

Type 2 Diabetes in Youth: What Health Care Providers Need to Know

Once uncommon in young people, the incidence of type 2 diabetes in youth is dramatically rising. Factors contributing to this increase include the rising prevalence of overweight as well as the sedentary lifestyles of many of today's youth. The prevalence of childhood overweight has more than doubled over the past three decades for preschool children. For school-aged children ages 6-19 the prevalence overweight has tripled.

What is Type 2 Diabetes in Youth?

It is a complex, chronic, metabolic disorder characterized by insulin resistance syndrome. It is often associated with hypertension, dyslipidemia and obesity. The etiology is multiple and includes genetic, environmental and socio-cultural risk factors. While there is a strong hereditary component to the disease, the recent rapid increase in type 2 diabetes in youth has occurred too quickly to be due to a change in the gene pool. Environmental factors (beginning in utero) are clearly important. Low birth weight and poor nutrition as well as the environment of gestational diabetes may predispose a child to insulin resistance and future diabetes.

Why Do You Need to Know About Type 2 Diabetes in Youth?

Early identification and treatment of the disease can help reduce complications. The personal and societal burden of diabetes will be enormous if diabetes is not well managed. Health providers need to be well educated about prevention and management of diabetes.

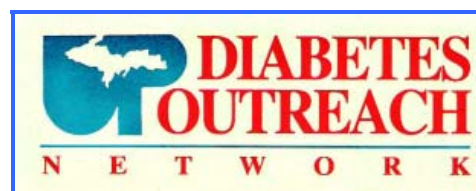
Who and When To Test?

Children who are overweight (defined as BMI > 85th percentile for age and sex; weight for height >85th percentile; or weight > 120% of ideal for height) **with two additional risk factors:**

- Family history of type 2 diabetes
- Race/ethnicity (Native American, African American, Hispanic/Latino, Asian American, Pacific Islander)
- Signs of insulin resistance (hypertension, dyslipidemia, polycystic ovary syndrome (PCOS), or acanthosis nigricans, the appearance of darkened, thick velvety pigmentation in the skin folds).
- Maternal history of diabetes or gestational diabetes

Testing should occur at age 10 or at the onset of puberty. The preferred test is a fasting plasma glucose, and the recommended frequency is every two years.

U.P. Diabetes Outreach Network
*Strengthening Diabetes Care & Prevention
in Upper Michigan since 1985*
(906) 228-9203
www.diabetesinmichigan.org



How is Type 2 in Youth Diagnosed?

Diagnosis is usually based on the clinical picture at presentation and the American Diabetes Association diagnostic criteria (see below). Some youth may be difficult to diagnosis because they may present with ketonuria and ketoacidosis.

Test	Diagnostic Criteria*	Comments
Fasting plasma glucose	≥ 126 mg/dl	No caloric intake for 8 hrs
Non-fasting (casual) plasma glucose	≥ 200 mg/dl	Plus classic symptoms: polyuria, polydipsia, unexplained weight loss
2 hr plasma glucose	≥ 200 mg/dl during a standard oral glucose tolerance test (OGTT)	75 gram anhydrous glucose dissolved in water

* Unless the child has obvious hyperglycemia with metabolic complications, diagnosis should be confirmed by repeating any of the above tests on a subsequent day.

What Are the Goals of Treatment for Type 2 in Youth?

The goal of treatment is to decrease insulin resistance and to prevent and delay the complications associated with diabetes. This should be accomplished through:

- Lifestyle modifications to help with cessation of excessive weight gain while allowing normal growth and development
- Normalization as close as possible of blood glucose and A1C
- Normalization of blood pressure if hypertension exists
- Controlling lipids if abnormalities are present

What Treatment Approaches Are Utilized?

- Medical care from a physician-coordinated team, including nurse practitioners, physician's assistants, nurses, registered dietitians, pharmacists and mental health professionals.
- Comprehensive client and family diabetes self-management education, individualized medical nutrition therapy, and encouragement of daily physical activity.
- Regular visits to appropriate health care providers for evaluation and follow-up.
- Medications may be prescribed: Insulin or oral medications (currently only metformin is approved for use in pediatric clients).
- Routine health tests and exams including: dilated eye exam, foot exams, blood pressure, lipids, albuminuria and serum creatinine to estimate GFR.
- Ongoing support and reinforcement of self-management education, along with a review of treatments will assist the youth with diabetes to meet outcome goals.

Resources

National Center for Chronic Disease Prevention and Promotion; www.cdc.gov/diabetes; 1-877-CDC-DIAB

American Diabetes Association; www.diabetes.org; 1-800-DIABETES

National Diabetes Education Program (NDEP); http://www.ndep.nih.gov/diabetes/youth/youth_FS.htm; 1-303-496-3593

Michigan Team Nutrition (nutrition and physical activity info); <http://www.tn.fcs.msue.msu.edu/resources.html>

References

American Diabetes Association. 2007. Clinical Practice Recommendations. *Diabetes Care*, 30(1), S4-S41.

American Diabetes Association. 2000. Consensus Statement: Type 2 Diabetes in Children and Adolescents.

Diabetes Care 23(3): 381-389.

Bloomgarden, Z. (2004) Type 2 Diabetes in the Young, *Diabetes Care*, 27(4): 998-1010.