Fact Sheet: Insulin Dependent Diabetes

About Diabetes:
Diabetes is a disease in which the body does not produce or is unable to use insulin, a hormone secreted by special cells called beta cells in the pancreas. The body needs insulin to allow blood sugar (glucose) to enter the body’s cells and be metabolized into energy. When glucose cannot enter the body’s cells, blood glucose levels rise.

- Elevated blood glucose levels ultimately cause chronic widespread damage to tissues, especially in the eyes, nerves, and kidneys. Additionally, there are increased risks for circulation problems, high blood pressure, and heart disease.
- The causes of diabetes are still unknown although it is clear that both genetic and environmental factors are important. Environmental factors include diet, obesity, and lack of exercise.
- Roughly 8% of the population has diabetes; unfortunately, a quarter of those are unaware that they have the disease.

There are two major types of diabetes.

- **Type 1** diabetes is the result of the failure of the pancreas to produce insulin.
  - Type 1 usually begins in childhood and is often called juvenile-onset diabetes. This type accounts for only about 5 to 10% of all diabetes cases.
  - Type 1 diabetics always require insulin for management of the disease.

- **Type 2** diabetes, which accounts for more than 90% of cases, is the result of insulin resistance in which the body’s cells no longer react properly to insulin, making it harder for glucose to enter them and be converted into energy. Initially, the body’s beta cells work harder to make more and more insulin, but ultimately they can become exhausted, resulting in a relative insulin deficiency.
  - Type 2 diabetes is associated with obesity and can often be cured or greatly improved if weight can be brought back closer to normal.
  - Occasionally, pregnant women will have a temporary form of diabetes, called gestational diabetes. Up to 10% of women with gestational diabetes will go on to have Type 2 diabetes after being pregnant.
  - In many cases of Type 2 diabetes, oral medications, which help the body utilize insulin or stimulate insulin secretion, may be sufficient to treat the disease. However, once the beta cells become exhausted, Type 2 diabetes must be treated with insulin.

- **Pre-diabetes** is the situation in which an individual’s blood glucose levels are higher than normal, but not high enough for a diagnosis of type 2 diabetes.
  - Up to 20% of the adult population has pre-diabetes.
  - Detecting pre-diabetes is worthwhile since changes in diet, exercise, and
weight reduction can often avoid or delay the onset of Type 2 diabetes.

Tests to Diagnose Diabetes:

- Two tests are commonly used to diagnose diabetes. In the fasting plasma glucose test, glucose levels should be below 100; in the oral glucose tolerance test, an individual drinks a glucose solution and the blood glucose is measured two hours later.

Complications:

- The complications seen in Type 1 and Type 2 diabetes are similar, but tend to occur much earlier and with greater severity in Type 1 diabetes.

- The most serious short term complication is the risk of hypoglycemia or low blood glucose level. This occurs when diabetes pills taken orally or when insulin is taken by injection causes there to be too much insulin in a person’s blood relative to the level of blood glucose as a result of eating and/or exercise. Hypoglycemia can cause confusion, falling, seizures, and, if prolonged, permanent brain damage. It requires prompt recognition and treatment, usually by giving sugar orally or, in severe cases, by vein.

- Chronic complications include diabetic retinopathy in which the blood vessels at the back of the eye begin to leak or bleed, causing damage to the retina.

- Other blood vessels can also be damaged leading to kidney, circulation, and heart problems.

- Sensory nerves, particularly in the feet, begin to fail, resulting in numbness and pain. As a consequence, injuries and infections of the feet may go unnoticed and untreated, that may lead to gangrene and/or amputation. In fact, diabetes is the leading cause of amputation.

Monitoring:

- Individuals with diabetes should be closely monitored for complications. They should receive quarterly medical examinations, eye examinations at least annually, and regular lab work to measure kidney function.

- Individuals with diabetes should be closely monitored to obtain optimum control of blood glucose levels, while avoiding hypoglycemia or hyperglycemia (high blood glucose level). Monitoring requires frequent measurement of blood glucose via a home glucose monitor and also periodic measurements of a chemical, called A1C, which reveals the overall average level of blood glucose over the previous 3 month period. Accurate control of blood glucose on a daily basis is the key to avoiding or delaying most chronic diabetic complications.