



INSULIN RESISTANCE
— SOLUTION —
PRACTITIONER TRAINING

Assessment Transcript

Hello and welcome to The Institute of Nutritional Endocrinology's Insulin Resistance Solution Practitioner Training, Module 2, Insulin Resistance Assessment and Glucose Testing.

The very first thing you want to do when you are working with somebody is just determine if indeed they are a candidate for this kind of work. How do you do that? Well, there's a number of ways to assess.

I like to use the insulin resistance assessment online form that we've given you in here.

I would start with you, because you might be in for a surprise. If you don't think you have an insulin resistance problem, you may find out that you do and then you'll be the best test case of all. That's what happened to me.

When I first started teaching, I decided to get a blood sugar meter for myself so that I could do the testing on me and do some videos. And I discovered that indeed have the problem. So it's not just what you think.

When somebody walks in your office and you see somebody with a big belly in comparison to the rest of them, it's often a surefire sign that they have insulin resistance. Then if they start to tell you, 'Oh, my brain is foggy and I'm tired all the time and I used to be able to remember things and I don't. And I've got no energy,' eh, it's a good sign they have insulin resistance.

Then you ask further questions – things like, 'Do you feel hungry, especially for sweets, even after you've just had a big meal? After you eat, do you feel more tired or do you feel energized?' These are some of the questions that are on there, really key questions to be asking people. 'Do you get cranky and irritable if you skip a meal?'



It's all signs of blood sugar imbalance. Not necessarily all related to insulin resistance, but it's all a spectrum. It's kind of like the way I look at the spectrum of neurodevelopmental diseases or disorders, like ADD, ADHD, Asperger's disease, autism – it's all on a spectrum.

This is the blood sugar imbalance spectrum, and it goes from hypoglycemia or reactive hypoglycemia, which means low blood sugar, and then it goes to hyperinsulinemia, where your body's producing too much – actually, that's usually at the stage of hypoglycemia that your body ends up producing too much insulin, which makes your body go down. Then you develop insulin resistance from all that insulin in your system, then you may go on to metabolic syndrome, which is like advanced state insulin resistance and you add in some of the cardiovascular side effects of the elevated insulin and glucose for so long. And then, finally, diabetes.

Not everybody progresses all the way to diabetes, but let me tell you, you get somebody who hits metabolic syndrome, it's not good.

When they get to insulin resistance, it may not be as dangerous at the present time, but they're leading themselves towards dangerous side effects.

So do the test on yourself – do the test on some of your loved ones, do the test on as many people as you can to get the experience of interpreting the test.

The next way to assess your clients is via lab testing. You may or may not be able to do it, depending on what state you practice in, but most of us can order stuff through Direct Labs dot com. I have a license that allows me to order blood tests directly. I still use Direct Labs dot com, because it's must easier to just send somebody there, they handle all the payments, they handle all the orders. I don't have to fill out requisition slips. It's much easier.

Direct Labs dot com – the link for that is in the lab testing PDF document.

But these are the ranges – anywhere from 75 to 89. When you have somebody whose blood glucose in the fasting range goes above 90, they're starting to get into the stages of insulin resistance. When it goes above 100, they're there. When it goes above 120, they will be diagnosed as diabetic.

So best is to keep it in the nice steady state – 75 to 85, some functional medicine practitioners say. I'm okay with up to 89, 75 to 89. I've seen studies that show when it goes above 90, there's a problem.



Fasting insulin is a good thing to do if you want to determine if this person is truly a type 2 diabetic – if a person's diabetic – or type 1 or they're heading towards a problem with insulin resistance versus a problem with not enough insulin. Okay? I've been able to use this – I've had somebody come in that said that they were told that they were type 2 diabetic, they were on three different medications, it wasn't helping. Their blood sugars, fasting, were still in the 220s, and they were on Metformin and other things for insulin resistance.

Well, we went and we tested their insulin – their fasting and their postprandial, meaning after-eating insulin – and it was really low.

So was that this person – it wasn't really a type 2 diabetic, it was an autoimmune diabetes. And when we got the person off some of the triggers for that autoimmunity, he managed to get his blood sugars down in the 70s and 80s pretty quickly. So we were able to differentiate that, and the antibodies helped, too.

Triglycerides – in a person who has been...who has is just having some early blood sugar dysregulation, you may not see any change at all in triglycerides.

HDLs – you want the ratio between the triglycerides and the HDLs to be less than or equal to one to be ideal. So if you've got someone whose triglycerides are 100 and their HDLs are 40, they're probably leaning towards insulin resistance.

If you have somebody whose triglycerides is above 100 – say they're 200 – and their HDLs are bound to be 100, that's a sign of insulin resistance. And it's something that's often overlooked and you can help people to determine, early on, whether they have a tendency towards insulin resistance. Most medical practitioners do not know about this. It's usually used by more functional and specialists.

Let's talk about hemoglobin A1c. I'm going to review that. That's a measure in your blood of the glycosylated hemoglobin. How many red blood cells are sugar-coated? And that gives you an idea of how long your blood sugar has been elevated and how high it's been elevated. The higher the percentage, the more you've had elevated blood sugars. And it's usually over the previous three months. So you wouldn't do a hemoglobin A1c, put somebody on a protocol, and go back and test it a month or two later.

Three to four months – although I will tell you, with this guy who I was just telling you about, he had a hemoglobin A1c at about 10 or 11. He was told he was not going to be able to get his pilot's license back, because he had to go back through a physical, and, if you were on insulin, you weren't going to get it. And if your hemoglobin A1c was out of control, they weren't going to give him his license.



So he was determined, and he did everything I said, and, at six weeks, he wanted to test his hemoglobin A1c, and I said, 'I don't know that you're going to see that much of a difference now. We should wait for the three months.'

He goes, 'Eh, it doesn't matter. I'll just see if it's on the path.'

And his hemoglobin A1c had gone from a 10 to 7. And 7 is considered well controlled for diabetics. But if you look on the chart, you'll see that, comparison between 'what does the mean blood sugar - at a certain level.' So somebody has a 4, a hemoglobin A1c of 4, that means their average blood sugar was 65. That's kind of low. Right? But 4.5 is somewhere in the range of 80, 82 – something like that. That's more something to target for.

If their hemoglobin A1c is just right about 5, their average blood sugar is 100. That's really good, because if you figure that they've been low overnight, leading up to the fast, and then all of their spikes of 0:11:15.6 glucose throughout the day, keeping it at 100 is good.

So the range I have written down there is 4.5 to 5 is really optimal. 5.6 is already at about 118 as an average, and you'll see when we talk about doing a 30-day metabolic reset with your clients that I like you to keep the blood sugars under 110 at all times. And I'll show you a few studies as to why I believe that.

So hemoglobin A1c is a great detector – you can do it as a home test. It's not as easy to do as glucose. It's not just a matter of poking your finger, sticking the blood on a little strip and getting a number. You have to do multiple steps. And I, quite frankly, messed up my first two, because I didn't read the instructions carefully enough and I didn't do it right.

So but you can get them – they're not that much. I think it costs a dollar or two less to do a home test versus going into the lab, Direct Labs, and get it done.

Some of the other tests I put in here are not...they're more extras, like the Bloodspot Fatty Acid Test by Metamatrix. Remember we talked about DHA being one of the key nutrients? The Bloodspot Fatty Acid helps you to detect imbalances in omega-3 and -6 that can adversely affect blood sugar. That's a test that's a finger prick test. They order the kit, they do it at home, they send in the card, and it's available at Direct Labs. Nice test – about \$120-ish.

Vitamin D is super important. I personally like to see it upwards of 75. A lot of docs are saying, 'No, no, no, it's fine if it's 50.' The more research I look at, the more I'm convinced that if you want to improve insulin sensitivity as well as improve thyroid function and improve the ability of your body to respond to autoimmunity and get better adrenal function, we want the numbers to be higher – 75 to 100.



C-peptide – that's something you probably have never heard of before. That's one of the ones I ran on my guy who I suspected didn't really have type 2 diabetes after all. C-peptide is also known as insulin C-peptide or connecting peptide. And that measures the residual beta cell function. The beta cells are the cells within the pancreas that produce insulin. If those beta cells have been damaged, destroyed, tried out, worn out, not producing enough, you're going to see low C-peptide levels.

The other thing you can run if you suspect that this person might have an autoimmune diabetes is islet cell antibodies. Your body can actually make antibodies that attack the islet cells of your pancreas. All of these tests are available on Direct Labs. They're a little bit more expensive than the standard, like hemoglobin A1c test. The panel can run quite a number of \$100. But it's really worthwhile.

The other thing is glutamic acid decarboxylase, GAD. That's an enzyme that's produced primarily by your pancreas islet cells. It's actually an enzyme that makes GABA, the neurotransmitter. So it's related both to insulin function and to the production of GABA. If that is too high, it means that there's a breakdown going on in the pancreas.

And then, finally, we have antibodies that attack insulin - insulin antibodies. You want those to be less than 5. If they're greater than 5, then it says your body is having an autoimmune attack.

The last test that I have listed on here is the adrenal stress index, because we know that insulin resistance and adrenal stress are very closely linked. So that's an optional test.

If you're going to be doing any pre-testing with somebody, highly recommend that you at least get a glucose and a hemoglobin A1c and if you can get them to...and a vitamin D. And if you can get them to swing for the fasting insulin, the triglyceride HDL, so you can calculate the ratio, these are good starting numbers so that you know where they're starting from and, as you guide them through a program, you know whether or not they're improving.

There's some short lifestyle assessments that I really like, because it asks people questions about some of the habits that we're going to be asking people to move towards and asking to see if they already have some of those habits. And there's one for nutrition, one for fitness, one for stress, one for sleep, and one for timing. So you have access those and you can use them as you wish. You can create one document for yourself. You can combine them. You can use the questions however you wish and use them with people.



We mentioned that we have a questionnaire that you can get a score, but symptoms of insulin resistance, when they walk in the door – when they start talking to you – these are some of the primary ones. The extra belly fat, low energy – especially after meals. Do you think you should be energized after you eat a meal? So when you have people who say they have low energy, especially after they eat a meal, they're hungry after they eat a meal – especially if they say they want sweets – they have a mid-afternoon energy slump – that could also be adrenal fatigue, but they're often closely tied together – they have challenge focusing, and they just really cranky and irritable if they miss a meal. If that's the person that's sitting in front of you, explain to them how this works, and I'll give you the tools that you need to get started with that.

This is just a summary sheet of the lab marker patterns. It's in front of you. Fasting glucose, in a normal person, 75 to 89, in an insulin-resistant person, 90 to 119, somebody with metabolic syndrome, it's generally going to be above 100, and remember metabolic syndrome is the combination of insulin resistance with altered blood lipids and also blood pressure, and then diabetes is greater than 120.

Your triglycerides – this should be greater than 65. Insulin resistant, greater than 90 you'll usually see. Metabolic syndrome greater than 110 – same with diabetes and sometimes you see these hugely elevated.... If you see somebody with 165, 250, then you're really, clearly going to suspect that there's an insulin resistance issue.

The HDL – 50 to 90 is what you're going to see normally. Insulin resistance, it's going to be less than 65, and it could be as low as 20. Same thing with metabolic syndrome and diabetes – they're going to be below 55.

Your fasting insulin – that should be between 2 and 5. And then your insulin resistance greater than 5, depending on the stage they're in – same thing with metabolic syndrome and diabetes. That number's going to go up. You can see people with a fasting insulin of 300.

The other thing to look at is after-they've-eaten insulin. And I wish that was something easily we all could do, because it'd be really telling.

Hemoglobin A1c – I said I like it to be between 4.5 and 5. When they get up to 5.3 to 6.5, they're insulin resistant. At 5.3, you're already looking at the average glucose is like in the one-teens, so that's not optimal. Metabolic syndrome, it's greater than 5.7, which means it's greater than...let me look at that. 5 is 100 and 6 is 135, so 5.7 puts at somewhere in the 120s. Not good. That's the average; that means fasting plus the spikes after eating. That's not good. And that same thing with diabetes.



So the first thing you've done when a person walks in the door is to look at them and say, 'Yeah, I think this person's insulin resistant.' You've done the physical assessment, you've asked them about their symptoms. You maybe did the insulin resistance questionnaire, maybe you get good enough that you don't even have to do the questionnaire, but it is a good idea to do because you get an objective number to share with them and to also show them that what you're doing with them is working.

Blood sugar testing is really important. I was going to say 'mandatory'; it's not mandatory. Nothing's mandatory, but when you can get your clients to do their blood sugar testing, you're going to have dramatic changes.

And a few stories – I have had people who have said, 'Oh, no, I can't do it. Oh, no. I'm afraid.' I've walked them through it. I've literally been on the phone with people as they were doing it, saying, 'Okay, now you do this and now you do that,' and they finally do it. And then they become obsessive about it when they see how much insight it gives them into the inner workings of their body.

That said, I still have several people who have not done it. They just haven't done it. They're just afraid to do it. They kind of tune in; they go on extremely low-glycemic diet, they go to the extremes. They eliminate certain things that maybe they don't have to eliminate, but they're not willing to test.

What it does, if you can explain to them that glucose testing is going to give them freedom in going through an insulin reset program. Why? Because, if you don't test, then you're just going to tell them, 'Okay, we're going to have you avoid all of these foods, because these have the potential to raise your blood sugar.' And you'll have them off of all grains and potatoes and sweet potatoes and all fruits. But if they test, then they can include everything that keeps their sugars below 110. And I'll share with you in the video on the page – you just go and watch the video of me doing the testing, really easy, and then charting it and explaining what the charts mean.

I'll give you a little bit of an idea here, but I have a really nice little spreadsheet that you're welcome to modify for your own purposes. Use that as a guideline. Really good, really helpful.

What I did for myself – once I discovered that I had this problem – is I printed out a whole stack of those sheets and I stapled them together and I just kept it with me. And, after a few weeks, I just had page after page after page of this stuff. But it was real easy and I figured out what I could eat and what I couldn't eat.



We'll go through those details – there's some of the details are gone through on the page. There's a video. There's an interpretation video – really get familiar with this.

One thing I would do over the next week is really get familiar with this. Test yourself.

You want to be able to work with people at a pace that they can do. Some people are just going to be 'Okay, have at it – I'm going to just do this' and others, you're going to have to go really slowly with.

I have some people who are just so obsessed with glucose testing that they – they're constantly testing it. They'll test every five minutes if they're testing a food, because they want to make sure they don't miss the spike. And other people are saying, 'Well, how many times do I have to do it? Can I just do it once in that first hour?' And I explain, too, on the video, a little bit more. I like to do it in that first hour, every 15 minutes – at least the first few times, just so they get the sense of how their body's reacting. And if there's a pattern to it, like their glucose always spikes at 45 minutes, then no problem.

It's very easy to do. You're basically have this little lancet. It's spring-fed. You cock it. I don't know if you can hear it. Let's see. That's cocked, and then you hold it up to your finger and you press the button and a little drop of blood, just like that, comes out. You put it directly in. You'll see on my video exactly how to do it.

I give you resources for the ones that I've used and that I've tested and that I enjoy and that have the most economical strips.

Glucose testing is not just for diabetics anymore. It's for the average person who wants optimal health. Now, if you have somebody or you are testing and you go, 'Well, it just doesn't apply to me.' That's good – it doesn't apply to you. It's going to apply to your clients and you need to be comfortable doing it. You need to be able to show them.

If you're doing face-to-face with them, you cannot do it for them - unless you're licensed as a phlebotomist or a nurse or a doctor - but you can do it, show them how, and then you can have them do it. I even had a few, when I was seeing people in my office, I would keep a few of these in-house so that I could have them walk away with it.

They're very easy to get. You can get them at Walgreens here in the States. I'm not sure if they're as easy in other countries, but this particular brand, the True2go and the TRUE Result, the two different ones, use the same strips and those strips are very inexpensive.



In fact, I have four new boxes of them sitting here. My husband just walked up and said, 'Hey, I just bought you some new strips.' So they're TRUE test strips. We get them for around \$20 or \$22 on Amazon for 100 of them. It's really a great skill.

This is going to set you apart as a practitioner, because most practitioners aren't doing this except with their diabetic patients. And you know what? They're not doing it right with their diabetic patients. They're telling their diabetic patients to test their glucose before a meal, and then test it two hours after the meal.

And get this – they're telling them, 'If your sugar is 140 at two hours after your meal, you're okay.' They're telling this to diabetics. This is insane and I'll show you a few slides that show you absolutely why that's so irresponsible.

We want to keep it at 110 or below. You want them to be able to test their stuff and test before they really start changing their diet, you want to catch them. You want to show them what their current diet's doing to them. If they typically eat donuts and coffee in the morning, have them test after their donuts and coffee.

Here's a graph – and this is both done after giving somebody a high carbohydrate meal where the straight line is about 7:30. And these are done with people who are not diabetic. And you'll see that they all have a certain peak where they kind peak out – at similar times, they all peak. But some of them are really high and some of them are really low.

You see a lot of people are just – they barely go up. It goes up 20 points and it comes back down. It never goes above that one line at the bottom, that kind of golden line. It never goes above 90, that lower one. Yeah, the bottom one is insulin, so insulin numbers and glucose numbers. It's the top one you want to be looking at.

We have a lot more detail on this in the presentation. I do a slide presentation in there and the explanation of how to interpret. And this is comparing – the bottom is somebody after a five-hour glucose tolerance test. The bottom is the low end and the minimum, the one minimum and the one max. Those are the normal ranges.

That's the ranges that people went to. This is after 100 grams of sugar that some people peaked at 150. At two hours, they were down into the 120 range - on the high end people.

Most people were below that and then the others were mildly diabetic or insulin resistant or very severely diabetic up at the top. Again, I explain all this in the videos. Watch them – great information. I don't want to spend your time now going over it again. You've got it there.



But here's the reason we want to do this. So you want to make sure that you know how your glucose is affected by the foods you eat and it also usually graphs – well, look back – pretty closely to blood sugar. The top is blood sugar. You can usually tell: 'Okay, if they're having a spike in glucose, they're having a spike in insulin.' Right? Except for certain foods, and this is where you need to be careful.

Dairy products produce high insulin response, even though what's called the glycemic index is low. Suffice it to say my opinion about the glycemic index is it's a moderately useful guideline. It's not science.

People will say, 'Oh, I'm going to have a low-glycemic sweetener like coconut nectar.'

I had somebody take coconut nectar, put it in a cup of hot water and drink it as a tea, and her blood sugar shot up to 160. That's not, in my book, low-glycemic.

Blueberries are considered a low-glycemic fruit. In fact, they have some substances that help improve insulin sensitivity. But I was not alone in that blueberries made my blood sugar go up. And there were several other people in my very first program, when I first discovered my issue, that had the same issue. Their blood sugar went up on blueberries.

You can't just say, 'Okay, well, you can include blueberries because it's said to be low glycemic.' If you truly want to get them results, you want to know what their body's doing with it.

But getting back to the dairy products, they produce high insulin response, even though they don't raise the blood sugar. So at first, when they were studying it, they thought, 'Well, maybe it's just due to lactose.' They turned out that it was the amino acids leucine, valine, lysine, and isoleucine are insulinogenic. And they're highest in whey.

Protein-rich foods and foods rich in fat and refined carbohydrate caused high insulin responses higher than their glycemic responses. So, instead of them being kind of on par so you could say, 'Oh, that particular food raised blood glucose that high, so therefore it raised the insulin that high,' there were certain things that were a combination foods that had a lot of protein and fat and refined carb that, even though they tested their blood sugar, it didn't go up.

So for example, if you, say, have somebody take like a Hostess cupcake and they find that their blood sugar doesn't go up that much, it's – their insulin is probably going up real high. It's just that the combination is keeping the blood sugar from going up too high. Doesn't mean it's a good food for them.



That's the other thing. Make sure your people know that, when they test a food, just because it doesn't raise their glucose, it doesn't mean it's good for them. It may not be good for them.

When you combine a protein-rich food and a carb-rich food – so for example, you have steak with potato. If you had just the potato, you may see a rapid rise in glucose. When you have it with the steak, the glucose doesn't go as high. But the insulin does.

So you can't always say, 'Well, I'm just going to slow this down by adding another food to it' if you're going to take a high-glycemic food. It doesn't always work that way.

And there's some reference there if you want to know more.

Blood sugars over 100 cause damage. What?! They're telling people that they can have a fasting blood sugar of up to 100, but any time it goes above 100, it causes damage? What's that all about?

This was a study – when was it done? 2004. And it was done on a group of people that had a small amount of beta cell destruction. Not huge, but they had beta cell destruction, which means that cells in the pancreas, they began to be undetectable in people whose blood sugar rose only slightly over 100 milligram on a two-hour glucose tolerance test. Those are the people at the low end of the spectrum.

There's some moderate amount of damage – now, this isn't saying there's severe damage. But there is some moderate damage, even at numbers over 100. So your really ideal would be to keep the numbers from ever going over 100.

I tell people when we're doing a metabolic reset 110 is their max. And if there's any food that makes it go higher than that, they shouldn't be eating it.

That doesn't mean they always shouldn't be eating it. As they restore the receptors and they get their diets improved and they get their nutrients improved, they get the glucose sensitivity up with exercise, things are going to change.

This was really frightening. More than 60 percent of retinopathy – retinopathy is a pathology to the retina that occurs as a diabetic complication – more than 60 percent were among patients where their fasting glucose levels were below 126.

Remember, they're diagnosing people as diabetics once it hits 120, but over 60 percent of them already have retinopathy by the time they're getting diagnosed – or pretty close.



Some 7.4 percent – so this is...it's not an insignificant percent. Up to 13 percent – not an insignificant percent – that had retinopathy when their glucose levels stayed below 100. So you really – it's really taking care with this - not taking it lightly.

They say, 'Ah, you know, so I had a bowl of fruit and my sugar went up to 150, but it came down pretty quickly.'

It's still causing damage. So really harp on them that.... We'll go through this in more detail. As they're going through the metabolic reset, we want to them to keep their sugars at 110 or below.