



## An Overview of Diabetes

# What is Diabetes?

- Diabetes is a disease in which the body is unable to properly use and store glucose (a form of sugar). Glucose backs up in the bloodstream – causing a person's blood glucose to rise too high.
- There are three different types of diabetes: type 1 (also called juvenile diabetes), type 2, and gestational diabetes.

# Types of Diabetes

- Type 1 diabetes occurs when the pancreas does not make insulin. Insulin is a hormone used to help glucose get into the cells to give them energy.
- Type 2 diabetes occurs when the body either does not produce enough insulin or the cells ignore the insulin.
- Gestational diabetes occurs in pregnant woman when a form of glucose intolerance requires treatment to normalize blood glucose levels to avoid complications with the infant.

# Diabetes Risk Populations



- Type 1 diabetes is more common in Caucasians than in African-Americans, American-Indians, Asians, and Hispanics.
- Type 2 diabetes is associated with older age, obesity, family history, history of gestational diabetes, physical inactivity, impaired glucose metabolism, and race/ethnicity.
- Gestational diabetes can occur in any woman during pregnancy; however, it occurs more frequently among African-Americans, American-Indians, and Hispanics.

# Diabetes Symptoms

- Symptoms include:
  - Frequent urination
  - Excessive thirst
  - Unexplained weight loss
  - Extreme hunger
  - Sudden vision changes
  - Tingling or numbness in hands or feet
  - Feeling very tired
  - Dry skin

# Diabetes Testing

- Since many of the symptoms of diabetes seem harmless, many people go undiagnosed.
- There are three types of tests to screen for diabetes: the fasting plasma glucose (FPG), the oral glucose tolerance test (OGTT), and the random plasma glucose test (RPGT).
- Patients who test positive for diabetes are encouraged to follow-up with a second test to confirm the results.

# Diabetes Testing (continued)



- The fasting plasma glucose test measures blood glucose in a person who has not eaten anything for at least eight hours. This test is usually used to detect diabetes and pre-diabetes.
- The oral glucose tolerance test measures blood glucose after a person fasts for at least eight hours and two hours after the person drinks a glucose-containing beverage. This test is also used to detect diabetes and pre-diabetes.
- The random plasma glucose test measures blood glucose without regard to when the person being tested has eaten. This test is only used to detect diabetes and is also referred to as the casual plasma glucose test.

# Diabetes Complications



- Heart Disease – When high blood sugar causes damage to blood vessels, this damage can lead to heart attacks.
  - In 2004, heart disease was noted on 68 percent of diabetes-related death certificates among people ages 65 years or older.
- Kidney Disease – When glucose accumulates in the blood, the excess glucose can attach to proteins in the vessels and alter their normal structure.
  - Diabetes is the leading cause of kidney failure, accounting for 44 percent of new cases in 2005.
- Lower-limb Amputations – When high blood sugar damages blood vessels these blocked vessels, in the legs can cause pain and impair circulation.
  - More than 60 percent of non-traumatic lower-limb amputations occur in people with diabetes.

# Diabetes Treatment



- People with type 1 diabetes don't make insulin. For these patients, injecting insulin into the bloodstream is the only way to keep blood glucose levels down.
- People with type 2 diabetes tend to have two problems: they don't make enough insulin and the cells in their body don't absorb glucose as efficiently as they should.
- Patients with type 2 diabetes can control their blood glucose by eating healthy, creating an exercise program and losing excess weight.

# Diabetes Treatment (Continued)

- Some patients with type 2 diabetes may also need insulin to control their blood glucose.
- Oral medications are also an option for patients with type 2 diabetes. These pills work best when used with meal planning and exercise.
- There are five classes of diabetes drugs sold in the U.S. today: sulfonylureas, meglitinides, biguanides, thiazolidinediones, and alpha-glucosidase inhibitors. These five classes of drugs work in different ways to lower blood glucose levels.

# Diabetes “Cure”



- Currently, there is no “cure” for diabetes.
- The U.S. Department of Health and Human Services (HHS) is actively pursuing different treatments to help prevent and control diabetes.
- Under HHS, the National Institute of Health (NIH) and the Center for Disease Control and Prevention (CDC) are both involved in prevention activities.
- Challenges still exist and include: preventing immune rejection, finding an adequate number of insulin cells, and keeping cells alive.

# Economic Costs



- The total annual economic cost of diabetes in 2007 was estimated to be \$174 billion.
- Approximately one of five healthcare dollars in the U.S. is spent for caring for someone with diagnosed diabetes.
- Education on diabetes self-management prevents hospitalizations. Every \$1 invested in education can cut health care costs by \$9.

# Economic Costs (continued)



- Intensified blood pressure control can cut healthcare costs by \$1,200 over the lifetime of a person with type 2 diabetes. It can also extend life by six months.
- Outpatient training to help people self-manage their diabetes prevents hospitalizations. Every \$1 invested in training can cut healthcare costs by up to \$8.76.

# Diabetes Sample Legislation

- Illinois Senate Bill 654 – Requires the Department of Human Services to develop a strategic plan to slow the rate of diabetes as a result of obesity and other environmental factors by the year 2010.
- New York Assembly Bill 3652 – Provides for individual, group and health maintenance organization coverage for glycosylated hemoglobin test for diabetes for up to four times per year when recommended or prescribed by a physician or other health care provider.
- New York Assembly Bill 6949 – Establishes a state diabetes coordinator within the Department of Health.
- Texas House Bill 1990 – Requires the establishment of a diabetes self-management training pilot program under the state Medicaid program.

# Resources



- American Diabetes Association, "All About Diabetes," <http://www.diabetes.org/about-diabetes.jsp>
- American Diabetes Association, "Diabetes Symptoms," <http://www.diabetes.org/diabetes-symptoms.jsp>
- American Diabetes Association, "Other Diabetes Medications," <http://www.diabetes.org/type-2-diabetes/oral-medications.jsp>
- Center for Disease Control and Prevention, "Frequently Asked Questions," <http://www.cdc.gov/diabetes/faq/basics.htm>
- Center for Disease Control and Prevention, "National Diabetes Fact Sheet 2007," [http://www.cdc.gov/diabetes/pubs/pdf/ndfs\\_2007.pdf](http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2007.pdf)
- Genetic Health, "How Does Diabetes Affect My Body," [http://www.genetichealth.com/dbts\\_consequences\\_of\\_diabetes.shtml](http://www.genetichealth.com/dbts_consequences_of_diabetes.shtml)
- Life Clinic, Health Information Systems, "Diabetes Basics: Who's at Risk?," <http://www.lifeclinic.com/focus/Diabetes/risk.asp>
- National Diabetes Information Clearinghouse (NDIC), "Diagnosis of Diabetes," <http://diabetes.niddk.nih.gov/dm/pubs/diagnosis/#diagnosis>
- National Institute of Health, Medline Plus, "Diabetes," <http://www.nlm.nih.gov/medlineplus/diabetes.html>
- National Institute of Health, Medline Plus, "Diabetes Type 1," <http://www.nlm.nih.gov/medlineplus/diabetestype1.html>