Are you suffering from any of the following?

1. PCOS, polycystic ovarian syndrome
2. High blood sugar or vacillating glucose levels
3. Intestinal bloating
4. Sleepiness, especially after meals and Brain Fog
5. Weight gain, fat storage, and difficulty losing weight
6. Increased blood triglyceride levels.
7. Increased blood pressure.
8. Increased pro-inflammatory cytokines associated with cardiovascular disease.
9. Depression.
10. Increased hunger.
11. Acne (cystic)
12. Imbalanced adrenal and ovarian hormones (estrogens, progesterone, cortisol, Dhea, Testosterone)
13. Sugar and/or carb craving
14. Waking in middle of night (between 2-4)
15. Suffering from osteoarthritis
16. Notice "skin tags" on body
17. REACTIVE HYPOGLYCEMIA

If you have 3 or more of issues above …. You are most likely INSULIN RESISTANT. Anyone can become insulin resistant — even if they are thin. We are all at risk in our society where we have access to a lot of refined carbohydrates (white bread, sugar, bagels, pasta, sodas, processed foods with added fructose, etc.). In fact, most of us are likely to be somewhat resistant to insulin. It is just a matter of degree. The more processed and refined food that we eat, the
more insulin we require to metabolize it. The more insulin in our blood, the less responsive our cells become. As we age, this continual exposure wears out our tolerance for refined carbohydrates and reduces our sensitivity to insulin.

What is INSULIN RESISTANCE?
Let’s take it from the very beginning… the cells of your body need sugar for energy. The sugar they need is glucose, which powers your brain, muscles, and other parts of your body, just as gasoline powers a car. To get glucose into your cells, your body makes insulin, a hormone that acts like a key. It attaches to the surface of your cells, allowing glucose to enter.

Insulin is a hormone that is released by the pancreas in response to rising blood glucose. When you consume carbohydrates, the glucose that enters the bloodstream signals the pancreas to make insulin. Insulin serves as the key that unlocks the door to allow glucose to enter body tissues. It tells your cells “HELLO! Pick up this glucose. It’s all over the place.”

Without insulin, cells in the liver, muscle, and fat have a difficult time vacuuming up glucose from the blood. These tissues can transport only a small percentage (5 to 10 percent) of the glucose in circulation without the help of insulin. When insulin is present, it increases the amount of glucose that can be transported into tissues, allowing them to be properly fed, and keeping blood glucose concentrations in the normal range.

This process of transporting glucose is important because every cell in your body uses glucose for energy. (Besides glucose transport, insulin also escorts amino acids into cells.)

The system looks like this:

For some people, the cells do not respond well to insulin. The tissues become “blind” to the insulin. Imagine that you try to start your car and insert your key into the ignition, only to find that it does not turn very easily. Looking more closely, you discover that some mischievous person put gum in your ignition. There is nothing wrong with your key, but your ignition does not work right. This is essentially what happens in insulin resistance: The insulin “key” attaches to the surface of the cells normally, but the cells don’t respond, as they should.

That’s where the problems start. If glucose cannot get into your cells, it builds up in your bloodstream. Your body responds by producing more and more insulin, eventually getting at least some glucose in the cells where it belongs. But as the years go by, your body may not be able to produce enough insulin to overcome the cells’ resistance. At that point, your cells cannot get the glucose they need. And you’ll find yourself low on energy, like a car that’s run out of gas.
Meanwhile, the glucose that builds up in your blood can harm the blood vessels in your eyes, kidneys, and heart. This condition is called type 2 diabetes, and it has reached epidemic proportions in North America and much of the rest of the world.

There is a significant amount of confusion about what actually causes insulin resistance, and I witness it every day in my work coaching people with diabetes, weight issues, and adrenal issues.

A large gap exists between the scientific research on insulin resistance and what the general public understands about it. Most health professionals even misunderstand the science or are not aware of the latest research. Unfortunately, excellent research does no good if the information is not put in the hands of those who need it. This is certainly the case with insulin resistance.

Excess fat also blocks the action of insulin in bringing sugars to the cells, which leads to diabetes – Dr. Marie

5 Causes of Insulin Resistance (metabolic syndrome, Type 2 Diabetes)

1. Trans Fats (animal meats, milks, cheeses & eggs)
2. Refined carbohydrates
3. High-fructose corn syrup
4. Preservatives, pesticides, toxins
5. Lack of Exercise & Stress

Why are instances of insulin resistance, metabolic syndrome, and type 2 diabetes on the rise? In many cases, the answer lies in the food we eat — and our lack of movement. Our early ancestors focused on hunting and gathering food. This simple act involved two key elements: they were obtaining whole foods straight from their environment and getting a lot of exercise in the process. In modern society, we sit parked at our desks and in our cars for so much of the day, and food is available at almost every turn — much of which depletes the body rather than nourishing it. Meanwhile, the research is mounting that shows how foods high in refined carbohydrates, preservatives, pesticides, trans fats, toxins and super sugars like high-fructose corn syrup, and lack of exercise, all contribute to insulin resistance.

Researchers using special scanning techniques found one of the most important contributing factors. Looking into the cells of people with insulin resistance, they found tiny particles of fat. These fat particles are especially common in muscle cells. Like gum in a lock, a buildup of fat particles in cells interferes with insulin’s ability to open the cell membrane and allow glucose inside.

Just as insulin resistance prevents sugar from entering muscle cells, it also prevents amino acids from entering. So now you can’t build or maintain your muscles. You get fatter and you lose muscle.

Your energy level drops, which makes you hungry for more carbohydrates and less willing to exercise. You actually crave more of the poison that is killing you.

When your liver becomes insulin resistant, it can’t convert thyroid hormone T4 into the T3, so you get those mysterious and stubborn “thyroid problems”, which further slow your metabolism.

Most individuals that develop insulin resistance actually have normal or close to normal blood glucose levels. Levels are able stay low due to the excessive release of insulin, which is trying to maintain the balance in the bloodstream. Just over a decade ago it was estimated that 60 to 70 million people fell into this category. Approximately 25% of this group progressed to having type 2 diabetes as their bodies couldn’t sustain the insulin resistant state. Today, the numbers are even higher.
If you’re younger (under the age of 40) you probably also have **REACTIVE HYPOGLYCEMIA**. This is a type of hypoglycemia (postprandial hypoglycemia) that is created by low blood sugar that occurs after a meal — usually within four hours after eating. **Probably a better definition of hypoglycemia is: low energy production and low glucose in the cells.** If you’re insulin resistant then the insulin cannot carry the glucose into the cell… this is one main cause of **REACTIVE HYPOGLYCEMIA**. The body gradually adjusts to this situation by using muscle protein to feed glucose to brain cells and fat to fuel the other body cells, but before this adjustment takes place, an individual may experience symptoms of glucose deprivation to the brain. Symptoms such as: anxiety, crying, moodiness, hunger, dizziness, confusion, sleepiness, weakness, shaking muscles and racing heart, fatigue, heart palpitations, and headaches may result. Most of these symptoms diminish five to ten minutes after eating a source of carbohydrate. Reactive hypoglycemia is **ALWAYS** caused by adrenal stress/fatigue.

**REACTIVE** hypoglycemia, that is due to severe muscular exertion (extreme exercise, i.e. my young female clients who run or are involved with heavy sports training), poor nutrition (simple carbs, skipping meals) and other stressors (imbalanced hormones, emotional stress, etc.), can be easily fixed with diet change, balancing of hormones, reducing stress in the person's life.

**HOW CAN I CONTROL REACTIVE HYPOGLYCEMIA?** Reactive hypoglycemia can be managed with:

- Eating nutritionally balanced meals (whole food plant based)
- Eating more frequent meals and snacks
- Balance your hormones and support the adrenal glands
- Handle your stress and anxiety

**Nutrition tips to manage hypoglycemia**

- Eat a small meal or snack about every 2-3 hours. Skipping meals can make symptoms worse.
- Choose high fiber foods at each meal and snack. Fiber helps stabilize blood sugar. Increase fluid intake when you increase fiber intake. A more whole food plant based diet is called for.
- Avoid simple sugars. (candy, soda, fruit juice, sweets) Simple sugar intake can make hypoglycemia symptoms worse. Avoid all processed foods.
- Limit alcohol and caffeine (coffee, tea, soda, chocolate).
- Eat a meal or snack 1-3 hours before exercise. Extra carbohydrates may be needed before exercise to compensate for energy used.
- Sleep… really make sure you are getting a good night’s rest every single night
- Have your holistic doctor check and see if you need additional nutrients: Vit. C, E, B6, B12, D3, Alpha Lipoic Acid, Chromium, Magnesium, etc.

“Potatoes often have a bad reputation, especially for people with diabetes. But they are actually a perfect food to help reverse insulin resistance and maintain steady blood glucose. If you have diabetes, you may see a blood glucose spike when you eat them for the first week or two, but that is because your body is still experiencing high levels of insulin resistance. As you continue to eat low-fat, plant-based whole foods, you will clear the fat out of your muscle cells and increase insulin sensitivity. In time, your body will no longer see the spikes and you’ll experience better blood glucose control and higher energy than ever before” – **Dr. Marie**

**What happens to your body after just ONE FATTY MEAL?**
Insulin become resistant: Researchers in Germany recently studied 14 healthy subjects after receiving a meal of palm oil—a tropical oil similar to coconut oil and almost as high in saturated fat. A single meal high in saturated fat reduced insulin sensitivity, which drove fatty lipids to be stored in the liver. The authors concluded that dietary fat ingestion may contribute to the epidemic of nonalcoholic fatty liver disease.

Telomeres are shortened: Telomeres are the tips of our chromosomes, and their length may be a marker of longevity—meaning the longer they are the better. In a study of nearly 2,000 Finnish men and women, those consuming the most butter had the shortest telomeres, while those eating the most vegetables had the longest telomeres.

Toxins are released: Bacteria contain dangerous endotoxins that, when released in the blood stream, may contribute to obesity and other diseases. In a study of healthy volunteers, a single meal high in saturated fat released endotoxins while meals with vegetables and marine oils did not cause this release.

Blood clotting: Blood clotting is an important factor in heart attack, stroke, and pulmonary embolism. After fatty meals rich in saturated fat, measures of the tendency to clot increased in a study of healthy volunteers. In another study of the impact of different types of fatty meals on the body, measures of blood clotting were activated.

Heart attack risk increases: The potential for a fatty meal to trigger heart attacks has been discussed frequently in medical literature. In a classic study measuring the impact of fat ingestion on patients with serious heart disease, a single meal rich in butter fat resulted in EKG changes and angina chest pain in nearly half of the patients. Many people with hypertension are either diabetic or pre-diabetic and have elevated insulin levels due to insulin resistance. One of insulin's effects is to control arterial wall tension throughout the body. High blood pressure medication will not cure insulin resistance.

Lowered testosterone hormone: A group of healthy men were fed a meal high in saturated fat, blood samples were taken, and results showed that after the meal, total and free testosterone levels dropped significantly.

![Photo of a person sleeping](image)

One night of Sleep Deprivation Causes INSULIN RESISTANCE

A single night of inadequate sleep could equal 6 months of a high-fat diet! Demonstrating once again the importance of a good night's sleep, new research has found that a six-month high-fat diet and one night of sleep deprivation could BOTH impair insulin sensitivity in a similar manner.

In the study, conducted at Cedars-Sinai Medical Center in Los Angeles, CA, researchers measured insulin sensitivity in eight male dogs, using an IV glucose tolerance test. They compared dogs before and after diet-induced obesity and one night of sleep deprivation, and compared those findings with the results of dogs that had a normal night's sleep. Prior to being fed a high-fat diet, one night of sleep reduced insulin sensitivity by 33%, similar to the reduction caused by being fed a high-fat diet alone, which reduced sensitivity by 21%. Dogs that had
impaired insulin sensitivity from the high-fat diet did not have further impaired sensitivity with one night of sleep deprivation. The results from tests clearly showed that sleep deprivation can also lead to overall increased risk for metabolic diseases and increased food intake. In addition to impaired insulin sensitivity, sleep deprivation can lead to increased food intake and overall increased risk for metabolic diseases.

"It is critical for health practitioners to emphasize the importance of sleep to their patients," said Caroline M. Apovian, MD, FACP, FACN, a Fellow and spokesperson for The Obesity Society. "Many patients understand the importance of a balanced diet, but they might not have a clear idea of how critical sleep is to maintaining equilibrium in the body."

**How to REVERSE Insulin Resistance**

You might wonder if you should avoid all carbohydrates (fruits, veggies, starches, etc) if the sugar is “building up in the bloodstream”. Actually it’s just the opposite that needs to be done! You would do better to have *more* healthful carbohydrates and a lot less fat. Here’s why: In Asian countries, where meals have long been centered on rice, insulin resistance and diabetes were relatively rare... until fast-food restaurants arrived. Since Asian diets have Westernized over the past few decades, with increasing amounts of meat, cheese, fried foods, and sugar, diabetes rates have exploded.

Remember those fat particles in your cells? Well, fatty foods can cause them to build up remarkably quickly. In a study, researchers in Baton Rouge, La., fed high-fat meals to 10 young men. After just three days, the fat particles in the men’s cells had built up significantly. Meanwhile, a team of London researchers tested people who were following vegan diets, finding that they had significantly less fat in their muscles compared to other people.

So getting the fatty foods off your plate is a good way to “clean out” your cells, so to speak, and a good way to tackle insulin resistance. The most powerful diets set animal products aside, keep vegetable oils low, and emphasize natural foods - beans, whole grains, vegetables, and fruits and even healthy starches (organic white potatoes, yams, sweet potatoes, etc). The Physicians Committee for Responsible Medicine studies have shown that these foods can reduce insulin resistance, promotes weight loss, and dramatically improves diabetes. It is vital to also check your adrenal hormones. When DHEA and Testosterone are high this is very indicative of insulin resistance in both men and women. If you are on antidepressants it is also vital to check for insulin resistance as these types of drugs cause diabetes.

We also know that incorporating exercise into your daily life is another way to reverse or prevent insulin resistance because it increases the insulin receptors on your cells. Walking is a great spiritual cure-all but it’s not going to reverse your insulin resistance all by itself nor build strength and strong bones. You need a minimum of 10-30 minutes daily of high intensity training. Hiiit (high intensity interval training) is defined by short bursts of high intensity exercises. It provides health benefits that you simply cannot get from any other regular aerobic activity: increase human growth hormone (the fitness hormone), decreases body fat, increases muscle mass, improves DNA expression, improved insulin sensitivity and blood sugar regulation and so much more.

Going to the local gym a few times each week (even for an hour) is NOT going to counteract the 8-10 hours of sitting you do each day! You must exert more energy and the way to do that is through HIIT with a trainer, video’s, or personalized programs. A simple weight training routine can help you lose weight and tone your body, while significantly reducing your insulin levels and blood pressure, and therefore your risk of diabetes and heart disease and insulin resistance.

There are supplements that will help with insulin resistance. I try to teach my clients that supplementation is NOT the correct way to fix this issue in your body. The correct way is through diet and exercise … but with that said… and based on correct testing for a client… I would suggest a proper form or B6 (called P5P) along with Chromium, Magnesium and possibly Berberine. The amounts would be based on test results.
BLOOD SUGAR AND YOUR HORMONES - Because insulin is one of the “major” hormones, it’s also impossible for your body to balance its “minor” hormones (estrogen, progesterone and testosterone among them) until your insulin metabolism is balanced first. To put it simply, if you have hot flashes and you are insulin resistant, it’s going to be nearly impossible to cure the hot flashes without first healing the insulin resistance.

As women approach menopause, they become increasingly intolerant of carbohydrates and find it easier to gain weight, especially around their waists. Afternoon blahs, sugar crashes and carbohydrate cravings may all be early insulin resistance symptoms.

When the cells won’t absorb the extra glucose, the liver has to convert it into fat. Fat cells are loaded with glucose receptors, so this is a vicious cycle. Ironically, while the insulin-resistant woman is gaining weight, her cells are actually “starved” for glucose, so she feels exhausted and tends to eat carbohydrate-heavy foods in search of energy.

These extra fat cells are also little estrogen factories. So weight gain contributes to the estrogen dominance that causes so many symptoms during the early stages of perimenopause.

Researchers at Yale University scanned the muscle cells of young adults whose parents or grandparents had diabetes. Even though these young people were slim and healthy, many had microscopic fat particles already building up in their muscle cells, suggesting that they were headed for diabetes. These fat particles are the result of diets loaded with fatty foods, along with sugar and overly refined carbohydrates that pack in more calories than we need. It also contributes to polycystic ovary syndrome (PCOS). In this condition, women lose their normal ovulation cycle, which can lead to infertility. The problem is that increased insulin produced in response to insulin resistance ends up triggering changes in sex hormones, especially an increase in testosterone in a woman’s bloodstream. Symptoms of PCOS include irregular periods, weight gain, acne, and an increase in facial hair.

Symptoms relating to syndrome X (metabolic syndrome or insulin resistance) usually predate the onset of menopause, but most women do not complain of them until then. A woman’s health can deteriorate rapidly during menopause with the decrease of estrogen levels in the body. And digestive issues that were once merely a hassle become an affliction when the body’s natural defenses against inflammation (estrogen being one) are depleted.

Women approaching menopause are particularly prone to becoming insulin resistant due to metabolic changes related to fluctuations in adrenal and thyroid secretions. We’re seeing more and more younger women with these same issues though. In fact, the decrease of certain hormones, like estradiol, may trigger a resistance to insulin in patients who never experienced it before. Certain blood pressure medications can mask symptoms without treating the problem. Frequently, women unwittingly make their symptoms worse by trying to lose weight with low-fat, high-carbohydrate diets. Men can experience all of this too!

Your body’s hormonal balance is like a symphony. Insulin is one of the loudest and most important instruments. When its metabolism goes wrong, it throws off everything else. We’ve seen over and over how women with menopause symptoms must reverse their insulin resistance in order to find relief from other symptoms. It can be done, and we’re here to help.

Bringing insulin into check

For many people with insulin resistance, the condition often goes unnoticed in routine blood-work because insulin drives the glucose levels down to a normal or near normal levels. This masks the problem, which can readily be identified with the simultaneous analysis of blood insulin and glucose levels. Unfortunately, doctors don’t usually order both tests, relying primarily on blood glucose and A1c. If a problem is suspected it is prudent to request both tests. As with most chronic illnesses, risk factors can be modified even if you do fall into a susceptible population. A comprehensive management plan that incorporates diet and lifestyle modifications along with supplemental support can be effective in turning the tide. It is always important to remember that it took time to create the condition and it will take time to reverse it as well.
When we evaluate a client for insulin resistance, we might recommend a blood test for glucose and insulin levels after fasting for 12 hours. On the fasting tests, we hope to see glucose levels of no more AND NO LESS than 85-100 and insulin of less than 14; higher levels indicate a risk of insulin resistance. Increased triglycerides make me suspicious too. We also take into account the patient’s lifestyle, diet and exercise patterns, as well as stress factors. Absolutely getting a saliva hormone test done to evaluate hormones is necessary. All of this can be changed. We have developed a few key supplements that can also greatly improve blood sugar regulation. But diet and lifestyle are the best avenues of change.

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