

# Algorithm for Managing Obesity in Patients 2 to 18 Year-Olds

In all 2 to 18 year-old patients in clinic for a well child visit record height, weight and BMI<sup>1</sup> in patient's growth chart in the medical record

**Healthy Weight**  
BMI ≥ 5th to < 85th percentile

**Overweight**  
BMI ≥ 85th to < 95th percentiles

**Obesity**

- Class I: ≥ 95th percentile to < 120% of the 95th percentile
- Class II: ≥ 120% to < 140% of the 95th percentile or BMI ≥ 35, whichever is lower
- Class III: ≥ 140% of the 95th percentile or BMI ≥ 40, whichever is lower

**CONDUCT THE FOLLOWING:**

1. **Basic patient history**
2. **Lifestyle screening<sup>3</sup>**, assessing:
  - Nutrition
  - Physical activity
  - Sedentary behaviors
3. **Physical exam**

Conduct the following:  
**Comprehensive patient history<sup>2</sup>** Includes **lifestyle screening<sup>3</sup>**  
**Weight management-specific physical exam<sup>4</sup>** (in addition to standard exam)

- Praise family/patient for positive reinforcement, and **be cautious not to hyperfocus on weight**
- Consider healthy lifestyle counseling
- Offer family/patient age-appropriate nutrition and exercise education materials
- Reassess at annual well child visit or next sick child visit

- Screen for comorbidities with the following lab tests: **\*Screening labs start at age 10yo (patients <10yo may require screening based on specific risk factors<sup>9</sup>)**
  - **HA1c and/or FPG** (BMI 85-94th% with risk factors present)
  - **ALT**
  - **Lipid panel** (BMI 85-94th% with risk factors present)
- See specific algorithm for exceptions & details
- Consider screening for other weight-related comorbidities<sup>5</sup>
- Offer family/patient age-appropriate nutrition and exercise education materials
- Consider **referral to Physical Medicine and Rehabilitation** if functional status is impairing activity or **referral to General Outpatient Nutrition** if patient has a diet related comorbidity

Offer long-term healthy lifestyle intervention counseling<sup>6</sup> in PCP clinic

- Follow-up every 3 to 6 months to monitor BMI trajectory
- Reassess family/patient readiness for change over time
- Consider referral to general nutrition or relevant subspecialists if comorbidity present **BUT NOT IDEAL CLINIC** if not interested in weight management

Family/patient **DECLINE** counseling

Family/patient **CONSENT** to counseling

**Refer to IDEAL Clinic**, and collect **required** fasting lab<sup>8</sup> **PRIOR** to referral

Patient's weight and BMI percentile are **increasing**

Assess if family behavior or patient weight/BMI percentile changed in the past 6 months

- Assess for family/patient readiness for change
- Greater contact hours, either thru the medical home, community resources, or specialists are most effective
  - Consider Dietician referral or community based lifestyle programs for family interested in more intensive intervention
  - Consider the use of pharmacotherapy<sup>10</sup> in patients ≥ 12 years with obesity
  - Consider referral for metabolic bariatric surgery in patients ≥ 13 with class 2 obesity +comorbidity or class 3 obesity<sup>11</sup>
- \* **Refer to IDEAL Clinic** if abnormal lab values<sup>7</sup>, specific comorbidities<sup>5</sup> AND patient is interested in more intensive behavior support +/- medical weight management

Continue counseling until personalized goals are achieved or comorbidities are alleviated

Patient's weight and BMI percentile are **maintained** or **decreasing**

#	Subject Superscript	Description										
1	Calculating BMI	<b>BMI</b> = kg/m <sup>2</sup> where kg reflects weight in kilograms and m <sup>2</sup> reflects height in meters squared										
2	Weight management-specific patient history	<ul style="list-style-type: none"> <li>Record <b>age of onset of overweight or obesity (Class I, II, or III) diagnosis</b> to help differentiate from genetic etiologies causing excessive weight gain</li> <li><b>Birth history</b>, including identification of: <ul style="list-style-type: none"> <li>- LGA</li> <li>- SGA</li> <li>- Gestational diabetes</li> <li>- Excessive maternal weight gain during pregnancy</li> </ul> </li> <li><b>Dietary history</b>, include noting early infant feeding behaviors</li> <li><b>Physical Activity history</b></li> <li><b>Medical history</b>, including medication history to screen for weight-promoting medicines</li> <li><b>Review of systems</b> to screen for etiologies and comorbidities</li> <li><b>Family history</b>, including screening for: <ul style="list-style-type: none"> <li>- Obesity in first-degree relatives</li> <li>- Obesity-related comorbidities in first- and second-degree relatives</li> </ul> </li> <li><b>Psychosocial history</b>, including screening for: <ul style="list-style-type: none"> <li>- Depression</li> <li>- School and social conflicts</li> <li>- Usage of tobacco and recreational drugs for weight management</li> <li>- Family Conflict</li> <li>- Separation</li> </ul> </li> </ul>										
3	Components of lifestyle screening	<ul style="list-style-type: none"> <li><b>Dietary History</b>, including identification of: <ul style="list-style-type: none"> <li>- Caretakers feeding child</li> <li>- Meal/snack frequency and portion sizes</li> <li>- Eating patterns</li> <li>- Types of foods being consumed</li> </ul> </li> <li><b>Physical Activity History</b>, including: <ul style="list-style-type: none"> <li>- Barriers to exercise</li> <li>- Type, frequency, and duration of exercise</li> </ul> </li> <li><b>Sedentary behaviors</b> <ul style="list-style-type: none"> <li>- Amount of non-academic screen time</li> </ul> </li> <li><b>Sleep History</b> <ul style="list-style-type: none"> <li>- Duration and quality</li> </ul> </li> <li><b>Social History</b> <ul style="list-style-type: none"> <li>- Housing</li> <li>- Food access/screening for food insecurity</li> <li>- School- After school activities/ caretakers /jobs</li> </ul> </li> </ul>										
4	Weight management specific physical exam	<table border="1"> <tbody> <tr> <td><b>General exam</b></td> <td> <ul style="list-style-type: none"> <li>Dysmorphic features, suggestive of genetic syndrome</li> <li>Fat distribution <ul style="list-style-type: none"> <li>- Peripheral or truncal fat</li> <li>- Dorsocervical and visceral fat suggests Cushing syndrome</li> <li>- Abdominal adiposity associated with metabolic syndrome</li> </ul> </li> <li>Record blood pressure with proper-sized cuff (adult-sized or large adult-sized cuff)</li> </ul> </td> </tr> <tr> <td><b>HEENT exam</b></td> <td> <ul style="list-style-type: none"> <li>Microcephaly suggests genetic syndrome</li> <li>Blurred disc margins suggests idiopathic intracranial hypertension</li> <li>Nystagmus or visual complaints suggests hypothalamic-pituitary lesion</li> <li>Retinitis pigmentosa suggests genetic syndrome</li> <li>Enlarged tonsils or high Mallampati score suggests Obstructive Sleep Apnea</li> </ul> </td> </tr> <tr> <td><b>Stature</b></td> <td>Differentiate exogenous obesity vs. genetic/endocrine induced abnormalities</td> </tr> <tr> <td><b>Skin and Hair</b></td> <td>Screen for endocrine disorder etiologies causing weight gain</td> </tr> <tr> <td><b>Abdominal exam</b></td> <td> <ul style="list-style-type: none"> <li>Abdominal tenderness suggests gallbladder disease</li> <li>Hepatomegaly suggests NAFLD</li> </ul> </td> </tr> </tbody> </table>	<b>General exam</b>	<ul style="list-style-type: none"> <li>Dysmorphic features, suggestive of genetic syndrome</li> <li>Fat distribution <ul style="list-style-type: none"> <li>- Peripheral or truncal fat</li> <li>- Dorsocervical and visceral fat suggests Cushing syndrome</li> <li>- Abdominal adiposity associated with metabolic syndrome</li> </ul> </li> <li>Record blood pressure with proper-sized cuff (adult-sized or large adult-sized cuff)</li> </ul>	<b>HEENT exam</b>	<ul style="list-style-type: none"> <li>Microcephaly suggests genetic syndrome</li> <li>Blurred disc margins suggests idiopathic intracranial hypertension</li> <li>Nystagmus or visual complaints suggests hypothalamic-pituitary lesion</li> <li>Retinitis pigmentosa suggests genetic syndrome</li> <li>Enlarged tonsils or high Mallampati score suggests Obstructive Sleep Apnea</li> </ul>	<b>Stature</b>	Differentiate exogenous obesity vs. genetic/endocrine induced abnormalities	<b>Skin and Hair</b>	Screen for endocrine disorder etiologies causing weight gain	<b>Abdominal exam</b>	<ul style="list-style-type: none"> <li>Abdominal tenderness suggests gallbladder disease</li> <li>Hepatomegaly suggests NAFLD</li> </ul>
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4	Weight management specific physical exam (continued)	<b>MSK exam</b>	<ul style="list-style-type: none"> <li>• Nonpitting edema suggests hypothyroidism</li> <li>• Postaxial polydactyly suggests genetic syndrome</li> <li>• Small hands and feet suggests genetic syndrome</li> </ul>	
		<b>GU exam</b>	<ul style="list-style-type: none"> <li>• Undescended testicles, small penis, scrotal hypoplasia suggests genetic syndrome</li> <li>• Small testes suggests genetic syndrome</li> </ul>	
		<b>Neurological exam</b>	Cognitive development or delay suggests syndromic cause of excess weight	
5	Weight-related comorbidities	<b>Common comorbidities</b> <ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Dyslipidemia/Hypercholesterolemia</li> <li>• Obstructive Sleep Apnea</li> <li>• Musculoskeletal conditions (Slipped Capital Femoral Epiphysis, Blount disease, fractures)</li> <li>• Non-Alcoholic Fatty Liver Disease</li> <li>• Psychosocial issues</li> <li>• Skin breakdown and infections</li> <li>• Polycystic Ovarian Syndrome</li> <li>• Acanthosis Nigricans</li> <li>• Asthma</li> <li>• Prediabetes and Type 2 Diabetes</li> <li>• Nutritional deficiencies (Vitamin D)</li> </ul>	<b>Less common comorbidities</b> <ul style="list-style-type: none"> <li>• Hidradenitis Suppurativa</li> <li>• Gallbladder Disease and Cholelithiasis</li> <li>• Hypercoagulability</li> <li>• Cardiac structural abnormalities (hypertrophic cardiomyopathy or ventricular hypertrophy)</li> <li>• Pancreatitis</li> <li>• Restrictive lung disease</li> <li>• Pulmonary hypertension</li> <li>• Obesity hypoventilation syndrome</li> <li>• Idiopathic Intracranial Hypertension</li> <li>• Nutritional deficiencies (Iron)</li> <li>• Impaired renal function</li> </ul>	
6	PCP healthy lifestyle intervention counseling	Incorporate <b>motivational interviewing</b> and <b>person-first language</b> when counseling to promote patient autonomy and provide positive reinforcement. Goal of PCP is NOT to hyperfocus on weight, but to be a trusted partner in the overall health journey of the family.		
7	Indications for IDEAL Clinic referral	<b>Abnormal lab values</b> that indicate <b>referral to IDEAL Clinic</b> include:		Conditions that benefit from comanagement
		<b>Elevated HbA1c</b> ≥ 6% or <b>Elevated FPG</b> ≥ 100	<b>Dyslipidemia in lipid panel</b> <ul style="list-style-type: none"> <li>• LDL-C ≥ 130 mg/dL</li> <li>• TG ≥ 100 mg/dL in &lt; 10 yo</li> <li>• TG ≥ 130 mg/dL in ≥ 10 yo</li> <li>• TC ≥ 200 mg/dL</li> <li>• Non-HDL-C ≥ 145 mg/dL</li> <li>• HDL-C &lt; 40 mg/dL</li> </ul>	<b>Elevated ALT</b> ≥ 80
8	Fasting labs required to be collected prior to IDEAL Clinic referral	<b>Fasting Labs:</b> <ul style="list-style-type: none"> <li>• Insulin</li> <li>• HbA1c</li> <li>• CMP</li> <li>• Lipid Profile</li> <li>• TSH</li> <li>• Vitamin D</li> </ul>		
9	Special Instructions for screening labs for age <10yo	<b>ALT</b>	<b>Lipid Panel</b>	<b>HbA1c</b>
		<ul style="list-style-type: none"> <li>• BMI ≥ 99th percentile</li> </ul> <i>*Consider ALT in this case</i>	<ul style="list-style-type: none"> <li>• Positive family history( parent, grandparent, aunt, or uncle at &lt;55 yo for males, &lt;65 yo for females)</li> <li>• myocardial infarction</li> <li>• Angina,</li> <li>• coronary artery bypass graft/stent/angioplasty,</li> <li>• sudden cardiac death</li> </ul>	<ul style="list-style-type: none"> <li>• BMI ≥ 99th percentile</li> </ul> <b>AND</b> <ul style="list-style-type: none"> <li>• T2DM in 1st degree relative or Gestation DM in patient pregnancy</li> </ul> <b>OR</b> <ul style="list-style-type: none"> <li>• Acanthosis or other sign of insulin resistance</li> </ul>

#	Subject Superscript	Description			
10	Currently approved pharmacotherapy for ages 12-17  **Consider on an individual basis along with close follow up <b>AND</b> intensive health behavior and lifestyle treatment	<b>Medication</b>	<b>Formulation</b>	<b>Contraindication</b>	<b>Side Effects</b>
		Liraglutide	SC, daily injection	MTC (medullary thyroid cancer), MEN (multiple endocrine neoplasia)	GI effects: nausea/vomiting/diarrhea/abd pain
		Semaglutide	SC, weekly injection	MTC, MEN	GI effects: nausea/vomiting/diarrhea/abd pain
		Qsymia (phentermine + topiramate)	PO, daily	Glaucoma, hyperthyroid	Dizziness, parasthesia, elevated BP and/or HR
		Orlistat	PO, TID with meals	Malabsorptive syndrome, severe renal disease	Steathorrhea, flatulence, fecal urgency
		Phentermine (≥ 16yo)	PO, daily	Cardiac arrhythmia, uncontrolled hypertension	Headache, dry mouth, elevated BP
11	Referral to the Children's National Bariatric Surgery Program 202-476-2150	<p>Prior to referral, please consider the following eligibility:            BMI of <b>at least</b> 35 with an obesity-related medical condition <b>OR</b> a BMI of greater than 40 without an obesity-related health condition</p> <ul style="list-style-type: none"> <li>• Understand the lifelong dietary commitment required after the surgery</li> <li>• Complete all clinically required laboratory and diagnostic tests</li> <li>• Have confirmation from a psychologist or psychiatrist that patient is mature enough to comply with the requirements (this will be done through the bariatric clinical psychology team)</li> <li>• Complete follow-up visits for three years after surgery</li> </ul> <p>Referral can be made directly to the bariatric surgery department or the IDEAL clinic. Patients will be evaluated and followed by a multidisciplinary team to determine surgical readiness.</p> <p><i>**Insurance restrictions may prevent some patients from accessing bariatric surgery</i></p>			

**Citations:**

- Children's National Hospital IDEAL Clinic
  - Children's National Hospital Radiology Department
  - Skinner et al., N Engl J Med AC, [doi:10.1056/NEJMoa1502821](https://doi.org/10.1056/NEJMoa1502821)
  - Klish et al., Clinical Evaluation of the Obese Child and Adolescent, UpToDate, [Click here for link](#)
  - De Ferranti et al. Dyslipidemia in Children: Definition, Screening, and Diagnosis, UpToDate, [Click here for link](#)
- AAP 2023 Clinical Practice Guidelines for the Evaluation and Treatment of Children and Adolescents with Obesity