

# 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.

**Healthy Weight**  
(BMI 5-84%)

- Family History
- Review of Systems
- Physical Exam

**Risk Factors Absent**

### 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.

**Overweight**  
(BMI 85-94%)

**Augmented (obesity-specific)<sup>1</sup>**

- Family History
- Review of Systems
- Physical Exam

**Determine Health Risk Factors\***

### 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**  
(BMI ≥ 95%)

**Augmented (obesity-specific)<sup>1</sup>**

- Family History
- Review of Systems
- Physical Exam

**Risk Factors Present**

**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>

#### Dermatologic:

- Acanthosis nigricans
- Hirsutism
- Intertrigo

#### Endocrine:

- Polycystic ovarian syndrome (PCOS)
- Precocious puberty
- Prediabetes: Impaired fasting glucose and/or impaired glucose tolerance as demonstrated during a GTT
- Premature adrenarche
- Type 2 Diabetes

#### Gastrointestinal:

- Cholelithiasis
- Constipation
- GERD
- Nonalcoholic fatty liver disease or steatohepatitis

#### Neurologic:

- Pseudotumor cerebri

#### Orthopedic:

- Blount's Disease
- Slipped capital femoral epiphysis (SCFE)

#### Psychological/Behavioral Health:

- Anxiety
- Binge eating disorder
- Depression
- Teasing/bullying

\*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

1. Barlow S, Expert Committee. Expert committee recommendations regarding prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. *Pediatrics*. 2007;120(4):S164-S192.
2. US Department of Health and Human Services. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: Full report. 2012.
3. American Diabetes Association. Classification and diagnosis of diabetes. Sec.2. In Standards of Medical Care in Diabetes – 2015. *Diabetes Care* 2015;38(Suppl.1):S8-S16.
4. Taveras EM, Rifas-Shiman SL, Sherry B, et al. Crossing growth percentiles in infancy and risk of obesity in childhood. *Arch Pediatr Adolesc Med*. 2011;165(11):993-998.
5. Copeland K, Silverstein J, Moore K, et al. Management of newly diagnosed type 2 Diabetes Mellitus (T2DM) in children and adolescents. *Pediatrics*. 2013;131(2):364-382.
6. Estrada E, Eneli I, Hampf S, et al. Children's Hospital Association consensus statements for comorbidities of childhood obesity. *Child Obes*. 2014;10(4):304-317.
7. Haemer MA, Grow HM, Fernandez C, et al. Addressing prediabetes in childhood obesity treatment programs: Support from research and current practice. *Child Obes*. 2014;10(4):292-303.
8. Preventing weight bias: Helping without harming in clinical practice. Rudd Center for Food Policy and Obesity website. <http://biastoolkit.uconnruddcenter.org/>.
9. Resnicow K, McMaster F, Bocian A, et al. Motivational interviewing and dietary counseling for obesity in primary care: An RCT. *Pediatrics*. 2015;134(4): 649-657.