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DIABETES:
A Preventable Epidemic?

The statistics of diabetes tell a staggering story of a diabolical condition that rarely kills in and of itself, yet it is a leading cause of death worldwide—and its prevalence is growing at an alarming rate.

Based on the fact that current data indicates that one out of every four Americans over the age of 20 will be affected by diabetes, the Centers for Disease Control and Prevention has classified it as an epidemic. Even more troubling are the reports that show an acceleration of diabetes diagnoses among younger age groups, including teenagers, which will lead to an even greater prevalence of this disease.

Healthcare professionals at all levels are working toward reversing this trend, primarily through education about diabetes, how it develops, and its repercussions if not managed. They have hope that, in many cases, diabetes can be prevented or reversed.

What is Diabetes?

In very simple terms, diabetes is a family of medical conditions involving the body's ability to metabolize, store, and make use of glucose, which is the main energy source for all cells in the body. This process of converting what we eat and drink into something the body can use requires insulin, a hormone produced by the pancreas. Insulin regulates the conversion of sugars and starches in the blood stream into glucose, and promotes its "uptake" into cells. This is what fuels and energizes cells throughout the body. When a person has diabetes, their body's ability to process glucose is impaired or nonexistent, either because the pancreas does not produce enough insulin or cells have become desensitized to insulin.

> *"The disorder we call diabetes affects virtually every cell in the body."*

When this conversion and uptake process goes awry, sugar builds up in the blood and urine. The medical term ***diabetes mellitus*** comes from Greek words meaning "to go through" (diabetes) and "honey" (mellitus) referring to the sweetness. In fact, before there were other methods, practitioners used to taste a patient's urine for sweetness to diagnose the condition (and some still do).

There are four primary types of diabetes:

- **Type 1 diabetes** accounts for less than 10% of all cases. It is an autoimmune disease that prevents the pancreas from producing enough insulin. This type of diabetes is typically diagnosed during adolescence, which is why it is also sometimes called "juvenile diabetes" even though it is a lifelong condition. With this type of diabetes, people must take daily insulin supplements to keep their cells supplied with glucose. Insulin supplements used to be manufactured from pigs and cows, but are now available as a human bioidentical hormone.
- **Type 2 diabetes** accounts for about 90% of the diagnosed cases. This type of diabetes is characterized by a persistent state of extremely high levels of sugar in the blood or urine, but not because of a lack of

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insulin. Instead, there is an abundance of insulin, but it no longer works as effectively as it should. For various reasons, the cells' insulin receptors have become desensitized to insulin and block the glucose uptake, causing an excess of sugar in the blood (***hyperglycemia***). This condition, also called ***insulin resistance***, can develop over time, and ranges from mild (prediabetic) to extreme (diabetic). It is treatable and, for many, reversible.

- **Gestational diabetes mellitus (GDM)** affects women in less than 10% of all pregnancies. This type of diabetes typically surfaces about 24 to 28 weeks into the pregnancy and is characterized by mild to severe insulin resistance. Because the fetus constantly draws glucose from the mother's bloodstream, the mother may feel "yo-yo" effects of hypo- and hyperglycemia before and after meals. Careful dietary planning and blood sugar monitoring are critical to preventing and treating GDM.

  If left untreated, GDM can lead to serious health concerns for both mother and baby, including pre-eclampsia or eclampsia (a potentially fatal condition characterized by high blood pressure, headaches, swelling of the lower extremities, and a buildup of protein in the urine), the need for a cesarean delivery, an increased risk of stillbirth, and a greater likelihood of developing Type 2 diabetes after delivery.

- **Secondary or miscellaneous diabetes** refers to cases resulting from surgery, the effects of drugs or medications, malnutrition or other diseases. This type of glucose/insulin impairment accounts for less than 2% of cases, and may be treatable depending on the cause.

Because it accounts for the vast majority of occurrences, we will be referring to Type 2 diabetes throughout the remainder of this newsletter, unless otherwise specified.

When things are working properly, insulin readily converts blood sugar to glucose, providing the fuel needed for cells throughout the body. In a person with diabetes, those cells are "starving" even though they are surrounded by both insulin and blood sugar. Over time, this cellular starvation takes its toll on all parts of the body, leading to a wide range of serious health issues such as blindness, high blood pressure, heart disease and stroke, kidney disease, dementia, infections and amputations.

"Overall, the risk for death among people with diabetes is about twice that of people without diabetes of similar age."

Why the Concern?

If diabetes is primarily a metabolic condition, and supposedly treatable 90% of the time (the Type 2 cases), how can it be a leading cause of death? Ironically, it is the prevalence of diabetes, coupled with the perception that it is "just a blood sugar thing," that makes this disorder so deadly! Diabetes is so common, and we interact with diabetics (or prediabetics) all the time who don't seem overly affected by it, so we are oblivious to its deadliness.

In *How to Prevent and Treat Diabetes with Natural Medicine*, Dr. Michael Murray and Dr. Michael Lyon caution that diabetes "affects much more than blood sugar. It is also characterized by abnormalities in fat and protein metabolism, inflammation, and immune system function." The disorder we call diabetes affects virtually every cell in the body.

The physical, emotional and financial burdens of diabetes are significant contributors to the current US healthcare crisis. People with diabetes tend to require more medical attention, and cost the healthcare system 2 to 3 times the amount of someone who does not have diabetes.

In "Long-Term Consequences of Diabetes," in the May 2009 issue of *The Townsend Letter*, Dr. Chris D. Meletis discusses the scope of diabetes' effects on a person's overall health. The litany of serious health consequences starts with the fact that the majority of diabetics suffer from severe nervous system damage (neuropathy), which is why their amputation rate is 10 times higher than non-diabetics. It continues with the explanation that diabetes takes a toll on the entire vascular system, leading to significant

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deterioration in the eyes, brain, and heart especially. One of diabetes' most serious consequences is the fact that death due to heart disease among diabetics is 2 to 4 times the rate of non-diabetics. Another is that diabetes is believed to be the cause of between 12,000 and 24,000 new cases of blindness each year, and nearly half of the new cases of kidney failure are due to diabetes. Perhaps most concerning to some is the fact that cognitive decline is more pronounced in diabetics than non-diabetics of similar age.

The trend is clear: serious health complications from diabetes will steadily increase, along with the rise in cases of diabetes among younger populations. The younger the age at which chronic insulin resistance begins, the earlier complications develop, giving them more time to advance into more serious health problems in adulthood. According to the Centers for Disease Control and Prevention, "Overall, the risk for death among people with diabetes is about twice that of people without diabetes of similar age."

Who is at Risk?

Diabetes strikes men and women nearly equally, but its type and occurrence does vary by race and ethnicity. American Indians, Hispanics, Asians and African Americans have a higher risk for Type 2 diabetes, while non-Hispanic Whites have the highest incidence of Type 1 diabetes. Aside from race, the more of the following characteristics that apply, the greater the risk of developing Type 2 diabetes:

- High carbohydrate diet
- Obesity (especially excess weight or "apple shape" around the waist)
- Sedentary lifestyle
- High blood pressure
- Low HDL cholesterol
- High LDL cholesterol and triglycerides
- Dark, thickened skin around the neck or armpits (a condition called *acanthosis nigricans*)
- Family history of diabetes.

For women, additional risk factors include:

- Giving birth to a baby weighing more than 9 pounds
- Gestational diabetes during a previous pregnancy
- Polycystic ovarian syndrome.

Pre-diabetes

Most people who develop Type 2 diabetes have had issues with "sugar highs" and "sugar blues" long before developing the disease. For example, they may alternate between being fidgety (sugar high) and exhausted (sugar low) because they eat a lot of sweets and primarily a high carbohydrate diet.

Symptoms of chronic hyperglycemia, a pre-diabetic condition, include:

- Excessive yawning and drowsiness
- Anxiety or nervousness
- Headaches or dizziness
- Blurred vision
- Inability to concentrate or make a decision
- Forgetfulness and confusion
- Depression
- Heart palpitations, tremors, or cold sweats
- Muscle pains and twitching, or leg cramps
- Numbness of the hands, legs or feet
- Digestive issues
- Allergies
- Insomnia.

What are the Symptoms?

The most common symptoms that point toward a diagnosis of diabetes are:

- Increased thirst with increased fluid intake that doesn't satisfy the thirst
- Increased urination (due to increased fluid intake)
- Vision problems, such as failing eyesight
- Unexplained fatigue, especially after eating

As diabetes takes hold, additional symptoms may include:

- Constant hunger
- Continuous craving for sweets
- Increase in infections, including pneumonia and influenza
- Open sores on the hands, legs and feet
- Slower healing time
- Skin itching and crawling sensations
- High concentration of sugar in blood and urine
- Rapid, unexplained weight loss

Diagnosing diabetes typically involves measuring blood glucose levels after fasting. Drs. Murray and Lyon also suggest

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measuring insulin levels, which provides more valuable information about where a patient falls on the continuum of insulin sensitivity. While simpler and less expensive, measuring glucose in urine is not currently considered accurate enough for diagnosing diabetes.

Can Diabetes be Prevented?

The growing epidemic of Type 2 diabetes seems to have a direct correlation to the prevalence of obesity. However, even thin people and those who carefully watch what they eat can succumb to diabetes. So, while diet and exercise seem to be the obvious answer, the insulin/glucose relationship is far more complex than that.

However, just because diabetes is complex does not mean it can't be prevented, managed, treated, or even reversed in some cases. Drs. Murray and Lyon suggest that "diabetes is a multifactorial disease that requires a multifactorial solution: medical, nutritional, and lifestyle changes." The most effective approaches to prevention, management, treatment or reversal will integrate all of these aspects, including hormone balance.

Hormones

As our hormone levels decline with age, our ability to regulate glucose is increasingly impaired. In a report in the July 2007 issue of *Life Extension* magazine, Dr. Edward Lichten notes that the simultaneous age-related drop in testosterone, DHEA and vitamin D creates the "perfect storm" for men to develop diabetes.

Although most of the research involves only men, testosterone supplementation has been shown to sensitize cells to receive glucose, essentially decreasing insulin resistance.

One report that included women from the Northern California Kaiser Permanente Diabetes Registry found that correcting a woman's sex hormone imbalance with combinations of estrogen, progesterone and testosterone improves glucose control and helps reduce weight gain. Progesterone alone also helps glucose control. This is why drops in progesterone levels during pregnancy contribute to gestational diabetes.

In *The Super-Hormone Promise*, Dr. William Regelson and Carol Colman note that DHEA plays a critical role in controlling the relationship between insulin and glucose. They claim that "the levels of DHEA and insulin are inversely related; that is, as one goes up, the other goes down. As we age, our levels of DHEA naturally decline and our levels of insulin rise." They state that DHEA supplements could be a tool in the prevention of diabetes.

In *Hypothyroidism: The Unsuspecting Illness*, Dr. Broda Barnes observes that "the complications of diabetes are much like the manifestations of hypothyroidism." In fact, many people with diabetes also have low thyroid hormone levels, due to the fact that the amount of active thyroid hormone (T3) produced by the liver depends on the amount of glucose available. Among Dr. Barnes' diabetic patients, those who were given thyroid supplements in addition to traditional diabetic treatments had fewer infections, their wounds healed more promptly, their cholesterol levels returned to normal, and they had increased energy. Over the course of many years, Dr. Barnes noted that "the complications of diabetes were conspicuous by their absence" among these patients. There were no amputations, and no reports of kidney failure, stroke or blindness.

Vitamin D, which is actually a hormone, is also linked to the occurrence of several types of diabetes according to studies reported on in the June 2009 issue of *The Vitamin D Newsletter*. For example, women who have low levels of vitamin D during pregnancy are three times more likely to develop gestational diabetes, a risk factor for developing Type 2 diabetes

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after delivery. A woman who maintains an adequate level of vitamin D during pregnancy and then assures that her child continues to get enough vitamin D throughout early childhood significantly reduces the child's risk of Type 1 diabetes.

Nutrients

In *Reversing Diabetes*, Dr. Julian Whitaker notes that vitamin and mineral deficiencies are quite common in diabetics, partially due to the excessive urination that is characteristic of the disease. He states that "nutritional deficiencies brought on by the diabetic condition are a significant contributor to diabetic complications."

Eating large amounts of sugar depletes the body of minerals, especially chromium, which is critical for regulating blood sugar. Chromium promotes insulin sensitivity; it improves insulin activity and facilitates the uptake of glucose into cells. Dr. Whitaker states that chromium "doesn't cause the body to make more insulin; it just makes insulin work better." In *The Diet Cure*, Julia Ross says that chromium also helps to "protect from the cravings and overeating that are triggered when blood sugar levels are unstable."

Other beneficial effects include improving lipid profiles and possibly facilitating weight loss. While it is not a miracle cure for obesity, Dr. Whitaker states that chromium improves body composition by increasing muscle mass and decreasing body fat, which "in and of itself helps improve insulin sensitivity" and is especially important in preventing gestational diabetes.

However, as important as chromium is, Dr. Whitaker believes that the mineral vanadium is "the single most effective and intriguing weapon for combating diabetes." Vanadium supplements reduce fasting glucose, as well as glycosylated hemoglobin (a longer-term measure of blood sugar control). Vanadium essentially mimics insulin.

The B vitamins are also important for diabetics because they are essential for metabolizing glucose. Biotin improves insulin sensitivity and glucose metabolism. Vitamin B3 fosters pancreatic function and the production of insulin. Vitamins B6 and B12 help prevent nerve damage as a result of diabetes, as does folic acid. Vitamin B6 supplementation has also been shown to be a safe treatment for gestational diabetes.

In addition to the minerals mentioned above, certain foods are known to be beneficial for diabetics. The spice cinnamon is one of the most powerful nutrients for improving glucose metabolism. It has been shown to help increase glucose uptake and lower blood glucose levels, as well as improve lipid levels. This dual-action is a bonus for diabetics because their risk of heart disease is greater than that of non-diabetics.

Other foods beneficial for diabetics are the spice turmeric, which is known to significantly reduce blood sugar, and the herb fenugreek, which is known to improve glucose control, decrease insulin resistance, and improve lipid profiles.

Conclusion

If you suspect you may be pre-diabetic or diabetic, it is not too late to try to do something about it. Work with your healthcare practitioner to assess your risk of diabetes and determine the best course of action. It may require lifestyle changes, such as diet and exercise, as well as hormone therapy and nutritional supplements. Be sure to discuss any supplements with your healthcare practitioner beforehand to make sure they do not interfere with other medications you may be taking.

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Women's Health Connection
P.O. Box 6338
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Thank you for your continued support.

~ Constance Hegerfeld,
Executive Vice-President

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