The 3 Biggest Mistakes Diabetics Make Transcript

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Identifying the mistakes

Okay, I'll start with Okay, I'll start with one patient. one patient. Of course, I won't say Of course, I won't say her name, but she her name, but she came to me. That came to me. That was probably was probably three weeks ago. She three weeks ago. She came in with a came in with a glycated glycated glycated hemoglobin level of 6.3—prediabetes, you could hemoglobin level of 6.3—prediabetes, you could say.

say. say. She was She was annoyed, right? annoyed, right? Because she had been in a state Because she had been in a state of prediabetes for of prediabetes for four years, and four years, and every year her score every year her score increased by one increased by one tenth: 5.9, 6, 6.1, 6.2, and tenth: 5.9, 6, 6.1, 6.2, and now 6.3. And she now 6.3. And she told me something I will told me something I will never forget.

never forget. She said, "Doctor She said, "Doctor Ergin, I Ergin, I walk 2 miles every day. I walk 2 miles every day. I never skip a beat. never skip a beat.

I eat salads. I don't know I eat salads. I don't know what else you want from me what else you want from me." She was." She was really angry. really angry.

But here's the thing. But here's the thing. She wasn't lying. She She wasn't lying. She wasn't one of those wasn't one of those patients who says they eat eat eat perfectly, and then perfectly, and then you look at the you look at the glucose monitor and there are continuous jumps.

continuous jumps. In fact, she In fact, she really did what she really did what she said she would do. She said she would do. She just wasn't doing just wasn't doing quite what was quite what was needed. And that's exactly what this needed. And that's exactly what this video is about. Three video is about. Three mistakes. I see them mistakes. I see them all the time at my all the time at my clinic in Port St.

Lucie, Florida. Lucie, Florida. Three mistakes that Three mistakes that almost almost almost every prediabetic every prediabetic and diabetic person makes. And before you and diabetic person makes. And before you turn off the video, turn off the video, know this: if you have already know this: if you have already been diagnosed with been diagnosed with type 2 diabetes and are taking type 2 diabetes and are taking metformin, Jardiance, metformin, Jardiance, or GLP-1 agonists, this or GLP-1 agonists, this video is even more important for you video is even more important for you. Everything I. Everything I say becomes even more say becomes even more relevant now that relevant now that the diagnosis has been the diagnosis has been made. Because now made. Because now you are trying to you are trying to hold your ground, hold your ground, not just prevent not just prevent the problem. The same three the problem. The same three mistakes, but with more mistakes, but with more serious consequences.

And the saddest thing is that And the saddest thing is that these people are actually these people are actually trying very hard. These are trying very hard. These are not indifferent people. These are the not indifferent people. These are the people who take the people who take the most care of themselves most care of themselves but get the but get the least results.

least results.

Improving exercise intensity

So, let's correct So, let's correct mistake number one: mistake number one: unfortunately, some of you unfortunately, some of you don't understand what don't understand what exercise intensity is.

exercise intensity is. Okay, this is the Okay, this is the most important point, right? This is what, right? This is what I

I I argue with argue with patients about the most. You don't patients about the most. You don't understand understand understand the intensity of the intensity of the intensity of the loads.

the loads. Let me Let me Let me speak carefully, because I know how it, because I know how it sounds. I'm not saying that sounds. I'm not saying that walking is bad.

walking is bad. Walking is wonderful. Walking is wonderful. If you're doing nothing right now If you're doing nothing right now and you start and you start walking 2 miles a walking 2 miles a day, that's a real day, that's a real improvement in your improvement in your health.

health. health. Blood pressure Blood pressure improves, mood improves, mood improves, and mortality risk improves, and mortality risk decreases. I am not decreases. I am not criticizing walking. But criticizing walking. But here's what you have to here's what you have to understand. Walking a understand. Walking a mile or two at a mile or two at a conversational pace on conversational pace on flat flat flat Florida terrain is a very, Florida terrain is a very, very weak stimulus.

Your metabolism and Your metabolism and muscles adapt to muscles adapt to this stimulus in this stimulus in about 3, maybe 4 about 3, maybe 4 weeks, and then nothing weeks, and then nothing happens. You happens. You hit the hit the wall again. Do you know what the wall again. Do you know what the problem is? Your body is problem is? Your body is smarter than you smarter than you think, and it is very think, and it is very efficient. It efficient. It adapts to adapts to everything you everything you ask of it, and ask of it, and then stops then stops changing. A changing. A two-mile walk, which seemed like a, which seemed like a big deal at big deal at first, first, first, becomes becomes becomes completely completely completely normal for the body after six months. This is now normal for the body after six months. This is now your base. It's like your base. It's like paying paying paying the minimum payment the minimum payment on a credit card.

on a credit card. You're not moving backwards, but you're not, but you're not moving forward either. And this is moving forward either. And this is my patient. 4 years of the same walks, 4 years of walks, 4 years of slowly increasing slowly increasing glycated glycated glycated hemoglobin levels. And what hemoglobin levels. And what actually gives actually gives results? What is this?

results? What is this? Let's talk Let's talk about this. So what does the data really say? If you look data really say? If you look at the at the Diabetes Prevention Program, Diabetes Prevention Program, some people call it DPP, some people call it DPP, right? This is a landmark, right? This is a landmark, milestone work.

milestone work. About 3,200 people with About 3,200 people with prediabetes. And it is on it that prediabetes. And it is on it that all recommendations are based, all recommendations are based, without exception without exception. The. The lifestyle group had 150 lifestyle group had 150 minutes of moderate minutes of moderate activity per activity per week plus a 7% reduction in body weight.

The results are often The results are often cited as a 58% reduction in the risk of progression to diabetes, which is 58% reduction in the risk of progression to diabetes, which is true. But I want true. But I want you to hear the you to hear the absolute numbers, because absolute numbers, because they are what they are what matter to you as an matter to you as an individual.

individual. individual. Relative risk can Relative risk can be somewhat misleading. be somewhat misleading. So in the placebo group, So in the placebo group, about 11 out of 100 people about 11 out of 100 people got diabetes each year got diabetes each year. So, 11 out of 100. In the. So, 11 out of 100. In the metformin group, those lazy metformin group, those lazy people who people who just want to take their medication and just want to take their medication and not change anything, it was not change anything, it was about 7.8 out of 100. In the about 7.8 out of 100. In the lifestyle group, lifestyle group, where people did where people did moderate- moderate- moderate-intensity exercise, it was 4.8 out of intensity exercise, it was 4.8 out of 100. So, going from 100. So, going from doing nothing to doing nothing to structured structured structured lifestyle changes reduced lifestyle changes reduced the rate from 11 to 5 per 100 the rate from 11 to 5 per 100 people per year. And this is people per year. And this is real. That's an absolute real. That's an absolute risk reduction of 6 risk reduction of 6 cases out of 100

every year, cases out of 100 every year, and that's great, that's a and that's great, that's a huge success, because huge success, because it works like compound it works like compound interest. They interest. They accumulate. But, and accumulate. But, and this is what no one this is what no one talks about, those 150 minutes in the talks about, those 150 minutes in the DPP study were DPP study were supervised. It was a supervised. It was a progressive progressive progressive load, and " moderate" meant a moderate" meant a really brisk really brisk pace: you're pace: you're breathing hard, you can breathing hard, you can talk, but you can't talk, but you can't sing. This is not sing. This is not a walk around the a walk around the block with the dog block with the dog stopping at stopping at every mailbox every mailbox. Now. Now look at look at King's study in King's study in China, 20-year and 30- year follow-up.

year follow-up. Thanks to Thanks to lifestyle changes, people lifestyle changes, people have seen lower rates of diabetes even diabetes even decades later. After 30 decades later. After 30 years, they had years, they had fewer deaths from fewer deaths from cardiovascular cardiovascular cardiovascular disease. That's disease. That's how how how durable it is if durable it is if you do everything right.

you do everything right. Two things you're Two things you're missing, right? So, missing, right? So, what's really what's really missing from your missing from your two-mile two-mile two-mile walk? Two walk? Two things. First, things. First, strength training. And strength training. And I can't say it I can't say it loud enough.

loud enough. Your skeletal muscles are the largest site of are the largest site of glucose utilization in glucose utilization in your entire body. your entire body.

Approximately 70–80% of insulin-dependent insulin-dependent insulin-dependent glucose uptake glucose uptake occurs in muscle. So if you have. So if you have insulin resistance insulin resistance insulin resistance or prediabetes, or prediabetes, the most powerful thing you the most powerful thing you can do is can do is create a larger " reservoir" for reservoir" for glucose, right? And glucose, right? And here is a mechanism that here is a mechanism that I really I really like. This is the like. This is the part that part that fascinates me.

fascinates me. Muscle contraction moves GLUT4 Muscle contraction moves GLUT4 to the cell to the cell membrane independently membrane independently of insulin. This is a of insulin. This is a completely different pathway, completely different pathway, mediated by AMP kinase. Your muscles kinase. Your muscles pull glucose from the pull glucose from the blood during and after blood during and after contraction, contraction, contraction, regardless of regardless of whether your insulin is working. Of course, if you have. Of course, if you have type 1 diabetes and type 1 diabetes and no insulin, this no insulin, this may not may not always work. You should have always work. You should have at least some insulin. So, you literally. So, you literally bypass your bypass your insulin resistance insulin resistance. And this effect from. And this effect from one intense one intense strength training session strength training session lasts for 24, sometimes 48 lasts for 24, sometimes 48 hours. So if you hours. So if you train on train on Monday, Wednesday, and Monday, Wednesday, and Friday, you're essentially Friday, you're essentially providing providing providing improved improved improved glucose uptake for the entire glucose uptake for the entire week. Two to three days week. Two to three days a week, basic a week, basic exercises. Squats, exercises. Squats, inclines, push-ups, inclines, push-ups, pull-ups, pull-ups, pull-ups, weight transfer. You don't weight transfer. You don't have to go to the have to go to the gym. Resistance bands, gym. Resistance bands, bodyweight, dumbbells, bodyweight, dumbbells, well, you know, in well, you know, in the garage, wherever, the garage, wherever, right? And that must be right? And that must be difficult. If you difficult. If you finish a set and finish a set and could have done 10 more could have done 10 more reps, that set reps, that set doesn't count, doesn't count, okay? Secondly, okay? Secondly, bursts of bursts of bursts of intensity. So, the intensity. So, the second zone—that's great. This steady. This steady cardio with cardio with nasal breathing, during which nasal breathing, during which you can talk, is mitochondrial is mitochondrial biogenesis. This is biogenesis. This is fat oxidation. So fat oxidation. So keep it up, but keep it up, but you also need you also need sessions where you sessions where you go go go all out, reaching 85–90% of your maximum of your maximum heart rate in short heart rate in short bursts. Of course, if bursts. Of course, if you have cardiovascular disease, heart attacks, or, heart attacks, or strokes, you need to be strokes, you need to be more careful and more careful and gradually increase your gradually increase your workload. If you are workload. If you are experiencing experiencing experiencing chest pain, it is obviously chest pain, it is obviously not going to do any good.

not going to do any good. Getting clearance from Getting clearance from a cardiologist is a cardiologist is always a good idea. But the literature on But the literature on low-volume HIIT, low-volume HIIT, high-intensity high-intensity high-intensity interval interval interval training, is truly training, is truly impressive. Gibala's group, impressive. Gibala's group, Little's, these guys—you Little's, these guys—you can get a can get a significant improvement in insulin sensitivity with a insulin sensitivity with a total total total workout time of less than workout time of less than 10-15 minutes of real 10-15 minutes of real hard effort. Not hard effort. Not because it burns because it burns more calories, it doesn't more calories, it doesn't. And because of what it. And because of what it does to your does to your mitochondria and BMD.

By the way, BMI is the By the way, BMI is the strongest strongest strongest predictor of predictor of all- all- all-cause mortality that we have. cause mortality that we have.

Stronger than your Stronger than your smoking status, stronger than smoking status, stronger than your lipids. Unfortunately, your lipids. Unfortunately, you won't increase your BMD by you won't increase your BMD by simply walking two simply walking two miles on a flat miles on a flat road. Practical road. Practical solution: I want solution: I want you to keep you to keep walking, don't quit it, walking, don't quit it, I'm not saying that, but I'm not saying that, but add lifts, add lifts, weighted vest, weighted vest, speed intervals.

speed intervals. Walk intensely for 30 Walk intensely for 30 seconds, calmly for 90, seconds, calmly for 90, repeat eight repeat eight times. Lift times. Lift weights two to three times a weights two to three times a week, it's non-week, it's non- negotiable. This is the negotiable. This is the most underrated most underrated intervention in all of intervention in all of endocrinology. Movement endocrinology. Movement after eating, it's after eating, it's free, right?

free, right? There is a good meta- analysis from 2022, by Boffi analysis from 2022, by Boffi and colleagues, which and colleagues, which shows that even shows that even two to five minutes of two to five minutes of easy walking after a easy walking after a meal significantly reduces the meal significantly reduces the glucose spike glucose spike compared to sitting.

So, just two So, just two minutes after dinner —just don't sit down. —just don't sit down. Even walk around Even walk around the kitchen, wash the dishes the kitchen, wash the dishes standing up, do 10 standing up, do 10 sit-ups, why not? One intense? One intense workout per workout per week. You can week. You can do this when you are do this when you are really uncomfortable.

really uncomfortable. 10 minute intervals, 10 minute intervals, that's all. And that's all. And progress. Whatever you progress. Whatever you do in January, do in January, you should be you should be doing more or doing more or harder by April. If your harder by April.

Strategic vegetable intake

If your workout hasn't workout hasn't changed in a year, your changed in a year, your body hasn't either. Mistake body hasn't either. Mistake number two: You sometimes have no number two: You sometimes have no idea how idea how powerful vegetables are. So, powerful vegetables are. So, this is the question, and honestly, this is the question, and honestly, it annoys it annoys me more because it's me more because it's so easy to fix.

so easy to fix. You don't eat enough You don't eat enough vegetables. vegetables. vegetables. Not even close. Even though you Not even close. Even though you think you're eating. And I think you're eating. And I don't mean "eat don't mean "eat your vegetables." I'm not talking about your vegetables." I'm not talking about that handful of that handful of iceberg lettuce next to iceberg lettuce next to your chicken. I'm your chicken. I'm talking about five to eight servings a day, eight servings a day, every day. Five to eight every day. Five to eight servings a day, every day. Shall servings a day, every day. Shall I repeat it? As a I repeat it? As a therapeutic dose therapeutic dose for you. I don't like for you. I don't like vegetables. I only like vegetables. I only like meat. Well, okay.

meat. Well, okay. Good luck. Let me Good luck. Let me repeat that word. repeat that word. This is therapy. I want This is therapy. I want you to think of you to think of vegetables like a prescription vegetables like a prescription

from a doctor. Don't you from a doctor. Don't you like it?

like it? Guess what? You Guess what? You will still will still accept it. Recipe. Who accept it. Recipe. Who loves recipes? But loves recipes? But if you need it, you have if you need it, you have pneumonia, then you pneumonia, then you better take it. Does better take it. Does it taste bad? Okay, then be patient. The same goes for. The same goes for vegetables. Because in the vegetables. Because in the correct correct correct dosage they act dosage they act like medicine. By the way, what exactly is a portion? Let's exactly is a portion? Let's quickly quickly quickly figure it out, because everyone gets this figure it out, because everyone gets this wrong all the time wrong all the time. One serving is about a cup of is about a cup of raw greens or half a raw greens or half a cup of cooked vegetables, cup of cooked vegetables, right? Or half a right? Or half a cup of chopped cup of chopped raw vegetables, okay?

raw vegetables, okay? So, five to eight So, five to eight servings. This can be anywhere servings. This can be anywhere from two and a half from two and a half to four cups of to four cups of ready-cooked ready-cooked ready-cooked vegetables per day. To make it vegetables per day. To make it easier: just easier: just fill half your fill half your plate with salad, that's a plate with salad, that's a good portion, good portion, at least twice a at least twice a day. This should be day. This should be enough. Most of enough. Most of my my my prediabetic patients, when prediabetic patients, when we analyze their we analyze their diet, diet, diet, only consume one serving, only consume one serving, you know, there's a you know, there's a lot of lot of research going on right now. But research going on right now. But don't just rely on don't just rely on potatoes. Potatoes are potatoes. Potatoes are not included here.

not included here. Why Why Why cruciferous vegetables? cruciferous vegetables? Of course, all vegetables are Of course, all vegetables are healthy, right?

healthy, right? But I want to focus on But I want to focus on cruciferous vegetables cruciferous vegetables because they are on a completely because they are on a completely different level.

different level. For example: broccoli, For example: broccoli, broccoli sprouts— even better, even better, cauliflower, cauliflower, cauliflower, Brussels sprouts, white cabbage, kale, arugula, bok choy, radishes, watercress,, radishes, watercress, kale, kale, kale, mustard greens. And that's what makes mustard greens. And that's what makes them special. These them special. These plants contain plants contain glucosinolates, glucosinolates, glucosinolates, especially especially especially glucoraphanin. When you glucoraphanin. When you chew or cut them, an chew or cut them, an enzyme called enzyme called myrosinase myrosinase myrosinase converts it into converts it into sulforaphane. And sulforaphane. And sulforaphane is one of the sulforaphane is one of the most powerful most powerful most powerful natural natural natural NRF2 activators NRF2 activators we know. And what is we know. And what is NRF2? Like, what is this NRF2? Like, what is this even about, buddy?

even about, buddy? What are you talking about? Well, What are you talking about? Well, that's what I'm talking about. NRF2 is that's what I'm talking about. NRF2 is your master transcription factor responsible for responsible for antioxidant antioxidant antioxidant protection and protection and detoxification. It detoxification. It triggers the synthesis triggers the synthesis of glutathione, of glutathione, you know? So, you know? So, phase two detoxification enzymes—this whole system.

phase two detoxification enzymes—this whole system. But here's what directly affects you. There is an directly affects you. There is an excellent scientific paper by excellent scientific paper by Axel Nissen and Axel Nissen and colleagues published in the colleagues published in the journal Science Translational journal Science Translational Medicine in 2017. They Medicine in 2017. They conducted a conducted a conducted a computer-based computer-based computer-based screening to look for screening to look for compounds that could compounds that could alter the genetic alter the genetic signature of signature of type 2 diabetes in the type 2 diabetes in the liver. And liver. And sulforaphane turned out to be the sulforaphane turned out to be the best. They then best. They then tested a tested a tested a concentrated concentrated broccoli sprout extract on patients broccoli sprout extract on patients with type 2 diabetes with type 2 diabetes for 12 for 12 weeks.

weeks. weeks. Fasting glucose levels Fasting glucose levels decreased, decreased, decreased, A1C improved,

and the A1C improved, and the greatest effect greatest effect was seen in was seen in patients with patients with obesity and obesity and metabolic disorders metabolic disorders, those, those who needed it who needed it most. The mechanism is most. The mechanism is just wonderful, just wonderful, right? Sulforaphane right? Sulforaphane inhibits hepatic inhibits hepatic gluconeogenesis, which is the gluconeogenesis, which is the production of glucose in production of glucose in your liver. It your liver. It suppresses key suppresses key gluconeogenesis genes gluconeogenesis genes in the liver. So, genes in the liver. So, genes that tell the liver that tell the liver to produce more to produce more glucose. This is the same glucose. This is the same general target that general target that metformin metformin metformin and berberine act on. Your and berberine act on. Your liver releases liver releases glucose at night. That's glucose at night. That's why your why your fasting sugar is 110, even though you have fasting sugar is 110, even though you have n't eaten anything, or 130, n't eaten anything, or 130, 140. It's like you haven't eaten 140. It's like you haven't eaten anything for 10 anything for 10 hours. You're thinking, "What's hours. You're thinking, "What's going on?" This is going on?" This is your liver. So your liver. So sulforaphane acts on this sulforaphane acts on this directly. Now, directly. Now, how not to spoil how not to spoil broccoli. When you broccoli. When you cook it, you cook it, you have to do it have to do it right, and almost right, and almost everyone ruins it.

everyone ruins it. Myrosinase is sensitive Myrosinase is sensitive to heat. So if you to heat. So if you digest broccoli digest broccoli to death, right? You to death, right? You get almost zero get almost zero sulforaphane. You sulforaphane. You get fiber get fiber and some vitamins. That's and some vitamins. That's all. Steam all. Steam lightly, 3-4 lightly, 3-4 minutes, until minutes, until bright green and still bright green and still crunchy. This is an ideal crunchy. This is an ideal option. Enough option. Enough to kill the enzyme to kill the enzyme competing for the pathway, but competing for the pathway, but not enough to not enough to kill myrosinase.

kill myrosinase. Cut it and let it Cut it and let it rest for 10 minutes rest for 10 minutes before cooking. before cooking. Let the reaction Let the reaction begin. The begin. The mustard seed trick, I'll mustard seed trick, I'll tell you. If you tell you. If you overcook it, overcook it, sprinkle some mustard seed powder on top.

mustard seed powder on top. Mustard seeds Mustard seeds contain their own contain their own myrosinase and save the myrosinase and save the day. Likewise with day. Likewise with raw radish or raw radish or arugula on top.

Broccoli sprouts Broccoli sprouts have 10 to 100 have 10 to 100 times more times more glucoraphanin than glucoraphanin than mature broccoli, right? That's why? That's why broccoli sprouts are better. A handful broccoli sprouts are better. A handful in a real salad is a wonderful intervention. And it's not just. And it's not just sulforaphane. Other sulforaphane. Other aspects of vegetables aspects of vegetables matter too, matter too, right? Fiber, right? Fiber, for example, in the EPIC for example, in the EPIC InterAct data: higher InterAct data: higher cereal and cereal and total fiber intakes total fiber intakes correlated with a significantly correlated with a significantly lower lower lower incidence of incidence of type 2 diabetes, with type 2 diabetes, with about a quarter about a quarter lower risk in the groups lower risk in the groups with the highest with the highest intakes. So, intakes. So, viscous fiber, viscous fiber, right? Slows down right? Slows down stomach emptying.

stomach emptying. These fibers really These fibers really do that, they do that, they slow down slow down slow down stomach emptying, they stomach emptying, they stretch out the stretch out the glucose curve. And this is the glucose curve. And this is the most important part, it feeds gut, it feeds gut bacteria to bacteria to produce butyrate produce butyrate and other and other short-chain short-chain short-chain fatty acids, which are fatty acids, which are wonderful, by the way, because they wonderful, by the way, because they stimulate natural stimulate natural GLP-1 and PJI from L-cells GLP-1 and PJI from L-cells in the gut. You are, in the gut. You are, literally, literally, literally, producing your own producing your own endogenous Ozempic endogenous Ozempic or Munjaro with or Munjaro with the help of fiber. Now magnesium, right? We talked about that too? We talked about that too. Dark green leafy vegetables are green leafy vegetables are rich in it. And magnesium is a rich in it. And magnesium is a cofactor for the cofactor for the tyrosine kinase tyrosine kinase tyrosine kinase activity of activity of activity of insulin insulin insulin receptors. So you receptors. So you literally can't literally can't properly properly properly transmit the transmit the transmit the insulin signal insulin signal when it's when it's depleted.

depleted. A dose- A dose- response meta-analysis also response meta-analysis also indicates an approximately 15 % reduction in % reduction in diabetes risk for every diabetes risk for every additional 100 mg of additional 100 mg of magnesium daily. And magnesium daily. And most most most Americans, Americans, Americans, frankly,

frankly, frankly, lack it. Now lack it. Now let's talk about let's talk about dietary nitrates.

dietary nitrates. Beets, arugula, and spinach Beets, arugula, and spinach are converted to are converted to nitric oxide, which nitric oxide, which improves improves improves endothelial function and endothelial function and blood flow, and better blood flow, and better perfusion of skeletal perfusion of skeletal muscles means better glucose supply and absorption.

glucose supply and absorption. Now let's Now let's talk about the talk about the order of order of eating. This is also eating. This is also free. free.

free. It just takes a little It just takes a little organization. It organization. It works. It doesn't cost works. It doesn't cost you anything, right?

you anything, right? Meal sequence. We've Meal sequence. We've talked about this talked about this before. Shukla and before. Shukla and colleagues clearly colleagues clearly demonstrated this demonstrated this in one study.

in one study. Same food, same Same food, same calories, same calories, same macronutrients. But macronutrients. But if you eat your vegetables if you eat your vegetables and protein first and your and protein first and your carbs last, you'll get, you'll get about a 30–40% smaller smaller smaller postprandial postprandial postprandial glucose spike glucose spike after a meal and significantly after a meal and significantly lower lower lower insulin levels. So, the insulin levels. So, the same food, different same food, different order—that's all.

order—that's all. So eat your So eat your salad first, then your protein, and salad first, then your protein, and if you have to if you have to eat rice, potatoes, eat rice, potatoes, or bread, save it or bread, save it for last. This works in for last. This works in restaurants, right?

restaurants, right? This works for This works for Thanksgiving and just about Thanksgiving and just about everywhere. So, where is everywhere. So, where is the place for additives here? That's the place for additives here? That's also a separate conversation.

also a separate conversation. I want to be frank. I want to be frank. Even my Even my most motivated most motivated most motivated patients have a hard time patients have a hard time reaching eight reaching eight servings of vegetables each day.

servings of vegetables each day. And in real life, And in real life, anything happens. We anything happens. We always tell always tell patients: do what you patients: do what you can, because no one is can, because no one is perfect. That's why perfect. That's why we sometimes add we sometimes add Super Berberine from SugarMD to our diet. This is Super Berberine from SugarMD to our diet. This is the formula the formula the formula for dihydroberberine, for dihydroberberine, right? Compared to right? Compared to berberine, this is berberine, this is important because important because regular berberine regular berberine has terrible has terrible bioavailability and is bioavailability and is harmful to the digestive harmful to the digestive system of many system of many people.

people. people. Dihydroberberine, on Dihydroberberine, on the other hand, the other hand, is absorbed several is absorbed several times better at times better at lower doses. From a lower doses. From a mechanistic mechanistic mechanistic perspective, it is an perspective, it is an activator of AMPK—the same energy-sensing pathway that muscles energy-sensing pathway that muscles use use use during exercise.

during exercise. So it perfectly So it perfectly complements everything complements everything we just talked about. we just talked about. Better processing of Better processing of glucose by the liver, glucose by the liver, better sensitivity to better sensitivity to insulin. sugarmds.com, you insulin. sugarmds.com, you already know this site. I'm already know this site. I'm using this as a using this as a bridge, okay? This is not a bridge, okay? This is not a replacement for your replacement for your lifestyle. And not a lifestyle. And not a replacement for medication either. No one has yet been able to one has yet been able to replace replace replace four cups of four cups of real

vegetables a real vegetables a day with supplements. But if you're at the day with supplements. But if you're at the two-glass level and two-glass level and gradually increase the gradually increase the amount, it will amount, it will help stay the help stay the course while you course while you form the habit.

Managing stress and sleep

form the habit. Mistake number three: Mistake number three: Unfortunately, you let Unfortunately, you let stress and poor stress and poor sleep derail all sleep derail all your efforts. And you your efforts. And you say I can't say I can't change it. I can't change it. I can't change my stress. I change my stress. I can't can't can't handle this as it is.

handle this as it is. People just give up. People just give up. I left this for I left this for last because it's the one last because it's the one people dismiss people dismiss the quickest, even though it the quickest, even though it may be the may be the most powerful most powerful most powerful factor of the three. You factor of the three. You are allowing are allowing are allowing chronic stress to chronic stress to run rampant.

run rampant. You don't know how to You don't know how to relax. You relax. You treat sleep as treat sleep as something something something optional. Everything optional. Everything else seems more else seems more important. And I see important. And I see you rolling your eyes: " Okay, doctor." Okay, Okay, doctor." Okay, I've heard that before, I've heard that before, right? You know, when right? You know, when a doctor says "manage your a doctor says "manage your stress," it sounds stress," it sounds like empty words, well, like empty words, well, you get the idea. It's like you get the idea. It's like we've run out of we've run out of real advice. So real advice. So let me let me explain the real explain the real physiology and then physiology and then tell you if it's tell you if it's not serious. What not serious. What does cortisol do to does cortisol do to you, huh? This is a you, huh? This is a counterregulatory counterregulatory counterregulatory hormone. Its only hormone. Its only job is to raise blood glucose levels. That's the whole point of it blood glucose levels. That's the whole point of it. It. It stimulates hepatic stimulates hepatic gluconeogenesis, gluconeogenesis, gluconeogenesis, which we talked about— glucose production.

glucose production. It causes It causes insulin resistance insulin resistance insulin resistance in peripheral in peripheral tissues such as tissues such as muscle and fat. It muscle and fat. It directs directs directs fat storage fat storage to the visceral to the visceral region, which is the most region, which is the most metabolically metabolically metabolically dangerous fat you dangerous fat you can have because can have because it goes straight into the it goes straight into the portal vein and portal vein and floods your liver with floods your liver with free fatty free fatty acids and acids and inflammatory inflammatory inflammatory cytokines. So cytokines. So when you're in a when you're in a state of chronic state of chronic low-level stress— work, marriage, caring work, marriage, caring for others, finances, for others, finances, whatever—you have a hormone working 24/7 whose function is to raise your raise your blood sugar and make you blood sugar and make you insulin resistant.

insulin resistant. You won't be able to " overeat" this broccoli. overeat" this broccoli. You won't be able to. The data You won't be able to. The data on sleep is actually on sleep is actually shocking, and sleep, well, shocking, and sleep, well, seriously? This is where seriously? This is where the evidence is so the evidence is so compelling that it should compelling that it should be in every be in every instruction manual in bold instruction manual in bold. In the. In the Lancet journal, this is a classic Lancet journal, this is a classic study. In study. In 1999, they took 1999, they took healthy young healthy young men and restricted men and restricted their sleep to 4 hours their sleep to 4 hours for 6 nights. Not for 6 nights. Not sick people, but sick people, but just young, just young, healthy, healthy, healthy, metabolically metabolically metabolically normal men like me. I'm still like me. I'm still young, right? 40, 42, young, right? 40, 42, 42, I don't know. It's still 42, I don't know. It's still okay. After 6 okay. After 6 nights, if I, nights, if I, for example, had slept that for example, had slept that little for 6 nights, what would have little for 6 nights, what would have happened to these happened to these men?

men? Glucose tolerance dropped by Glucose tolerance dropped by about 40%. about 40%. The rate of glucose absorption decreased dramatically. Some decreased dramatically. Some of them had glucose curves that of them had glucose curves that looked like looked like early diabetes. And early diabetes. And that's just because of that's just because of sleep deprivation, sleep deprivation, remember? Then, in remember? Then, in 2012, another study was published in the Annals of Internal 2012, another study was published in the Annals of Internal Medicine

Medicine Medicine. Four. Four nights of 4 and a half nights of 4 and a half hours of sleep.

hours of sleep. Whole- Whole- Whole- body body body insulin sensitivity dropped by insulin sensitivity dropped by about 16%. And about 16%. And during a biopsy of adipose during a biopsy of adipose tissue, it turned out tissue, it turned out that the sensitivity of that the sensitivity of adipocytes, that is, adipocytes, that is, fat cells, to fat cells, to insulin dropped by insulin dropped by about 30% in about 30% in four nights, just four nights, just four. Regarding four. Regarding appetite, when appetite, when sleep is restricted, sleep is restricted, for example, for example, leptin levels decrease leptin levels decrease by approximately 18% and by approximately 18% and ghrelin increases by 28%.

ghrelin increases by 28%. So, what's going on? You become? You become hungrier. You are less hungrier. You are less full. And you are especially full. And you are especially drawn to carbohydrates.

drawn to carbohydrates. It's not a question of It's not a question of willpower. This is willpower. This is neuroendocrinology. neuroendocrinology. neuroendocrinology.

You are being chemically You are being chemically pushed to pushed to eat the very eat the very foods that are foods that are harmful to you. This is the one thing harmful to you. This is the one thing you can completely you can completely ignore. I ignore. I have to say this because I have to say this because I encounter encounter encounter this all the time in my clinic.

this all the time in my clinic. Just remember Just remember this, okay? Sleep apnea. this, okay? Sleep apnea. If you have prediabetes If you have prediabetes or diabetes, are or diabetes, are overweight in your overweight in your abdominal area, abdominal area, snore, snore, snore, wake up wake up wake up groggy, groggy, groggy, need to get up to use the need to get up to use the bathroom two or three times a bathroom two or three times a night, or night, or wake up with a wake up with a headache or headache or dry mouth—you dry mouth—you need a need a sleep study. You have a thick neck —you need a —you need a sleep study.

sleep study. Now a home test is quite acceptable. is quite acceptable. It's pretty simple It's pretty simple now. But untreated now. But untreated apnea causes apnea causes insulin resistance insulin resistance insulin resistance regardless of weight regardless of weight due to periodic due to periodic hypoxia and hypoxia and activation of the activation of the activation of the sympathetic nervous sympathetic nervous system. I have seen my system. I have seen my glycated glycated glycated hemoglobin drop by hemoglobin drop by 0.3-0.4% just with CPAP therapy without any therapy without any other changes. And other changes. And the number of patients the number of patients with prediabetes and with prediabetes and diabetes who walk around diabetes who walk around with undiagnosed with undiagnosed apnea, in my apnea, in my experience, is simply experience, is simply enormous. In particular, enormous. In particular, in type 2 diabetes, the in type 2 diabetes, the prevalence rate prevalence rate is more than is more than half of cases.

half of cases. If you If you only remember one thing from this video only remember one thing from this video, let this be, let this be it. Get it. Get tested. Circadian tested. Circadian desynchronization is of desynchronization is of great importance.

great importance. This is another important This is another important factor. It's not factor. It's not just about how much just about how much sleep you get, right? It matters when you sleep and when you when you sleep and when you wake up.

wake up. Circadian Circadian Circadian desynchronization is desynchronization is important. When you important. When you shift a shift a person's behavioral cycle relative to their person's behavioral cycle relative to their internal internal internal biological biological biological clock, the clock, the glucose response after a meal, the glucose response after a meal, the postprandial postprandial postprandial glycemic response, glycemic response, worsens even worsens even when eating the same when eating the same food. In some food. In some people, glucose levels people, glucose levels reach reach reach prediabetic prediabetic prediabetic levels within a few days. This is why data on. This is why data on shift work, shift work, for example, shows a for example, shows a significantly increased significantly increased risk of type 2 diabetes, risk of type 2 diabetes, especially with a especially with a

variable schedule. And that's why variable schedule. And that's why eating at 10 eating at 10 p.m.

p.m. p.m. is metabolically different from is metabolically different from eating at 6 p.m. So eating at 6 p.m. So your beta cells and your beta cells and peripheral peripheral insulin sensitivity are insulin sensitivity are under circadian under circadian control, and control, and both of these things both of these things get worse at night. What is the get worse at night. What is the practical solution?

practical solution? Fixed Fixed Fixed wake-up time. Same wake-up time. Same time every day, time every day, including weekends. including weekends. What time do I What time do I get up on Sunday? At get up on Sunday? At six. Don't want to six. Don't want to do this? Well, that do this? Well, that could be a problem.

could be a problem. And that is why And that is why people's sleep is always people's sleep is always disturbed. The time disturbed. The time of waking up of waking up of waking up sets the entire sets the entire circadian system circadian system more firmly than the time of more firmly than the time of going to bed.

going to bed. Morning light, 10–15 Morning light, 10–15 minutes of street minutes of street light within an light within an hour of hour of waking up. You waking up. You should go should go outside, not look outside, not look out the window. It's the out the window. It's the most powerful most powerful most powerful circadian signal circadian signal you have, and it's you have, and it's free. I live free. I live in Florida. I know where in Florida. I know where you live, so there really are no excuses here.

really are no excuses here. Most mornings are Most mornings are sunny. If it rains, sunny. If it rains, it's usually in the afternoon. it's usually in the afternoon.

So, stop So, stop eating 3 hours before eating 3 hours before bedtime. Eating late, bedtime. Eating late, no matter no matter how late you work, how late you work, is a battle with is a battle with your own physiology.

your own physiology. Alcohol, right? I Alcohol, right? I know, but alcohol know, but alcohol fragments fragments fragments your your your sleep architecture, suppressing rapid eye sleep architecture, suppressing rapid eye movement (REM).

movement (REM). There is nothing good about alcohol. There is nothing good about alcohol. It messes up It messes up your CGM readings and your CGM readings and puts a strain on your liver.

puts a strain on your liver. Yes, it “turns you off” Yes, it “turns you off” and relaxes you, but it and relaxes you, but it doesn’t give you true doesn’t give you true rest. You rest. You need cold, need cold, dark, and boring dark, and boring bedrooms. 18–20 bedrooms. 18–20 degrees, complete degrees, complete darkness, it darkness, it 's better to charge your phone in 's better to charge your phone in another room.

another room. Get a Get a sleep study done if sleep study done if any of what any of what I've I've I've said applies to you. And now— real stress, right?

real stress, right? You have to work You have to work on this stress. This is on this stress. This is work for you, not work for you, not just some just some abstract intervention. 5 minutes of slow. 5 minutes of slow diaphragmatic diaphragmatic diaphragmatic breathing, exhalation longer than breathing, exhalation longer than inhalation. It could be 5 on 5, 6 inhalation. It could be 5 on 5, 6 on 6, 8 on 8, or actually 6 on 6, 8 on 8, or actually 6 on 8, or 4 on 7, something like that on 8, or 4 on 7, something like that. And. And parasympathetic parasympathetic parasympathetic tone will improve. This is tone will improve. This is important because it can be important because it can be measured by measured by heart rate variability.

heart rate variability. Do this before meals Do this before meals if you want to if you want to improve your metabolism. A 10-minute walk. A 10-minute walk outside outside outside without your phone will be without your phone will be very beneficial. Better very beneficial. Better something you actually something you actually do every day than a do every day than a perfect protocol perfect protocol you throw away. Now you throw away. Now about supplements: I often about supplements: I often use magnesium use magnesium glycinate, especially glycinate,

especially before bed, because it before bed, because it helps me helps me fall asleep faster, relaxes fall asleep faster, relaxes my muscles, corrects the my muscles, corrects the deficiency we deficiency we talked about, and is talked about, and is low risk. This is a low risk. This is a very valuable tool.

very valuable tool. Sometimes, Sometimes, Sometimes, ashwagandha extract is one of the ashwagandha extract is one of the few few few adaptogens with adaptogens with real data from real data from randomized randomized randomized human trials.

human trials. Studies generally Studies generally show significant show significant reductions reductions reductions in in in serum cortisol levels and serum cortisol levels and perceived stress perceived stress over 8–12 weeks.

over 8–12 weeks. However, a caveat: However, a caveat: this is a this is a thyroid modulator. thyroid modulator. So if you have So if you have Hashimoto's disease or are Hashimoto's disease or are taking taking taking levothyroxine, I advise you to levothyroxine, I advise you to consult your consult your doctor first. I saw doctor first.

Conclusion and final outlook

I saw her TSH levels change her TSH levels change. So, the three mistakes, let me, let me put them together, because put them together, because they're not three separate things.

they're not three separate things. That's one thing. You That's one thing. You are performing light are performing light exercises that your exercises that your body stopped body stopped responding to 2 years responding to 2 years ago. You eat a meager ago. You eat a meager amount of vegetables that amount of vegetables that could be considered a could be considered a therapeutic dose and therapeutic dose and allow cortisol allow cortisol and sleep deprivation to quietly and sleep deprivation to quietly negate the negate the progress from the first progress from the first two points. Now I two points. Now I want to clearly outline want to clearly outline the stakes without the stakes without dramatizing dramatizing dramatizing the situation.

the situation. Prediabetes is not Prediabetes is not just a just a just a warning warning warning label. This is already a label. This is already a painful process.

painful process. Beta cell function is Beta cell function is already declining. already declining. Endothelial Endothelial Endothelial damage is already damage is already occurring.

occurring. occurring. Neuropathy and Neuropathy and retinopathy, which retinopathy, which people think people think appear after appear after diagnosis, partly diagnosis, partly begin in the begin in the prediabetes stage.

And if you've already And if you've already been diagnosed, been diagnosed, if you have type 2 diabetes if you have type 2 diabetes, if you're, if you're on medication, none on medication, none of this becomes of this becomes optional. This optional. This becomes the becomes the deciding factor in whether your deciding factor in whether your dose will increase each year, dose will increase each year, decrease, or decrease, or perhaps even perhaps even go off the go off the medication. I have taken people off medication. I have taken people off insulin doing insulin doing exactly what is shown in exactly what is shown in this video. Not all of them, this video. Not all of them, but more than you but more than you might think.

might think. Thanks for watching Thanks for watching today. Remember, we are in Port St. Lucie,, we are in Port St. Lucie, Florida, League IV—the steroid and steroid and hormone center of the hormone center of the Treasure Coast, our website—tcandro.com. For supplements,. For supplements, please please please visit sugarmds.com.

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