

What is Prediabetes and Why Does it Matter?

According to newly released data from the Center for Disease Control and Prevention,⁽¹⁾ an estimated 86 million Americans over the age of 20 years have prediabetes — the metabolic condition that precedes the development of type 2 diabetes. This represents 37 percent of U.S. adults and 51 percent of those aged 65 years and older. Prediabetes is defined by a fasting blood of 100-125 mg/dl or a hemoglobin A1c of 5.7-6.4 percent. 15-30 percent of people with prediabetes will go on to develop type 2 diabetes within five years. It is critical that clinicians identify these individuals in their practice because it is now well established that implementation of a lifestyle intervention like that employed in the Diabetes Prevention Trial will prevent persons at risk from developing diabetes.

The Diabetes Prevention Trial randomized more than 3,000 people with prediabetes to lifestyle intervention that included a 7 percent loss in body weight and at least 150 minutes of physical activity per week, treatment with metformin, or placebo.⁽²⁾ The study was stopped early, after an average follow-up of 2.8 years, because the lifestyle intervention arm reduced the incidence of diabetes by 58 percent, as compared to only 31 percent in those treated with metformin. To prevent one case of diabetes during a period of three years, the investigators determined that 6.9 persons with prediabetes would have had to participate in the lifestyle intervention program and 13.9 would have had to receive metformin.

This approach has attracted widespread attention. Across the country organizations like the YMCA are partnering with health care companies to draw people with prediabetes into a 16 session program that encourages them to improve their eating habits and exercise more. In 2009, Minnesota Senator Al Franken co-sponsored the Diabetes Prevention Act with Indiana Senator Dick Lugar to increase access to this kind of prevention program. Multiple studies have demonstrated that this intervention is very cost effective.

The American Diabetes Association recommends that screening for diabetes begins at age 45 years for everyone. Screening is done most simply by measuring a fasting glucose or a hemoglobin A1c, but some may prefer to perform a two hour glucose tolerance test with 75 grams of glucose. If the screen is negative, the screening test should be repeated every three years. If people are overweight (BMI > 25 kg/m²) or known to have factors associated with increased risk such as a family history of

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FORUM

ADDRESS THE SLEEPING GIANT: Effective prediabetes management for physicians

Tuesday, October 7, 2014 | 6pm - 7:30pm CDT | Ramada Plaza Minneapolis

Prediabetes is a health condition characterized by higher than normal blood glucose levels, but levels not high enough to be diagnosed as diabetes. Prediabetes increases the risk of developing type 2 diabetes, heart disease and stroke. Elizabeth

Seaquist, MD and Luke Benedict, MD will discuss evaluation and diagnosis of prediabetes. MN Dept of Health will share the scope of the problem in Minnesota, and the Twin Cities YMCA will present an evidence-based program available to patients, and funded by CMS.

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By Elizabeth R. Seaquist MD

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type 2 diabetes or a past history of gestational diabetes, screening should be initiated at a younger age. Screening should also be provided to individuals identified as

nigricans, hypertension, dyslipidemia, polycystic ovarian syndrome, or small for gestational age birth weight), or exposure to maternal diabetes in utero should be screened starting at age 10, or the onset of puberty. Those with prediabetes should be

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being at high risk using the Diabetes Risk Test developed by the American Diabetes Association (<http://www.diabetes.org/are-you-at-risk/diabetes-risk-test/?loc=atrisk-slabnav>). This test gives higher scores for people with greater risk based on age, gender, history of gestational diabetes, a first degree relative with diabetes, personal history of hypertension, physical activity, and weight. This simple to use test could be given to patients as they sit in the waiting room. All who receive a score of 5 or higher should be screened for diabetes. Those who are found to have prediabetes should be referred to a lifestyle intervention program modeled after the Diabetes Prevention Program. In the future, we may have genetic tests that can identify risk. Several genes have been linked to the disease, including TCF7L2, but currently these tests are not clinically available.

In recent years, the incidence of type 2 diabetes has increased dramatically in children, particularly in minority populations. This is presumably associated with an increase in prediabetes in children as well. Children who are overweight and have two or more other risk factors such as family history of type 2 diabetes, member of an ethnic minority, signs of insulin resistance (such as acanthosis

counseled to lose weight and become more active to reduce their risk of developing diabetes.

What are the consequences of not identifying patients with prediabetes? The biggest consequence is that they will go on to develop type 2 diabetes, which is the single greatest cause of end stage renal disease and adult blindness in our country. Diabetes is the seventh leading cause of death in the United States in 2010. The direct medical costs associated with caring for people with diabetes in 2012 was \$176 billion, which is 2.3 times higher than the costs associated with caring for people without diabetes. The indirect costs of the disease, which include disability, work loss, and premature death, were \$69 billion in the same year. Prediabetes is also associated with an increased risk for cardiovascular disease. Risk factor modification such as treating hypertension and hyperlipidemia in people with prediabetes will improve their cardiovascular health. ♦

Notes:

1. Centers for Disease Control and Prevention. *National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014*. Atlanta, GA: U.S. Department of Health and Human Services; 2014.
2. Diabetes Prevention Program Research Group. *Reduction in the Incidence of Type 2 Diabetes*

with Lifestyle Intervention or Metformin *N Engl J Med* 2002; 346:393-403.

Elizabeth Seaquist, MD is President, Medicine & Science of the American Diabetes Association. She is also a Professor of Medicine at the University of Minnesota where she holds the Pennock Family Chair in Diabetes Research.

Dr. Seaquist is a clinical investigator interested in the complications of diabetes. Her research focuses on the effect of diabetes on brain metabolism, structure and function. She directs the University of Minnesota site for the ACCORD (Action to Control Cardiovascular Risk in Diabetes) and GRADE (Glycemia Reduction Approaches for Diabetes: a Comparative Effectiveness Study) Trials, and has an active clinical practice. The American Diabetes Association awarded her the Distinguished Clinical Scientist Award in 2009.

Dr. Seaquist holds a bachelor of arts degree from Vassar College in Poughkeepsie, N.Y., and a doctorate in medicine from the University of Minnesota in Minneapolis. She is board certified in Internal Medicine and Endocrinology, Diabetes, and Metabolism.

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