Gestational Diabetes: A Closer Look Into Pregnancy Complications
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Michelle Russell, M.D.

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Introduction

Andrew Schorr:
Hello and welcome to this winter day on HealthRadio Network and Patient Power. I'm Andrew Schorr today broadcasting from sunny Seattle. We had kind of ice and a little bit of snow. In other parts of the country, particularly where our guest is from today who you'll meet in a minute, they laugh about it, but we get like a dusting of snow or a little bit of slush, and everybody freaks out around here. My assistant, Blake, who's from Durham, North Carolina, and now she's living out here, she like left her car somewhere, took the bus, and she's struggling to get back to work today, but she's got that southern accent, and she's just not used to this, but we're ploughing ahead today.

When we think about moving ahead, we want to cover topics that we haven't covered yet on Patient Power. We've been doing a lot related to high-risk pregnancy because we wanted to talk about that and help people understand some issues that can come up. Often they don't, but if they do, you really want to know.

One of them is something called gestational diabetes. So we know about this word "diabetes" and we know that whether it's 19, 20, 21, 22 million Americans affected by diabetes now, it's an epidemic. So we're not talking about the sort of autoimmune diabetes, type 1 that people often develop very early in life. We think of adult onset diabetes, and as America has a weight problem, more and more children as well, we have called it adult onset, but it's kids now too. All right, so that's a kind of diabetes that's rampant in the country, and we've done programs on that.

But what about diabetes that develops during pregnancy? That's called gestational diabetes, and it affects about 135,000 women in the U.S. each year. So should you be alarmed? What kind of test should you have for it? Are you at risk? What do you do about it? How do you work with your doctor? How does it affect the baby? How might it affect, if it's not managed, affect your child going on in life, and what about for you? Lots of questions, so we're delighted to have with us an expert in high risk pregnancy and a maternal-fetal medicine specialist, and that's Dr. Michelle Russell who's an OB/GYN, and as I said a maternal-fetal medicine specialist. She's at the Dartmouth-Hitchcock Medical
Center. She joins us from today sunny, glistening blue skies, white from a blizzard yesterday, she joins us from Lebanon, New Hampshire. Dr. Russell thanks so much for being with us on Patient Power.

Dr. Russell:
Hello Mr. Schorr. Thank you very much for having me today.

Andrew:
Welcome, and you and everyone else can call me Andrew. My mother called me Andrew at an early age. Our producers like to joke and call me Andy, but anybody can call me Andrew.

So let's understand this problem. So first of all, it's not most of the time, but how much of the time in pregnancy do you see signs of gestational diabetes?

Dr. Russell:
The estimates for the occurrence of gestational diabetes in pregnancy varies depending on the ethnicity of the person, but overall in the United States about two to five percent of women will develop gestational diabetes in pregnancy, but there are certain groups of women of various ethnicities that have had rates up to 15 and even 20 percent.

Andrew Schorr:
Which groups are those?

Dr. Russell:
Well actually the Native Americans have rates of gestational diabetes in the high teens, and some of the other populations, like African Americans in this country, have gestational diabetes in the high teens as well.

Andrew Schorr:
Do we have any scientific evidence as to why as to why it affects those groups more?

Dr. Russell:
Those groups seem to be at increased risk of developing type-2 diabetes or adult onset type of a diabetes, and the pattern of gestational diabetes seems to reflect on the underlying incidence of type-2 diabetes in the population. Hispanic women, women of Hispanic ethnicity, are also at increased risk for gestational diabetes.

Dr. Russell so let's understand what went gestational diabetes means. So there you are. You're putting on weight the baby hopefully is getting bigger. What does it mean to have gestational diabetes? What's going on in the body?
Dr. Russell:
Right, well the definition of gestational diabetes is carbohydrate intolerance or intolerance to sugars in the diet, which is first diagnosed in pregnancy. So essentially the woman's body is unable to manage the dietary intake of glucose and sugars and her meals.

Andrew Schorr:
Hmm, okay. So is it something that's triggered with the hormones as the fetus develops? Where does it come from?

Yes it's thought that some of the hormones of pregnancy actually created kind of diabetogenic effect or a diabetes like effect. These hormones of pregnancy are thought to increase the fuels or the glucose for the baby during normal pregnancy, but in women who develop gestational diabetes there’s just a malfunction in the amount of insulin that their pancreas is able to produce, and this on top of the hormones of pregnancy produces the hyperglycemia or the high glucose resulting in gestational diabetes.

Testing Glucose Levels

Andrew Schorr:
How do you determine if a woman has this, and when during pregnancy do you look for it?

Dr. Russell:
Right. Typically we screen all pregnant women or most pregnant women anyway at around 24 to 28 weeks of pregnancy so in their middle-to-late second trimester and the beginning of the third trimester, and we give them a glucose drink called a glucose challenge test, which is essentially almost like a sweetened soda type of drink, and we test their blood sugar and hour after consuming this drink.

Andrew:
Okay, and then what results, we have some questions later in the program about specific numbers, but what's sort of normal range? What are you looking for that says things are okay, and then what kind of numbers would say, hmm, we should investigate this further?

Dr. Russell:
Right, various providers throughout the country use different numbers, but the numbers that are used to determine whether a person is at risk for gestational diabetes ranges between 130 mg/dL of blood glucose after the drink up to 140 mg/dL of blood glucose after the drink. Anything below 130 is considered normal.

Andrew:
Okay, let's say somebody had one of those right higher reading. Would you do any other test then to look for to look at a further?
Dr. Russell:
Yes. The initial test, the glucose challenge test, is a screening test that we do for most pregnancies. The women who have a higher glucose levels on that screening tests, the women with the levels greater than 130 or greater than 140 depending on the levels that your doctor uses, will go on to have a diagnostic test, which is called an oral glucose tolerance test.

Andrew:
Okay, and then are you looking at the same kind of number ranges then, or what would the result be then?

Dr. Russell:
Yes. The oral glucose tolerance test is typically about twice the amount of sugar, so the first screening test at 50 g of sugar, and the second screening test has 100 g of sugar or the diagnostic test is 100 g of sugar, and after this test would typically look at a glucose value prior to having taken the glucose drink, and we look for a number less than 95. Anything greater than 95 is considered abnormal. We also look at the blood glucose level of one hour after the drink, and we typically use levels of less than 180 as considered normal at one hour after drinking the drink and after two hours we use the value of 155 for the maternal glucose level, and after three hours we use a value of 140 that is considered normal.

Potential Complications for Mother and Baby

Andrew:
Let’s talk about the bottom line, and then of course we’ll get into well what do you do about it, but if somebody has those abnormal readings what is the risk to their baby in having a normal delivery and a healthy baby?

Dr. Russell:
The risk that obstetricians are most concerned about associated with gestational diabetes is the risk of macrosomia, which is a very large baby, typically a baby greater than 9.5 to 10 pounds, and with these large babies come difficult deliveries. So for the baby there is a risk of injury during the process of delivery, birth trauma, and also the risk of a complication called the shoulder dystocia.

Andrew:
First of all as far as having a larger baby though it would seem like then you could deliver the baby may be a little earlier and maybe cesarean section and that would take care of that, am I wrong?
Dr. Russell:
Gestational diabetes does increase the risk of a cesarean section. This is a definite association with gestational diabetes, and there are some birth thresholds or some estimated fetal weight thresholds at which a doctor would probably recommend this cesarean section.

Andrew:
What about delivering a little bit early?

Dr. Russell:
That certainly has been tried, and in situations where you have documented fetal lung maturity delivering a little bit earlier may be a very acceptable alternative to delivering later in having a very large baby.

Andrew:
Now people worry though, and some people have written in and wondered well, 'Is my baby at risk? Am I at risk for having a stillborn?' Which of course is terrifying. Any increased risk of that from gestational diabetes?

Dr. Russell:
Well the old literature, the original studies which basically defined gestational diabetes playback in the 1960s, did show that there was an increased risk of stillbirth associated with gestational diabetes, but with today's management and the monitoring that we do with gestational diabetes, the risk of stillbirth is very, very small and in well-controlled gestational diabetes probably not a whole lot different from the baseline population risk.

Andrew:
One other question. Let's say you had gestational diabetes and let's assume now maybe it wasn't well managed, will get to how you manage it, but if sort of went on you talk about what your risk for, but what about after the pregnancy? Let's talk about the kid first. What are the studies showing as far of a child who is developing during a period of gestational diabetes, are they at higher risk for any other conditions later on?

Dr. Russell:
Yes, there is several studies out there that have looked at the outcomes in the infants and the children who were born to women with gestational diabetes, and there seems to be in association with conditions such as chronic hypertension, obesity, and also insulin resistance and type-2 diabetes in those children that were born to women with gestational diabetes. There is thought that there is programming essentially that goes on that the intrauterine environment, the metabolism in the hormones and the increased insulin associated with gestational diabetes, predisposes these offspring to have these conditions; the hypertension, the type-2 diabetes, and the obesity.
Andrew:
Dr. Russell, what about for the mom? What about them?

Dr. Russell:
For the woman there is an increased risk of developing type-2 diabetes later in life. Gestational diabetes typically goes away about 90% of the time after delivery, but these women are at lifetime increased risk of developing type-2 diabetes.

Risk Factors and Prevention

Andrew:
All right, let's back up before the pregnancy. So is there a connection between type-2 diabetes before pregnancy and developing gestational diabetes? Is there a through-line there?

Dr. Russell:
Well, some women who are diagnosed with gestational diabetes very early in pregnancy actually may have type-2 diabetes underdiagnosed.

Andrew:
Okay and what about diabetes and their family? So if there was, you know we worry about the hereditary connection you know if you have relatives with type-2 diabetes, so does that put you at higher risk for gestational diabetes?

Dr. Russell:
Yes, it absolutely does, it's one of the risk factors. If you have a first-degree relative with type-2 diabetes, you have an increased risk of developing gestational diabetes and type-2 diabetes later in life.

Andrew:
All right, so what are things you do, so for women who are going to get pregnant or early in pregnancy, what can they be doing to avoid all this? What can lower their risk and maybe help us understand you mention one factor that may raise their risk, the first-degree relative, what are the other risk factors and when you do about all of them if you can?

Dr. Russell:
Right. Type-2 diabetes prevention has been shown pretty well in a very large study that weight loss, exercise, and dietary modifications can delay the onset of adult type-2 diabetes in people who are at increased risk for it. As far as gestational diabetes in pregnancy, very similar types of things such as weight loss before pregnancy, exercise, and use dietary modification may delay the onset of gestational diabetes or even prevent it in pregnancy.
Andrew:
Now is the community, the OB/GYN community, sort of unified and what the approaches are today? Maybe help us understand how you monitor for this and deal with it at Dartmouth, and is that the national standard, or we want to empower women to make sure they get the best quality of care.

Dr. Russell:
Right. Doctors throughout the country do not necessarily agree on a lot of the aspects of management of gestational diabetes, and part of that is that there is not a whole lot of evidence-based studies out there. A lot of the studies are observational, but we do our best to follow the guidelines put out by the American Diabetes Association as well as the American College of Obstetricians and Gynecologists, so most obstetricians follow these guidelines, and we do practice and manage diabetes in a relatively similar way.

Andrew:
So take us through it. So a woman gets that abnormal result in some percentage of the time, you said it varies maybe by the ethnicity, you tell your patient, 'Well you do have gestational diabetes,' and then they say, 'Okay, oh my goodness, what are we going to do about it?' so what do you do about it?

Dr. Russell:
The first thing that we usually do is once had actually been diagnosed with gestational diabetes, which is based on that oral glucose tolerance test, then we usually start monitoring their glucose. We also send them to a nutritionist or to a registered dietitian to basically become educated on dietary methods that can help to reduce their glucose level. So we monitor and educate them on nutritional intake.

Andrew:
But there's no particular medicine or anything that's use there. It's nutritional, it's diet. Now usually you think of gaining weight during pregnancy. So I know there is a healthy weight, but is there any weight management? Can somebody be too big or have too much weight during pregnancy and that would be a concern to?

Dr. Russell:
Absolutely women again an excessive amount of weight during pregnancy are at increased risk for gestational diabetes. We typically try to modify the diet in a way that allows continued weight gain during pregnancy, doesn't cause the person to go into a starvation type of metabolism, but provides them just enough calories and the distribution of calories that will maintain their glucose levels within a normal range. We do this typically for one to two weeks and monitor their glucose levels during that time.
Andrew: Dr. Russell, what about medication? For instance, there are people who develop type-2 diabetes who end up on insulin. Is insulin used at all during pregnancy with gestational diabetes, and how safe is it?

Dr. Russell: In general if the woman can control the gestational diabetes with diet then they don't need to have medication, but approximately 30% of women won't be able to control their gestational diabetes with diet, and they will require medication. The most frequently used medication during pregnancy to control the glucose level is insulin during pregnancy.

Andrew: So do they have to give themselves a shot or is that oral insulin. I don't know if it's come out yet, but I know there's been work on inhaled insulin. So what are the different delivery forms that can be used? Women have a lot on their minds when they're pregnant, and so dealing with this how can this be done as straightforwardly as possible?

Dr. Russell: There's a lot of research going on right now on different routes of administering insulin, but currently during pregnancy the safest route and the most tried-and-true route is actually insulin injections the subcutaneous injections of insulin.

Andrew: So would that be something that a woman would do herself; would you consider somebody with gestational diabetes then that they're in the high-risk category, and they're seeing their doctor more frequently and going to the clinic more frequently, and so they get the shots at the clinic, or do they do this themselves?

Dr. Russell: Typically, women can learn to give themselves their own injections and do very well at it. They're very motivated during pregnancy to take good care of themselves, and giving themselves insulin doesn't seem to be a major difficulty during pregnancy.

Andrew: Now, if the insulin is good for the mom as they go through pregnancy, you know, I know my wife, every little molecule of anything that she took during pregnancy for the three children that she gave birth to as they were developing, you know, she was very conscious of that. So with insulin is there any effect on the unborn child that would worry about?
Dr. Russell:
Well it's been studied and it doesn't seem that insulin. The human form of insulin actually crosses the placenta. So it seems safe in pregnancy, and it's been used for many, many years, at least since the 1960s and 1970s in gestational diabetes, and without any adverse outcomes in the fetus that we know of that's been associated with its use.

Andrew:
Okay. So most of the women who are diagnosed with gestational diabetes won't need medicine or insulin.

Dr. Russell:
Correct.

Andrew:
And the ones who do, typically with a shot, but it's not a concern as far as continuing with a healthy pregnancy. Now if it's managed that way, if the woman's on top of it and her doctor, and they're working together with the latest thinking about the management of gestational diabetes, does that take care of the concerns we had of having the baby that's too big, having to have a cesarean section, raising the risk of diabetes for the mom in the child later, does that reset everything to baseline, if you will, or where are we with that?

Dr. Russell:
Taking insulin during pregnancy certainly seems to improve the outcome of macrosomia, so the babies are not quite as large as babies that are born to women that are not treated with insulin or with the other agents during pregnancy. As far as the risk of cesarean section, unfortunately, just carrying the diagnosis of gestational diabetes increases the risk of cesarean section. So trivial with insulin doesn't seem to alternate that outcome.

Andrew:
We've a lot more to talk about, as we continue our visit with Dr. Michelle Russell who's an OB/GYN and maternal fetal medicine specialists and helps people with gestational diabetes at the Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire. We'll be back with much more Patient Power. We'll take questions from our listeners, either give us a call or send an e-mail. We'll be right back with much more.

Welcome back to Patient Power on HealthRadio Network. Andrew Schorr here broadcasting from sunny but not at all warm Seattle, although our guest I'm sure, Dr. Russell, will laugh just as probably like 40° here, you know, and in Lebanon, New Hampshire, What's the temperature? What is the 20?

Dr. Russell:
Yes, it was 20 this morning, yes.
Andrew:
Yeah, and you guys probably think that's warm. We're still upset now here because our Seattle Seahawks, and we have mild weather in Seattle, played against the Green Bay Packers and lost in kind of a blizzard, and we thought that was kind of unfair, and then the San Diego Chargers are going to Green Bay this weekend, and those guys are usually lying around getting a suntan, and they'll be there at Lambeau Field; the weather kind of works against them.

We're talking about gestational diabetes today, and Dr. Russell, who joins us from Dartmouth-Hitchcock Medical Center in sunny Lebanon, New Hampshire, and crisp and clear, it's beautiful. She is a specialist in high-risk pregnancies but also helping women who have gestational diabetes and as we heard earlier that can marry in some ethnic groups. Sometimes 15%, sometimes 4% of the pregnancies, but no matter what 135,000 new cases each year. One of the things I wanted to ask you about Dr. Russell before we get to some e-mail questions we've received, and we have people calling in as well; and we'll get to that, Nicole hold on for a minute; is like my wife. She had three pregnancies. We have three wonderful kids, two boys and a girl. She didn't develop it, but if she had developed it in pregnancy, number one would be Ari our 18 year old, would she be at higher risk of gestational diabetes for pregnancy number two or three?

Dr. Russell:
Yes, the recurrence rate for gestational diabetes is about 30 to 50%, so half of women who have gestational diabetes in a prior pregnancy will go on to have it again in a later pregnancy. Also maternal age is associated with gestational diabetes, so with the subsequent pregnancy you're a little bit older, so you're at a little bit higher risk of gestational diabetes in those other pregnancies.

Andrew:
Okay, now let's flip it around. My wife Esther had not had gestational diabetes in pregnancy number one. Does that mean she's in the clear for all future pregnancies or can it show up anytime?

Dr. Russell:
It can still show up. It really depends on issues such as her age, and even her weight gain between the pregnancies could also influence her risk for gestational diabetes and later pregnancies.

Listener Questions

Andrew:
Okay, so it's something you've got to pay attention to any time you go down this pregnancy road. Let's take a call. Joining us is Nicole. Nicole I understand you're in Trenton, New Jersey. Is it clear and beautiful there today?
Caller:
I guess you could say that. It is in my mind. It's cold.

Andrew:
There you go. What's your question for Dr. Russell?

Caller:
I want to know, is it normal for insulin resistance to increase during pregnancy without necessarily leading to gestational diabetes because I'm going to take the GTT, but I was wondering, what's normal, because most information refers to women taking the test at 24 to 28 weeks.

Andrew:
Good question.

Dr. Russell:
Normal pregnancy has an increased incidence of insulin resistance. That's how the body provides glucose for the fetus essentially is that your body becomes more insulin resistant. How far along are you right now?

Caller:
About four months.

Dr. Russell:
About four months, so your doctor is asking you to do an early glucose tolerance test. Is that true?

Caller:
Yes.

Dr. Russell:
Yes, he must think you have some increased risk for gestational diabetes, so he wants to make the diagnosis is early in the pregnancy is possible.

Caller:
Okay. All right, well thank you.

Andrew:
Nicole, thank you so much for listening. We've gotten in several e-mail questions, and I want to ask you some now. This one is from Rhonda in Mesa, Arizona. A little bit of a long question, but I'll read through this one Dr. Russell. I'm pregnant with my first child and diagnosed with diabetes during the first trimester, but the doctors don't know if it was pre-existing or not. It appears to be very mild, and I'm diet control as you said most people are. I'm now at 30 weeks, and my obstetrician tells me that they normally induce
their diabetic patients at 38 weeks. Even if they are well-controlled because of the risk of,' and this is scary, 'unexplained intrauterine fetal death,' which you were saying maybe that's the older studies, but I'd love your comment on that, because she says, 'however, I've read that if the diabetes diet controlled, then there is no greater risk of stillbirth. Could you please give me your opinion?'

So it sounds like there's information you'd question there. Help put it in perspective for us because she's worried.

**Dr. Russell:**
It's sometimes very difficult to tell if the person is pre-existing diabetes or gestational diabetes. The reason why her doctors are worried about her having pre-existing diabetes is that it was diagnosed so early in pregnancy, really before the placenta grew large enough to produce the hormones of pregnancy that are normally associated with the gestational diabetes. The fact that she is diet controlled makes it reasonably likely that it is gestational diabetes. The practice of inducing the pregnancies at 38 or 39 weeks for diabetes is not unusual. We generally here at Dartmouth recommend that there's a fetal lung maturity study done if the induction is going to occur prior to 39 weeks. Especially in somebody who has good glucose control.

**Andrew Schorr:**
Okay, now we're going to mention of course here, it's very difficult for Dr. Russell to tell a woman in Arizona or even across New Hampshire what to do, because she's not your doctor, and that wouldn't be fair. That wouldn't be fair on the air or on the Internet so you have to have this discussion, but we'll give you whatever information, and Dr. Russell we appreciate you sharing what you do in these sorts of situations at Dartmouth-Hitchcock.

Here's a question we got from Isabel in Washington, DC. She says, 'I'm 28-weeks pregnant and have gestational diabetes. Is it okay for me to eat desserts with,' and she said "malitol." Now we're assuming that's an artificial sweetener. So let's broaden that question. Is it okay for someone in her situation to eat desserts with an artificial sweetener?

**Dr. Russell:**
Right, well, it would depend on what your glucose does after the artificial sweetener dessert. You know, essentially, if the artificial sweetener dessert doesn't elevate your glucose level then an occasional dessert with a product in it like the sorbitol or potentially even the maltitol or phenylalanine is probably not going to be harmful during pregnancy. It's nothing that I would want to do a great excess though.

**Andrew:**
You said that you had people consult with a nutritionist, so I'm sure they take them through that. It sounds like having an nutritional consultation if you have gestational diabetes is a good idea.
Dr. Russell:
Oh, absolutely. The nutritionist can help women to figure out exactly what foods are causing their glucose levels to increase. They can help them to disperse their meals over the day. Rather than eating three large meals, eat three smaller meals and snacks in between, which also distributes the calories so that there's less of a glucose load and controls their blood sugar better. The dietitian is invaluable in educating women on how to eat and how to change their habits.

Andrew:
Okay, well, I'd recommend that to people. Now I want to skip back to one thing about treatment. So we said that about 30% of the time, you need to use a medicine. Often it's insulin, but I understand there's another drug that you use some too call glyburide. Tell us about that. What does that do, and where does that fit in with you're kind of tools that you have for this?

Dr. Russell:
This is true. This is a newer treatment strategy that doctors have been using increasingly over the past, probably about eight years or so. Glyburide is basically a medication called a sulfonylurea. It's been used a lot in type-2 diabetes, but the older kind of sulfonylureas were actually shown to cross the placenta, but glyburide, which is a newer type of medication in the family of sulfonylureas, does not appear to cross the placenta, and there has been one fairly large study that has compared women taking this medication glyburide to women taking insulin that have gestational diabetes, and their outcomes are very similar. They had similar glucose levels. They have similar rates of macrosomia. They actually had better satisfaction with the regimen, and it seems to be an alternative to taking insulin injections.

Andrew:
Okay, so it's an oral pill. How often do you take it?

Dr. Russell:
Well it depends on the control of the gestational diabetes. Typically it's started once a day and can be given as many times as twice a day.

Andrew:
Okay, Tamara looked it up for me, and what she found was glyburide lowers blood sugar by stimulating the pancreas to secrete insulin and helps the body use insulin more efficiently. So that's what you're trying to correct where the pregnancy has kind of disrupted that efficient insulin use, I guess.

Dr. Russell:
Exactly, exactly, and the beauty of glyburide is that it's been studied in actually cord blood levels where the baby's blood level has been checked, and it doesn't seem to be any
passage of glyburide from the mother to the baby. So it seems like a very safe alternative to using insulin during pregnancy.

Andrew:
All right. Let's go back to some e-mail questions. Now talked about the glucose screening test and how you do the screening test, and then there's a longer diagnostic test. Well Elizabeth from Pensacola sounds like she's going through it. Here's what she wrote in. 'I failed my one-hour glucose screening test,' and I think "fail" that's, she didn't do anything wrong, it just is, but she wrote, 'I failed my one-hour glucose screening. The result was 150.' And remind us what the top of the normal range would be in the one-hour tests.

Dr. Russell:
Right. Different providers use 130 up to 140, so I would say 150 is considered abnormal.

Andrew:
Okay. So, she said, 'I'm scheduled to take the three-hour test,' and I guess she calls it the GTT. I think he referred to it as the glucose challenge test?

Dr. Russell:
Well, the first screening test is the glucose challenge test. She is correct. It's what we call the glucose tolerance test, the GTT.

Andrew:
Okay, so that's the three-hour test. Now, she was given some instructions she is wondering about. She said, "I was instructed to on each of the two days prior to my test eat six slices of bread or three candy bars, and then I'm to fast starting at midnight the night before the test. She said, 'I'm confused. Why load up on carbs including simple carbs like in the candy bars in the days preceding the test?' So maybe you can help us understand the logic of what's going on there.

Dr. Russell:
Sure. Many women when they're told that they're going to have to undergo this test will start fasting and dieting, and essentially what they do is they deplete their liver of carbohydrate stores during their fasting and dieting, and we've actually seen that there's an increase false positive rate of this test in women who diet and fast before the test, so we typically tell people not to modify their diet and to make sure that they eat some complex carbohydrates in the forms of breads or pastas. I haven't recommend candy bars, but pastas and breads and those types of complex carbohydrates load their liver with carbohydrates so that they don't have that risk of the false positive test when they do the three-hour GTT.

Andrew:
Okay, I understand that stuff is really sweet by the way.
Dr. Russell:
My understanding is that it is very sweet as well, but it should be very similar to a soda beverage.

Andrew:
I know, my little boy, 10 years old, he wants to be like the big kids now, and they're having these energy drink. I'm trying to curtail that. I tasted that. That's super sweet stuff.

Here's an e-mail question we got in from Wendy in Rochester. I'm assuming it's Rochester, New York, but it could be Rochester, Minnesota, and there's even a Rochester in my state of Washington, but we'll pretend she's from clear and cold Rochester, New York. Wendy writes in, 'My mother who's in her late 30s is preparing to have another child. When my sister and I were conceived, she was diagnosed with gestational diabetes. My concern is that as she progresses in a pregnancy at the age she's at, is it a risky thing? If possible, what could she do to decrease her chances of being diagnosed with gestational diabetes, and would she be more likely to be diagnosed with type-1 or type-2 diabetes later in life because of all this?' And she says, 'I really appreciate your time, and hopefully this could help my mom's health.' Nice question.

Dr. Russell:
Sure. Well, if your mom had gestational diabetes. When she was pregnant with her first two children, she does have an increased risk of gestational diabetes in her subsequent pregnancies. As far as reducing the risk, there are some great studies that have shown that weight loss through exercise and modifying the diet can actually prevent type-2 diabetes and can probably reduce the risk of gestational diabetes as well. As far as the risk of type-1 diabetes, gestational diabetes doesn't seem to increase your risk of type-1 diabetes later in life. It does seem to be associated with type-2 diabetes. It's not that the pregnancy necessarily increases the risk of type-2 diabetes, but it's that women who have the gestational diabetes are at a predisposition to later in life to develop the type-2 diabetes.

Andrew:
Wendy, it's very sweet. So you can take your mom and go for walks with her, whether it's the mall or wherever. Yeah, do some exercise. Don't stop for chocolate cake for huge chocolate chip cookies, even though I love them, but I'm not pregnant, but anyway, just manage that, and I think that's the best thing, but gathering information like you are now is a wonderful gift for your mom. So thanks for doing that.

Dr. Russell:
Absolutely. Right, in general, the public health service recommends 30 minutes of exercise on most days of the week. When I talk to patients who are at risk for gestational
diabetes, or that even have gestational diabetes, I tell them that exercise program applies to you as well as long as they don't have any risk factors that should prevent them from exercising.

Andrew:
Yes. It's so important. Okay, so if a woman's pregnant, you say what kind of activities are safe? I'm just curious about that. Like for instance, you're like in a big cross-country skiing area like I am. Could somebody besides walking get out in the snow? You're worried about falling, you know, so what kind of activities would you recommend?

Dr. Russell:
Well, in general, I tell people that the activities that they're used to doing prior to pregnancy short of doing things like contact sports, karate and boxing and things like that, they can continue these activities even when they're pregnant. We do ask them to modify their heart rate a little bit, and if their heart rate seems to be saying above 120 beats-per-minute then they should probably back down their exercise level a little bit, but if they're physically fit to begin with, and they're doing things like running or aerobics, they can pretty much continue doing those throughout pregnancy as long as no other risk factors develop in pregnancy that should prevent them from doing it.

Andrew:
Okay, good to know. Now here's a question he got in from Lorraine on Long Island, New York. She writes in, 'During the past two to three weeks, my first and second toes on my left foot had a degree of numbness. I've also had a burning station in the heel of the foot. I have numbness or tingling in both feet from time to time. I had gestational diabetes with both pregnancies, and my father is diabetic. I've been told that this could possibly be caused by unstable sugar levels. Is this true?' Before you answer, I think this brings up the whole thing of what monitoring women need after having had gestational diabetes in pregnancy.

Dr. Russell:
Absolutely. As far as monitoring after gestational diabetes, in general, we recommend that women undergo another glucose tolerance test, a smaller glucose tolerance test where they only have two blood sugar levels tested, and this is called the 75 g two-hour oral glucose tolerance test, and it's typically done at about six weeks postpartum. This is to detect any women who have persistent diabetes after the pregnancy hormones have dissipated. If that test is abnormal, then they should be followed by their primary care physicians for either glucose intolerance or for diabetes if the results indicate one or the other. If the test is normal, they should probably be followed periodically throughout their life for the development of type-2 diabetes. Some people recommend an annual fasting glucose or even potentially doing it every three years an evaluation for type-2 diabetes.
Andrew:
Now of course Lorraine is worried about I guess circulation issues because she's got this numbness and tingling and certainly we've heard that that can go with diabetes ongoing, so she should get that checked, and it could possibly be tied to unstable sugar levels?

Dr. Russell:
Well certainly people that have type-2 diabetes that are poorly controlled or undiagnosed can develop peripheral neuropathies or nerve injury, which can present as numbness and tingling in the extremities. So yes, she should go to her primary care doctor and be evaluated for the development of type-2 diabetes. Her lifetime risk after having had a pregnancy with gestational diabetes is 50 to 70%.

Andrew:
Okay, Lorraine, we gave you your marching orders. I hope things turn out okay, but of course, there are almost, I think it may be over 20 million people now living with type-2 diabetes, and many of them, many, many where it's well managed are living quite well. It's a little scary, but having an active relationship with your doctor, getting monitored and doing the exercise and diet and maybe medication that you need can make huge difference.

Okay, here's a question we got in from Los Angeles from Miriam. She writes in, 'Dr. Russell, I had a diabetes test at my OB/GYN the other day, and I drank the sweet drink and then had a fingerstick almost an hour earlier.' She said, 'I tested 141. My doctor said that was one point above their cutoff, so I was sent for a three-hour glucose tolerance test.' So she wants to know is 141 high. 'My doctor said that he didn't think I had diabetes but wanted to be safe. If I had diabetes, what can it do to the fetus?' We've covered a lot of this already, I know, 'and does the condition reverse after pregnancy, and would glucose have been tested in my prenatal blood work?'

So let's take that in pieces. You said that usually the normal level in many clinics is 140?

Dr. Russell:
Correct.

Andrew:
Okay, so 141, he wants to check further, and he's not that worried though. If she has diabetes, then there's the monitoring, and I think was that 70% of the time it's diet and exercise. The worry to the fetus at that level is not high as well managed, correct?

Dr. Russell:
Correct. If the gestational diabetes is able to be managed with diet and is well controlled, then the risk to the fetus is fairly capped. There's still a risk of macrosomia or huge baby.
Andrew:
Right. Now would glucose have been tested earlier in her prenatal blood work, and would have shown up then?

Dr. Russell:
The routine prenatal blood work doesn't usually include a glucose level. Some providers may be doing that, but in general it's not one of the standard tests that's ordered up at the initial prenatal visit.

Andrew:
And as you said is it's usually the fetus getting to a certain point in the pregnancy that triggers all these insulin problems in the first place, so it usually shows up typically later in pregnancy, right?

Dr. Russell:
Correct. It has to do with the placental hormones, and the larger the placenta becomes in the late second and early third trimester, the increased risk of the gestational diabetes. So early on in pregnancy, the placenta is much smaller, the hormones are much less, and typically we don't see gestational diabetes in a very initial start parts of pregnancy.

Andrew:
Okay, and just to restate to help Miriam, does gestational diabetes typically go away after pregnancy?

Dr. Russell:
Yes, about 90% of the time gestational diabetes will go away after pregnancy. Only somewhere around 10% of women would be actually diagnosed with persistent diabetes, usually type-2, but those people still have the lifelong risk of developing type-2 diabetes over the course of a number of years. The risks sometimes are 50 to 70%.

Andrew:
Okay. So I guess as we sum up Dr. Russell the way to look at this is you need an active dialogue with your doctor, if you're diagnosed with then there's a plan usually that follows that you need to follow, and if you do, most of the time you'll do fine.

Dr. Russell:
This is true. Also, as long as women are tested after pregnancies then the hope would be that in subsequent pregnancies that they won't have pre-existing undiagnosed diabetes.

Andrew:
Well, I want to thank you for your time with us today. Dr. Michelle Russell, as we told you earlier, is at the Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire where we said it's clear and cold today. She's given us some great information on gestational diabetes. So it's something to take a look at, understand always family history, whether
you may have type-2 diabetes, that's something you discuss with your doctor, and certain ethnic groups certainly are at higher risk. Dr. Russell, thanks so much for being with us on Patient Power.

**Dr. Russell:**
Thank you, Andrew, it was a pleasure.

**Andrew:**
Really, it was a pleasure. Thank you so much. Also by the way tomorrow on Patient Power on our next program were going to take a look at lowering high cholesterol and taking charge of your health with Dr. Jeffrey Johnson. We'll also have nurse Jane Kelly from the University of Tennessee Medical Center. We always pay attention to cholesterol too. This is what we do on Patient Power. Take a look at our website, [www.patientpower.info](http://www.patientpower.info), and also to go to the new Microsoft HealthVault search engine, health.live.com, you can search on many topics and Patient Power is right there too. We're really excited. Have a great winter day and as always, knowledge can be the best medicine of all. In Seattle I'm Andrew Schorr, signing off.

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