

OBESITY IN CHILDREN

I. DEFINITION:

- A. **Overweight** – Body weight exceeding the average for height and body build. The term “overweight” is defined by the Centers for Disease Control (CDC) and the American Medical Association as a BMI between 85th but less than 95th for ages 2 to 18 years and plotted on the age and sex appropriate growth chart.
- B. **Obesity** – An excess accumulation of body fat. Obesity in children and adolescents is defined by the CDC and American Medical Association as a BMI greater than the 95th percentile or BMI exceeding 30 (whichever is smaller) for ages 2 to 18 years and plotted on the age and sex appropriate growth chart.

II. ETIOLOGY AND EPIDEMIOLOGY:

- A. The fundamental cause of obesity is related to an equation that shows a positive intake of calories and a negative output of energy (lack of physical activity)
- B. 16.9% of adolescents between the ages of 12 and 19 years are at or above the 95th percentile for BMI. An additional 30.9% in this age group are overweight with a BMI at the 85th-95th percentile on the growth chart.
- C. Endogenous causes of obesity include hypothyroidism, hypothalamic dysfunction, growth hormone deficiency, Cushing syndrome, polycystic ovary syndrome, Prader-Willi syndrome, Turner syndrome, and psychiatric or psychological conditions.
- D. Exogenous factors are responsible for the dramatic increase in childhood obesity seen since the late 1970's. Increased consumption of high-fat, high-calorie foods combined with increased sedentary activities is the single most important cause of increased obesity among our youth.
- E. Cultural factors may also play a role in the development of obesity, i.e., belief that a heavier infant or child signals good health.
- F. If a child is obese early in life the likelihood of that child becoming an obese young adult rose from 50% for 5 year olds to 80% for 10-17 year olds.
- G. Children with obese parents and those whose mothers had diabetes mellitus during the child's gestation have an increased risk of obesity.
- H. Serious health consequences of childhood and adolescent obesity include arteriosclerosis, elevated blood pressure, cholesterol, and/or triglycerides, Type 2 diabetes, interference with respiratory function, orthopedic problems, gallstones, eating disorders, social isolation, and depression.

III. CLINICAL FEATURES:

- A. Overweight or obese as previously defined.
- B. May have elevated blood pressure.
- C. Short stature and obesity may signal endogenous causes of obesity; exogenous obesity typically demonstrates tall stature for age and, often, early puberty in girls.

IV. MANAGEMENT PLAN:

- A. Obese children and adolescents (BMI \geq 95%) should be referred to APRN or private physician for evaluation and treatment.
- B. Offer overweight and obese teens one of the Weight Management handouts based on their stage of change.
- C. Refer obese infants and children enrolled in WIC program to nutritionist.

REFERENCES:

- Polk, SL "Definitions and Demographics of Obesity: Diagnosis and Risk Factors Anesthesiology Clinics of North America 2005 vol 23 pp 397-403
- Herban-Hill, N; Sullivan, LM Management Guidelines for Nurse Practitioners Working with Children and Adolescents 2nd ed 2004 FA Davis, Co pp 418-421.
- Graham, MV; Uphold, CR Clinical Guidelines in Child Health 3rd ed 2003 Barmarrae Books pp 107-112
- Greydanus, DE; Patel, DR; Pratt, HD Essential Adolescent Medicine 2006 McGraw-Hill pp.652-662
- "Expert Committee Recommendations on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity", June 6, 2007
www.ama-assn.org/ama1/pub/upload/mm/433/ped_obesity_recs.pdf
- MD Consult: Bradford, N., Overweight and Obesity in Children and Adolescents, Primary Care: Clinics in Office Practice, vol 36, Issue 2 (June 2009) www.mdconsult.com (*Access to website is available through your local Advanced Practice Nurse)
- MD Consult: Overweight and Obesity in Children and Adolescents, Nathan D. Bradford, M.D., Primary Care: Clinics in Office Practice (June 2009).
- American Academy of Pediatrics & Bright Futures: Nutrition, 3rd ed, 2011.
- Bright Futures: Nutrition, 3rd ed.2011. American Academy of Pediatrics. Pgs 55 and 196.
- MCH Weight Management handouts: Teens Are You Worried About Your Weight, 10 Steps for Watching Your Waistline – Rev. 2013

APPENDIX I

**APPROXIMATE SERVING SIZES
FOR AGE & DAILY GOALS**

Rule of thumb: A serving size for a child is usually 1 tablespoon for every year of age.

To reduce risks of choking:

- Always watch children during meals and snacks.
- Avoid the following foods until 4 years of age:
Nuts, seeds, and chunks of peanut butter; hot dogs and chunks of meat and cheese; whole grapes and raisins; hard candies, popcorn, chewing gum; and raw vegetables

FOODS	Age 2 (1,000 Kcal) Daily Goal / Amount	Age 3-4 (1,000-1,600 Kcal) Daily Goal / Amount
Grains (Make half the grains whole – For ages 2-4, aim for at least 1 ½ to 2 ½ oz. of whole grains a day) 1 oz of whole grains = 1 slice of whole wheat bread, 1 cup of whole grain cereal, and ½ cup of cooked brown rice, whole grain cereal, or whole grain pasta.	3 ounces	3-5 ounces
Vegetables Aim for a variety each week: <ul style="list-style-type: none"> • Eat dark green vegetables like broccoli, spinach, and other dark leafy greens. • Include orange vegetables like carrots and sweet potatoes. • Eat dry beans and peas like pinto beans, kidney beans, and lentils. 	1 cup	1-2 cups
Fruits <ul style="list-style-type: none"> • Eat a variety of whole fruits. • Choose fresh, frozen, canned, and dried fruits. Limit fruit juice to 6 ounces each day.	1 cup	1-1 ½ cups
Milk group <ul style="list-style-type: none"> • Choose reduced fat, low-fat or fat free milk, yogurt, cheese, and other milk products. • 1 cup of milk = 1 cup of yogurt, 1 ½ oz natural cheese or 2 oz processed cheese. • If children don't or can't drink milk, choose lactose-free products or other calcium sources such as fortified foods and beverages. 	2 cups	2 -3 cups
Meat & Beans <ul style="list-style-type: none"> • Choose low-fat or lean meats & poultry. • Bake it, broil it, or grill it. • Choose more fish, beans, and peas. • 1 ounce of protein = 1 oz of meat, poultry or fish, 1 egg, ¼ cup dry beans. 	2 oz equivalent	2-5 oz equivalent

SOURCES:
 ChooseMyPlate.gov
 OSDH WIC Service, Feeding Your Child, ODH No. P354
 OSDH WIC Service Nutrition Education Protocols

APPENDIX 2 Nutrition Counseling

Infant:

1. Encourage breastfeeding. Breast milk provides complete nutrition from birth to six months of age. Water, juice and other foods are not necessary for breastfed babies less than 6 months of age. Breastfed infants typically nurse 8-12 times a day during the first 4 months; 6-8 times a day from 4-6 months of age; and 4-6 times a day from 6-12 months of age. It's best to feed only breast milk or formula for the first 4 months.
2. Formula-fed infants typically drink 18-36 ounces of formula a day from 0-4 months of age, taking 26-30 ounces at 4 months, 30-45 ounces a day from 4-6 months of age, and 24-32 ounces a day from 6-12 months of age.
3. Infants are ready for solid foods when they can sit supported with good head and neck control, open mouths when they see a spoon, and are able to keep food in their mouths and swallow it. At 4-6 months, may begin to introduce cereals, starting with plain rice cereal (1 tsp. mixed with 4-5 tsp. of breast milk or formula, gradually increasing to 1-2 Tbsp. per feeding over the next couple of months), then try barley and oatmeal. Always introduce one new food at a time, wait 3-5 days between each new food, and watch for possible food allergies.
4. At 6-7 months, begin to offer one-ingredient foods without sugar, salt, or spices, such as pureed or strained meats, vegetables, or fruits. Limit added fats, dinners, and desserts. Do not add sugar, salt, or spices to foods. Offer breast milk, formula or water from a cup and avoid or limit sweetened drinks (sodas, fruit drinks, etc.).
5. Pasteurized fruit juice may be offered with meals or snacks after solid foods have been introduced (after 6 months), but not sipped throughout the day or as a means to pacify an infant or child. Always offer juice from a cup and limit to 4 oz per day. Avoid citrus juices.
6. Do not use infant feeders, multi-hole nipples or enlarged nipples.
7. Encourage caregivers to offer food in response to hunger, not as a pacifier. Avoid force feeding. Stop feeding when infant shows disinterest (turning head away from bottle or closing mouth).
8. Avoid foods that can cause choking or allergic reactions during the first year (hotdogs or sausages, strawberries, raisins, grapes, nuts & chunks of peanut butter, hard foods, popcorn, seeds, raw vegetables, hard candy, chewing gum, marshmallows, honey or foods made with honey, cow's milk, orange and citrus juices, egg whites, fish or shellfish).
9. Clean gums & teeth with a clean cloth or infant toothbrush with eruption of the first tooth. See Fluoride G/O.
10. Offer a variety of foods. 1 to 2 Tbsp is a serving at about 12 months. Begin weaning from the bottle to a cup for good nutrition and dental health.
11. 400 IU of vitamin D is recommended for all infants beginning the first few days of life. If taking less than 32 ounces of formula a day, a supplement of vitamin D is recommended.

Toddler/Childhood (1 through 4 years):

1. Appropriate beverages and amounts:
 - a. Suggest water or milk with meals.
 - b. Offer water or beverages low in added sugars for snacks.
 - c. Offer reduced-fat, low-fat, or fat-free milk after 2 years of age. The AAP recommends that children who drink less than 1 liter per day of vitamin D fortified milk receive a vitamin D supplement of 400 IU/day. Since 1 liter of milk is more than the recommended 2-3 cups of milk per day for pre-school children, most children will require a vitamin D supplement.
 - d. Avoid tea, sweetened or unsweetened, to help to prevent anemia.
2. Management of solid feeding:
 - a. Snacks are important to satisfy nutritional needs. Encourage regular snack times.
 - b. Use fresh fruits and vegetables frequently (fresh in season, frozen, and canned are often less expensive – rinsing canned vegetables lowers the sodium content).
 - c. Check the nutrition facts label and choose foods that are low in saturated fats, trans fats, and sodium.

- d. Use less solid fats like butter, margarine, shortening, and lard, as well as foods containing these fats.
 - e. Use less fried foods
 - f. Offer foods low in added sugars.
 - g. Use appropriate serving sizes (see Appendix 1).
3. Food Jags:
- a. There will be times when a child will only want one food to eat.
 - b. Counsel parent to offer a variety of healthy foods at meal and snack times.
 - c. Children will outgrow these food jags.
4. Snack foods from ChoseMyPlate:
- a. Fruits - encourage pieces of fresh fruits for children over two years of age. Fruit packed in its own juice may also be used.
 - b. High protein foods – offer plain meats (not fried), hard cooked eggs, quartered sandwiches.
 - c. Milk – offer small amounts of thin sliced cheese, plain yogurt, cottage cheese. Choose low fat versions of milk and milk-based foods for children over 24 months of age.
 - d. Grains – Offer whole grain breads, toast, crackers, graham crackers, ready to eat cereals and rolls.
 - e. Space snacks a couple of hours before the next meal and a couple of hours after the last meal.
 - f. Encourage parents to coordinate meals and snacks with other caretakers.
5. Screen Time/Activities
- a. Limit TV and screen time to *less than* 2 hours daily, as recommended by the American Academy of Pediatrics.
 - b. Avoid having the TV and other computer gaming systems on during mealtimes.
 - c. Avoid having a TV and other computer gaming systems in a child's bedroom.
 - d. Encourage parents and caregivers to be a role model and set a good example by limiting screen time and being active (engaging in active play time or family fun activities that get parents and children moving – like games, family walks, walking the dog, or swimming).

Sources:

OSDH WIC Service: Feed me, I'm yours!, ODH Form P 450

OSDH WIC Service: Feeding Your Toddler, ODH Form P-209 (next reprinting)

<http://www.ChooseMyPlate.gov/preschoolers.html>

Michelle Battista, B. P. (2009). Managing the Risk of Childhood Overweight and Obesity in Primary Care Practice. *Curr Probl Pediatr Adolesc Health Care* , 146-165.

Rakel: Textbook of Family Medicine, 8th edition. 2011. Saunders.

