

Assessment

Prevention

Breastfeeding

Promoting healthier weight begins with feeding decisions made before and at the time of the infant's birth. Explore with parents the benefits of exclusive and continued breastfeeding. Initiation and duration of breastfeeding are associated with reducing pediatric overweight.¹

Behaviors

Nutrition & physical activity habits

Incorporate assessment of nutrition and physical activity behaviors into routine clinical practice. A careful history will uncover opportunities to make improvements. Asking about nutrition and physical activity also raises awareness in the patient and the family of their importance for good health.²

Refer to Healthy Habits Questionnaire to assess activity and nutrition behaviors (pages 27-30).

Attitudes

Self-perception & motivation

Assess perception or concern about weight with patient and family. Establish patient's readiness for change and determine barriers, challenges, and successes.³ *Refer to national guidelines and Healthy Weight Change Plan (pages 31-33) for more detailed guidance.*

Family History

The guideline's algorithm summarizes aspects of the patient and family risk factors that are important for the assessment of overweight.

Review of Symptoms

Take a focused review of systems using the table at right and refer to national guidelines in toolkit (*page 35*).

Medical Risks

Physical exam

Signs to look for while conducting the physical exam are included in the table at the right. Assess annually blood pressure and body mass index (BMI).

Blood pressure

When measuring blood pressure be sure to use a cuff large enough to cover 80% of the arm and refer to Table 2 (page 39) in the Implementation Guide when diagnosing hypertension.³

SYMPTOMS & SIGNS OF CONDITIONS ASSOCIATED WITH OBESITY

SYMPTOMS
Anxiety, school avoidance, social isolation, sleepiness or wakefulness (Depression)
Tobacco use (Weight control technique)
Polyuria, polydipsia, unexpected weight loss (Type 2 diabetes mellitus)
Severe recurrent headaches (Pseudotumor cerebri)
Breathing difficulties (Shortness of breath, exercise intolerance, asthma, sleep apnea, hypoventilation syndrome, daytime sleepiness, nocturnal enuresis)
Abdominal pain (Gastroesophageal reflux, gallbladder disease, constipation)
Hip, knee, or foot pain (Slipped capital femoral epiphysis, musculoskeletal stress from weight)
Oligomenorrhea or amenorrhea (Polycystic ovary syndrome)

SIGNS
Poor linear growth (Hypothyroidism, Cushing's, Prader-Willi syndrome)
Dysmorphic features (Genetic disorders, including Prader-Willi syndrome)
Acanthosis nigricans (insulin resistance)
Hirsutism and excessive acne (Polycystic ovary syndrome)
Violaceous striae (Cushing's syndrome)
Papilledema, cranial nerve VI paralysis (Pseudotumor cerebri)
Tonsillar hypertrophy (Sleep apnea)
Abdominal tenderness (Gall bladder disease, GERD, NAFLD)
Hepatomegaly (Nonalcoholic fatty liver disease [NAFLD])
Undescended testicle (Prader-Willi syndrome)
Limited hip range of motion (Slipped capital femoral epiphysis)
Lower leg bowing (Blount's disease)

Adapted from National Initiative for Children's Healthcare Quality (NICHQ), Childhood Obesity Action Network (COAN). Available at <http://www.nichq.org/documents/coan-papers-and-publications/COANImplementationGuide62607FINAL.pdf> Accessed on April 21, 2014.

Barlow, S.E. and C. and the Expert (2007). "Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report." *Pediatrics* 120(Supplement_4):S164-192. Accessed on April 21, 2014.

Mental Health

Depressed children and children with eating disorders also require psychological evaluation and treatment. Without treatment, a weight-control program may be ineffective. *Bright Futures in Practice: Mental Health* (see the Resources section for more information) provides information on early recognition and intervention for specific mental health problems.



Laboratory Tests & Referrals

Laboratory tests and referrals should be determined by the degree of overweight, family history, and the results of the physical exam. Clinicians should recognize and monitor changes in obesity-related risk factors for adult chronic disease, including hypertension, dyslipidemia, hyperinsulinemia, impaired glucose tolerance, and symptoms of obstructive sleep apnea syndrome.³ Universal screening is now recommended for all children aged 9-11 and 17-21. (Refer to page 6)

Body Mass Index (BMI)³

Calculate and plot BMI periodically. BMI is the ratio of weight in kilograms to the square of height in meters. It is used to define overweight because it correlates well with more accurate measures of body fatness and is derived from commonly available data.

It is helpful for several members of the office team to know how to calculate patient BMI and to assign this role specifically for well-child visits.

Once BMI is calculated for patients, it is critical to assess and track the child's BMI over time. You will also find an online BMI calculator at <http://apps.nccd.cdc.gov/dnpabmi/>. If your practice has an Electronic Health Record that automatically calculates BMI percentile, it is important to document the weight category and discuss with patient and family.

A child with BMI between the 85th and 94th percentile for age and sex is considered overweight. BMI at or above the 95th percentile is considered obese. Newly-issued recommendations replace the phrase "at risk of overweight" with "overweight" and suggest the term "obese" rather than "overweight" for patients with a BMI \geq 95th percentile.² The negative impact of the term "obese"



may outweigh the benefits for some families. Use sensitivity and clinical judgment when using these terms in conversation with families.

Significant changes in BMI should also be recognized and addressed. Refer to page 8 for symptoms and signs of conditions associated with obesity.

Until the BMI 99 percentile is added to the growth charts, the Expert Committee recommends use of the following table to determine the 99 percentile cut points.²

BMI 99 PERCENTILE CUT POINTS (KG/M²)

AGE (YEARS)	BOYS	GIRLS
5	20.1	21.5
6	21.6	23.0
7	23.6	24.6
8	25.6	26.4
9	27.6	28.2
10	29.3	29.9
11	30.7	31.5
12	31.8	33.1
13	32.6	34.6
14	33.2	36.0
15	33.6	37.5
16	33.9	39.1
17	34.4	40.8

Measurement Technique Checklist⁴

Stature

- Use a calibrated vertical stadiometer with a right-angle headpiece
- Measure stature (height, not length) for children 2 years and older who are able to stand on their own*
- Child or adolescent is measured without shoes, outer clothing, or hair ornaments on calibrated stadiometer.
- The child is measured standing with heels, buttocks, and shoulders touching a flat upright surface
- Child or adolescent should stand on the stadiometer footplate with heels together, legs straight, arms at sides, shoulders relaxed
- Child looks straight ahead
- Bring the perpendicular headboard down to touch the crown of the head
- Measurer's eyes should be parallel with the headboard
- Read the measurement to the nearest 0.1 cm or 1/8 inch and record it on the chart
- Reposition and remeasure the individual
- Measures should agree within 1 cm or 1/4 inch

* The CDC recommends measuring stature for children 2 years and older who are able to stand on their own, calculating BMI and plotting it on the BMI-for-age chart. However, clinicians may choose to measure recumbent length and use the weight-for-length charts for children 2 to 3 years of age. Alternatively, the weight-for-stature charts can be used to plot stature from 77 to 121 centimeters. Whether the child's length or stature is measured determines which growth chart will be used. It is inappropriate to use a length measurement to calculate BMI-for-age. It is also inappropriate to use a stature measurement with either the length-for-age chart or the weight-for-length chart.

Weight

- Use a beam balance or electronic scale.
- A child older than 36 months is weighed standing on a scale
- Child must stand without assistance
- Child or adolescent is wearing lightweight undergarments, gown, or negligible outer clothing
- Child or adolescent stands on center of scale platform
- Read the measurement to the nearest 0.01 kg, 10 gm, or 1/2 oz. and record it on the chart
- Reposition and repeat measure
- Measures should agree within 0.1 kg, 100 gm, or 1/4 lb

