Pediatric Severe Obesity: Time To Establish Serious Treatments for a Serious Disease

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Severe obesity in children and adolescents, defined as a BMI 20% higher than the cutoff for obesity (95th BMI percentile), is a serious disease that requires research into novel, intensive treatment approaches.¹ Severe obesity afflicts nearly 6% of all children and teens in the United States²—equivalent to one or more children in every elementary school, middle school, and high school classroom in the country. Worse yet, trends suggest that the prevalence of severe obesity is increasing faster than the prevalence of overweight and moderate obesity.² This concerning upward shift of BMI and BMI percentiles in our youth should be cause for great concern because severe obesity during childhood is associated with serious immediate medical and psychosocial consequences.¹ Children and teens with severe obesity, even compared to overweight or obese youth, have higher levels of blood pressure, triglycerides, inflammation, oxidative stress, lower levels of high-density lipoprotein cholesterol, signs of subclinical atherosclerosis, and a higher prevalence of impaired glucose tolerance and prediabetes.¹ Severe pediatric obesity is also associated with obstructive sleep apnea, nonalcoholic fatty liver disease, musculoskeletal problems, and reduced quality of life.¹ Furthermore, longitudinal evidence suggests the excess adiposity and its associated comorbidities track into adulthood.³ Therefore, the long-term prognosis is poor for the majority of these youth—approximately 90% of children with severe obesity will grow up to be adults with at least class 2 obesity (BMI ≥ 35 kg/m²).³

The good news is that healthy lifestyle changes, when implemented during childhood, appear to be relatively effective in reducing adiposity, at least compared to implementation in the teenage or adult years.^{4,5} This underscores the critical importance of early identification of children with severe obesity and of those who are on a trajectory toward developing the disease, because prevention is the ideal approach. Unfortunately, identification

of obesity by pediatricians in primary care is less than optimal.⁶ It is crucial that the pediatric medical community more frequently diagnoses this disease in the clinic so that appropriate lifestyle-based interventions can be applied during this relatively short window of opportunity when lifestyle approaches may be effective. New pediatric growth charts have been developed for BMI to make it easier to identify and track severe obesity in the clinical setting.⁷

Perhaps the most concerning aspect of severe obesity, once it is established, is the virtual ineffectiveness of all nonsurgical treatment approaches in adolescents afflicted with this disease.¹ Although lifestyle modification therapy is indispensable and should be included as a component of any effective treatment approach, outcomes of studies in which this approach has been used in isolation have been poor among teens with severe obesity.^{4,5} The current state of evidence suggests that more intensive interventions, potentially including pharmacotherapy and weight loss surgery, may be required to elicit meaningful reductions in adiposity and the comorbidities associated with severe obesity in this lifestyle treatment resistant adolescent population. Even if weight loss can be achieved with lifestyle modification in the short term, complex physiological adaptations occur, including changes in levels of hormones that control appetite and satiety, which continue to have strong control over feeding behaviors.⁸ Disturbances in these counter-regulatory mechanisms can persist for long periods of time, making it extremely difficult to maintain weight loss.⁸ It stands to reason that targeting one or more of these pathways with pharmacotherapy in the adolescent with severe obesity is a rational approach, particularly considering that obesity is a chronic disease that will likely require lifelong treatment. Unfortunately, at present, only one weight loss medication (orlistat) is approved by the U.S. Food and Drug Administration (FDA) for use in adolescents. Orlistat has been shown to have minimal efficacy and

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notable side effects, which hamper its widespread use. Other drugs that have been evaluated for pediatric obesity treatment have either been removed from the market (sibutramine) or have demonstrated only modest efficacy (metformin, exenatide). However, two new weight loss medications have recently been approved by the FDA for use among adults (lorcaserin and phentermine/topiramate), and others are in the developmental pipeline. Adolescent clinical trials of the two recently approved medications need to begin in earnest, and studies of the newer agents need to be initiated as soon as approval in adults is granted by the FDA.

The most effective treatment for severe obesity is weight loss surgery. Clearly, risks associated with surgery exceed those of lifestyle modification and pharmacotherapy. However, depending upon the severity of obesity and the number of comorbidities, surgery may be the best treatment option for some teens with this disease. Reductions in BMI at 1 and 2 years with weight loss surgery range from 30% to 40%, which is far and away superior to lifestyle modification and/or pharmacotherapy.¹ Perioperative safety outcomes appear to be reasonable in relation to the health benefits derived from surgery.⁹ Weight loss surgery is likely underutilized as a treatment for adolescent severe obesity. The reasons for this may include reluctance of pediatricians to refer potentially eligible patients, perceptions of teens (and their parents) regarding the invasiveness, irreversibility, and unknown long-term effects of surgery, limited accessibility with only a few well-developed pediatric centers across the country, and inconsistent insurance coverage. Most youth with severe obesity do not actively seek medical care.¹⁰ Perhaps these trends, and some of these attitudes, will change as the evidence base matures regarding the potentially favorable long-term benefit/risk profile of weight loss surgery.

Despite the importance of public health initiatives targeting the prevention of childhood obesity, it must be understood that these efforts will not help youth who are already afflicted with severe obesity. It should also be noted that primary care pediatricians probably do not have the time, training, or resources to effectively manage severe obesity within the confines of their respective clinics. Specialty medical weight management programs are best equipped to address this challenging and refractory disease. Unfortunately, too few of these programs exist, making accessibility a problem for many families. Progress needs to be made within the pediatric medical community in regard to the importance of identification of severe obesity in the clinic and in attitudes surrounding the management of severe obesity, including the medical urgency of the situation and the appropriate intensity of treatment. Lifestyle modification counseling alone will not be enough for most teens with severe obesity. Pediatric weight management specialists need evidence from clinical trials to inform their treatment strategies; therefore, such studies are desperately needed. As more data begin to accumulate regarding the safety and efficacy of pharmacotherapy and surgery in the

context of adolescent severe obesity, it is hoped that much of the widespread resistance to the use of these more intensive treatment approaches will abate. For the hundreds of thousands of teens in the United States currently struggling with severe obesity and in need of tools to help them address their weight, this represents their best chance to achieve the long and healthy life they deserve.

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