



## IS DIABETES IN YOUR FUTURE?

### **Type 2 Diabetes: The Growing Epidemic**

In case you aren't sure....

Risk factors for diabetes:

- Inactive lifestyle and excessive body weight for your height/frame
- High blood pressure
- Body type that stores excess body fat in the abdominal area
- Family history of diabetes within the last 2 generations
- Delivering a baby weighing >9 lbs.

Know the warning signs:

- Frequent infections
- Unusual thirst and frequent urination, coupled with unexpected weight loss, even after having prior weight gain
- Extreme fatigue
- Slow-to-heal cuts & bruises
- Extreme hunger
- Blurred vision

### **Differences Between Type 1 and Type 2**

#### Diabetes Types Defined:

Type 1 Diabetes is associated with a complete or near-complete inability of the pancreas organ to make the insulin hormone. This is usually caused by an autoimmune response and the destruction of the beta cells of the pancreas, which are responsible for the production of insulin. It is thought to be, in part, an inherited disorder, but generally requires an environmental trigger such as a virus (examples: mumps, German measles, and the coxsackie group of viruses) to lead to the damage/ destruction of these crucial cells. Without the body's production of insulin, an individual must depend upon an injectable form of insulin for survival. Previously known as juvenile diabetes, half of the people diagnosed with Type I Diabetes are under 20 years of age. It is more common among Caucasians than any other racial group.

Type 2 Diabetes is associated with "insulin resistance" rather than a complete absence of insulin. Either the body can no longer produce an adequate supply of insulin to keep the blood glucose level healthy, or the body's cells are not properly using the insulin that is available (hence, the term "insulin resistance"). This type accounts for 90-95% of all cases of diabetes in the U.S. Half of all the new cases of Type 2 diabetes are diagnosed in 55+ year old people. Women are more likely to be diagnosed with this disease than men after the age of 30. Certain groups of Native Americans, Hispanics and African Americans have a higher rate of Type II Diabetes. Heredity plays a significant role, as a risk factor, but obesity, inactivity and high calorie diets are all known to precipitate the disease. Research continues to show that "insulin release is either delayed, sluggish or somehow ineffective", resulting in elevated blood glucose levels (Pastors, 2007).

## **Carbohydrates: You Need Them!**

Carbohydrate (carbs) in foods is either digestible (simple and complex forms) or indigestible (dietary fiber). 100% of the digestible carbs will eventually be metabolized to glucose and used for either current energy needs, stored as glycogen in the liver and muscles as readily available energy, or converted to fat (triglycerides) and stored as adipose (fat) tissue. Carbohydrates function to:

- Provide, primarily, a ready source of energy for the body's cells, including muscle cells. Glucose is **the** energy source for the brain and central nervous system (CNS), which is why it is so critical for the body to maintain a given level of glucose in the blood stream at all times (typically between 70-100 mg/dL, even when fasting).
- Help keep the bowel system functioning well (the role of dietary fiber).

## **Where Do I Find Carbohydrates?**

- All plant foods are primarily carbohydrate, with varying lesser amounts of protein. Examples include:
  - Cereals and grains such as bread, pasta, rice, crackers, cookies, breadings & flour
  - Starchy vegetables such as potatoes, corn, peas & legumes
  - Non-starchy vegetables such as broccoli, carrots, lettuce, mushrooms & peppers
  - Fruits and juices
- Milks & yogurts provide carbohydrate as a major energy nutrient. The lactose in milk is a form of simple sugar.

## **Sugars Defined**

Sugars or sweeteners can go by many names. They are generally added to foods, but also include the naturally occurring sugars such as lactose (milk sugar) and fructose (fruit sugar). Fructose is a monosaccharide found in fruits, vegetables and honey. Disaccharides are 2-unit sugars which are quickly broken down by enzymes to yield single unit sugars, or monosaccharides. Examples of common disaccharides are:

- **Sucrose** (table sugar) which is fructose linked with glucose
- **Lactose** (milk sugar) which is galactose linked with glucose
- **Maltose** (from digestion of starches) which is composed of two units of glucose

Common Names of Sugars:

- Sucrose
- High Fructose Corn Syrup (HFCS)
- Fructose, fruit juice, honey
- Brown sugar
- Dextrose, Maltose, Malt, Maltodextrins
- Corn Sweeteners, sorghum
- Syrups (molasses, maple syrup, corn syrup)
- Panocha, Treacle
- Marshmallow
- Mannitol, sorbitol, xylitol ("zi-litol")
- Hydrogenated starch hydrolysates

Read nutrient labels and note how much sugar a food product contains per portion. Then, read the ingredient label and note which ingredients contain simple sugars. While a person with diabetes can include these in the diet, be aware that they may be replacing carbs which offer more health benefits of vitamins, minerals and fiber, and which are less cavity-promoting. High fiber, less processed foods generally delay absorption of glucose into the bloodstream, and, therefore, help to control blood sugar levels.

### **Healthy Living with Type 2 Diabetes**

How to reach better glucose control:

- Adopt healthier behaviors
- Replace highly processed foods with more “whole”, recognizable foods (including plenty of low fat plant foods)
- Move your body more
- Modify the kinds and amount of fats you eat (minimize saturated and *trans* fats)
- Space your meals out over the day (eating small “mini-meals” throughout the day can help to prevent large spikes and drops in blood glucose)
- Monitor your blood glucose and add meds, if prescribed

The heart-breaking complications of diabetes are largely avoidable by maintaining good blood glucose control. When blood sugar levels remain high over extended hours, days, months or years, the body cannot efficiently circulate needed oxygen and nutrients through tiny capillaries to critical tissues of the eye, kidney, heart and extremities and rid the body of waste products from those tissues. That’s why so much effort through meds, diet, exercise and glucose monitoring is devoted to attaining and maintaining good blood sugar levels.

### **Understanding More about Insulin Resistance**

The increase in Type 2 Diabetes with age is related to the increase in body fat, especially for those who carry it in the abdominal area. The well-supported theory is that as fat cells enlarge, there are fewer receptor sites on individual cells to allow for transporting of glucose into the cells. More glucose circulates in the blood stream, unused, and the pancreas secretes more insulin in an attempt to get the excess glucose out of the blood stream.

### **Exercise to the Rescue!**

While excess abdominal fat obstructs insulin efficiency, physical exercise makes the body's insulin MORE effective.

### **Benefits of Exercise to the Type 2 Diabetic:**

- Improvement in overall fitness, including cardiovascular system, muscle strength, endurance, balance and flexibility
- Lower blood glucose levels and increased insulin sensitivity (desirable)
- In combo with a healthy meal plan, a person may avoid the need for medications, which involve side effects
- Decreased risk factors related to the cardiovascular system (i.e. improved blood lipids and lowered blood pressure)
- Healthy form of weight loss

### **Additional Reading and Information Resources**

- <http://www.eatright.org>
- <http://www.diabetes.org>
- <http://www.nutrition4texas.org>
- [http://news.yahoo.com/s/hsn/20080211/hl\\_hsn/sugarsubstitutesmaycontributetoweightgain](http://news.yahoo.com/s/hsn/20080211/hl_hsn/sugarsubstitutesmaycontributetoweightgain)
- <http://www.news-medical.net/?id=35135>
- <http://www.cancer.gov/cancertopics/factsheet/Risk/artificial-sweeteners>
- <http://www.bddiabetes.com/us/>
- [http://win.niddk.nih.gov/publications/take\\_charge.htm](http://win.niddk.nih.gov/publications/take_charge.htm)
  
- *Nutritional Care of Diabetes* (5th ed, September 2007) by Joyce Green Pastors, MS, RD, CDE
- *Tell Me What To Eat If I Have Diabetes* by Elaine Magee, MPH, RD
- *Bowes & Church's Food Values of Portions Commonly Used, 18th edition* by Jean Pennington and Judith S. Douglass.