Obesity: Choosing the Right Referral
# Understanding Childhood and Adolescent Obesity Management

## Definition, Epidemiology and Risks

Overweight is defined as a Body Mass Index (BMI) between the 85th and 94th percentiles for age and gender. Obesity is defined as BMI greater than the 95th percentile for age and gender.

Obesity has been increasing in the United States over the past 50 years. It disproportionately affects certain ethnic groups including Hispanic, black and Native American children. Obesity leads to or exacerbates many medical conditions, including hypertension, lipid abnormalities, diabetes, polycystic ovary syndrome, fatty liver disease, sleep apnea, exercise intolerance and asthma, depression, eating disorders and orthopedic disorders.

## Causes

Both genetic predisposition and environmental factors contribute to obesity risk. Genetic predisposition is not sufficient to explain obesity. The condition always arises from an imbalance between energy intake (food intake: quantity, caloric density) and energy output (physical activity).

## Assessment and Diagnosis

BMI should be used as a screening tool to evaluate for overweight or obese classification. Based upon the child’s BMI, further screening can be performed to enable the provider to recommend appropriate intervention and referral, if necessary. Initial assessment should evaluate:

- Ethnicity
- Blood pressure
- Medication list (including antipsychotics)
- Personal history of apnea or exercise intolerance
- Family history of obesity and type 2 diabetes mellitus

## Screening

The American Academy of Pediatrics Expert Committee recommendations for screening for comorbid disease in overweight and obese children are:

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Overweight (BMI 85th-94th percentile)</th>
<th>Obese (BMI 95th percentile and above)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs</td>
<td>Fasting lipids, ALT and AST (liver function tests) every 2 years</td>
<td>Fasting lipids, ALT, AST and fasting glucose every 2 years</td>
</tr>
<tr>
<td>Additional Screening</td>
<td>Check fasting glucose in children with additional risk factors, such as acanthosis nigricans, features of polycystic ovary syndrome, a family history of diabetes, minority ethnicity or cardiovascular risk factors.</td>
<td>The American Academy of Pediatrics does not recommend routine screening for secondary causes of obesity such as thyroid dysfunction, Cushing syndrome or genetic disorders.</td>
</tr>
</tbody>
</table>
Referral Options for Obese Patients

The American Academy of Pediatrics recommends referral to a pediatric tertiary weight management center with a multidisciplinary team to address intractable obesity. Nationwide Children's Hospital offers a range of specialty services to address obesity and related health concerns. Please use the following information to determine which specialty referral is appropriate for your patient.

The Center for Healthy Weight and Nutrition
Numerous studies support the effectiveness of early family-based behavioral and lifestyle intervention programs. The Center for Healthy Weight and Nutrition offers specialized obesity care and management for obese children with BMI at or above the 95th percentile. Services include the following:

- Comprehensive approach to weight management in children, including programs for both prevention and treatment.
- Multidisciplinary team of physicians, nurse practitioners, psychologists, registered dietitians, physical therapists and certified athletic trainers.
- Family-based, medical weight-management programs covering everyday diet and fitness education.
- Complete medical evaluation for obesity and comorbid conditions at the initial visits.
- Diagnosis and triage or management of obesity-related conditions such as acanthosis nigricans, anxiety, asthma, depression, dyslipidemia, fatty liver, glucose intolerance, elevated insulin levels, high cholesterol, high triglycerides, hypertension, polycystic ovary syndrome, sleep apnea and type 2 diabetes.
- Subspecialist referral if indicated.

Endocrinology, Metabolism and Diabetes
The section of Endocrinology, Metabolism and Diabetes at Nationwide Children’s is not a weight-loss program and does not manage obesity. The Endocrine Society recommends against a routine laboratory evaluation for endocrine causes of obesity in prepubertal to mid-pubertal children unless the child’s linear growth is attenuated. Abnormal screening labs should be obtained prior to an endocrinology referral.

The endocrinology team offers comprehensive care for:

- **Impaired glucose tolerance in non-obese children:** Fasting blood glucose of 100 to 125 mg/dL or hemoglobin (Hgb) A1c > 5.7% in child with BMI < 95th percentile.
  - **Please Note:** Obese children with impaired glucose tolerance (fasting blood glucose > 100 mg/dL), mild elevations in HgbA1c (5.7 to 6.4%), acanthosis nigricans, hirsutism, hyperandrogenism or irregular menses can be referred directly to the Center for Healthy Weight and Nutrition.
  - **Type 1 and type 2 diabetes mellitus:** Random blood glucose ≥ 200 mg/dL or HgbA1c ≥ 6.5%. Please contact us directly to expedite care for new-onset diabetes.

- **Polycystic ovary syndrome:** Irregular menses (< 9 per year) at least two years after menarche.

- **Thyroid dysfunction:** TSH > 10 µIU/mL or TSH > normal with positive TPO or Tg antibodies. TSH elevation is common in obesity. If TSH is 4 to 10 µIU/mL in the setting of obesity, repeat TSH with free T4 and TPO/Tg antibodies in 4 to 6 weeks.

Providers with additional questions about obesity referrals should utilize the Nationwide Children’s Physician Direct Connect line, (877) 355-0221, to speak with one of our physicians.
Choosing the Right Referral
Nationwide Children’s Hospital offers a range of specialty services to address obesity and related health concerns.Outlined below are the guidelines for pre-referral testing and the criteria for referral to the Center for Healthy Weight and Nutrition versus the section of Endocrinology, Metabolism and Diabetes.

Quick Reference Referral Chart for Obese Patients

<table>
<thead>
<tr>
<th>Labs</th>
<th>Values</th>
<th>Refer to Endocrinology</th>
<th>Refer to Healthy Weight and Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random Blood Glucose</td>
<td>$\geq 200$ mg/dL$^{(1)}$</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Fasting Blood Glucose</td>
<td>$\leq 125$ mg/dL</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\geq 126$ mg/dL</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>HgbA1c</td>
<td>$&lt; 6.5%$</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\geq 6.5%$ $^{(1)}$</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>TSH$^{(2)}$</td>
<td>$&gt; 10$ μIU/mL</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>elevated TSH &amp; positive thyroid antibodies</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Fasting Insulin</td>
<td>elevated</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>ALT/AST</td>
<td>elevated</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Cholesterol or Triglycerides</td>
<td>elevated</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Signs/Symptoms:</td>
<td>Acanthosis nigricans</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irregular menses$^{(3)}$</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Please call with questions</td>
<td></td>
</tr>
</tbody>
</table>

(1) Please contact us directly to expedite care for new-onset diabetes.
(2) If TSH 4 to 10 μIU/mL, repeat TSH with free T4 and TPO/Tg antibodies in 4 to 6 weeks.
(3) Fewer than nine menses per year at least two years after menarche.

Referrals and Consultations
Online: NationwideChildrens.org/Endocrinology-Metabolism-and-Diabetes
Phone: (614) 722-6200 or (877) 722-6220  | Fax: (614) 722-4000
Physician Direct Connect Line for 24-hour urgent physician consultations:
(614) 355-0221 or (877) 355-0221.

Laboratory Testing and Pathology Consultations
Online: NationwideChildrens.org/Lab
Phone: (614) 722-5477 or (800) 934-7575