulin-resistant patients who have extreme dyslipidemia. We do have

entry criteria to come to our clinic in terms of what the LDL and triglyceride levels should be. We usually test the lipids twice just to be sure that we do have a persistent dyslipidemia. They have two sets of labs. They come in and I see them first to obtain a family history with a focus to cardiovascular disease and do an examination. We want to make sure there is no evidence of tendons lymphoma which are nodules which we see on tendons which is a marker of genetic dyslipidemia, which is rare, but we have seen them in a few of our patients. We also want to look at the backs of their necks to see if they have acanthosis, which is the marker of insulin resistance and pre-diabetes. We want to see body fat distribution, if they have abdominal adiposity and that could be a sign of visceral adiposity. That is particularly toxic for the cardiovascular system. We look at their body mass index. I review the labs with them, just factually, what's what. I go through the process of atherosclerosis. We have models in our clinic – a plastic model of atherosclerosis, which the kids seem to like and even the parents seem to understand better when I show them the model and show them what happens when a healthy blood vessel is exposed to risk factors and, over time, how it can get clogged. I go over bad cholesterol, good cholesterol – which is HDL, the role of triglycerides. There is a misconception that eating fat makes you fat. I kind of educate them on the association between excess caloric intake and excess starchy and sugary foods and its association with high triglycerides, obesity and insulin resistance. The first time we also look into the smoking history. I come from in Kansas City, Missouri. We have, in this state, one of the highest prevalence of exposure to second hand smoke. We also, unfortunately, have low taxation on tobacco so I am not sure if they are associated, but could be.

Dr. Smith: Interesting.

Dr. Raghuveer: We do see those exposed to tobacco smoke. So, I go through not just the lipids but all the other risk factors such as high blood pressure. Some of them could have that and insulin resistance. We also look at vitamin D deficiency, which is associated with cardiovascular morbidity and endocrine morbidity such as diabetes. A lot of our obese kids are also vitamin D deficient. I correct them pharmacologically. If they are extremely deficient and also advise on dietary factors which can help improve vitamin D. That's kind of the beginning. Then, they see a couple of our team members, one of them is a nutritionist, who looks at the dietary chart and makes customized recommendations to how they could improve their dietary habits. They are also evaluated by our exercise physiologist who looks at their activity baseline and then makes recommendations based on what the family can do and what the kid can do within the school setting and a lot of that is based on where they live, safety in the neighborhood, etc. We kind of wrap up the visit at the end of all that giving them some goals which are made in collaboration with the child and the family and we schedule them for a repeat visit. We hope that they keep some of these goals. The main basis of this clinic is education, as you can understand. We hope to educate the family. The kids themselves play a role but they don't play a very timely role when they are younger. So, it's mainly the family that needs education. I'm very particular about telling these families that we need to change as a family and it's not going to work if just Johnnie is made to do this versus the rest of the family is not doing the same thing.

Dr. Smith: Right. Tell us about the behavioral outcomes database and what you're doing with that.

Dr. Raghuveer: We do have some questionnaires that we collect from the families. For example, does their child eat breakfast every day? Who's around the child that smokes? How many fruits and vegetables are consumed by your child? How many days in the week does your child eat dessert? How many days in a week does your child drink sugary beverages, which is a large part of our population.

We kind of collect that and that gives us an idea of where they are at and based on that we tailor our recommendations with regards optimizing lifestyle. The same thing with second hand smoke exposure-- it could be the parent or it could be the grandparent, but if they are not ready for change. The first thing is to gather the information and then perception is also very important. Some kids who come to our clinic their parents are not even sure if they are overweight, where they are at on the growth charts. It's really important to share the growth chart with the family and spend time in explaining the growth chart and see trends. We see some concerning trends at times. Kids that were at average weight and then rapidly gained weight. It could be some circumstances. It could be stress. It could be something else going on. Understanding the growth chart is real important and accurate perceptions by the parents as to what their child's weight status is, is important in helping optimizing the lifestyle change.

Dr. Smith: I'm speaking with Dr. Geetha Raghuvver. She is from the Preventative Cardiology Clinic at Children's Mercy Kansas City. Dr. Raghuvver, thank you for the work that you are doing and thanks for coming on the show. You're listening to *Transformational Pediatrics* of Children's Mercy Kansas City. For more information you can go to ChildrensMercy.org. That's ChildrensMercy.org. I'm Dr. Michael Smith. Thanks for listening.

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