

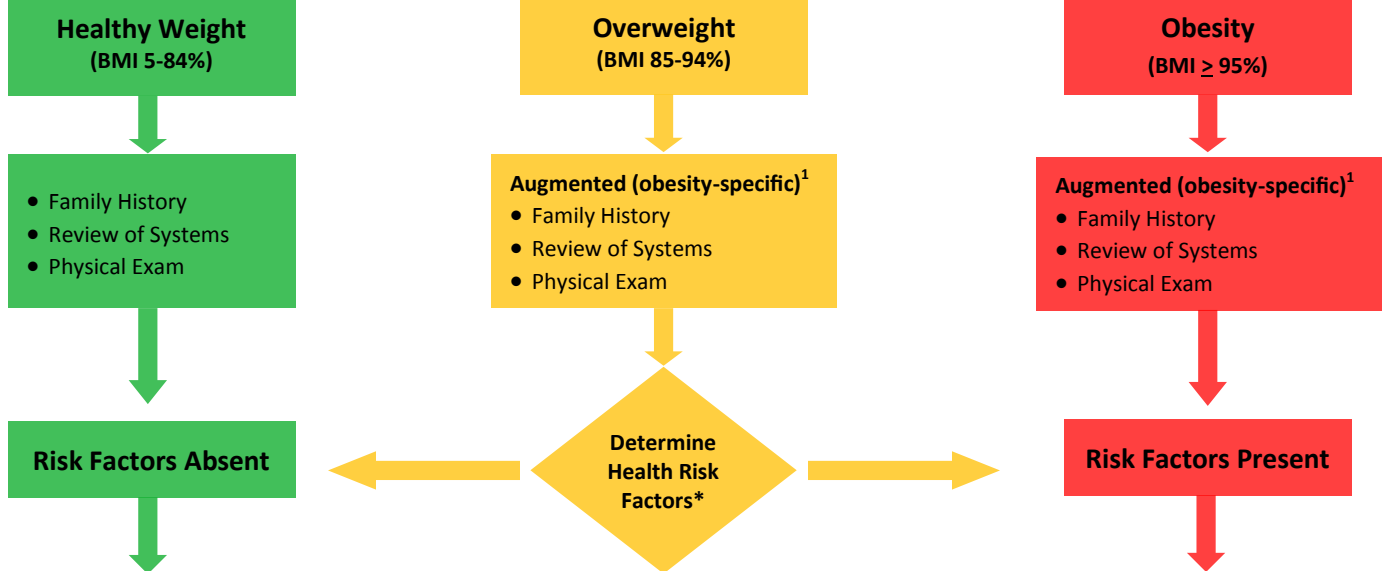
# Algorithm for the Assessment and Management of Childhood Obesity in Patients 2 Years and Older

This algorithm is based on the 2007 Expert Committee Recommendations,<sup>1</sup> new evidence and promising practices.

**Assess Behaviors**  
Assess healthy eating and active living behaviors

**Provide Prevention Counseling**  
5 (fruits & vegetables) 2 (hours or less of screen time) 1 (hour or more of physical activity) 0 (sugary drinks) every day!

**Determine Weight Classification**  
Accurately determine weight and height, calculate and plot Body Mass Index (BMI) and determine BMI percentile.



**Routine Care**

- Provide ongoing positive reinforcement for healthy behaviors.
- For patients in the *healthy weight* category, screen for genetic dyslipidemia by obtaining a non-fasting lipid profile for all children between the ages of 9-11 and again between 18-21.<sup>2</sup>
- For patients in the *overweight* category, obtain a lipid profile.
- Maintain weight velocity:
  - Crossing 2 percentile lines is a risk for obesity<sup>4</sup>
  - Reassess annually
- Follow up at every well-child visit.

**Lab Screening**

- The 2007 Expert Committee Recommendations<sup>1</sup> state that a fasting glucose and fasting lipid profile along with ALT and AST should be obtained.
- Additionally, guidelines from the ADA and Endocrine Society recommend using A1C, fasting glucose or oral glucose tolerance test to test for diabetes or pre-diabetes. The ADA notes that there are presently limited data supporting A1C for diagnosing diabetes in children and adolescents; however, they are continuing to recommend A1C at this time.<sup>3</sup>
- For patient convenience, some providers are obtaining non-fasting labs.
- Clinical judgment, local preferences and availability of testing should be used to help determine the timing of follow up of abnormal labs.
- Of note, some subspecialty clinics are screening for Vitamin D deficiency and insulin resistance by obtaining labs for Vitamin D and fasting insulin. The clinical utility and cost effectiveness of such testing is yet to be determined.
- Currently, there are no guidelines on when to start laboratory testing for patients with obesity. Based upon the patient's health risk, some experts may start screening patients at 2 years of age.

**Obesity-related conditions:** The following conditions are associated with obesity and should be considered for further work-up. Additional lab tests may be warranted if indicated by the patient's clinical condition.<sup>5</sup> In 2014, consensus statements from The Children's Hospital Association described the management of a number of these conditions.<sup>6,7</sup>

<p><b>Dermatologic:</b></p> <ul style="list-style-type: none"> <li>• Acanthosis nigricans</li> <li>• Hirsutism</li> <li>• Intertrigo</li> </ul>	<p><b>Endocrine:</b></p> <ul style="list-style-type: none"> <li>• Polycystic ovarian syndrome (PCOS)</li> <li>• Precocious puberty</li> <li>• Prediabetes: Impaired fasting glucose and/or impaired glucose tolerance as demonstrated during a GTT</li> <li>• Premature adrenarche</li> <li>• Type 2 Diabetes</li> </ul>	<p><b>Gastrointestinal:</b></p> <ul style="list-style-type: none"> <li>• Cholelithiasis</li> <li>• Constipation</li> <li>• GERD</li> <li>• Nonalcoholic fatty liver disease or steatohepatitis</li> </ul> <p><b>Neurologic:</b></p> <ul style="list-style-type: none"> <li>• Pseudotumor cerebri</li> </ul>	<p><b>Orthopedic:</b></p> <ul style="list-style-type: none"> <li>• Blount's Disease</li> <li>• Slipped capital femoral epiphysis (SCFE)</li> </ul> <p><b>Psychological/Behavioral Health:</b></p> <ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Binge eating disorder</li> <li>• Depression</li> <li>• Teasing/bullying</li> </ul>
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\*Based on behaviors, family history, review of systems, and physical exam, in addition to weight classification.

# Management and Treatment Stages for Patients with Overweight or Obesity

- Patients should start at the least intensive stage and advance through the stages based upon the response to treatment, age, BMI, health risks and motivation.
- An empathetic and empowering counseling style, such as motivational interviewing, should be employed to support patient and family behavior change.<sup>8,9</sup>
- Children age 2 – 5 who have obesity should not lose more than 1 pound/month; older children and adolescents with obesity should not lose more than an average of 2 pounds/week.

## Stage 1 Prevention Plus

**Where/By Whom:** Primary Care Office/Primary Care Provider

**What:** Planned follow-up themed visits (15-20 min) focusing on behaviors that resonate with the patient, family and provider. Consider partnering with dietician, social worker, athletic trainer or physical therapist for added support and counseling.

**Goals:** Positive behavior change regardless of change in BMI. Weight maintenance or a decrease in BMI velocity.<sup>4</sup>

**Follow-up:** Tailor to the patient and family motivation. Many experts recommend at least monthly follow-up visits. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 2.

## Stage 2 Structured Weight Management

**Where/By Whom:** Primary Care Office/Primary Care Provider with appropriate training

**What:** Same intervention as Stage 1 while including more intense support and structure to achieve healthy behavior change.

**Goals:** Positive behavior change. Weight maintenance or a decrease in BMI velocity.

**Follow-up:** Every 2 - 4 weeks as determined by the patient, family and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 3.

## Stage 3 Comprehensive Multi-disciplinary Intervention

**Where/By Whom:** Pediatric Weight Management Clinic/Multi-disciplinary Team

**What:** Increased intensity of behavior changes, frequency of visits, and specialists involved. Structured behavioral modification program, including food and activity monitoring, and development of short-term diet and physical activity goals.

**Goals:** Positive behavior change. Weight maintenance or a decrease in BMI velocity.

**Follow-up:** Weekly or at least every 2 – 4 weeks as determined by the patient, family, and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 4.

## Stage 4 Tertiary Care Intervention

**Where/By Whom:** Pediatric Weight Management Center/Providers with expertise in treating childhood obesity

**What:** Recommended for children with BMI  $\geq$  95% and significant comorbidities if unsuccessful with Stages 1 - 3. Also recommended for children  $>$  99% who have shown no improvement under Stage 3. Intensive diet and activity counseling with consideration of the use of medications and surgery.

**Goals:** Positive behavior change. Decrease in BMI.

**Follow-up:** Determine based upon patient's motivation and medical status.

### References

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