

Prevention and Treatment of Obesity, Metabolic Syndrome, and Type 2 Diabetes in Children and Adolescents

Preface

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Are health care providers adequately trained and motivated to fight the obesity epidemic? Many pediatricians view obesity treatment in a negative way,¹ and this attitude may impair their ability to evaluate and treat children who are trending upward on, as well as closing in on the upper percentiles of, the BMI chart. Many health care providers believe that most people who lose weight will experience rebound.² This negative perspective generates an atmosphere of futility rather than the promotion of self-efficacy so needed by both health care providers and patients.

Equally disturbing is a recent report by the U.S. Preventive Services Task Force, which concluded that there is insufficient evidence to recommend for or against primary care providers screening for overweight in children and adolescents to prevent obesity.³ After reading this report, providers may be left with the impression that there is nothing they can do, or they may face a dilemma as to whether to intervene with a child who appears to be gaining excessive weight as evidenced by an upward trend of the child's BMI or relative BMI.

This is reminiscent of the time before completion of the Diabetes Control and Complications Trial,⁴ when the medical profession was ambivalent about the direct relationship of poor glycemic control (as opposed to inherent aspects of the disease itself) and the complications of diabetes. Because of a lack of definitive information, neither patients nor health care providers felt the burden of responsibility for poor treatment outcomes. Subsequently, neither providers nor patients were

motivated to tighten glycemic control. A similar view of obesity may already be the standard of care in many communities. The typical referral to our Lifestyle Clinic at the University of Tennessee Health Science Center is severely obese with a BMI ~ 34 kg/m², and frequently there is no history of previous weight-related intervention.

Community and school-based interventions exist that have been proven to be effective. However, application of these in different locations may be problematic. The cost, logistics, and experience of the individuals involved could result in negative outcomes even though they are evidence-based interventions. In medical centers, a multidisciplinary team approach is ideally used for evaluation and treatment. However, in primary care clinics, there is usually no such team. Should primary care providers then do nothing or refer these patients?

In a national survey on management of childhood and adolescent obesity, 939 health care providers, including pediatricians, pediatric nurse practitioners, and registered dietitians, were found to have self-perceived low skill levels in their ability to counsel patients with obesity in the areas of behavior management strategies, parenting techniques, and family conflicts.⁵ On the positive side, most of these practitioners were concerned about childhood obesity and favored treatment. Furthermore, they were interested in receiving obesity education, particularly through professional guidelines and continuing education courses.

A recent survey of pediatricians in North Carolina regarding self-efficacy,

barriers, resources, and advocacy revealed major concerns. Most pediatricians felt less prepared to treat childhood obesity than to treat asthma or attention deficit hyperactivity disorder.¹ They also perceived greater self-efficacy in preventing sexually transmitted diseases than in preventing childhood obesity.¹ If one generalizes this study to primary health care professionals around the country, one could conclude that there is a major problem with the education and training of primary care providers to fight the growing epidemic of childhood obesity.

Although pediatricians and other health care practitioners have had access to expert committee recommendations for evaluating and treating childhood obesity since September 1998,⁶ integrating these concepts into primary care practice has not been universally accomplished, as evidenced by the failure to reverse the obesity epidemic. There is hope that perceived environmental barriers (fast food, sugary soft drinks, unhealthy school food, and inadequate physical activity) and medical practice-based barriers (nonphysician reimbursement, lack of patient education materials, and not having dietitians on-site) can be overcome.¹ It is unfortunate in our oversized society that neither caregivers nor children may perceive being overweight as a problem, and this may result in a lack of motivation to change unhealthy lifestyle behaviors.

What Can Be Done in the Primary Care Setting?

Some of the barriers to obesity management by primary care clinicians should be overcome with modifications of our environment, such as improved fast food, control of media advertising to children, and increased community involvement. Obesity-related education efforts for physicians and other health care professionals needs expansion at the office-based level.

Our team at the University of Tennessee Health Science Center has developed an evaluation and treatment toolkit called "Rearing Healthy Children," which has yielded encouraging results with our patients. Approximately two-thirds of the obese children who have been followed for > 6 months have lost weight. Long-term follow-up is ongoing. Because evidence-based methods

have thus far not been established, this experience constitutes "practice-based evidence."⁷

A description of the provider/patient application for this toolkit, which has already been shared with > 200 pediatricians in the greater Memphis, Tenn., area and beyond, can be found in the final article of this research section (p. 240). Additionally, we promote patient/parent questionnaires that aid in discerning areas of weakness in implementing the guidelines. The toolkit provides a method for assessing accomplishment and accountability. A one-page form for initial evaluation includes history of present illness, review of systems, physical exam, assessment (including comorbid conditions), recommended laboratory tests, and management goals. Because reimbursement continues to be a challenge, we provide recommended codes from the International Classification of Diseases, 9th revision. The entire 18-page toolkit is accessible on our website (www.utmem.edu/pediatrics/obesity).

All sectors of the community, including medical organizations, businesses, schools, religious organizations, and government agencies, need to work toward solving the childhood obesity epidemic. Clinicians should play a pivotal role in reversing the upward trajectory of obesity, which has an enormous impact on the health of our children, communities, and health care system.

In the first article of this From Research to Practice section, adult endocrinologist Pedro Velasquez-Mieyer, MD, and his colleagues address identifying children at risk for obesity, type 2 diabetes, and cardiovascular disease (p. 213). They emphasize that the expanding obesity epidemic will expand the epidemics of both type 2 diabetes and cardiovascular disease.

When evaluating patients, it is important to recognize that a number of risk factors and medications promote the development of obesity. Although pancreatic β -cell indexes derived from oral glucose tolerance tests are an accepted surrogate marker for population-based studies,⁸ the authors state they are not good predictors of type 2 diabetes and that their accuracy may diminish once glucose intolerance develops. Indexes to evaluate insulin resistance may help identify children at high risk of developing abnormal glucose tolerance.

In our second article, pediatric endocrinologist Johanna T. Mallare, MD, FAAP, and her colleagues discuss current and future treatment options for childhood obesity, type 2 diabetes, and the metabolic syndrome (p. 220). Although several medications and bariatric surgery are approved options for adult obesity, they should be considered investigational in children and utilized only in well-controlled studies.

In our third article, pediatric endocrinologist Robert K. Danish, MD, and Beverly B. West, BSN, RN, CDE, describe an obese teenaged male patient who, under medical supervision, metabolically decompensated from pre-diabetes to severe type 2 diabetes manifested by hyperglycemic hyperosmolar syndrome complicated by rhabdomyolysis (p. 229). The authors provide intervention strategies with the hope of preventing similar life-threatening situations in the future. They recommend that children at very high risk for developing type 2 diabetes be monitored at home using a blood glucose meter.

In the final article of our series, Sarah R.S. Stender, MD, FAAP, a pediatrician with subspecialty board certification in adolescent medicine, and her colleagues provide background and perspective on the ever-increasing global obesity epidemic in the context of genetics and post-modern environmental toxicities, with the goal of targeting strategic points for intervention (p. 240).

The creation of a healthier environment is critical as this pandemic worsens daily. A February 2003 article in *Science*⁹ stated that decreasing the average American diet by a mere 100 kcal/day or increasing energy expenditure by a similar amount could reverse the current alarming trend in rising rates of obesity.

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