

# Distinguish Type 1 From Type 2 in Obese Youth

*Signs, symptoms, and family history are not enough, as obesity epidemic complicates diagnoses.*

BY BRUCE JANCIN

EXPERT ANALYSIS FROM A MEETING ON PRACTICAL PEDIATRICS SPONSORED BY THE AMERICAN ACADEMY OF PEDIATRICS

STEAMBOAT SPRINGS, COLO. – New-onset type 1 diabetes in an obese youth cannot reliably be distinguished from pediatric type 2 diabetes on clinical grounds in this era of epidemic obesity.

“The only way to distinguish obese type 1 diabetes from type 2 diabetes is to measure diabetes autoantibodies. And those autoantibody panels are commercially available now. Signs and symptoms, diabetic ketoacidosis, family history – they don’t really help you. We get an autoantibody panel routinely in obese kids above age 10 presenting with new-onset diabetes,” said Dr. Charlotte M. Boney, chief of the division of pediatric endocrinology and metabolism at Hasbro Children’s Hospital in Providence, R.I.

Diabetic ketoacidosis is widely thought of as incompatible with type 2 diabetes. Not true. Close to 20% of youth with type 2 diabetes present with DKA. Similarly, while a history of recent weight loss is considered a classic presenting symptom of type 1 diabetes, it’s also present in about one-quarter of young people presenting with type 2 diabetes, Dr. Boney noted.

The presence of pancreatic autoantibodies spells type 1 diabetes metabolically, even if the patient appears phenotypically to have type 2 disease.

“Some pediatric endocrinologists call this ‘type one-and-a-half’ diabetes. No, no, no. Let’s not make things any weirder than they already are. They have autoimmune diabetes, which is clearly type 1 diabetes. It just happens to be a little more complicated in them because they also have the morbidity of obesity,” she explained at the meeting.

The obesity epidemic has muddied the diagnostic waters, because now 20%-30% of patients with new-onset type 1 diabetes are obese, as is a similar proportion of the general pediatric population. At the same time, the obesity epidemic has led to an increase in type 2 diabetes.

But it’s important to bear in mind that most youths with new-onset diabetes still have type 1 disease, she said.

In the landmark, prospective The SEARCH for Diabetes in Youth study, nearly all children who presented under age 10 years had type 1 diabetes. Among 10- to 19-year-olds, the proportion with type 2 disease was 15% among whites, but considerably greater among racial minorities: 58% among African Americans, 46% in Hispanics, 70% in Asian/Pa-

cific Islanders, and 86% among Native Americans (JAMA 2007;297:2716-24).

In the ongoing, multicenter, National Institutes of Health-sponsored Treatment Options for Type 2 Diabetes in Adolescents and Youth (TODAY) study, which enrolled 1,206 subjects with a presumptive diagnosis of type 2 diabetes, 9.8% proved to be positive for GAD-65 and/or insulinoma-associated protein 2 autoantibodies. They had to be excluded from participation in the treatment phase (Diabetes Care 2010;33:1970-5).

As a practical approach to the initial therapy of young patients with new-onset diabetes, Dr. Boney urged that those with DKA and ketosis should be started on intravenous fluids and insulin, regardless of their age and body habitus. If they are over age 10 and obese, however, pancreatic autoimmunity should be ruled out before transitioning to long-term therapy. For autoantibody-negative patients whose clinical picture is consistent with type 2 diabetes, the treatment is metformin, the only Food and Drug Administration-approved therapy for children. Extensive experience shows that it’s a very safe drug, she said.

The TODAY trial is designed to determine whether the best treatment for type 2 diabetes in youth is metformin alone, metformin plus rosiglitazone, or metformin and an intensive lifestyle intervention aimed at achieving a 7%-10% weight loss.

The use of metformin to try to pre-

vent diabetes in obese children with insulin resistance and the metabolic syndrome is the subject of large ongoing clinical trials. Until the results come in, Dr. Boney said she sees no role for off-label prescribing of metformin, given that weight loss and exercise are quite effective in improving insulin sensitivity.

Maturity Onset Diabetes of the Young,



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DR. BONEY

or MODY, is worth considering in white youth who are pancreatic autoantibody-negative and have a strong history of parental non-type 1 diabetes. MODY is a single-gene disorder that causes diabetes and is inherited from a parent.

“There are a lot of experts in the MODY field that think we’re grossly underdiagnosing monogenic diabetes,” said Dr. Boney.

The treatment for MODY is not insulin or metformin, but rather oral sulfonylureas, although those agents are not FDA-approved for use in children, she observed.

Dr. Boney reported having no financial conflicts. ■

## Telephone Intervention Programs Fail to Cut Medicare Costs

BY MARY ANN MOON

FROM THE NEW ENGLAND JOURNAL OF MEDICINE

Eight commercial disease-management companies using nurse-based telephone care programs failed to improve quality of care, reduce hospital admissions, decrease emergency department visits, or cut health care costs in a pilot project of fee-for-service Medicare patients.

The Medicare Modernization Act of 2003 mandated that the Centers for Medicare and Medicaid Services test a commercial model for chronic disease management in its fee-for-service beneficiaries.

The agency launched the Medicare Health Support Pilot Program to test this model in 2005, contracting with companies to cover approximately 30,000 chronically ill patients each in eight geographic locations, for a total of about 240,000 patients.

These companies used nurse-based call centers to assess the needs of patients with diabetes and/or heart failure. Each program used “coaches” to improve patients’ understanding of their disease(s), their ability to manage self-care, and their ability to communicate with providers.

Companies were required to meet preset targets for clinical quality and patient satisfaction, and to hold health care costs under a preset limit. An independent group, RTI International, won a competitive bid to evaluate the programs.

However, before the evaluation could be completed, five of the eight companies incurred such “substantial financial liability” that they terminated their programs, according to Nancy McCall, Sc.D., and Jerry Cromwell, Ph.D., of RTI International in Washington.

The 242,417 patients who constituted the study subjects were randomly assigned to receive the disease-management services being tested (163,107 subjects) or usual care (79,310 subjects).

VITALS

**Major Finding:** None of the eight commercial disease-management companies participating in the pilot program improved quality of care, reduced hospital admissions, decreased emergency department visits, or cut health care costs.

**Data Source:** A randomized study of eight commercial programs for disease management involving 242,417 Medicare patients with chronic heart failure or diabetes.

**Disclosures:** This study was funded, designed, conducted, and presented for publication by RTI International. No financial conflicts of interest were reported.

All the patients were “quite sick,” requiring at least one hospitalization every year, having substantial comorbidities along with chronic heart failure or diabetes, and incurring an average of \$15,000 in Medicare expenditures annually.

All companies were assessed, in comparison with usual care, on 40 evidence-based process-of-care measures. Only seven of these measures represented improvements over usual care, and the absolute percentage-point differences between the groups were found to be negligible.

The disease-management programs “had little success” in curbing hospital admissions and emergency de-

partment visits, both for any medical condition in general and for conditions amenable to ambulatory care in particular, the investigators said (N. Engl. J. Med. 2011;365:1704-12).

And average monthly health care costs increased substantially for all patients in the disease-management groups.

Dr. McCall and Dr. Cromwell suggested several possible explanations for the results.

One is that medical care of elderly, chronically ill patients typically covered by Medicare and Medicaid is inherently difficult and expensive, unlike the care of the average patient covered by a commercial disease-management program.

“The health coaches were surprised by the number of health and psychosocial problems that were prevalent among Medicare fee-for-service beneficiaries,” they noted.

In addition, “the unpredictable nature and immediacy of chronic disease flare-ups call for real-time information on health status.” The commercial disease-management programs, with their relative inflexibility, often failed to provide services before patients sought costly acute and/or inpatient care elsewhere.

These findings show “it is unlikely that simply managing the care of elderly patients through telephone contact or an occasional visit will achieve the level of savings Congress had hoped for when it mandated the Medicare Health Support Pilot Program,” Dr. McCall and Dr. Cromwell said.

The results also “suggest that for such programs to be effective, they need to include intensive, costly, personal clinical attention,” they added. ■