Addressing Obesity with Pediatric Patients and Their Families in a Primary Care Office

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INTRODUCTION

Obesity is a major health problem in the United States. Since first recognized as a chronic disease by the National Institutes of Health in 1985, childhood obesity has more than doubled in children and quadrupled in adolescents in the past 30 years.\textsuperscript{1} According to the National Center for Health Statistics, the percentage of US children in the 6 to 11 age group who were obese increased from 7\% in 1980 to nearly 18\% in 2012. Similarly, the percentage of adolescents in the 12 to 19 age group who were obese has increased from 5\% to 21\% over the same time period.\textsuperscript{2} Furthermore, overweight and obese children are more likely to become and stay obese into adulthood\textsuperscript{3} and more likely to develop noncommunicable diseases, such as diabetes and

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cardiovascular disease, at a younger age. With the prevalence of childhood obesity and overweight in today's society, the family physician must be comfortable counseling parents of obese and overweight children about treatment options. This article discusses the diagnosis and treatment of obesity with an emphasis on diet, physical activity, pharmacotherapy, gastric bypass, and behavior therapy.

**DIAGNOSING OBESITY AND OVERWEIGHT**

Body mass index (BMI; weight [kg]/height squared [m²], or weight [lb]/height squared [in] * 703) can be used to assess a person's weight as it relates to their height. For children weight status is further conceptualized as a BMI percentile, which is determined by plotting BMI on a normal curve according a child's age and gender. The Centers for Disease Control and Prevention has developed growth charts that define overweight as a BMI at or above the 85th percentile and lower than the 95th percentile for children of the same age and sex. Obesity is defined as a BMI that is at or above the 95th percentile for children of the same age and sex.

**TREATMENT: GENERAL GUIDELINES**

After determining that a patient is obese and organic causes are ruled out, a treatment plan should be established. First, the physician must determine if contraindications to weight loss programs exist. When considering weight-reduction programs, patients often have unrealistic expectations, hoping to achieve weight loss goals within a short period of time. This can be a source of disappointment and frustration. The National Institutes of Health/National Heart, Lung, and Blood Institute recommend that children and teenagers that are overweight or obese should focus on weight maintenance or weight loss, depending on several factors. Healthy youth are expected to gain weight as they grow taller, so an obese child that maintains their current weight will still reflect positive health changes in some circumstances. Table 1 describes the different factors to consider when determining a patient’s treatment goals. It is important for physicians to educate parents about this and align patient expectations with what is known to be realistic to avoid the patient having feelings of failure and parent frustration.

The main strategies for weight loss and weight maintenance are dietary therapy; physical activity; combined therapy; pharmacotherapy; and weight loss surgery,

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Factors to consider when determining treatment outcome goals</th>
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<tbody>
<tr>
<td><strong>Goal: Weight Maintenance</strong></td>
<td><strong>Goal: Weight Loss</strong></td>
</tr>
<tr>
<td>All children at risk for becoming overweight (BMI &gt;85th percentile and &lt;95th percentile) between 2 and 7 y of age with no medical complications</td>
<td>All obese children (BMI ≥95th percentile) older than 7 y</td>
</tr>
<tr>
<td>Obese children (BMI ≥95th percentile) between 2 and 7 y of age with no medical complications</td>
<td>Obese children between 2 and 7 y with medical complications</td>
</tr>
<tr>
<td></td>
<td>Children at risk for becoming overweight (BMI &gt;85th percentile and &lt;95th percentile) older than 7 y with medical complications</td>
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</table>

also known as bariatric surgery. Treatment modalities are most successful when approached in a combined fashion. For example, diet and physical activity together achieve a greater success rate than diet alone.

**DIETARY THERAPY**

The US Department of Agriculture/US Department of Health and Human Services recommend a diet rich in fruits and vegetables, whole grains, and fat-free and low-fat dairy products for persons aged 2 years and older. The guidelines also recommend that children and adolescents limit intake of solid fats (major sources of saturated and trans fatty acids), cholesterol, sodium, added sugars, and refined grains. Table 2 provides the US Department of Agriculture/US Department of Health and Human Services caloric recommendations for children and adolescents based on age, gender, and activity level. It should be noted that the caloric data are presented in a range where the lower end could support weight loss and the higher end could support weight maintenance depending on the individual needs of the patient.

Patients should determine their caloric intake by filling out a daily food diary, and then adjust their total intake as described. Web sites and mobile phone applications have been created to assist in completing the food diary. Most women lose weight with 1000 to 1200 kcal/d and men with 1200 to 1600 kcal/d. Calories can be increased by 100 to 200 kcal/d if the patient is hungry. Very-low-calorie diets are not recommended because they require close monitoring and nutrient supplementation. It is recommended that more than half of the calories (55%) come from complex carbohydrates, 15% from protein, and less than 30% from fat. Cholesterol, sodium, calcium, and fiber should also be monitored. Cholesterol intake should be less than 300 mg/d; sodium, less than 2.4 g/d; calcium, 1000 to 1500 mg/d; and fiber, 20 to 30 g/d.

**PHYSICAL ACTIVITY**

Increasing physical activity is critical for obesity prevention, long-term weight maintenance, and overall improvements in health. The US Preventive Services Task Force recommends that all patients seen in a primary care setting be advised to reduce dietary fat consumption and increase physical activity. Although physicians can substantially impact patient activity levels, many physicians do not have the time for exercise counseling during the average patient visit. This problem can be

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (y)</th>
<th>Sedentary</th>
<th>Moderately Active</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child (male or female)</td>
<td>2–3</td>
<td>1000–1200</td>
<td>1000–1400</td>
<td>1000–1400</td>
</tr>
<tr>
<td>Female</td>
<td>4–8</td>
<td>1200–1400</td>
<td>1400–1600</td>
<td>1400–1800</td>
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<td></td>
<td>9–13</td>
<td>1400–1600</td>
<td>1600–2000</td>
<td>1800–2200</td>
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<tr>
<td></td>
<td>14–18</td>
<td>1800</td>
<td>2000</td>
<td>2400</td>
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<tr>
<td>Male</td>
<td>4–8</td>
<td>1200–1400</td>
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<td>1600–2000</td>
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<td></td>
<td>14–18</td>
<td>2000–2400</td>
<td>2400–2800</td>
<td>2800–3200</td>
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</tbody>
</table>

overcome by following time-saving, standardized exercise prescription protocols, such as the one developed in Project PACE (see www.paceprojec.org). Evaluation of the PACE program by physicians indicated that 75% would recommend PACE to other physicians and more than 50% reported an increase in their patients’ activity levels. Physicians can also refer to the US Department of Health and Human Services exercise guidelines for prescription development. According to these guidelines, children should be advised to perform 60 or more minutes of physical activity each day. This can include either moderate-intensity aerobic activity, such as brisk walking, or vigorous-intensity activity, such as running. Children should also include vigorous-intensity aerobic activity on at least 3 days per week. Muscle strengthening activities, such as gymnastics or push-ups, should be included at least 3 days per week as part of their total 60 or more minutes per day. Other activities, such as swimming, biking, and tennis, are comparable if performed at equivalent intensity and duration. It is important for the physician to remember that weight-loss/maintenance and overall well-being are facilitated by regular exercise.

PHARMACOTHERAPY: NONPRESCRIPTION PRODUCTS

The long-term lifestyle changes necessary to produce and maintain weight loss are difficult. Therefore, nonprescription weight loss products have become prevalent and are attractive to consumers. In fact, the sale of nonprescription weight loss products has turned into a multibillion dollar industry. A recent multistate survey indicated that 7% of respondents (N = 14,679) used a nonprescription weight loss product in the last 2 years. This extrapolates to 17.2 million Americans that have used nonprescription drugs for weight loss. This is a significant health concern, because dietary supplements are regulated as food, not drugs, and are therefore not subject to the same scrutiny as medications. This can result in labeling and dosing inaccuracies that may increase negative health risks.

Ephedrine and phenylpropanolamine (PPA) have been commonly used as appetite suppressants, whereas other products offer meal replacement options (Slimfast, Sweet-Success, and so forth). Because of the potential for adverse effects, ephedrine and PPA are discussed in detail. Ephedrine products have stimulant properties and are purported to decrease weight and appetite. In April 2000, restrictions placed on dietary supplements containing ephedrine, in place for 3 years, were withdrawn, citing the need for additional information on adverse effects. Adverse effects are currently being studied, but the Food and Drug Administration has recommended labeling that requests those with diabetes, hypertension, and heart disease to seek the advice of a physician before using the products.

PPA is a synthetic ephedrine alkaloid. Until recently, it was thought to be a safe appetite suppressant and stimulant, but case reports of cerebrovascular and cardiac events prompted the voluntary withdrawal of PPA-containing products in November 2000.

In addition, ephedrine and caffeine have been tested for weight loss, but are not approved to treat obesity at this time. Although there are many herbal weight loss products on the market, they are not recommended as a part of a weight management program because these preparations may have unpredictable amounts of active ingredients.

PHARMACOTHERAPY: PRESCRIPTION PRODUCTS

In general, pharmacotherapy for weight reduction achieves about a 10% weight reduction and requires continued compliance to avoid weight gain. Prescription
weight loss therapy is based on reducing caloric absorption, decreasing appetite, or increasing metabolic rate. Currently, there is only one prescription weight loss drug available in the United States for adolescents: orlistat (Xenical), approved for adolescents older than 12. According to the Mayo Clinic, prescription medication is not recommended for adolescents because the long-term risks of weight loss medication are still unknown, and it should not be viewed as a replacement for behavioral therapies including healthy diet and exercise. Adolescents should only be treated with orlistat if their BMI is above the level as indicated in Table 3.

**Orlistat**

Orlistat is a pancreatic lipase inhibitor that acts to reduce fatty acid absorption in the intestine. Because the drug is minimally absorbed, it is considered to be generally safe, but is contraindicated in patients with chronic malabsorption syndrome or cholestasis. Its side effects include malabsorption of fat-soluble vitamins and steatorrhea (oily, loose stools with excessive flatus caused by unabsorbed fats reaching the large intestine), and patients taking orlistat should be counseled to take a multivitamin that includes fat-soluble vitamins daily. The usual dosage is 120 mg, three times a day (one per meal) with meals. If a meal is missed or does not contain fat, the dose can be skipped.

**Future Directions**

New advances in the understanding of the molecular mechanisms of satiety and thermogenesis have opened doors and new opportunities for pharmacotherapy. Potential strategies include targeting leptin, believed to be an afferent signal for satiety in mice. Additionally, melanocortin receptor agonists, cocaine- and amphetamine-regulated transcript receptor agonists, and drugs that target thermogenesis regulation are being studied and may show promise. However, it is unlikely that a “magic pill” that allows weight loss without dietary and activity modification will ever be developed.25

**BEHAVIOR THERAPY**

A National Institutes of Health/National Heart, Lung, and Blood Institute expert panel recommends that behavior therapy be an adjunct treatment of weight loss and weight

<table>
<thead>
<tr>
<th>Table 3</th>
<th>BMI guidelines for orlistat (Xenical) treatment</th>
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</thead>
<tbody>
<tr>
<td><strong>Age (y)</strong></td>
<td><strong>BMI Male</strong></td>
</tr>
<tr>
<td>12</td>
<td>26.02</td>
</tr>
<tr>
<td>12.5</td>
<td>26.43</td>
</tr>
<tr>
<td>13</td>
<td>26.84</td>
</tr>
<tr>
<td>13.5</td>
<td>27.25</td>
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<tr>
<td>14</td>
<td>27.63</td>
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<td>14.5</td>
<td>27.98</td>
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<td>15</td>
<td>28.30</td>
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<td>15.5</td>
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<td>16</td>
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<td>16.5</td>
<td>29.14</td>
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<tr>
<td>17</td>
<td>29.41</td>
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<tr>
<td>17.5</td>
<td>29.70</td>
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maintenance. This treatment modality is important because it assists the patient in identifying cravings and establishing ways to disconnect the triggering events that lead to overeating. Studies show that when behavior therapy is combined with diet therapy in the form of a low-calorie diet or very-low-calorie diet, maintenance of weight loss at 1 year is better than diet alone. Studies have shown that behavior therapy increases the effectiveness of pharmacotherapy. It is our recommendation that counseling be part of any weight-reduction program, not only to increase effectiveness, but to help handle the emotional impact that body image can cause.

SUMMARY

Obesity is a significant health problem that is associated with multiple disease states. Family physicians are in a unique role to influence behaviors, such as diet and exercise. When combined with behavior therapy, diet and exercise should be first-line treatment modalities. Pharmacotherapy has been proved effective, but has reluctantly been used by professionals because these drugs have potential side effects, and offer only short-term weight loss. In extreme obese conditions bariatric surgery may be considered after all other less aggressive treatment modalities have failed.

REFERENCES


