

# Screening Identifies Kids at Type 2 Diabetes Risk

*Despite the program, only 8% of children with BMIs in the 85th-95th percentile were referred for lab tests.*

BY ELAINE ZABLOCKI  
Contributing Writer

RENO, NEV. — A novel screening program developed by researchers in North Carolina was able to identify children at risk for type 2 diabetes or prediabetes, and to facilitate lifestyle interventions, Dr. Elizabeth C. Tilson said at the annual meeting of the American College of Preventive Medicine.

However, the referral rate was lower than expected.

The type 2 diabetes (T2D) program was designed to identify children aged 10-18 years with type 2 diabetes, prediabetes, or metabolic syndrome. Children diagnosed with these conditions were referred to community-based exercise programs. They also participated in eight intensive family education sessions on nutrition, diet, and exercise. After the intervention ended, they were offered continuing membership in exercise programs near their homes, at reduced rates, said Dr. Tilson, medical director of Community Care of

Wake/Johnston Counties, a quality improvement care management program for Medicaid patients.

"I think it is really important to set up routine screening criteria and a screening process for diabetes and prediabetes," Dr. Tilson said in an interview. "With the epidemic of obesity in our children, more and more and more of them are going to have diabetes or prediabetes. It's really important to set up a systematic process so we can find these children early."

The screening tool was designed to identify children aged 10 years or older with a body mass index (BMI) at the 85th percentile or higher for their age, plus one of the following risk factors: racial/ethnic minority, family history of type 2 diabetes, acanthosis nigricans, or hypertension. Children who met the criteria were referred for an analysis of fasting lipid and blood glucose levels.

The program was supported by a broad community collaboration that included funding from a private foundation, pilot testing through the local health depart-

ment, and exercise programs at the YMCA and local parks. Screening was conducted by private pediatricians, while most of the lab tests were done at WakeMed Health and Hospitals, a nonprofit hospital system based in Raleigh, N.C. The screening tool was developed by the WakeMed pediatric diabetes program in collaboration with the local public health department and local medical society.

In July 2004, the T2D screening tool was made available to pediatricians in Wake County, N.C. During the next 18 months, 89 physicians in 37 practices referred a total of 747 patients for lab tests. Of those, 81% were screened, and 45% of those who were screened had abnormal lab values. Three cases of type 2 diabetes were diagnosed.

Although the screening form did accurately select children who should be screened for diabetes and prediabetes, the referral rate was lower than expected. Only 8% of children whose BMI was in the 85th-95th percentiles were referred for lab

tests, while the referral rate for children with a BMI higher than 95th percentile was 52%. "We were shocked that the referral rate was so low. Because so many children are overweight, it appears we have become desensitized to this issue," said Dr. Tilson.

The barriers to screening children for type 2 diabetes include physicians' busy schedules and parental resistance, Dr. Tilson said. In the future, the project will work to further identify and reduce barriers to screening.

"The increasing number of referrals shows that [the] T2D [program] and area pediatricians have formed effective partnerships," she said. "However, the referral rates at present are not what we would like to see. Even when you have a system set up, you still have to work hard to maximize that system and really make sure you're identifying all the at-risk kids." ■

For more information and copies of the screening form, e-mail Dr. Tilson at [elizabeth.tilson@co.wake.nc.us](mailto:elizabeth.tilson@co.wake.nc.us).

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## Early Use of Insulin Trumps Oral Agents Alone for Treating Type 2 Diabetic Teens

BY DIANA MAHONEY  
New England Bureau

BOSTON — The use of insulin early in the management of adolescent type 2 diabetes mellitus may provide substantially improved glycemic control compared with the use of oral hypoglycemic agents alone, Dr. Aneesh K. Tosh said at the annual meeting of the Society for Adolescent Medicine.

Additionally, inpatient admission for newly diagnosed adolescents may provide a more effective means for facilitating intensive disease education compared with outpatient education programs.

A review of 51 patient charts from an adolescent type 2 diabetes mellitus subspecialty clinic showed, via multivariable regression, that the 11 patients who received insulin only at the time of diagnosis experienced a 30% improvement from baseline in their hemoglobin A<sub>1c</sub> (HbA<sub>1c</sub>) levels compared with a 5% improvement among the 23 patients who received oral agents only, after controlling for age, race, and body mass index. The 6 patients who did not receive insulin or oral agents experienced a 6% improvement from baseline, whereas the 11 who received both insulin and oral agents experienced a 26% improvement, reported Dr. Tosh of the department of pedi-

atrics at Indiana University in Indianapolis.

Furthermore, the regression analysis showed that hospitalization for diabetes education was independently associated with improvements in glucose control. Among patients receiving only oral agents, inpatient education was associated with an 11% HbA<sub>1c</sub> improvement, compared with a 3% improvement among those receiving outpatient education, said Dr. Tosh. Among

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patients receiving insulin therapy alone or in combination with an oral agent, inpatient education was associated with a 29% improvement compared with 18% for those who received outpatient education. The inpatient education protocol consisted of 3 days of intensive education about diabetes management and glucose control, whereas the outpatient program consisted of a half-day of education.

"One reason the inpatient program may have led to greater improvements is the fact that it requires, by design, significant

parental involvement, which in turn impacts patient understanding and compliance," said Dr. Tosh. However, there is also the potential for selection bias. "Presumably, patients who were admitted for inpatient management were sicker at diagnosis, so you would expect more substantial improvement."

Similarly, with respect to the choice of oral agents vs. insulin at diagnosis, patients with lower hemoglobin A<sub>1c</sub> initially might be more likely to receive oral agents, Dr. Tosh noted.

Although the study results are limited by the potential selection bias and small sample size, the findings suggest "that we need to take a closer look at the evolving role of insulin therapy for adolescents with type 2 diabetes," said Dr. Tosh.

Current practice typically favors lifestyle management and oral hypoglycemic agents as first-line therapy for adolescents newly diagnosed with type 2 diabetes, with insulin being reserved for those diagnosed with severe disease or as second-line therapy. "There are a number of examples in the literature of the benefits of early insulin therapy, but most of the studies look at adults. Our findings are a call for studies of insulin management in the growing number of children and adolescents with type 2 diabetes," Dr. Tosh said. ■

## Type 2 Diagnosis Predicts Depression in Diabetics

DENVER — Depression was nearly twice as common among adults who had been diagnosed with type 2 diabetes, compared with adults who had either normal or impaired fasting plasma glucose levels and those with undiagnosed diabetes, Mirjam J. Knol said in a poster presented at the annual meeting of the American Psychosomatic Society.

The prevalence of depression was 17% in the 3,205 adults with a normal fasting plasma glucose (less than 5.6 mmol/L), 14.6% in the 534 subjects with impaired FPG (5.6-7.0 mmol/L), and 13.3% among 30 undiagnosed subjects who met the criteria for type 2 diabetes (FPG of at least 7.0 mmol/L).

By contrast, the prevalence of depression was 32.7% in the 49 patients who had been diagnosed with type 2 diabetes, wrote Ms. Knol of the University Medical Center, Utrecht (the Netherlands). The study was supported in part by Novo Nordisk.

The data were taken from a larger study, the Utrecht Health Project, and the investigators excluded patients with cardiovascular disease and type 1 diabetes.

Overall, patients who had been diagnosed with type 2 diabetes had a twofold increase in depression, even after adjusting for age, body mass index, smoking, alcohol consumption, physical activity, education level, and the number of comorbid conditions.

The increased risk of depression among diagnosed type 2 diabetes patients suggests that depression in this population is a consequence of the psychosocial burden of the illness, rather than a contributor to it, Ms. Knol wrote.

In a related study aimed at estimating the effects of depression on utilization among patients with newly diagnosed type 2 diabetes, Medicaid claims data were analyzed for more than 4,000 type 2 diabetics with and without depression. Dr. Iftekhar Kalsekar of the College of Pharmacy and Health Sciences, Butler University in Indianapolis, and colleagues found that those with depression had nearly 65% higher overall health care costs than those without depression (Manag. Care Interface 2006;19:39-46).

—Heidi Splete