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## OCTOBER 2012 NEWSLETTER - ADULT DIABETES

### TOPIC: ADULT DIABETES

Diabetes is a disorder of glucose (sugar) metabolism. It occurs in two forms: Type 1 (about 10% of the cases), which is also known as juvenile diabetes, occurs in younger people and is characterized by a lack of insulin, and Type 2 (about 90%), or adult onset, which is characterized by resistance in the body to the effects of insulin. Type 2 diabetes affects 25 million Americans (8.3% of the population). Any person with a family history of diabetes has an almost 50 % risk of developing type 2 diabetes. People who are overweight and underactive also are at high risk.

When we eat, food is broken down into its constituent parts, (fat, protein and carbohydrates) and absorbed into the blood stream. Carbohydrates are large groups of sugars. Once absorbed, insulin is released by the pancreas and grabs the sugar, transporting it to the cells. The cells then absorb the glucose and use it for energy (like gasoline in a car). In Type 2 diabetes your cells become resistant to the effects of insulin and no longer accept the sugar they bring. The result of this is a cycle in which the pancreas secretes more and more insulin to overcome this. Eventually the pancreas cannot keep up and the blood sugar rises. There are significant problems with increasing levels of insulin including changes in cholesterol, thickening of arteries, and elevation of blood pressure. All of these lead to increasing your risk of heart disease, kidney disease, eye disease, and nerve disease. Diabetes is also linked to dementia. Treatment can help prevent these complications, but with the aging population that is inactive, the incidence is on the rise.

We are aggressive when looking for diabetes. The ADA (American Diabetes Association) recommends screening everyone over age 45, those with a family history of diabetes, hypertension, overweight (body mass index >25), those with gestational diabetes, and those with heart disease. The Federal Government does not recommend screening (big surprise)! I agree with the ADA and other societies that are aggressive with screening. We screen by obtaining a fasting sugar at a yearly physical. We sometimes also check a blood test called the hemoglobin A1C. This gives a three month average of your blood sugar and has been used for years for monitoring people with diabetes. You can eat really well before your blood test and have a great serum sugar, but the hemoglobin A1C does not lie. It measures the sugar attached to a red blood cell and is the best measure. We rarely use a 3 hour glucose tolerance test, but the obstetricians still use it to check for pregnancy induced diabetes (gestational). A normal blood sugar is less than 100 but higher than 60. Diabetes

occurs when two or more blood sugars are more than 126. Between 100 and 126 is prediabetes. The risk of becoming diabetic when one has prediabetes is between 5- 10 % / year. This can be reversed with diet and weight loss.

The Metabolic Syndrome is a term used in medicine to describe a set of factors that increase the risk of developing diabetes, heart disease and stroke. These people have an "apple- shaped "body with increased weight in the upper and middle body. The measures we look at are:

1. Blood pressure of 130/85 or greater.
2. Fasting blood sugar of more than 100.
3. Waist circumference of > 40 in men and > 35 in women.
4. HDL (good cholesterol) < 40 in men and < 50 in women.
5. Triglycerides of >150.

If you have three or more of these traits, you are considered to have the syndrome and are at a much higher risk of diabetes or vascular disease.

So what can you do if your numbers are high? The best thing to do is to lose weight. Several studies show that weight loss and exercise can make type 2 diabetes disappear. In one study, older men were placed on a diet and exercise program. The men who completed the program were able to totally reverse the diagnosis. Other studies have shown that medical weight loss surgery will take people with diabetes and reverse it. Because of studies like these, I will send you to a dietician for education, but common sense is key. A diet rich in lean proteins and vegetables is best. Reducing but not eliminating foods such as white potatoes, white rice, pasta, and white bread will help. Instead, substitute foods that have higher fiber contents for them such as brown rice, yams, whole wheat bread and whole wheat pasta. Avoid snacking, and eat three meals a day. Adding exercise is also key, but before going crazy check with me.

The reason for this is that diabetes is a coronary risk equivalent. This means that all people with diabetes have some degree of plaque in their heart arteries and therefore are at a higher risk of heart attack or stroke. In fact, if you have diabetes your risk of having a heart attack is the same as the person without diabetes who has already had one (about 12% in 7 years).

There are many medications available for the treatment of diabetes. They, like all medicines, have side effects. Metformin is usually the first pill used and is a medication that works in the liver to reduce the amount of glucose it produces. Yes, the body does make sugar and if you think about it, how else would we survive long periods without food. The great part of this drug is that it generally causes some weight loss. In a landmark trial in the late 90's (UKPDS), Metformin was shown to reduce mortality including heart disease in diabetics treated with Metformin. The other great part is that it is generic and cheap. There are numerous other oral medicines but the details of how these work is beyond the scope of this article.

Insulin still remains a mainstay of treatment. Two newer types of insulin have been developed in the last few years. Long acting or basal insulin is a 24 hour insulin that is given once a day. Rapid acting insulin is given with meals. The needles that we have now are small and most formulations come in a device that looks like a pen. The medicine can be given easily anywhere. The downside is that it stimulates hunger and thus weight gain. No matter what you weigh, the key is to keep the blood sugar in a desired range (less than 110 in the morning and under 150 after meals). If we do this, we can prevent or delay the secondary effects of the disease.

What are the consequences of uncontrolled diabetes? Heart attack, stroke, blindness, renal failure, peripheral arterial disease, impotence, neuropathy (inability to feel in the extremities), high cholesterol, infections, and dementia. None of this sounds good but all can be handled and avoided if you eat right and take your medication. You will need to see me frequently, along with seeing your ophthalmologist and a podiatrist. You will get routine stress tests and be subject to taking blood pressure and cholesterol medication. Flu shots are a must as well as pneumonia shots. We also will give you a free glucose meter so you can track your blood sugar at home. This really helps at your visits.

As you can see, if you become a diabetic it takes a lot of work, but if you do the work, we can prevent the complications and maybe even reverse the disease. It all starts with diet and exercise as do most things.