Transcript Details
This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: https://reachmd.com/programs/medical-industry-feature/carrier-screening-your-practice-it-time-expand-your-view/9648/

ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Carrier Screening in your Practice – Is it Time to Expand your View?

Narrator:
Welcome to ReachMD. The following program Carrier Screening in your Practice – Is it Time to Expand your View is sponsored by Quest Diagnostics.

Dr. Russell:
Traditional carrier screening, based on ethnicity, has been a standard approach in maternal fetal medicine, but newer expanded carrier screening methods are redefining that standard for couples considering pregnancy, or those who are already pregnant. This is ReachMD and I'm Dr. John Russell. Today's program will be conducted in two distinct parts. First, joining me to share insights on expanded carrier screening will be Dr. Ronald Wapner, Professor of Obstetrics and Gynecology and Maternal Fetal Medicine at Columbia University Center in New York. Later in the program, I will be speaking with Lisa Pike-Buchanan, who is a genetic counselor with Quest Diagnostics, to talk about evolving technologies in counseling roles from a commercial laboratory. Dr. Wapner, welcome to the program.

Dr. Wapner:
Thank you very much for having me.

Dr. Russell:
So, Dr. Wapner, can you first tell us about expanded carrier screening? As a family doctor, I know this may be old hat to our OB/GYN colleagues, but as a family doctor, what exactly is expanded carrier screening?

Dr. Wapner:
Sure. Well, let's start with what carriers are. And carriers are individuals that have a minor change in one of their genes that has the potential, if they have a partner that has a similar change, that they can have a child with a very severe disorder.

So, what we're trying to do is identify individuals and see, first of all who the carriers are, and then we can tell what genes and what diseases they're carriers for. As I said, if one person is a carrier, they only will have a child that has a problem if both partners are. Now, what are they carriers for? They're carriers for what we call autosomal recessive disorders and they can be very, very severe. As a matter of fact, about 1 in every 500 babies born will have one of these severe autosomal recessive disorders; about 1 in 200 will have an autosomal recessive disorder, but about 1 in 500 will be very, very severe. As a matter of fact, about 20% of all admissions to pediatric hospitals are for children that have these genetic disorders.

So, it's not an uncommon problem and it's not just a problem for children. Many of these disorders last an entire lifetime.

Dr. Russell:
So, when I was in medical school, I used to remember, okay, this disorder is more common in the Irish; this disorder is more common in Ashkenazi Jews, etc. Is this kind of what you're talking about?

Dr. Wapner:
Sure. And, as a matter of fact, about half a century ago now, we realized that there were certain groups of individuals that did have, or were carriers, for specific disorders. And this came in relatively isolated groups because they started with relatively few individuals. If one of them had an abnormality in the gene, they could pass it down, because the carriers are totally normal. They have no problem. It is only when two carriers match. But as I said, in isolated populations, you're more likely to have the same gene in both partners. So, we realized that and what we realized first was that individuals who were Jewish had a very frequent mutation that caused a very severe disease called Tay-Sachs disease. As a matter of fact, all of the children that have it die by the age of 5 or 6. And so, we started

screening based on the ethnicity. We would test the Jewish population for Tay-Sachs. We would test the African-American population for sickle cell disease, because about 1 in 10 or 1 in 11 carry that disorder. But the world changed, and no longer do we have isolated populations. There's a lot of intermarriage, there's intermixing, so that we can't just look and ask somebody or screen for genetic disorders based on what they think their ethnicity is. Also, it's surprising, but more than half of us have no idea of what our ethnicity is, beyond our direct parents.

Dr. Russell:
There are probably people who think their ethnicity is probably something entirely different from what they think.

Dr. Wapner:
Absolutely. You have seen the commercials.

Dr. Russell:
I have seen the same commercials. Exactly. So, you've got this wonderful new testing. Have there been some guidelines? Has ACOG, has ACMG decided to kind of start using this in its guidelines?

Dr. Wapner:
Sure. Now both ACOG and ACMG have suggested for over a decade to do screening. But they did it in a very limited fashion. ACOG suggested that we screen all patients for cystic fibrosis. ACMG suggested that we screen, not only for cystic fibrosis, which we're all aware of is a very severe, debilitating, lung disorder, but that we also screen for SMA or spinal muscular atrophy, which is a very severe neurologic disorder. Recently, ACOG, the American College of OB/GYN, suggested in addition to cystic fibrosis, they added SMA. So, until recently, that was the screening that we did. Most recently, as a matter of fact within the last month or two, ACOG and ACMG just said, it's now time that we seriously consider expanding carrier screening for all the reasons that we talked about. So, it's actually what the national organizations are now suggesting. They're not mandating that we do this, but they're suggesting that doctors should begin to think about it.

Dr. Russell:
So, how have you taken these guidelines and incorporated them into your own practice?

Dr. Wapner:
Yes, just in the interest of being transparent, for the last 3 years at Columbia, we have been doing expanded carrier screening. We felt that we owed it to our patients to give them as much genetic information as possible. Because if you did just the recommended screening, which at the time was cystic fibrosis and SMA, you would get less than 50% of carriers for these recessive disorders. So, we've been screening every patient that wants to be screened, because it's important, this is voluntary. So, the first important part is to make sure the patient understands what screening is about; make sure they want to have it. But other than that, everybody is at risk, including yourself.

Dr. Russell:
Wow. So, there's no group, no population you would say, "I'm not going to test you," if they're willing to be tested.
Dr. Wapner:
There's absolutely no group. Each of us, myself included, carry somewhere between 2 and 12 recessive disorders.

Now, not all of them are severe, but, as a matter of fact, among Ashkenazi Jews, because we were talking about them, if you screen for a lot of disorders, 1 in 3 will be a carrier for a severe disorder. Fortunately, still, their partners are rarely carriers, but that's how frequent these genes are that can cause these problems.

Dr. Russell:
So, if you've been doing this testing for 3 years at Columbia, you must have a great story of someone who in an old paradigm would not have been tested, but you tested them in this new expanded carrier screening state, and you found something unexpected.

Dr. Wapner:
Just recently, we had a woman who was Caucasian and Irish and non-Jewish and she had expanded carrier screening and lo-and-behold, she turned out to be a carrier for Tay-Sachs disease, which we would never, even 2 or 3 years ago, looked for in a non-Jewish Irish patient. So, we tested her husband thinking, "Ah, what's the chance that…" because he was Irish also, "What's the chance he'll have it." And the same thing; he was a carrier so they had a 1 in 4 chance of having a child that had Tay-Sachs and actually, unfortunately, the child had inherited both the affected genes from both parents and was affected with the disorder. So, there's an example of how expanded carrier screening was able to alert the couple that there was a problem.

Dr. Russell:

This would probably even be more powerful to know this information before someone's pregnant, correct?

Dr. Wapner:
Ideally; screening should be before you're pregnant. You don't need to be pregnant for the test to work and the majority of people could be screened. And I sometimes think that when a woman says to her obstetrician, "I'm thinking about having a child," then that's the time to do the screening.

Dr. Russell:
So, the future is here.

Dr. Wapner:
The future's absolutely here. All the tools that we have with genetics are leading us to a number of healthcare options. I think that there's some concern, people say, "It's a brave new world, what are we doing," and we do have a responsibility because we can test for so many things, to make sure we use it wisely, that we only test for disorders that are severe or debilitating, at least in someone that's considering a pregnancy, we test for things that are appropriate. But yes, the information we can give patients is here and we should learn to use it wisely.

Dr. Russell:
So, Dr. Wapner, are there any final thoughts you'd like to share with our viewers on this topic of expanded carrier screening?

Dr. Wapner:
I think, again, that it's to be thought of as giving patients important information about their pregnancy. And just because ACOG and ACMG have now expanded their recommendations, physicians in practice should start thinking about it. There's a paper that we wrote about 2 or 3 years ago that was kind of the beginning of raising the question, and it's called: Things to Consider if You're Having Carrier Screening. And there are a number of things. First of all, how you inform a patient about what you're testing for, the fact that it's voluntary, what you tell patients if they're carriers, and the most important thing there is, if you're a carrier, you're a totally normal person. How to counsel carrier couples. So, I think that that's something that people could look at. I think the other thing is, in both family physicians and OB/GYN, all this genetic information is flooding in, and to be honest, it can be overwhelming, I won't call us old, for people our age. But I think there are really great resources that are developing to help people begin to understand how to use these tools. So, shouldn't be afraid.

Dr. Russell:
But you work in a teaching hospital in the greatest city in the world. Is this going to be something that's going to be available, kind of, Main Street, USA?

Dr. Wapner:
Absolutely. This is not something that should be limited to teaching hospitals. And I have to hand it to the companies that are offering this testing, because they all have genetic counselors, they all educate the practicing physicians before they start using the test, and they're always there on the phone. If you have a question, you can pick up the phone and you can call them. But, your point is well taken. A test is only as good as the education and knowledge that people have. And without the backup of counselors and without the backup of this information, this would be problematic. So, you have to include both in your use of this.

Dr. Russell:
Well, you've shared some great education with us today. Thank you so much for being on the program.

Dr. Wapner:
Well, thank you for having me. Much appreciated.

Dr. Russell:
Thank you.

I would like to now welcome Lisa Pike-Buchanan, a genetic counselor with Quest Diagnostics. Lisa, welcome.

Lisa Pike-Buchanan:
Thank you. It's a pleasure to be here.

Dr. Russell:
So, can you tell us about your role as a genetics counselor at Quest Diagnostics and how we can work with clinicians?

Lisa Pike-Buchanan:
So, as a laboratory-based genetic counselor, it's my job to bridge the gap between information produced in the laboratory and that which

is given to the clinician. So, I help with everything from appropriate test selection all the way to results interpretation for the doctors. So, as Dr. Wapner mentioned, it's very important to get to know your lab-based genetic counselor because we are key in helping to translate complicated medical and genetic information into more simplified language that doctors can then share with their patients.

Dr. Russell:
Lisa, can you give me an example of that?

Lisa Pike-Buchanan:
Sure. So, in the carrier screening population, there may be a doctor who is seeing a positive carrier result for the very first time and they may not know what it means, they may not know what to do with it, so they will call me in the laboratory and we would have a discussion about what the result means and then what the next steps would be. In a carrier testing situation, this is most likely going to be to test the partner and then we can walk through what the results on the partner might be such that the doctor will be ready to answer any questions after that result comes back that the patient might have.

Dr. Russell:
Could you tell us about Quest Diagnostic's expanded carrier screening option?

Lisa Pike-Buchanan:
So, as we've heard in the last clip, our population is such an add mixture of different ethnic groups now that sometimes people are unaware of all of their ethnicity. So, pan-ethnic expanded carrier screening allows us to test individuals regardless of their self-identified ancestry and get a snapshot of what their genetic risk is for the diseases that are tested. So, at Quest Diagnostics, we have developed an expanded carrier screen that consists of 22 inherited diseases and we call it QHERIT and, in QHERIT, we do use next-gen sequencing as a methodology and these 22 diseases, 21 of them are autosomal recessive and one of them is x-linked. Typically, carrier panels are made up of recessive diseases because these are hidden diseases in families that you're trying to identify and recessive diseases can be passed down during multiple generations in a family and will go unnoticed until either a carrier couple happens to get together and have an affected child or somebody in the family happens to have carrier screening done and they're identified. Now, in terms of the x-linked disorders, those are a little bit different than recessive diseases. They only require one carrier parent in order to have an increased risk for affected offspring regardless of the carrier status of the other partner.

Dr. Russell:
Lisa, there certainly must be more than 22 inherited conditions out there. So, how did you guys at Quest Diagnostics decide on including which 22 diseases on this QHerit panel?

Lisa Pike-Buchanan:
Yes, that's a good question and it's always a balance of what is enough information versus what is too much information and, with the advent of next-gen sequencing, we have the ability to test for hundreds and hundreds of genetic disorders, all at the same time, all with one test. But the question remains, is that the appropriate approach in a prenatal setting and through interviews with OB/GYN's we've learned that their preference is actually to have smaller panels with a smaller number of manageable diseases for which they have some sort of guidelines from one of their national groups like ACOG. So, when we were developing QHERIT, we did look at national guidelines and recommendations from various groups, that is ACOG, ACMG, National Society of Genetic Counselors, Jewish Advocacy Groups and we only chose clinically actionable variants to include on our panel that are associated with a clear phenotype so that the doctors have some clear information on how to handle that positive result. So, another factor that went into our decision was carrier frequency of different diseases and we chose diseases that are approximately 1% carrier frequency or greater and specifically chose not to include ultra-rare conditions on our panel. There are some expanded carrier screening panels that do include these very rare conditions and there are risks to including them. For example, if a patient tests positive for one of these very rare diseases, then the next step would be to test the partner. But, in reality, what is the real risk that that partner would also be a carrier given that it's rare. Probably pretty darn low unless they're related to each other so, you've maybe, unnecessarily, increased the anxiety of that patient by including that disease on your panel. If you continue to walk through that scenario, let's just say that the partner does test positive for that ultra-rare condition, well, are you going to be able to find a laboratory that was able to validate fetal specimens so that you have a laboratory to go to in terms of prenatal diagnostic testing? Doctors don't want to be in situations where they know that their patient's pregnancy is at 25% risk and they can't do much about it very readily. So, we did make sure that we validated fetal specimens for each of the 22 diseases that are on our panel such that we can provide complete continuity of care for physicians who are trying to manage their patients. That is all the way through from carrier testing on the parent's bloods all the way through to providing prenatal diagnostic testing on fetal specimens for at-risk couples.

Dr. Russell:
That's really helpful, thank you so much for being with us today.

Lisa Pike-Buchanan:
Thank you.

Dr. Russell:
I would like to thank Dr. Wapner and Lisa Pike-Buchanan for speaking with me today.

I'm your host, Dr. John Russell, and thank you for joining us.

Narrator:
This is ReachMD. The preceding program was sponsored by Quest Diagnostics. Thank you for watching.