
James L Wilson: Adrenal Fatigue & Metabolic Syndrome Stress

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Speaker 1: ... This Jim Wilson, who is one of the few people to hold 3 Doctorate Degrees and 2 Masters Degrees all from different disciplines. He received his PhD in [inaudible 00:00:14] nutrition from the University of Arizona, with a dissertation in cellular immunology and holds degrees as a Doctor of Chiropractic and Naturopathic Medicine. His Masters Degrees are in bio-nutrition and experimental psychology, all in all totaling 24 years across secondary education. He was one of the 14 founders of the Canadian College of Naturopathic Medicine in Toronto, one of the largest naturopathic colleges in the world. He currently resides in Tucson, Arizona. During his 28 years of private practice, he dedicated himself to helping people regain their health and vitality and continues to pursue that purpose on a wider scale through his current activities of teaching, writing, research, and formulation. He's lectured extensively to physicians and has knowledge as an expert in alternative medicine. He's spoken at some of the most prestigious conferences, the A4M, the ACAM there in Academy of Environmental Medicine and Brazilian Association of Anti-Aging. Last year he was a [inaudible 00:01:21] speaker for Roids Society and Medicine in London.

He has a company called Future Formulations that, I think, when you get his card you can look up and find lots of products for things like adrenal fatigue, which is the book he wrote a few years ago. Oh, it's in its 13th printing and he didn't bring any more copies this time, so you'll have to order it from the web. I now give you Jim Wilson.

Jim Wilson: Thank you. Well, it's a pleasure to be back again. This is my ... One of the few public presentations I make. Most of the time I speak to physicians and [inaudible 00:02:03], pharmacists, nurses, but I like this group. I have to say, I was thinking on the break, I think the liveliness of this group is far superior to most physicians I [inaudible 00:02:13]. It suddenly hit me how stressed physicians are. Of course, we know that's true, kind of impactful. Well, the last time I was here if any of you were here, you remember my computer died on the way to this, so the operation was successful, but the computer died. I had to lecture without notes up here for 2 hours drawing on the board and you had to try to read my writing. Hopefully, you won't have to do that again. Last time we talked about ... What did we talk about? Chronic Fatigue Syndrome and Fibromyalgia and a relationship with adrenal fatigue with that. The time before that I talked strictly about Adrenal Fatigue.

I thought you might be tired of hearing about that, so I thought I'd tell you about another part of the adrenals, that's the high-functioning part of the adrenals that we'll see that plays itself out in a condition called Metabolic Syndrome. I'm going to concentrate mostly on Metabolic Syndrome tonight. If you come up and see me afterwards, you might see that I have a scratch, it is skin off my nose and it happened when i was trying to get a piece of stucco off a building and the whole piece of stucco came off and got me in the nose. That's it. It's literal this time. You know the saying, there's no skin off my nose? This [inaudible 00:03:34]. We're going to talk about ... Everybody finds the things in life, certain things in life interesting. You can find expert in almost every field. We have a number of experts that are around here tonight and it's once again, it's a pleasure and honor to speak here. One of the things that interest me is how the body works and the wonderful mechanism that we have inside and the

fact that even in the most sick person, most of the mechanisms are still operating pretty well, in even sick people.

Every day, if you wake up and find yourself still breathing, you should think whatever power it is that you have this ... You've been summoned, influenced by this huge evolution that's allowed you to have this mechanism in the body and you should be very careful about the society we're creating, because it's trying to tear it down very rapidly. If you're doing what all your friends are doing, unless they're a special group of friends, you need to change what you're doing, if you're going to live to be an older, healthier person. The average person consumes ... We were talking about sugar a while ago ... The average person consumes 180 pounds of sugar a year. Yeah. Half a pound a day. Had a patient argue with me for 15 minutes that jello has no sugar in it. They're total clueless. They have no idea. They think a balanced diet is Twinkies and a Coke. We've got our work cut out for us. In an enlightened group like this, please go out and do what you can to apostatize and convince people. We don't have a healthcare system that can stand the kind of illnesses that we have. If they think they're going to throw a trillion dollars at it, that's laughable. It's laughable, because the Baby Boomers haven't begun to degenerate yet. Wait until they get to degeneration.

How much money was in the last health plan for prevention? Zero. Zero dollars. Not a single dollar for prevention, and that's the only way we're going to do it folks. The only way we're going to do it. Nice that we're going to talk about how you can do this with Metabolic Syndrome, how you can prevent yourself ... I don't know whether you realize it or not, but there's probably someone in this room that may be under a little bit of stress. The interesting thing is people aren't always aware of it. A couple studies studying hospital ER Physicians shows that people who are ER Physicians aren't aware of their stress. When they gave them a paper and pencil test asking them if they thought they were under stress, they said no. When we looked at their cortisol levels, one of the major indicators of stress, it was 3 times normal. You don't have to be aware of your stress, to be under stress.

Stress, even though it can invigorate life, stress when it goes on for a long time or too intense, or there's too many of them, starts tearing your body down, starts tearing the lives down, starts tearing the pleasure that you have down. The problem is everybody seems to be talking about it. There's thousands and thousands of articles about stress on the internet. They seem to be worried about it. A lot of people are writing about it, but no ones doing anything about it. Now it takes about 10,000 years ... Genetics is big right now. If you wonder where is that stress gene, well, it takes about 10,000 years for the body to adapt and develop new [inaudible 00:07:06] for adaptation to the environment. We have about 9,900 years to go. I'm going to be pretty tired by that time, so I'd rather find something else that may be helping reverse this. Remember that even if they find genetics, a genetic strain or this particular gene, usually genes have to be triggered and they're usually 15 to 30% environmental. Only 15 to 30% of it is the gene. The other 85 to 70% is environmental that triggers that gene to manifest in the first place.

What I'm saying is before we get to the end, the take-home message in this is there's a tremendous amount you're going to be able to do for your own body, your friends, your loved ones that doesn't cost a lot of money, that doesn't require drugs, that you can do with your own intelligence, with very little effort that can reverse this and increase the quality of your life and make yourself a lot happier and healthier. The purpose of this presentation is to give a practical approach to the successful diagnosis and treatment yourself. You diagnose and treat yourself. You don't have to be licensed to diagnose and treat yourself. I don't know whether you realize it or not. You have to be licensed to diagnose and treat somebody else, but you don't have to be licensed to diagnose and treat yourself. We're going to be talking about ... Oh. There we go. You thought I was just copied. Okay.

Speaker 3: Sorry about that.

Jim Wilson: Yeah. This was all supposed to have slides in it and then there were -

Speaker 3: Should we kill one more set of lights?

Jim Wilson: Yes.

Speaker 3: [crosstalk 00:08:40] projectors and [inaudible 00:08:41].

Speaker 4: Like the movies. Popcorn? I'm starting to want [crosstalk 00:08:47].

Jim Wilson: The back set and then the middle row, please.

Speaker 3: Unfortunately it's this one, that one, and this other one.

Jim Wilson: Is it okay [crosstalk 00:08:56]? I was hoping it would be a little darker so I could pick my nose.

Speaker 3: Going over to the dark side now.

Jim Wilson: Okay. The purpose of this is to help you see an integration between the high and the low functioning of the cortisol, how the adrenals when they're overworked can produce a situation called Metabolic Syndrome when they're over-stressed and they start breaking down. Then, they start producing something called Adrenal Fatigue. I call them the 2 faces of stress. They both have greatly to do with the dysfunction of the adrenal glands. It's a little bit like you're damned if you do and you're damned if you don't, if you have a lot of stress, because if your body can hold up to it, you're adrenals are able to function like that, you eventually it will produce Metabolic Syndrome and if they break down they you've got Adrenal Fatigue. The idea is to minimize your stress or to do things that help your body more able to cope with stress. Now, the stress is always mediated by what we call the HPA axis, and that's the adrenal hypothalamus pituitary axis. Here's a quote, "The HPA axis is the major endocrine stress axis of the human organism. Cortisol, the final hormone of this action axis, affects metabolic, cardiovascular, central nervous system, both acutely

and chronically. Another words, cortisol is a pretty important factor in how the HPA works. The HPA axis is pretty important in how you work. When the HPA axis gets off balance, lots and lots of mechanisms go haywire in your body.

Here's a little picture of the HPA axis. You can see we have the hypothalamus, which is like a football up there. It's actually not as large as the adrenal glands, but it's very important. A hypothalamus has to register all the stresses going on in your body. When I was in experimental psychology we used to have a phrase, "The hypothalamus rules the world." What did we mean by that? Well, we meant that the hypothalamus controls so many mechanisms ... It's about the size of the end of your little finger, sits in the middle of your brain. It's called hypothalamism, because it sits below the thalamus. It's a little, tiny, little thing, but it has to do so many functions. If you did rat experiments as I did, if you put a electro in a certain part of the hypothalamus, the rat never ate. If you put it in a slightly different part, the rat never quit eating. If you put it in another part, they never slept. If you put it in another part, they slept all the time. If you put it in another part, they had constant sex drive, so you put it a little bit further, they had no sex drive whatsoever. The hypothalamus does a tremendous amount of things. That's why it was called hypothalamus rules the world. They had that phrase.

One of the things the hypothalamus does is register all the stresses going on in your body, outside your body, in the environment, in your thought processes and it has to integrate this whole thing and determine how much of a particular hormone called corticotropin releasing factor, CRF. It goes to this other gland called the pituitary gland that hangs like the a little pinny hanging from your brain, down the bottom of your brain, in this little piece of bone called the sella turcica. It goes around like this, [inaudible 00:12:19] fill the fluid. It hangs down there and it creates a lot of hormones and it's divided in a front and back part. The front part secretes something called adrenocorticotrophic hormone, ACTH. That goes all the way down.

We have these 2 things in the brain. That goes all the way down to the adrenal glands and the adrenal glands sit right over here and they sit over the kidneys, ad renal, over the kidneys. I say that because I had a doctor about 3 years ago pull on my shirtsleeve on my suit and look down. I was on a platform. He said, "Well, that was pretty good talk, but you had one mistake." I said, "What was that?" He said, "Well, the adrenals are located in the base of the brain." He and I read different anatomy text. Anyway, I just want you to know. He's how to find the adrenal glands. You take your hands on yourself or someone else, put them behind on your spine, your lowest ribs. There's my lowest rib. Then, where my second and third finger goes, that's about where the adrenal glands are. If you're quite stressed, that might be a tender area, because it's one of the signs, called [inaudible 00:13:23] sign that we use when someone has a lot of Adrenal Fatigue, that we can push on the adrenal glands and because the adrenal glands can become high-percofied during that time, they will cause the rest of that area around there to become tender. It's called a visceral somatic reflex. It goes down the cortisol, then after secreted by the adrenal gland, we're talking about the outside the adrenal gland now.

There's a different hormone called epinephrine, norepinephrine, adrenaline, nor-adrenaline, is secreted from the inside of it and this goes on the inside. It goes all over the place, but the one on the outside goes to even more places and cortisol's one of the major hormones. There's about 50 hormones secreted by this little gland that's about as big as a large grape that sits over your kidneys, over 50 hormones if you count the metabolic intermediates. It secretes things like cortisol. We're going to talk about how dosterine, it helps control the fluid balances and the sodium retention of potassium, sodium ratios in your body. About 40% of sex hormones are produced, both male and female, by these adrenal glands. As a matter of fact, about 40% of female hormones are produced in normal menstruating women as when they get into menopause. Most though progesterone and estrogen is produced by the adrenal glands. In men, about 40% of testosterone is produced by the adrenal gland and as men get into menarchy, or into andipause, then we so a more and more predominant role in the adrenals to produce testosterone. They're very, very important in their function. Cortisol, one of the major hormones, and it goes back up to the hypothalamus and it tells the hypothalamus, "I have enough," or "I don't have enough."

Hypothalamus, then, has to determine how much cortisol's in circulation, how much is going to be needed in the next 3 to 6 seconds, because it has about a 3 to 6 second cycle, and tell the pituitary how much ACTAs to send down to the adrenals and that is in the cycle. Now, there's another factor. What you are thinking about is also important too. Let's say we all have the same amount of stress in here and the people going out this door think Ed McMahon, who recently passed away, was going to give them a Publisher Clearing House check for a million dollars and we have over here an ex-spouse that's about to sue you for divorce papers, or so you think. You see how much different your cortisol levels are going to be? And your hypothalamus is going to anticipate what's going to happen as you go out that door. It's going to adjust your cortisol levels, not just on the events that are going on, but what you think is going to happen. The hypothalamus ends up being an extremely important in this role and it is important in the mitigation and the adaption for stress, along with the hypo-campus, the migdala, and other parts of the brain.

Now here's a picture of the adrenal glands. This is not a male and female adrenal gland. That's a right and left adrenal gland. They have to be different because you have different anatomical structures pressing in on them to give them that. Now, the difficulty is that when doctors do cortisol levels, they base it on a statistical model not a physiological model and the reason this is a problem ... So I get my pointer to work here. Does it carry over? Okay. So, you're considered to be normal if you go into a hospital and they have a cortisol test, because you think you're under stress and you want to test your cortisol levels. If you're plus or minus 2 standard deviations ... It just disappeared. There we go. Which is this gray area through here, then you're considered to be normal. Plus or minus 2 standard deviations ends up being 95%. By definition, only 2 and a half percent can be low and only 2 and a half percent can be high. That sounds okay, except here's the problem. You start having symptoms of adrenal dysfunction after you get about 15 to 20%.

Another words, about a half a standard deviation out, about half here and about half here. After there is when you start getting signs and symptoms on this side of Adrenal Fatigue and over here, signs and symptoms of Metabolic Syndrome until it becomes very, very overblown and you Cushings Disease on this side and over here, Addison's Disease on this side. When does medicine recognize the dysfunction for the adrenals? Right here at this line and right here at this line. If you're just inside that line, you're normal. If you're over here, that's a hospital crisis. If you're over here, you're normal. If you're right up here, we really have to act fast, because you have Cushing's Syndrome. So you can see this is our artificial and it doesn't go along with the physiology at all. Lots of things effect the adrenal gland. Things that you don't think of, things you do think of. What I'm trying to say through this cartoon, is the adrenal glands have to do a lot to help you stay balanced and to feel good. They're mainly called the glands of stress, because they mainly handle stress even though they have a lot to do with sex hormone production and other things. It's main job it to handle stress for you.

Dr. Selye showed in his early experiments and he wrote over 100 books. He had hundreds of articles, very prolific writer of Montreal. He showed that when an animal is first exposed to a severe stress, he did things like he broke their legs and burned them and did surgery without sowing them back up and all kinds of other things like that he could never get away ... Took me 2 years to get an animal subject committee to let me inject the foot pad of an anesthetized rat. There's no way in the world I'd be able to do or anybody would be able to do any of Dr. Selye's experiments today, but what he did show is that animals have a predictable way of responding to stress and it emulates a lot of what we go through when we have stress. That's when we first are exposed to stress, we get a big rise in the adrenal gland function, including the rise in cortisol. Then, you can see that the main line is the base line of cortisol.

Then, you get a big rise and then the adrenal gland gives it all. No one has to recover for a while, but if that stress continues, the adrenal gland recovers and moves up and then it gets above base-line and that's called the stage of resistance. We can go like that. Animals go for several months. We could go for several years like that, at a price, but we can function. It depends on the person too. Some people, one more stress, that's it. Other people can go like this for a long time. We have a society that is driving itself and most of the people in it or a lot of the people in it have high cortisol levels if their adrenal glands are able to function well. Then, and interesting thing happens on a lot of these people. You get them more severe stress or something else happens, and the adrenals seem to suddenly give out and that person then a lot of times goes into what we know as Adrenal Fatigue.

This is a little cartoon that shows you that in addition to cortisol, there's another important hormone called aldosterone. Aldosterone controls the potassium, sodium balance in the body in the blood, in the interstitial fluid between the cells and also within the cells. As stress goes on, aldosterone becomes even more important, because the ratio of sodium potassium in your body has a lot to do with how well you handle the stress. There's a hint in physiology. If you want to know what happens to the water in body, follow the sodium. Water follows sodium. When someones under

stress and the adrenals are able to respond and they respond by increase in aldosterone as well as cortisol, then your body retains fluid, it retains a sodium and pees out the potassium, so it tends to then retain the fluid as well.

This is one of the biggest reasons why Gatorade works so well, because it's very high in potassium and it helps replace the potassium. The athlete who gets cortisol levels like crazy during the athletic event, preserving that sodium, excreting the potassium and then the potassium, from the Gatorade or something else, comes into balance. His system will make it more balanced. When you have Adrenal Fatigue, you have the opposite problem. You pee out the sodium and you retain the potassium. Those people then need sodium. Those people need salt. On the Metabolic Syndrome side, with the high cortisol levels and high adrenal functions, salt is very bad for them. It's the worst thing they can do. You don't want salt on the left side. Over here, you can't function very well without the salt. How do you know? Usually you'll have a desire for salt, because you're body naturally if you haven't suppressed it's natural desire, it will want that salt.

We're in a salt phobic society, aren't we? You ask people if they salt their food and they say, "I never salt my food." They expect you to pin a little badge on them for no salt. You say, "Do you like salted popcorn?" "Oh, yeah, yeah." "Well, what about pretzels?" "I eat a lot of pretzels." It's funny how they won't salt their food, but they'll eat salty foods to try to get this ... If they have Adrenal Fatigue, low function of adrenals, that's how they get that back in to help balance it, help get this aldosterone more of a break. Once again, we have this side and then we have the other side. Basically when the body's under continual stress, if the adrenals can remain strong, then eventually you get into Metabolic Syndrome. If the adrenals collapse or become weaker under this time, then you'll develop Adrenal Fatigue. The key is we need to strengthen the adrenal glands, keep them strong, and loosen, decrease the stress as much as possible. A lot of that is mentality. There's a large portion of the section of the book that's all about how to reframe your mind, how to reframe how you're responding to things.

I had not long ago an experience where I was taking off out out Tucson on an airplane, commercial airliner, and we have mountains on all 4 sides of us. Sometimes the rides bumpy getting out of there. We were taking off and we were steep angle, because the fella wanted to clear the mountains, and we hit some air pockets. There's this great thing. It's like you're being on a ride at an amusement park and the plane was going boom, boom, boom, boom. I was loving it and I said, "Can you believe this?" It was one of my best days. I couldn't believe we were getting such a nice bump. The women next to me said, "No." Well, I was having a great time and she was having a horrible time, and we were both having the same experience. See? What I'm saying is a lot of stress that people have in their mind has to do with things they created in here. The drive to work can be either stressful or not stressful. You can be listening to classical music, learning things on a talking book, enjoying whatever, or you can be yelling at the driver ahead of you and waiting so you can change lanes and get ... You can make your own hell or your own heaven a lot and your body's going to respond to you.

Your hypothalamus is going to respond to how you think and how you anticipate as much as it is for an actual event. One of the first things we can do to help our stress levels is to see if something's really worth stressing about. When I was in chiropractic college, I went to ... I was riding the bus back and forth to Toronto on the street car. I met this old woman who was lifting these groceries, so I helped her lift her groceries onto the trolley and we sat there for a while. I said ... She's 94. This was my chance. I got a chance. How does she live to be so long, or so old. I said, "Do you eat anything special?" She said, "Lots of cabbage, lots of pork." Oh great, the 2 hardest things to digest in the vegetable kingdom and the animal kingdom. Okay. "Anything else?" "I never worry. I never worry. My husband died. I didn't even go to the funeral." A lot of what stresses you, may not have to be stressful. Think about that. Like I say, there's some techniques in the book that you can ... That will help you deal with that.

What do we have? We have on one side, Metabolic Syndrome, high cortisol, Adrenal Fatigue, low cortisol. On the Metabolic Syndrome side we have high aldosterone, high sodium, low potassium, high blood sugar, because cortisol, one of its main things it does is elevate blood sugar. It goes into the cells and it causes something called gluconeogenesis. Another words, it takes fatty acids and proteins, low peptides and converts them into blood sugar in the liver and the muscles, especially. When you have stress, in nature you're ready to have to do something. You're having to think your way out of this. You're having to act. You're either going to have to fight or run away. You're going to have to do something. Preparing for that, cortisol goes up, starts getting your blood sugar up. Insulin's going to go up, because it's got to get ... Cortisol has got to get the blood sugar up, but it doesn't get into the cells. Insulin's going to act like the key to get it into your cells. We want a certain amount of insulin, because we don't want too much, because we want enough glucose to feed your brain, because it's its favorite food, and we want enough to get the muscles in there and things going. It's a very delicate thing. Cortisol, insulin, they all work together to help you with the stress.

When you have adrenal fatigue, you have low cortisol, so you can't make enough blood sugar. Hypoglycemia's one of the most common things that happens. You have low aldosterone so you have a craving for salt and a craving for water. Low sodium, high potassium, low blood sugar, a mild type of dehydration. Whereas on the other side we have fluid retention. You see how beautiful it is? Nature's so wonderful. There are 4 definitions. We're going to concentrate on Metabolic Syndrome in this presentation. There's 4 definitions of, current definitions of Metabolic Syndrome, given the people who have the organizations of the 4 different definitions. They all include glucose intolerance, blood sugar getting out of control, the pre-diabetic that moves on to Diabetic Syndrome or something called Disglycemia where the blood sugar may run up and then it may go down, then runs up, then goes down. We have some visceral obesity. Another words, the anapocity starts to develop around the belly. We have a hypertension, high blood pressure. We have what's called dislipydemia, which means your cholesterol and triglycerides are out of function. You have not enough HDL, too much LDL, and too much triglycerides.

There's inflammation going on in your veins. I'm sorry, in your arteries, in your brain, in other parts of your body. There's small leakage of protein into the urine, called microalbuminuria in the later parts of it. Then, it also starts to have a mild effect and then moderate and severe effect on different cardiac functions. Metabolic Syndrome doesn't happen over night. It takes years of dedication to get Metabolic Syndrome. We start at, actually now, we're getting to be to a point where our children are in epidemic proportion of developing Metabolic Syndrome. Insulin resistance can develop in childhood. Now we now that about half to two-thirds of our children are already overweight. Most children show some sort, more than half of the children show at least one of the indications of Metabolic Syndrome. Why wouldn't they? What do our schools teach them? Pizza and JuJus are good for you, because we serve it in our cafeteria every day.

Speaker 5: High fructose corn syrup.

Jim Wilson: High fructose corn syrup. Exactly. We want to make sure we have a desert with every meal. You go in there and there school cafeteria looks like a bulletin board, a YouTube advertisement for diabetes and heart disease. We're teaching our children by the authority of the school to have the diseases that are going to break our healthcare system. Somebody's got to make money somewhere, I guess. The reason they make ketchup a vegetable in our school way back when is because without it two-thirds of the schools wouldn't qualify for federal existence, because they didn't have enough vegetables in the school cafeteria diets. They made ketchup into a vegetable so they would qualify. We have here the insulin of both an obese person and a normal person. You see that the one on the top is a person who's overweight, 120% body mass, and we see that a normal person, or more of an ideal person has a much lower insulin level throughout the day. Let's look at how this leads to diabetes. That actually ends up being the end point. Well, one of the, I'd say one of the medium points of Metabolic Syndrome. We have glucose intolerance and then as the glucose goes up and down, it has to have somewhere to go. A natural response is first of all, high glucose is a stress for the body. High glucose by itself will stimulate cortisol production.

Then, you have gluconeogenesis glucose so you get even higher. That causes insulin. Now if you have a big onset of this all at once, like taking a 44 ounce or Big Gulp, or having a second desert or something like that, that's going to cause the body to go, "Whoa, we really better get some insulin in here, because we've got way too much of the carbohydrate that's going to be digested and floating into the bloodstream." Way too much insulin gets secreted. Then, that causes the blood sugar to start dropping too fast. That causes a craving for more. You get into a cycle so people feel like they have the accelerator and the brake on at the same time, which they do with the escalating, with their sugars, are going up and down. With time, though, then the body develops and resistance so that it takes more and more insulin to turn that key into the cell. The reason for that is because not only cortisol's elevated, but insulin is damaging to cells.

You don't want the body to have too much insulin. You want enough to open up that key to get the [inaudible 00:32:53], but you don't want enough to let too much in because the cells inside the mechanisms inside the wheel of the cells start coming off. If you get too much blood sugar inside the cells, then you have glycolysis and the Krebs cycle and then they go crazy and things over-function. The insulin's very important to keep constant. It can damage cells if it goes too high. Cortisol comes in and helps protect that. The cortisol helps stimulate more insulin. You get into a positive feedback cycle. Not only that, recent research has come in to say that insulin inside the cell will prevent cortisol from going from the active cortisol to the inactive cortisol, so you get even more of a positive feedback cycle of cortisol not being able to be reduced inside the cell, because of the action of insulin [inaudible 00:33:41]. You get into this wheel, perpetual wheel that gets worse and worse the more you spin the wheel.

The early signs of diabetes are really the glucose intolerance, so when you fast that means don't eat anything from 6:00 that night and then the next morning you take good blood glucose, then it's going to be over 99, then that's considered to be glucose intolerance or too high of glucose. You get into insulin resistance because we get the passing insulin that gets higher and higher and higher. That is what we call syndrome x or Metabolic Syndrome. Now, the consequences of Metabolic Syndrome are diabetes, and that progresses to cardiovascular disease, and then that also we get hormonal regularities. The adipose tissue itself starts to create its own estrogen. It starts to inhibit its own cortisol reduction. You get decreased DHEAS. That should have an S in there. The DHEAs that becomes DHEA inside the cells, another hormone secreted by the adrenal glands that has a lot to do with sex hormones and other metabolic functions of the body. You get blocked inactivation of cortisol, which we were talking about, which leaves to the adipose tissue of excess production of cortisol.

One of the other things we find that happens a lot with metabolic syndrome is the polycystic ovarian syndrome, called PCOS. You can see that this is starting to be a cycle that's not just about stress. It's about the effects of stress. It's about people eating the wrong foods that feeds to stress to make it worse and worse and worse. We can easily see, then, how stress leads to weight gain. As the cortisol increases and the insulin's going to increase, then we're going to get more gluconeogenesis. That's going to increase the blood glucose. We're going to have an increase insulin secretion to handle that increased blood glucose. Then, that increased insulin over time is going to create an insulin resistance. That in itself is a stressor and the cortisol has to get elevated in order to balance the excess insulin, and then that's going to help that abdominal fat distribution, because cortisol has ... The tissue around here has special sensitivity to cortisol. We get this spare tire.

If the amount of available glucose is insufficient, then hunger rises, which happens then. You get too much insulin, too much cortisol, and then the insulin eventually wins and it produces hunger. The people then don't like to feel hungry, so they tend to overeat and they usually eat the wrong foods and that wrong foods, then, causes a big rush of insulin, because they just ate sugary stuff or white flour stuff that's easily

converted into sugar, and they start creating their own perpetual problem. Even before diabetes develops, people with insulin resistance ... And no other risk factor, no other risk factor for heart disease develop abnormalities in the blood vessels. We're seeing these now. When I first practiced, I could look in the eye of a child, teenager, and I'd never see what we call copper, cord arteries where we get arteriosclerosis. Now it's common. It's probably every third or fourth child, teenager, you'll see it.

How do you find it? Well, if you want to spend 200 bucks, you can do it yourself. You have an auto-abdominal scope and then you learn to look in the eye. You can see it in the back of the eye. You can see the arteries in the eye. You'll see that there's mostly arteries have a deep red or a lighter red look to them, but the ones that are already starting to sclerose will have a shiny, copper look to them. You can find them on there in these young teenagers already. See those mainly in the 70 year olds and older 60 year olds, but you can see them in the teenagers now. Another quote, "The major clinical consequence of Metabolic Syndrome is Atherosclerotic Cardiovascular Disease." We're teaching our kids to have it from the time they are in grade school. Now, we've been talking about the academics and the physiology and about chemistry. Let's get down to [inaudible 00:37:58] and how you can tell if you have Metabolic Syndrome yourself.

First of all you're going to need some really fancy tools, a cloth tape measure, Jo Ann Fabrics, I think Wal-Mart has them, Hancock Fabrics, anywhere that they sell a cloth by the role will have a tape, a cloth tape measure. You don't have to have a cloth tape. It's just easier. You need scales, so you can weigh yourself. You'll need a blood pressure cuff, called a sphygmomanometer. You can get those at drug stores or at medical supplies or order them on the internet. You need some glucose monitoring device. I saw one in Wal-Mart. It was \$40 for the machine and they got a \$40 rebate. The reason for that is because they make the money on strips. It costs you nothing and then you buy the strips and the strips are about 17 bucks or 100 and something like that. You prick your finger ... Cheaper than that? Oh, good.

Prick your finger, put a drop of blood on it, put it in the dextrometer or the glucose monitor, or the blood sugar monitoring machine, and you'll be able to see in a minute whether or not you have high blood sugar or not. The nice thing is you can also measure this throughout the day. You can measure it after you eat, see how fast it rises, and measure it every 2 hours, every 3 hours. You can do whatever you want. Fingers get a little sore if you do it too much, but that's okay. You can keep going as long as you want to. I also suggest that you complete an activity dietary information sheet. I don't have it, one with me. It's basically what you eat and drink and how you felt and what signs and symptoms you had during the entire day. It's really meant for people that are going to take the salivary cortisol test where you spit in a tube 4 times a day, but you can get a lot of information about yourself by recording everything you eat and drink and how you felt during the entire day as you're taking the blood sugar several times a day.

Here's the key: When you're feeling normal, take your blood sugar 3 or 4 times. When you haven't eaten in the morning, take your blood sugar. That will give you your fasting blood sugar. The other will give your more normal blood sugar. Then, when you start feeling symptoms, when you have symptoms, like, "I don't feel very good," or "I get pretty hyper," take your blood sugar again and see how much blood sugar has played a part in what your symptoms are, how you're experiencing them. Here's an observation you can make: Does your stomach proceed you? Do you have an apple type body? You have your own personal spare tire? These are 3 ways you can tell, you don't even have to need those others, you have insulin resistance, you have a form of Metabolic Syndrome. You can do the tests and find out how severe it is, and certainly you can monitor your progress by taking those [inaudible 00:40:59], but that's number one. If you see this, if you're over weight, especially around the tummy area, you have some form of Metabolic Syndrome.

Symptoms: Fatigue. Now interesting thing about cortisol is, when cortisol ... You remember I said you start getting symptoms, about 15 to 20% outside that medium, about a half of standard deviation. Well, the interesting thing is when you have mildly elevated cortisol or mildly low cortisol, that you have some of the same symptoms. You have the same thing with low and the high thyroid. You get someone moderately low or moderately high. A lot of times they'll have same or similar symptoms. You can have brain foggy and inability to focus, which you can get with high or low cortisol. You need to go to the high metabolic, to the Metabolic Syndrome, is an intestinal bloating, a gas. The reason for this is because you're also exhausting the exocrine portion of the pancreas as well as the endocrine portion of the pancreas. The endocrine portion of the pancreas, it's split into 2 pieces.

We've got the beta-cells producing insulin. Then, we have the optic cells producing something called amylase. Amylase is the digesting fluid that helps you digest carbohydrates. As it gets weaker, you can't digest the carbohydrates as well. The stress has caused depletion of the amount of amylase secreted by the pancreas. That's why you can't digest the carbohydrates very well. If you want to do a little test with yourself, eat a plate of spaghetti and don't put anything on it, no butter, no salt, no meatballs or anything, and see how you feel for the next 60 minutes. If you don't feel sleepy or you don't feel like anything is happening, you're probably okay as far as your amylite go. If you felt sleepy and you feel like you got a led ball in here and you don't want to talk, you find you can't think very well after that spaghetti meal, you probably have a lack of amylase. You need digestive aids. Go to the health-food store and get some digestive aids to help you digest those carbohydrates.

A mild form of depression that's independent of depressive events ... Another words, nothing's really happening to make you feel depressed, but you feel depressed anyway. How are you going to measure? You can take your waist measurement in addition, so you can do it with the scales. You can see what your weight is. We're going to weigh. You do your waist measurement. That's to gently go around where your belly button is, then your hip measurement, the widest part of your buttock here. Then, take those measurements. Write them down. Then, you can do what they call a waist, hip ratio, and there's no reason to just say males in there. It's males and

females. You can also do something called a body mass index. You can take your weight, you can take your height, and you can find out something called a body mass index. If you simply do your visceral obesity test with a waist circumference, if you're a male, you have more latitude. You get to have a waist of over 40. Anything over 40 is considered to be abnormal.

If you're a female, any waist over 35 is considered the abnormal. See, women don't get a break, do they? The waist, hip ratio, it's okay with men if you're the point ... If you divide the amount of inches of your waist, divide that by your hips, and you get the hip, weighted ratio. If it comes out to be .9 or less, then it's okay. If you have .85 as a female or less, then you're okay. Greater than .9 in a male, greater than .85 in a female means that you have an elevated hip, waist ratio. Now, why would we want to measure the hip, waist ratio? Did I count up the BMI? Okay. It's down here. Because when you do these, both ... Both of them are valuable. If we do just a visceral adiposity, just the waist measurement, that's an important indicator, especially if you look at your triglycerides, a simple blood test your doctor can give you. I'll even give you the Quest number in a little bit. Then, if you have an elevated waist circumference and high triglycerides, that's a stronger indicator than either one by themselves.

Waists, it ends up that a waist circumference is actually a better predictor of Metabolic Syndrome and a cardiovascular risk and mortality than BMI, but they're both valuable. To do the body mass index, you simply take your weight with that scale you bought, you measure a height and you convert the weight and the height into kilograms and meters. How you do that is a kilo's 2.2 pounds. You probably already know this. One meter is 39.37 inches. You divide your weight by 2.2 and you divide your height by 39.37. That gives you your weight and height in the metric. When you divide your weight by ... Oh, I'm sorry. Then, you also have to square your height. If you don't know how to do that ... If you go to calculator and say that your height is 2 meters, then it's 2 meters. On a calculator if you hit times equal, it will automatically square it for you or you can do 2 meters times 2 meters so you'd have 4 meters. You have your results square and so you have your height squared divided into your weight and that's going to give you your body mass index. If you're over 25, then you're considered to be overweight. If you're over 25, but under 30. If you're over 30, then you're considered to be obese or grossly overweight.

If you're Asian, though, no matter what it is, if you're over 21 ... We can't go by the same indicators if you're Asian, of Asian decent. If you have a body mass index of over 21, then you're considered to be having Metabolic Syndrome. Now, Metabolic Syndrome ... I'm sorry, BMI, is a good indication the Metabolic Syndrome [inaudible 00:47:27] and insulin resistance. Visceral obesity is associated with increased cardiovascular risk, but not actual heart disease. BMI, when it's increased, is a risk of unstable angina and mild cardio infarct. Another words, if you're heart disease, if you have an increased BMI, you have an increase for a heart disease of an unstable angina and a mild cardio infarct, which is a short, medical term for heart attack. It's progressive. Another words, the higher a BMI, the more likely you are to have unstable angina and a mild cardio infarct. Such that if you're well within the normal

range of 22, then you have no risk at all for either one of these. As it gets up, by the time you get to a BMI of 40, you've got almost a 5 times, a 4 and a half times likelihood of having unstable angina, mild cardio infarct.

Remember, men, that first sign of cardiovascular disease in half the males is sudden death. That's the first time. Most men are unaware. Another words, what we're saying is first heart attack, half of them don't make it to the hospital. And of that, the ones that do make it to the hospital, a lot of those don't make it through the first night and I have some studies I'm not going to bring in here tonight, but I can tell you that the adrenals are one of the deciding factors on whether someone makes it through that first night. The strength of the adrenals have a lot to do with survival of a heart attack, of a first heart attack or following heart attack.

The higher the BMI the greater the proportional risk of all cause of mortality, not just heart attack, but all causes of mortality and lots of other things, including sudden death, thrombosis, diabetes, hypertension, and generally poor health. All people with excess abdominal fat have some degree of insulin resistance, as we said before. It's now known to be associated with inner abdominal fat, as opposed to total fat distribution. Another words, there are some people that are fat all over, they're not as much risk as the people with just fat around the middle. We can diagnose our own. We know that you have resting blood pressure, what your blood pressure is when you rest. By the way, blood pressure is almost non ... You can't depend on what your doctor says, what your blood pressure is. It's something called fightfo syndrome, when you go in his office you're blood pressure automatically elevates.

Your best indication is to have your own sphyg at home, the sphygomomanometer. They have self-inflating ones. They have ones that will have a printed readout. There's all kinds of fancy things you can get. They run from about 14 bucks to \$140. You take your blood pressure, and you want the high part, if you're listening, you listen to when the heart ... When you can feel a heartbeat, when you first can hear it, as you let the sphyg out. You write down that number, you see that little gauge, and then when you hear it go away, you write down that number. One's called ... The diastolic is the low number and the systolic is the high number. That's your blood pressure. It's when the sound comes, you pump it up to where it cuts off all blood supply. Then, you let it out little by little and listen to it. When you first hear the sound you write down that number on the gauge, all the way when you can't hear it anymore, then you write it down, and that's your blood pressure; 90 over 120 over 80 or whatever it is. You thought it took a lot of training to do this. No, it takes about 2 minutes to teach someone how to take blood pressure.

How do you know if you have what's called hypertension or high blood pressure? Well, if you consistently ... Not only one time, but if you consistently get a blood pressure that's 140 over 90 or greater, either one of those numbers or greater, then you have something as a single marker. But if you have some of these other indicators of Metabolic Syndrome, the overweightness, the high glucose, then if you have a BP of grater than 130 over 80 ... Now notice, 80 is considered to be normal in medical literature, but if you have this of 130 over 80 or greater, then you're considered to be

having a marker of hypertension when it comes to Metabolic Syndrome. Note that insulin resistant precedes hypertension by about 10 to 20 years. You got somebody that's going to have insulin resistance, it's going to take them a while before they develop their hypertension.

If you are taking your blood pressure and you go, "Oh, I got high blood pressure," you've had insulin resistance for at least 10 years, probably, most likely. You can do this simply with the insulin meter we've been talking about. You can also test urinary overflow of glucose. you can get little pee strips from Johnson & Johnson. They're urinary strips. They're easy to take and they can have just glucose indicator. You can get 8 different markers on one, little strip. You dip them in your pee, midstream, or you can put it in a cup and test them. It's easiest to do it midstream, you wait a minute, you check on the little bottle you get it on. It has the interpretation right there. It's all color metric determination, so it turns colors. Each one of these little blocks on this strip will tell you whether your keytones are elevator, your blood, whether you have blood in your urine, whether you have protein in your urine, it's very easy to do. It's what your doctor charges you \$27 to do. It costs you about a buck for you to do it at home.

Go into a medical supply house. You're looking for urinary strips and you can get just the glucose or you can get up to 8 different strips.

Speaker 6: [inaudible 00:53:19] keytones sticks?

Jim Wilson: Yeah. Keytones sticks is one of the specialties. You can get one that does eight. Keytones are included in that. Yeah. Those keytones strips, the glucose strips, protein strips, but then you can get one that has them all if you want to. You do your fasting, blood glucose. Remember, you have the \$40 meter you got a \$40 refund in. You're fasting glucose, you wake up, you take it, and if it's over 99 urine problems, if it's over 110, you're a flat diabetic. This isn't just one day. Take it 3 to 4 days, and if it's consistently elevated, you've got your problems. You can do fasting and insulin. Most of these modern meters do have fasting and insulin too. If that happens and you're over 108 [inaudible 00:54:10] per liter, then you're going to have insulin resistance along with the blood discratia, the blood glucose discratia. You can also take after you eat, it's called post-peranial, after you eat your blood sugar normally rises. If you wait about 30 minutes to take your blood sugar, and it's more than 140, then you have some what we call glucose discratia, blood discratia, the glucose is out of line, not necessarily related to insulin, by the way. There's a large argument going on in medicine about that.

If you're ... Normally you don't have any glucose in your urine. Normally those glucose sticks should be zero. After you eat, however, there's some spill over. You may get one plus. They're usually 1 plus, 2 plus, 3 plus, 4 plus. You get 1 plus. That's all you need. If you get more than 1 plus, you've got problems. Your kidneys are spilling over with glucose. You can also do the celebratory test kit. You can get these on line. There's about a dozen labs that do it. I think my preference of labs is ZRT Labs at

salivatest.com. I know the people that run that lab. These people run a lot of labs, but this one I see the care they go through to make sure everything is accurate.

Speaker 7: Livetest.com, you say?

Jim Wilson: It's called salivatest.com.

Speaker 7: Salivatest.com.

Jim Wilson: Yes, or you can Google ZRT Labs. I suggest that if you're going to take your cortisol, you take it 4 times during the day. They'll give you instructions. You ask for 4 times a cortisol test and you test the one in the 8:00 in the morning, at noon, 4:00 in the afternoon, 11:00 at night. The instructions will be in the test. Then, we're looking for elevated or depressed cortisol levels or sometimes they're very up and down. There's some laboratory tests you want your doctor to order for you. Here's a Quest pin panel. I think you get the most bang for your buck out from. It's called the Chem Panel 11, plus HDL. The test code on that is 900151. Pedestrian cost, another words, walking in off the street, not getting any kind of discount that physicians get that costs \$78.22 the last time I checked about 6 months ago. Now you're doctor may want to charge \$122 or whatever, but you say, "Hey doc, it doesn't cost you that much." Actually it costs him probably between, depending on how many lab tests he orders, between 35 and 55 for the same test. You shouldn't pay more than this much when he charges you.

Speaker 8: [inaudible 00:57:01] formula there was illegal with the doctor -

Jim Wilson: Is it illegal? Oh, good. I'm glad to hear that. Good. Same with not my carpenters only charging me for what they buy at Home Depot. I don't like the doctor overcharging for the laboratory test he runs. What you'll get, bang for your buck, you're going to get fasting glucose, blood [inaudible 00:57:23] nitrogen -