In This Issue

Diabetes
Upcoming Events
Health Tip

Dear Friends,

In celebration of National Diabetes Month, we have selected this growing problem as our November topic. A recent study published in the Journal of Women's Health reported a rapid rise in the number of hospitalizations due to diabetes for young adults, particularly young women. This information along with the accelerating problem of obesity in this country reinforces the seriousness of this current trend. Diabetes is not merely a condition; it is a disease with deadly consequences. This is a disease that can often be prevented and or with proper care, can be controlled. There are steps we can all take now that can make a difference.

The Institute Staff

Diabetes

What is Diabetes?
Diabetes is a disease in which levels of blood glucose (blood sugar), are above normal. People with diabetes have problems converting food to energy. Normally, after a meal, the body breaks food down into glucose, which the blood carries to cells throughout the body. Insulin, a hormone made in the pancreas, helps convert blood glucose into energy.

People develop diabetes because the pancreas does not make enough insulin or because the cells in the muscles, liver, and fat do not use insulin properly, or both. As a result, the amount of glucose in the blood increases while the cells are starved for energy. Over the years, high blood glucose, also called hyperglycemia, damages nerves and blood vessels, which can lead to complications such as heart disease, stroke, kidney disease, blindness, nerve problems, gum infections and amputations.

Main Types of Diabetes

- **Type 1 Diabetes** (formerly called juvenile diabetes) is usually diagnosed in children,
Type 1 Diabetes (formerly called juvenile diabetes) is usually diagnosed in children, teenagers and young adults. The pancreas no longer makes insulin in these cases because the body's immune system has destroyed the pancreatic cells (beta cells) specialized to make insulin. Each year 15,000 American children are diagnosed with type 1 diabetes.

- **Type 2 Diabetes** (formerly called adult-onset diabetes) is the most common and can occur at any age. This form usually begins with insulin resistance, a condition in which muscle, liver and fat cells do not use insulin properly. As a result, the body needs more insulin to convert more glucose into energy.

- **Gestational Diabetes** (GD) first occurs during pregnancy. When women are pregnant, their need for insulin increases, and many can develop gestational diabetes during the late stages of pregnancy. GD in expectant moms may lead to a more complicated or dangerous delivery and can contribute to their child's future obesity. GD usually goes away after the baby is born, but a woman who has had this condition is at higher risk for type 2 diabetes later in life. Prevalence rates for GD are **not** included in the general diabetes rates. Until recently, 5-8% of pregnant women were diagnosed with GD. Investigators at Northwestern University are using a new measurement to determine risky blood glucose levels in pregnant women that may identify this condition in 16% of pregnant women. For more information, click [here](#).

A number of other types of diabetes exist and an individual may exhibit a combination of characteristics of types 1 and 2. Some types may be due to genetic defects, pancreatic infections, hormonal abnormalities, medications or chemicals. To read more on the less common forms, click [here](#).

**Prevalence of Diabetes**

Data from the 2007 National Diabetes Fact Sheet reports:

- 23.6 million children and adults in the U.S. have diabetes (7.8% of the population)
- Diagnosed cases: 17.9 million; Undiagnosed: 5.7 million
- 57 million have pre-diabetes
- Under age 20, 186,300 have diabetes
- About 1 in every 400-600 children and adolescents have type 1 diabetes
- About 2 million adolescents ages 12-19 have pre-diabetes.
- Of the adult male population, 12.0 million or 11.2% have diabetes
- Of the adult female population, 11.5 million, or 10.2% have diabetes (not including gestational diabetes).

**What is Pre-diabetes?**

In pre-diabetes, blood glucose levels are higher than normal but not high enough for a diagnosis of diabetes. It is an important warning sign and a good incentive to change one's lifestyle. Many people with pre-diabetes develop type 2 diabetes within 10 years. People with pre-diabetes have impaired fasting glucose (IFG) or impaired glucose tolerance (IGT) which is measured by blood tests described below. This basically means their bodies are not managing glucose in the right way, so cells of the body are beginning to work harder with less fuel.

The Fasting Plasma Glucose test (FPG) measures blood glucose in a person who has not eaten anything for at least 8 hours. The FPG is the preferred test for diagnosing diabetes because of its convenience and low cost. However, it will miss some diabetes or pre-diabetes that can be found with the OGTT test. The FPG test is most reliable when done in the morning. People with a FPG test result of 99 mg/dL (milligrams per deciliter) or below are normal. A result of 100-125 mg/dL means the person has a form of pre-diabetes called impaired fasting glucose (IFG). Having IFG means a person has an increased risk of developing type 2 diabetes but does not have it yet. A level of 126/mg/dL or above in a FPG test, confirmed by repeating the test on another day, means a person has diabetes.

An oral glucose tolerance test (OGTT) measures blood glucose after a person fasts at least 8 hours and 2 hours after the person drinks a glucose-containing beverage. Research shows that this test is more sensitive than the FPG but it is less convenient to administer. The OGTT requires fasting for a least 8 hours before the test. The plasma glucose level is measured immediately before and 2 hours after a person drinks a liquid containing 75 grams of glucose dissolved in water. If the blood glucose
after a person drinks a liquid containing 75 grams of glucose dissolved in water. If the blood glucose level is between 140 and 199 mg/dL 2 hours after drinking the liquid, the person has a form of pre-diabetes called impaired glucose tolerance (IGT). Having IGT, like having IFG, means a person has an increase risk of developing type 2 diabetes but does not have it yet. A 2 hour glucose level of 200 mg/dL or above, confirmed by repeating the test on another day, means a person has diabetes. An OGTT test level of 139 mg/dL and below is considered normal.

Your doctor will also take into account other symptoms such as increased urination, increased thirst and unexplained weight loss in determining whether or not you may be pre-diabetic. With modest weight loss and increased physical activity, you can delay or prevent type 2 diabetes and even return to normal glucose levels.

Who should be screened?
The American Diabetes Association (ADA) recommends that testing begin at age 45 in individuals who have no other risk factors. Screening should begin sooner if you are overweight or obese and have one or more of the following risk factors:

- Sedentary lifestyle
- A parent, brother, or sister with diabetes
- African American, Alaskan Native, American Indian, Asian American, Hispanic, or Pacific Islander background
- Gave birth to a baby larger than 9 lbs. or have had gestational diabetes
- High blood pressure (140/90 mm or above)
- Abnormal cholesterol levels
- Previous elevated glucose levels
- Polycystic Ovary Syndrome
- History of Cardiovascular Disease

The ADA recommends, if results of testing are normal, testing should be repeated at least every 3 years. People previously diagnosed with pre-diabetes should be tested more often.

Preventing Type 2 Diabetes
People at risk can prevent or delay developing type 2 diabetes by losing a little weight. Research has shown that losing a small amount of weight, 5-7% (10-14 lbs in a 200 pound person) can help delay or prevent type 2 diabetes. Lifestyle change is even more effective in those aged 60 and older. A smart nutritious diet and moderate exercise, even 30 minutes a day of vigorous walking can help prevent type 2 diabetes.

Unfortunately, the latest group to develop type 2 diabetes is children and adolescents. Once thought to be a disease of adults, the incidence of type 2 diabetes in this population parallels the epidemic of childhood obesity. Because type 2 diabetes in this age group is a relatively new phenomenon, accurate statistics regarding the number of cases have not been generated. However, reports indicate that 8-45% of children with newly diagnosed diabetes have type 2. Previously the prevalence of type 2 in children was considered to be 2-4%.

Sex and Gender Differences
Because the prevalence of diabetes is similar in men and women, most research has not focused on men or women specifically. The one exception is gestational diabetes which is female exclusive. Research in the area of sex and gender differences and insulin resistance and type 2 diabetes is clearly in need of attention. However, the impact of diabetes as a risk factor for coronary artery disease on the two sexes is significantly different and the increased interest in sex differences in heart disease will, hopefully, encourage more research on the role of insulin resistance. In addition, new research tools have become available that will enable us to tease out the sex differences in response to medical and nutritional therapies. Interventional studies with a special emphasis on nutrition, powered to determine gender differences are needed particularly on differences in metabolism, which may alter how fat and carbohydrates are handled in men and women.

Special Concerns for Female Diabetics
Fluctuations in hormone levels occur throughout the menstrual cycle and can affect blood sugar. When estrogen levels are naturally high, your body may be resistant to its own insulin or injected insulin. The only way to manage blood sugars during this time is to record and test blood sugar 4 or
more times per day the week before, during and after your period for at least 2-3 months to find your own pattern so you can learn how to adjust your dose. Premenstrual symptoms (PMS) can be worsened by poor blood sugar control especially if you have cravings for sweet foods.

The oral diabetes medication classified as thiazolidinediones (TZDs) may cause women who are not ovulating and have not gone through menopause to begin ovulating again, enabling them to conceive. Oral contraceptives may be less effective when taking this medication. Certain types of birth control may increase the risk of blood clots if you have type 2 diabetes.

Women with diabetes may be predisposed to develop recurrent yeast infections because glucose triggers yeast growth. The risk of depression which is already 2 times more common in women increases with diabetes.

Research suggests that eating disorders are probably more common among women with diabetes than women who do not have it. Bulimia is the most common eating disorder in women with type 1 diabetes. Among women with type 2 diabetes, binge eating is more common. Because both diabetes and eating disorders involve attention to body image, weight management, and control of food, some people develop a pattern in which they use the disease to justify or camouflage the disorder.

Diabetes is a powerful risk factor for heart disease in women. Heart disease is the leading cause of death in women with diabetes. Women with diabetes are two times as likely to have a second heart attack and 4 times more likely to have heart failure than women without diabetes.

**Health Care Reform Impact on the Diabetes and Obesity Epidemic**
A number of provisions of the new health care reform legislation could help address the diabetes and obesity problem. Some of these have already been enacted and others are scheduled to begin sometime in the next 3 years.

- Insurance companies can no longer deny coverage or exclude benefits to children due to preexisting conditions like diabetes (this will be expanded to include all ages in 2014).
- New health plans and Medicare must cover diabetes screenings.
- Medicare covers nutritional therapy to seniors with diabetes.
- Most chain restaurants must post nutritional information on menus (2011).

Resources:
- American Diabetes Association
- CDC Diabetes Public Health Resource
- Health Reform Source: Implementation Timeline
- Juvenile Diabetes Research Foundation
- NIDDK National Diabetes Statistics
- USDHHS National Diabetes Education Program
- Women's Health.gov

**Upcoming Events**

November 16, 2010
Institute for Women's Health Research Monthly Forum
Nanodiamond-Based Platforms for Drug Delivery - Dean Ho, PhD

November 17, 2010
6th World Conference on the Promotion of Mental Health and Prevention of Mental and Behavioral Disorders
Omni Shoreham Hotel, Washington, DC

December 7-8, 2010
2010 Illinois Women's Health Conference
Health Tip:
You can test your risk for diabetes by clicking here.

Join the Illinois Women's Health Registry

On August 30, 2010 the Illinois Women’s Health Registry reached its September 1 goal of 5,000 participants. Special thanks to Illinois BlueCross-BlueShield for promoting the registry in their Lifetimes newsletter. Our next challenge is to reach 6,000 by the end of the year! If you have not joined yet, please do, and encourage your family and friends, to help us advance women's health research!