



Clinical Practice Guideline for the Management of Obesity in Children and Adolescents

The prevalence of obesity is reaching epidemic proportions. Obesity is a risk factor for Type 2 diabetes mellitus, hypertension, dyslipidemia, coronary artery disease, cerebrovascular disease, and osteoarthritis. While obesity is related to a positive energy balance (intake > output), other factors contribute to the increasing prevalence (environmental, cultural, and genetic). After reaching the age of six, an obese patient has a 50% chance of being obese in adulthood.⁴

Definitions:

- Obesity - BMI is 95th-98th percentile
- Overweight - BMI is 85th - 94th percentile
- Healthy Weight - BMI is 5th to 84th percentile
- Underweight - BMI is < 5th percentile
- $\geq 99^{\text{th}}$ percentile- not added at this time (until added to growth charts)

Initial Assessment for Risk Factors (at diagnosis):

- Accurately measure height and weight beginning at age 2.
- Calculate BMI: Body mass index (BMI) = [weight (lb) / height (in) /height (in)] x 703
- Relevant BMI calculation links:
http://www.cdc.gov/healthyweight/assessing/bmi/childrens_BMI/about_childrens_BMI.html
<http://apps.nccd.cdc.gov/dnpabmi/>
*Note: BMI is very sensitive to measurement errors, particularly height. Having a standard measurement protocol as well as training can improve accuracy. BMI calculation tools are also helpful (see links).
- Assess degree of obesity based on BMI
- Plot BMI on BMI growth chart
- Assess presence of associated morbidity:
 - Cardiac risk factors, weight-related orthopedic problems, skin disorders, and potential psychiatric sequelae
- Assessing cardiac risk factors:
 - Cigarette smoking, High blood pressure, High cholesterol and triglycerides, Presence of diabetes mellitus, Family history of premature coronary heart disease, Decreased physical activity
- Physical examination
 - Blood pressure determination – use appropriate sized cuff
 - Evidence of orthopedic problems (tibial torsion, bowed legs, slipped femoral epiphysis, symptoms of weight stress in joints)
 - Skin examination – heat rash, intertrigo, monilial dermatitis, acanthosis nigricans (may be marker for type 2 diabetes mellitus), acne
- Psychological assessment – depression, poor self-esteem, negative self-image, withdrawal from peers
 - Sensitivity and acceptance of the obese patient is important
 - Focus on the positive aspects of a treatment plan
- Family history of obesity, Type 2 diabetes, cardiovascular disease, early deaths from heart disease or stroke
- Assess Behavior and attitudes: diet behaviors, physical activity, readiness to change, possible success barriers
- *Not recommended:* skinfold thickness, waist circumference
- Assessment of sleep: disordered sleep patterns or the presence of sleep apnea

Laboratory Tests (Minimal Recommendation at Diagnosis):

- Fasting blood sugar
- Fasting lipid panel
- ALT and AST when child is at the 85th percentile (beginning at 10 years of age, then every 2 years)

Pediatric Obesity Management

• Prevention:

- Counsel about physical activity, sedentary behavior, meal patterns and food choices at every well care visit with all pediatric patients and their parents.
- Bottle and breast fed patients can be overfed – families should be counseled that they don't need to finish every bottle.
- Skim milk can replace whole milk after age two.
- Food should not be offered as a reward by parents and caregivers. Other reward such as a break from chores for 1 day, 1 TV show, 1 video game, 1 parent-child hour together, etc may be offered.
- Eat healthy family meals together 3 to 6 times per week (<30% calories derived from fat); limit food portions
- Limit TV time to less than 2 hours per day. Remove TV from child's bedroom.
- Encourage 60 minutes of physical activity and free play each day.
- Limit sugar-sweetened beverages.
- Recommend at least 5 servings of fruits and vegetables a day. A serving is ½ cup.
- Recommend a healthy breakfast every day, Evidence supports that obese children are more likely to skip breakfast or to eat smaller breakfasts than leaner children.
- Limit eating out, especially fast food.

• Treatment

- Reasonable weight-loss targets (by age and BMI)
 - BMI 85-94th Percentile, No Risks
2-5 Years: Maintain Weight Velocity
6-11 Years: Maintain Weight Velocity
12-18 Years: Maintain Weight Velocity. After linear growth is complete, maintain weight
 - BMI 85-94th Percentile, With Risks
2-5 Years: Decrease weight velocity or weight maintenance
6-11 Years: Decrease weight velocity or weight maintenance
12-18 Years: Decrease weight velocity or weight maintenance
 - BMI 95-98th Percentile
2-5 Years: Weight maintenance
6-11 Years: Weight Maintenance or gradual loss (1 pound per month)
12-18 Years: Weight loss (average is 2 pounds per week)
 - BMI ≥ 99th Percentile
2-5 Years: Gradual weight loss of up to one pound a month if BMI is very high (>21 or 22 mg/m²)
6-11 Years: Weight loss (average is 2 pounds per week)
12-18 Years: Weight loss (average is 2 pounds per week)
- Dietary management – reduced calorie, (this should be more specific about calories) balanced diet, low in fat, family oriented
- Encourage nutritional counseling by the provider.
- Activity prescription that is fun and recreational, and enjoyable for the patient. This may include lifestyle activities tailored to the relative strengths of the patient and family.

Treatment Goals and Monitoring (6 months):

- **Short-term goal:** 10% loss of initial body weight in 6 months
- Be physically active at least 1 hour per day
- Decrease screen time to 2 hr/day or fewer
- No sugar-sweetened beverages
- Proper, balanced meals and diet, including daily breakfast
- **Long-term goal:** Altered and sustained life style behaviors to provide further weight loss, maintain declined weight, and avoid additional weight gain and BMI < 85th percentile (although BMI between 85-94th percentile may be healthy in some children)

Additional interventions if initial goals not met:

- Drugs are not recommended for weight loss in children
- Weight loss surgery is not recommended in children
 - Referral to a specialist for further assessment in the case of severe obesity where medical risks are present

References:

- 1) Expert Committee Recommendations on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity, An Implementation Guide from the Childhood Obesity Action Network. Recommendations by the AMA, HRSA and CDC, January 25, 2007. Available online at www.ama-assn.org.
- 2) American Academy of Pediatrics. Policy Statement: Prevention of Pediatric Oversight and Obesity. Pediatrics, Volume 112 (2), August 2003.
- 3) Lau, D.C.W., Douketis, J.D., Morrison, K.M., Hramiak, I.M. , Sharma, A.M., and Ur, E. 2006 Canadian clinical practice guidelines on the management and prevention of obesity in adults and children [summary]. Obesity Canada Clinical Practice Guidelines Expert Panel, Canadian Medical Association Journal, Volume 176, Issue 8, April 2006.
- 4) Moran, R. Evaluation and Treatment of Childhood Obesity. American Family Physician, Published by the American Academy of Family Physicians, February 15, 1999.
- 5) Bartow SE and the Expert Committee, Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report. Pediatrics, Supplement, Volume 120, December 2007, p. S 164-S192.

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