Risk Factors for Diabetes
The following is a list of risk factors for the development of diabetes. What that means is that if you have any of these, you are more likely to develop diabetes. It does not mean, however, that you will develop diabetes, it just means that your chances are greater.

Family history of diabetes (parents, siblings, etc.)	Hypertension (blood pressure at least 140/90)
Obesity (body mass index of 27 or greater)	Race (African, Hispanic, Native American, Asian, Pacific Islander)
Age of 45 or greater	Physical inactivity
HDL cholesterol 35 or less	Triglycerides 250 or more
Pre-diabetes (fasting blood sugar 100-125)	Polycystic ovary syndrome

Complications of Diabetes
Cardiovascular disease (heart disease and stroke) is the number one killer of diabetics, with 80% dying of cardiovascular disease. Diabetes is responsible for 1/3 of all cases of kidney failure and half of all amputations. It leads to impotence, glaucoma, cataracts, poor wound healing, poor blood supply to the extremities, and slow stomach emptying associated with pain, bloating, and cramping. Diabetes is the leading cause of blindness in developed countries, and up to 50% of diabetics have peripheral neuropathy (numbness, tingling, pins & needles sensation in the feet and sometimes hands). Seventy-three percent of diabetics have high blood pressure, and being diabetic decreases memory and increases your chances of developing depression.

The life expectancy of diabetics is reduced by 12-14 years compared to the normal population!

Diagnosing Pre-Diabetes & Diabetes
In order to diagnose pre-diabetes (a condition where your blood sugars are elevated but not to the degree that they are in diabetes) or diagnose diabetes, your doctor can do the following:
1. Fasting blood sugar. A sample of blood is taken from a vein and tested. If the glucose level is 100 to 125, you have pre-diabetes, and if it is 126 or greater, you have diabetes.
2. Random blood sugar. If you have classic symptoms of diabetes (increased thirst, increased urination, & unexplained weight loss) and a blood sugar measurement of 200 or greater (regardless of when your last meal was), you have diabetes.
3. 2-Hour Oral Glucose Tolerance Test (OGTT). After fasting, you would be given 75 grams of glucose to eat and your blood sugar measured (sometimes at various intervals). If the blood sugar level 2 hours after you were given the glucose is 140 to 199, you have pre-diabetes, and if it is 200 or greater, you have diabetes.
4. Haemoglobin A1C. A sample of blood is taken from a vein and is tested to see how much sugar is attached to haemoglobin moecules in your blood. This gives your doctor an idea of how high your blood sugars have been over the last several months. A value of 6.5% or more indicates diabetes.

Treatment
If you or a loved one has diabetes, what do you do about it? Check out the information on our Treating Diabetes handout. This will give you information that you can use to disarm diabetes. Basic principles of diabetes treatment include proper nutrition and scheduling, exercise and weight loss, replacement of vitamin/mineral deficiencies, avoiding substances that abnormally elevate blood sugar levels, and sparingly using pills or insulin injections as needed.

H. E. A. L. T. H.
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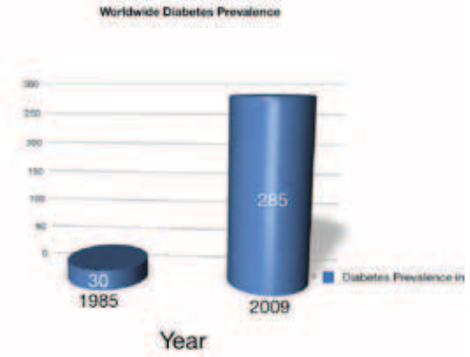
Exploring Diabetes

Is it all about sugar?

Taking a closer look at type 2 diabetes

How Bad is the Problem?



According to the International Diabetes Federation, in 1985 there were an estimated 30 million persons worldwide with diabetes. By 2009, the estimates were 285 million. And they project that by 2030 that will increase to 441 million! In Trinidad & Tobago 12.5-20% of the population has diabetes! And the death rates for diabetes (the second leading cause of death in Trinidad & Tobago) is 10 times that seen in the U.S.A. or Canada!

Normal Glucose Control

Before we consider what diabetes is, we need to understand how blood sugar (glucose) levels are controlled in a normal individual. When the sugar levels go above 70mg/dl, the pancreas is stimulated to release insulin. The insulin then attaches to cells and allows the sugar to go into the cells, thus decreasing the amount in the blood. When the blood sugar levels go down, the pancreas is triggered to stop making insulin, and the liver starts releasing its stored sugar into the blood and the blood sugar level goes up again. In this way the body keeps blood sugar levels in a "normal" range.

What Happens in Diabetes?

In diabetes, however, three main problems emerge that cause the blood sugar to increase.

1. Insulin Resistance. This is a condition where the cells require more insulin to do the same work. There are several mechanisms by which this might happen.

- First, if the cells are continually exposed to high levels of insulin, they will decrease the number of their insulin receptors (places on the cell where the insulin can attach and thus cause the sugar to go into the cell). If there are fewer receptors, it will require more insulin to get the same amount of sugar to go into the cells. Thus the cells are "insulin resistant." By the way, foods that trigger a high insulin response are sugars and processed carbohydrates (candy, cakes, pies, chips, crackers, pastries, white flour products, juice, jelly, ice cream.)

- Second, if fat cells become too full, they will not only decrease the amount of insulin receptors, but they will also release leptin, which increases the insulin resistance of other cells.
- Third, there is some link with the immune system as well. Rats that have certain parts of their immune system "turned off" will not develop insulin resistance if fed a diet that usually causes insulin resistance.
- Fourth, individuals who have increased fat around the organs have increased insulin resistance, because this fat produces substances that disrupt insulin's action, and cause the liver to become fatty, which increases the liver's production of glucose.
- Fifth, fructose (in the sugar form, or especially high-fructose corn syrup) is associated with increased insulin resistance. This is not true of fruits, however!
- Finally, vitamin D, magnesium, and chromium deficiencies have been shown to correlate with increased insulin resistance, and diabetics given vitamin D, magnesium, and chromium supplements have improved insulin action.

2. Impaired Insulin Secretion. Over time, as insulin resistance increases, the pancreas cannot keep up with the demand for more insulin, and its production of insulin decreases. This is why some type 2 diabetics become insulin dependent (have to take insulin to keep the blood sugars down).

3. Liver Glucose Production. Insulin resistance in the fat cells causes them to release more fatty acids (triglycerides) into the blood, which in turn causes the liver to release more glucose into the blood. Insulin resistance in the liver cells causes the liver to store less glucose and to produce and release more glucose into the blood.

Potential Causes of Diabetes

Research shows that compared to a low-fat, plant-based diet, those who consume lots of animal fats or moderate amounts of trans fats (i.e. partially hydrogenated oils, shortening, margarine) have a 40-64% increased risk of developing diabetes. Not all fats are bad, however. Research also shows that if you increase your consumption of nuts, you will decrease your chances of developing diabetes, even though nuts are relatively high in fats. Studies have shown that if you drink one regular soft drink daily, you increase your risk of diabetes by 83%; that eating 2 or more fast food meals per week doubles your chances of developing diabetes compared to eating fast food less than once weekly; that caffeine increases diabetic blood sugars by 28%; that alcohol negatively impacts the pancreas so that it is less able to release insulin; that narcotics (morphine, Pethidine, Panadeine, etc.) increase insulin resistance; that smoking increases the risk of diabetes by 60%; that cow's milk and red meat consumption increase insulin resistance; that stress increases your chance of developing diabetes; and that obesity is a major factor in developing diabetes. In fact, if you are normal weight, you only have a 15% chance of developing diabetes in your lifetime. If you are overweight, you have a 26% chance. If you are obese, you have a 44% chance, and if you are morbidly obese, you have a 57% chance of developing diabetes in your lifetime.

Signs & Symptoms of Diabetes

How do you know if you have diabetes? Some of the common symptoms of diabetes include increased thirst and frequent urination, increased hunger, weight loss, fatigue, blurry vision, slow-healing sores or frequent infections, and areas of velvety darkened skin especially along creases in the skin (arm pits, neck, groin). Other symptoms include frequent yeast infections, numbness and tingling in the hands and feet, impotency, and loss of consciousness. If you have these symptoms, check with you doctor about being tested for diabetes.