



Indian Health Service: Division of Diabetes Treatment and Prevention

Promoting a Healthy Weight in Children and Youth *Clinical Strategies*

Recommendations and Best Practices

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Clinical Strategies: Summary of Recommendations

Provide BMI screening and assessment for all children through age 18

- Measure height and weight at every well-child appointment for children up to age five, and at every appointment for children age five and older.
- Calculate BMI in patient's chart and age and sex-specific BMI percentile (BMI-for-age) and plot on a growth chart.
- Track BMI trends for individual patients.
- Use appropriate "V" codes to document BMI screening and assessment.
 - V85.5X codes are used to document BMI values up to age 18.
 - V85.X codes are used to document BMI values for adults.
- Educate all providers on the use of BMI-for-age as a tool for identifying overweight and obese patients.
- Use web resources available for training on BMI measurement.
- Encourage all pediatric health care providers to receive training on child and adolescent BMI interpretation.

Promote exclusive breastfeeding for infants

- Breastfeeding education: Conduct small group education classes or provide individual education during the prenatal visit. Include benefits of breastfeeding, prenatal breast care, common problems and how to overcome them.
 - Discuss breastfeeding at the first and subsequent prenatal visits.
 - If possible, provide one-on-one counseling for breastfeeding support; this has been shown effective in increasing breastfeeding initiation and duration rates.
 - Ask "Have you thought about how to feed your baby?"
 - Encourage mothers to initiate breastfeeding within one hour of delivery.
 - Refer to lactation specialist, if available.
- After delivery:
 - Encourage mothers to "room-in" with their infants.
 - Refer to lactation specialist, if available.
- Postpartum period:
 - Promote peer support or support and advice on breastfeeding from mothers who have breastfed and received training as peer counselors, given via home visit or telephone.

- Conduct follow-up appointments with patients; contact postpartum mothers to offer help and information on feeding choices.
- Assist nursing mothers with practical and realistic strategies to promote continued breastfeeding even when they are separated from their infants by work, school, or other circumstances.
- Collaborate with Women, Infants, and Children (WIC) programs and other programs that have expertise in breastfeeding support.
- Provide patients with resources for breastfeeding support, including contact numbers for national, state, and IHS breastfeeding hotlines.
- Establish hospital policies to promote breastfeeding; encourage IHS direct hospitals to work toward “Baby-Friendly Hospital” designation.
- Offer breastfeeding education to providers; providers trained in breastfeeding interventions have higher rates of breastfeeding among patients whom they have educated and encouraged.
- Establish workplace policies to promote breastfeeding, and disseminate to the community as model policies.
- Designate personnel or programs to ensure supportive equipment needs (breast pumps) of breastfeeding mothers are addressed in the community through health care facilities, local WIC programs, or local businesses.
- Use Clinical Reporting System (CRS) to monitor breastfeeding rates for 2, 6, 9 and 12-month old infants.
- If parents/caregivers choose to bottle feed, then providers should provide appropriate education on feeding in response to hunger cues and avoidance of overfeeding.

Implement universal patient health education regarding healthy eating behavior and increased physical activity to prevent and treat childhood overweight.

- Limit juice and other sugar sweetened drinks to no more than 4 ounces daily (2-4 ounces for toddlers), or less than one small cup per day.
- Replace one can of soda with water every day, with the goal of eventually replacing all soda with water.
- Encourage water as the only in-between meal drink.
- Eat five (5) servings or helpings of fruits and vegetables a day. (A serving equals 1T of fruit or vegetable per year of age up to age six.)
- Avoid using food as a reward for good behavior.

- Eat together as a family for meals as much as possible.
- Discourage TV viewing during mealtimes.
- Learn about calorie and fat content of foods consumed.
- Play or get active every day, at least 30-60 minutes every day.
- Reduce TV and screen time (e.g. video games, computers) to no more than two hours every day.
- Avoid putting TVs in children’s bedrooms.
- Follow the “5-2-1-0” model. Make sure to do the following *every day*:
 - 5: Eat 5 servings of fruits and vegetables each day.
 - 2: Limit TV and other screen time to no more than 2 hours a day.
 - 1: Engage in 1 hour of physical activity.
 - 0: Limit sugar-sweetened beverages—none is best.

Other Strategies

- Encourage parents to wean infants from the bottle to the cup at or before 12 months of age.
- Emphasize to parents that infants should not be offered food other than breast milk or infant formula until they can sit with support and have good control of the head and neck, at about 4 to 6 months of age.
- Explain that no nutritional advantage is known, but disadvantages may exist, in introducing supplemental foods before their baby is developmentally ready, at about 4– 6 months of age.
- Emphasize that if the infant does not like a new food, he/she should not be forced to eat it. The food can be offered at a later time. It may take 15 to 20 attempts before an infant accepts a particular food.
- Tell parents children 1 to 3 years of age need 4– 6 servings per day of fruits and vegetables as well as smaller serving sizes. See the table in *Appendix G: Serving Size Portions*.
- Instruct parents to serve children 1 to 2 years of age whole milk. For older children, reduced-fat (2 percent), low-fat (1 percent), or fat-free (skim) milk is acceptable.
- Teach the concept of “everyday” and “sometimes” foods. Everyday foods come from the food groups on the food guide pyramid. “Sometimes foods” are okay to eat but only sometimes or in small amounts, like chips, candy, fried foods, and desserts. (See the USDA “My Pyramid” website <http://www.mypyramid.gov/mypyramid/index.aspx> for more information.)

- Encourage parents and children not to skip meals.
- Serve as a role model for healthful eating and regular physical activity and encourage parents and caregivers to serve as role models.
- Serve as an advocate in your local community, especially schools, to promote a healthier environment, including healthier school menus and school vending machine policies as well as regular physical activity for all school children. Encourage parents and caregivers to advocate as well.
- Advocate for increased outdoor playtime for school-aged children.
- Record patient education in CRS; use “Cheat Sheets” for data entry.

For patients who are already overweight or obese, assess for complications and co-morbidities, provide counseling, and identify and refer patients to resources that promote weight-reduction, weight management, nutrition, and physical activity.

- Assess overweight patients for complications and co-morbidities associated with childhood overweight.
- Provide culturally-competent counseling for children and families to work on specific goals for behavior change, which should include:
 - Reducing family intake of sugar sweetened drinks and fast food.
 - Parental monitoring and modeling of positive eating behaviors.
 - Increasing physical activity.
- When counseling children and families, follow these guidelines:
 - Develop a clear but *culturally competent* message about your concern for the child’s weight and the potential for positive change.

Note: Cultural competence is the ability of individuals to consider ethnic/racial, and cultural aspects in all dimensions of their work relative to obesity prevention and population health programs and interventions. Cultural competence is optimized when programs involve clients or recipients in all phases of a program, from planning to implementation, monitoring, and evaluation.¹

- Avoid using the term “obesity;” use the term “overweight.”
- Encourage and empathize rather than criticize.
- Acknowledge patient feelings.
- Answer questions without showing judgment; e.g. use terms such as “healthier food” instead of terms like “bad food.”
- Promote permanent lifestyle changes, not short-term diets.

¹ IOM, *Progress in Preventing Childhood Obesity: How do we measure up?* p.434.

- Urge them to set simple, concrete goals, which lead to a sense of success.
- Involve family and all caregivers in the treatment process.
- Use motivational interviewing techniques.
- Be sensitive to and appreciate the food and nutrition traditions as well as the cultural beliefs of the tribe(s) of the service unit towards food and why certain foods may be valued.
- Locate and document appropriate community resources for referrals.
 - Complete Community Resources Template with contact information. See Appendix D.
 - Provide training to providers on using community resources.
- Refer obese and overweight children and their caregivers to Registered Dietitians (RDs), if possible.
- Adopt a team approach — involve all qualified staff, RNs, RDs, health educators, physical therapists, wellness staff, and behavioral health specialists.

Advocate for and promote healthful eating and regular physical activity in the larger community.

Strategies

- Assess school-based wellness policies in place in your community — especially for children in grades K-8.
- Using the Community Resources Template:
 - Assess school and community resources available as adjuncts to clinical resources for overweight and obese children.
 - Assess and advocate for community venues and programs for physical activity that can be promoted to children and families.
- Assess and advocate for increased community availability of healthier food choices, and develop culturally competent and realistic recommendations for families seeking positive lifestyle changes.

Introduction: The Epidemic of Childhood Overweight

In the past 25 years, the prevalence of overweight among children in the United States has steadily increased. Since the 1970s, rates of childhood overweight have more than doubled for preschool children aged 2-5 years, and have tripled among children aged 6-11 years. Approximately nine million American children over age six are overweight.

BMI

Body Mass Index, or BMI, is a measure of a person's weight in relationship to their height. In children, BMI typically decreases from birth to about age six and then *increases* steadily until adulthood as a part of normal growth and development. The adult cutoffs of 25 for overweight and 30 for obesity are not meaningful in children.

BMI: Children

The American Academy of Pediatrics has recently issued guidelines regarding the prevention, assessment, and treatment of children who are obese and overweight. According to the AAP, children with a BMI at or above the 95 percentile should be considered "obese" and children with a BMI at or above 85%, but less than 95%, should be considered "overweight". These terms replace the previous categories of "overweight" for children with a BMI at or above the 95 percentile and "at risk of overweight" for children with a BMI between the 85-94 percentiles.² In 1999-2000, the prevalence of obesity (previously defined as overweight) was 10.4% among all 2-5-year-olds.³ The rates are even higher among preschool-aged children from low-income households.⁴

BMI: American Indian and Alaska Native Children

Rates of overweight among American Indian and Alaska Native (AI/AN) children exceed these high national averages. Among American Indian children aged two to five, overweight/obesity rates have been reported at 12 to 39 percent.⁵ A recent study conducted by the Aberdeen Area Indian Health Service found that at five years of age, 47% of boys and 41% of girls had a BMI at or above the 85 percentile, and 24% of the children had a BMI at or above the 95 percentile.⁶ These higher rates persist into later childhood as well. Among AI children ages 6 to 19, the rate of overweight

² Barlow SE, and the Expert Committee, Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report *Pediatrics* 2007 120:S164-S192.

³ Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and Trends in Overweight Among US Children and Adolescents, 1999-2000. *JAMA* 2002;288:1728-1732.

⁴ Mei Z, Scanlon KS, Grummer-Strawn LM, Freedman DS, Yip R, Trowbridge FL. Increasing prevalence of overweight among US low-income preschool children: the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance, 1983 to 1995. *Pediatrics* 1998;101(1):E12.

⁵ Indian Health Service. *IHS Report to Congress: Obesity Prevention and Control for American Indians and Alaska Natives* April 2001; 9.

⁶ Zephier E, Himes JH, Story M, Zhou X. Increasing Prevalences of Overweight and Obesity in Northern Plains American Indian Children. *Arch Pediatr Adolesc Med* 2006;160:34-39.

and obesity has been estimated at 39%, compared to 15% for all races combined.⁷ A study of schoolchildren in seven American Indian communities found that 28.6% of AI children ages 6-11 had a BMI above the 95 percentile.⁸

Government Performance Results Act (GPRA)

The Indian Health Service (IHS) created a GPRA measure to assess the rate of overweight and obesity among its patient population through the measurement of BMI of all active clinical patients. In FY 2006, this measure changed to assessing the percentage of children ages 2-5 with a BMI at or above the 95 percentile. This change was made in order to assess the scope of the problem of childhood overweight among young children in the IHS patient population. Data from the Clinical Reporting System (CRS) for FY 2007 show that these rates are quite high, with Area rates ranging from 20% to 30%, and an overall national rate of 24%.

Results of Childhood Overweight

Children who are overweight tend to show related signs of morbidity, which may include elevated blood pressure, cholesterol, triglyceride, and insulin levels.⁹ In one population-based sample, approximately 60 percent of obese children aged five to ten had at least one cardiovascular disease (CVD) risk factor, such as elevated total cholesterol, triglycerides, insulin, or blood pressure, and 25 percent had two or more CVD risk factors.¹⁰ Overweight children also are at risk for psychosocial difficulties arising from being obese, including shame, self-blame, and low self-esteem, all of which may impair academic and social functioning and carry into adulthood.¹¹

One major result of rising childhood overweight rates is the growing prevalence of type 2 diabetes among children. In some populations, type 2 diabetes is now the dominant form of diabetes in children and adolescents.¹² For children born in the United States in 2000, the lifetime risk of being diagnosed with type 2 diabetes at some point in their lives has been estimated at 30 percent for boys and 40 percent for girls, *if* rates of overweight stabilize. The estimated lifetime risk for developing type 2 diabetes is even higher among some ethnic minority groups (including AI/ANs) at birth and at all ages.¹³ In case reports from the 1990s, type 2 diabetes accounted for

⁷ Story M, Evans M, Fabsitz RR, Clay TE, Holy Rock B, Broussard B. The epidemic of obesity in American Indian communities and the need for childhood obesity-prevention programs. *Am J Clin Nutr* 1999;69(4 Suppl):747S-754S.

⁸ Caballero B, Himes JH, Lohman T, Davis SM, Stevens J, Evans M, Going S, Pablo J; Pathways Study Research Group. Body composition and overweight prevalence in 1704 schoolchildren from 7 American Indian communities. *Am J Clin Nutr* 2003;78(2):308-12.

⁹ Dietz WH. Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics* 1998;101:518-525.

¹⁰ Freedman DS, Dietz WH, Srinivasan SR, Berenson GS. The relation of overweight to cardiovascular risk factors among children and adolescents: The Bogalusa Heart Study. *Pediatrics* 1999;103(6 Pt 1):1175-1182.

¹¹ Schwartz MB, Puhl R. Childhood obesity: A societal problem to solve. *Obes Rev* 2003;4(1):57-71.

¹² Deckelbaum RJ, Williams CL. Childhood obesity: the health issue. *Obes Res* 2001;9 (Suppl 4):239S-243S.

¹³ Narayan KM, Boyle JP, Thompson TJ, Sorensen SW, Williamson DF. Lifetime risk for diabetes mellitus in the United States. *JAMA* 2003;290(14):1884-1890.

8-45 percent of all new childhood cases of diabetes. Prior to the 1990s, type 2 diabetes accounted for less than 4% of new cases.¹⁴

Excess weight gain in early childhood also has significant effects on later health, including a high risk of being overweight or obese in adulthood, and a higher risk of cardiovascular disease and some cancers.^{15 16}

Among adults, obesity is associated with significant health risks, including high blood pressure, high cholesterol, asthma, arthritis, coronary heart disease, stroke, colon cancer, post-menopausal breast cancer, endometrial cancer, gall bladder disease, and sleep apnea. The overweight epidemic among children may also reduce overall adult life expectancy because it increases lifetime risk for type 2 diabetes and other serious chronic disease conditions.¹⁷ This epidemic has the potential to reverse gains that have been achieved in reducing mortality rates in the past century. As a result, this may be the first generation of Americans to have a shorter life expectancy than their parents.

The epidemic of overweight among children has been recognized as a public health crisis. In 2005, the Institute of Medicine published a report on obesity among children calling for a broad public health response: “Just as broad-based approaches have been used to address other public health concerns — including automobile safety and tobacco use — obesity prevention should be public health in action at its broadest and most inclusive level.”

“Prevention of obesity in children and youth should be a national public health priority.”¹⁸

¹⁴ Fagot-Campagna A, Pettitt DJ, Engelgau MM, Burrows NR, Geiss LS, Valdez R, Beckles GL, Saaddine J, Gregg EW, Williamson DF, Narayan KM. Type 2 diabetes among North American children and adolescents: an epidemiologic review and a public health perspective. *J Pediatr* 2000;136(5):664–672.

¹⁵ Pi-Sunyer FX. Health implications of obesity. *Am J Clin Nutr* 1991;53(6 Suppl):1595S-1603S.

¹⁶ Power C, Lake JK, Cole TJ. Measurement and long-term health risks of child and adolescent fatness. *Int J Obes Relat Metab Disord* 1997;21:507-526.

¹⁷ Fontaine KR, Redden DT, Wang C, Westfall AO, Allison DB. Years of life lost due to obesity. *JAMA* 2002;289(2):187–193; Narayan et al 2003.

¹⁸ IOM, *Preventing Childhood Obesity: Health in the Balance*. 2005.

Recommendations

The Indian Health Service (IHS) has a GPRA measure targeting childhood overweight and obesity. The annual goal is to reduce the percentage of children ages 2-5 with a BMI at or above the 95 percentile.

The IHS will adopt a multi-faceted approach to fighting childhood overweight, with the ultimate goal of reducing the overall rate of children with a BMI at or above the 95 percentile in the active user population from the 2007 rate of 24%.

Although obesity is difficult to treat and data on effective ways to prevent and treat overweight in AI/AN communities are limited, providers may still adopt the “best available” evidence. The following five recommendations are based on the best available clinical evidence regarding the prevention and treatment of childhood overweight.

Recommendation 1: Body Mass Index (BMI) Assessment

Provide BMI screening and assessment for all children through age 18.

Recommendation 2: Breastfeeding

Promote exclusive breastfeeding for infants.

Recommendation 3: Patient Health Education

Implement universal patient health education regarding healthy eating behavior and increased physical activity to prevent and treat childhood overweight.

Recommendation 4: Counseling and referrals

For patients who are already overweight or obese, assess for complications and co-morbidities, provide counseling, and identify and refer patients to resources that promote weight-reduction, weight management, nutrition, and physical activity.

Recommendation 5: Community Education

Advocate for and promote healthful eating and regular physical activity in the larger community.

Recommendation 1: Body Mass Index (BMI) Assessment

Provide BMI Screening and Assessment for All Children through Age 18

The American Academy of Pediatrics (AAP), along with most other recommending bodies, endorse universal screening using body mass index (BMI) and use of age-specific BMI percentiles to identify overweight and obese children.

BMI is interpreted differently for children than adults. Also called “BMI-for-age,” this measurement is plotted on gender-specific growth charts and evaluated according to the following criteria:

- **Underweight:** BMI-for-age < 5 percentile
- **Normal:** BMI-for-age 5th to < 85 percentile
- **Overweight:** BMI-for-age 85 percentile to < 95 percentile
- **Obese:** BMI-for-age \geq 95 percentile¹⁹

During early childhood, BMI typically decreases from birth until about age six years and then increases steadily until adulthood as part of normal growth and development. The adult cutoffs of 25 for overweight and 30 for obesity therefore are not meaningful in children

The CDC has charts available (see “resources” below) to plot BMI-for-age for children, age 2-20. Infants under age two should be measured for length; providers should use the sex appropriate “weight-for-length” CDC charts, which cover children from birth to 36 months. At age 24 months and older, if the child can stand unassisted and follow directions, stature should be measured and plotted on the BMI-for-age chart for children (2 to 20 years).

Strategies

- Measure height and weight at every well-child appointment for children up to age five, and at every appointment for children age five and older.
- Calculate BMI in patient’s chart and age and sex-specific BMI percentile (BMI-for-age) and plot on a growth chart.
- Track BMI trends for individual patients.
- Use appropriate “V” codes to document BMI screening and assessment.
 - V85.5X codes are used to document BMI values up to age 18
 - V85.X codes are used to document BMI values for adults
- Educate all providers on the use of BMI-for-age as a tool for identifying overweight, obese, and at-risk patients.
- Use web resources available for training on BMI measurement.
- Encourage *all* pediatric health care providers to receive training on child and adolescent BMI interpretation.

¹⁹ Barlow SE, and the Expert Committee, Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report *Pediatrics* 2007 120:S164-S192.

Resources

CDC (Centers for Disease Control): BMI for age charts:

http://www.cdc.gov/nchs/about/major/nhanes/growthcharts/clinical_charts.htm

CDC training modules for using growth charts:

<http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/>

WIC (Women, Infant, and Children) Website (BMI growth charts):

http://www.nal.usda.gov/wicworks/Learning_Center/WIC_growthcharts.html

WHO (World Health Organization) Growth Charts:

<http://www.who.int/childgrowth/en/>

American Dietetic Association certificate training course on Childhood and Adolescent weight management:

<http://www.cdrnet.org/wtmgmt/childhood.htm>

The Indian Health Service pediatric height and weight study website has training tools, including:

- Training guide for measuring BMI in children and adolescents
- Online training test
- Continuing education unit module

<http://www.ihs.gov/medicalprograms/anthropometrics/>

*Additional resources can be found in *Appendix B: Resources* in this document. <http://www.ihs.gov/medicalprograms/anthropometrics/>

Recommendation 2: Breastfeeding

Promote Exclusive Breastfeeding for Infants

Numerous studies have shown a positive association between breastfeeding and lower rates of overweight among children. A number of studies show that the prevalence of overweight in childhood is lower among young children (3-6 years of age) who were breastfed compared to children who were never breastfed.²⁰ The protective effect also seems to persist into older childhood. One study found that among older children (ages 9-14) the risk of becoming overweight was lower for children who were

²⁰ Armstrong J, Reilly J; Child Health Information Team. Breastfeeding and lowering the risk of childhood obesity. *Lancet* 2002;359:2003–2004; Gillman MW, Rifas-Shiman SL, Camargo CA, Berkey CS, Frazier AL, Rockett HR, Field AE, Colditz GA. Risk of overweight among adolescents who were breastfed as infants. *JAMA* 2001;285(19):2461–2467; Hediger ML, Overpeck MD, Kuczmarski RJ, Ruan WJ. Association between infant breastfeeding and overweight in young children. *JAMA* 2001;285(19):2453–2460; Von Kries R, Koletzko B, Sauerwalk T, von Mutius E, Barnette D, Grunert V, von Voos H. Breast feeding and obesity: cross sectional study. *BMJ* 1999;319:147–150.

exclusively or mostly breastfed when compared to children who were fed mostly formula. It also found that older children who were breastfed at least seven months were also 20 percent less likely to be overweight than children who were breastfed for at least three months.²¹ A recent study also suggests that there is a dose-dependent effect on overweight; for each month of breastfeeding, there was an associated 4% decrease in the risk of the child becoming overweight.²²

Note: Breastfeeding promotion is a prevention-based intervention that has the greatest potential to reduce rates of overweight among young children.

Breastfed infants also have lower rates of asthma and diabetes. Research suggests that exclusive breastfeeding for at least the first four months may be preventive for asthma and other allergies in children who are susceptible to environmental influences that trigger the onset of the disease.²³ Breastfeeding has also been correlated with a lower prevalence of type 2 diabetes in adult Indians. One study found that both non-pregnant and pregnant breastfed Pima Indians studied had lower plasma glucose concentrations at ages 20-24 years.²⁴

The *Healthy People 2010* objective is to have at least 75 percent of mothers breastfeeding during the early postpartum period, and 50 and 25 percent breastfeeding at six months and one year, respectively. In 1998, 64 percent of mothers breastfed their infants during the early postpartum period. 29 and 16 percent of mothers breastfed their infants at six months and one year, respectively.²⁵ In 2007, two new objectives on exclusive breastfeeding were added to *Healthy People 2010*. The new objectives are to increase the proportion of mothers who exclusively breastfeed their infants through age 3 months to 60% and through age 6 months to 25%. Rates for exclusive breastfeeding through ages 3 months and 6 months among infants born in 2004 were 30% and 11%, respectively.²⁶

Breastfeeding Promotion Strategies

Breastfeeding Education

- Conduct small group education classes or provide individual education during the prenatal visit. Include benefits of breastfeeding, prenatal breast care, common problems and how to overcome them.

²¹ Gillman et al 2001.

²² Harder T, Bergmann R, Kallischnigg G, Plagemann A. Duration of breastfeeding and risk of overweight: A meta-analysis. *Am J Epidemiol* 2005;162(5):397-403.

²³ Bjorksten B, Kjellman N-IM. Perinatal environmental factors influencing the development of allergy. *Clin Exper Allergy* 1990;20 Suppl(3):3-8.

²⁴ Pettitt DJ, Roumain J, Hanson R, et al. Lower glucose in pregnant and nonpregnant Pima Indians who were breast fed as infants. *Diabetologia* 1995;38 (suppl 1):A61.

²⁵ Healthy People 2010.

²⁶ CDC. Breastfeeding Trends and Updated National Health Objectives for Exclusive Breastfeeding - United States, Birth Years 2000-2004. *MMWR* 2007;56(30):760-763

- Discuss breastfeeding at the first and subsequent prenatal visits.
- If possible, provide one-on-one counseling for breastfeeding support; this has been shown effective in increasing breastfeeding initiation and duration rates.
- Ask “Have you thought about how to feed your baby?”
- Encourage mothers to initiate breastfeeding within one hour of delivery.
- Refer to lactation specialist, if available.
- After delivery:
 - Encourage mothers to “room-in” with their infants.
 - Refer to lactation specialist, if available.
- Postpartum period:
 - Promote peer support, or support and advice on breastfeeding from mothers who have breastfed and received training as peer counselors, given via home visit or telephone.
 - Conduct follow-up appointments with patients; contact postpartum mothers to offer help and information on feeding choices.
 - Assist nursing mothers with practical and realistic strategies to promote continued breastfeeding even when they are separated from their infants by work, school, or other circumstances.
- Collaborate with WIC programs and other programs that have expertise in breastfeeding support.
- Provide patients with resources for breastfeeding support, including contact numbers for national, state, and IHS breastfeeding hotlines.
- Establish hospital policies to promote breastfeeding; encourage IHS direct hospitals to work toward “Baby-Friendly Hospital” designation.
- Offer breastfeeding education to providers; providers trained in breastfeeding interventions have higher rates of breastfeeding among patients whom they have educated and encouraged.²⁷
- Establish workplace policies to promote breastfeeding, and disseminate to the community as model policies.
- Designate personnel or programs to ensure supportive equipment needs (breast pumps) of breastfeeding mothers are addressed in the community through health care facilities, local WIC programs, or local businesses.
- Use Clinical Reporting System (CRS) to monitor breastfeeding rates for 2, 6, 9 and 12-month old infants.

²⁷ Humenick SS, Hill PD, Spiegelberg PL. Breastfeeding and health professional encouragement. *J Hum Lact* 1998;14(4):305-310.

According to the Centers for Disease Control and Prevention (CDC), the combination of breastfeeding education, peer support and policy changes in the hospital and workplace positively impact breastfeeding incidence and duration rates.

Breastfeeding education was reported to be effective in increasing rates in women from different income and ethnic groups, while peer support programs were particularly effective among low-income women.²⁸

The World Health Organization (WHO) promotes “*Ten Steps to Successful Breastfeeding*”: a list of hospital and maternity care policies and practices that can be adapted to clinical settings. These ten steps are part of the Baby-Friendly Hospital Initiative.

WHO “Ten Steps to Successful Breastfeeding”

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within one hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food and drink other than breast milk, unless medically indicated.
7. Practice rooming-in; allow mothers and infants to remain together— 24 hours a day.
8. Encourage unrestricted breastfeeding (on demand).
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.

Note: Several studies have shown that pacifier use has a protective effect on the incidence of SIDS.²⁹ The American Academy of Pediatrics recommends the use of pacifiers when placing infants to sleep for the first year of life, but delaying this practice until one month of age in breastfed infants.³⁰

²⁸ CDC Resource Guide for Nutrition and Physical Activity Interventions to Prevent Obesity and other Chronic Diseases <http://www.cdc.gov/nccdphp/dnpa/>

²⁹ Hauck FR, Omojokun OO, Siadaty MS. Do pacifiers reduce the risk of sudden infant death syndrome? A meta-analysis. *Pediatrics* 2005;147:32-7.

³⁰ Hagan JF, Shaw JS, Duncan PM, eds. 2008. *Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents*, Third Edition. Elk Grove Village, IL: American Academy of Pediatrics, p. 280.

10. Foster the establishment of breast-feeding support groups and refer mothers to them on discharge from the hospital or clinic.³¹

Breastfeeding Resources

IHS Maternal and Child Health Breastfeeding Home Page:

<http://www.ihs.gov/MedicalPrograms/MCH/M/bf.cfm>

Indian Health Service Division of Diabetes Best Practices on Breastfeeding:

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsBPList>

IHS Breastfeeding Patient Health Education Protocols:

http://www.ihs.gov/NonMedicalPrograms/HealthEd/Peptopics/bf_2007.pdf

*Additional breastfeeding resources can be found in *Appendix E: Community Resources Template* in this document. Resources and recommendations for parents who choose to bottle feed can be found in *Appendix G: Bottle Feeding*, in this document.

Recommendation 3: Patient Health Education

Implementation of Universal Patient Health Education

Implement universal patient health education regarding healthy eating behavior and increased physical activity to prevent and treat childhood overweight. Three behavioral factors most commonly associated with overweight among children are as follows:

- Long hours of television viewing
- Consumption of sweetened drinks (e.g. soda)
- Consumption of fast food

One study tracking children over a 19 month period found that each additional serving of a sugar-sweetened beverage consumed daily was associated with a 60% increase in the risk of being overweight after controlling for other potentially confounding variables.³² Excessive sweetened drink consumption (>12 oz/day) among children ages 6-13 years old is associated with lower milk consumption, lower protein and calcium intake, higher daily energy intake, and greater weight gain.³³ National cross-sectional surveys have shown a positive association between the

³¹ World Health Organization *Ten Steps to Successful Breastfeeding*.

http://www.euro.who.int/nutrition/Infant/20020808_1; also <http://www.unicef.org/newsline/tensteps.htm>

³² Ludwig DS, Peterson KE, Gortmaker SL. Relation between drinks and childhood obesity: a prospective, observational analysis *Lancet* 2001;357(9255):505-508.

³³ Mrdjenovic G. Nutritional and energetic consequences of sweetened drink consumption in 6 to 13-year-old children. *J Pediatrics* 2003;142(6):604-610.

number of hours children watch television and prevalence of overweight.³⁴ The *2001 Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity* recommended that children watch no more than two hours of television a day.³⁵

For AI/AN children, these environmental and behavioral factors appear to be a significant contributor to childhood overweight. As the 2001 *IHS Report to Congress: Obesity Prevention and Control for American Indians and Alaska Natives* stated, “most AI/AN populations developed obesity only in the past few generations, a change probably related to the relative abundance of modern foods, accompanied by relatively rapid changes from an active to a sedentary lifestyle.” It also notes that “...the recent proliferation of fast-food restaurants and convenience food stores on and near reservations also encourages the consumption of foods high in fat and sugar.”³⁶

One study documented that Navajo adolescents consumed sugared carbonated beverages at more than twice the national average.³⁷ Another study found one group of overweight AI/AN children consumed 402 more calories per day than children who were not overweight.³⁸ Other researchers assessed physical activity in Pima and Caucasian children, and found that Pima children spent more time watching television and were less involved in sports than Caucasian children.³⁹

An understanding of social determinants of health may also help to explain and provide solutions for the epidemic of childhood overweight in AI/AN communities. AI/AN children and their families experience many social, economic, and health disparities and are more likely to live in environments with insufficient encouragement and reinforcement for health-promoting behaviors.

The recent IOM report: *Progress in Preventing Childhood Obesity: How Do We Measure Up?* points to the need for a broader understanding of systemic disadvantage in reaching high-risk populations, including AI/ANs.

³⁴ Crespo CJ, Smit E, Troiano RP, Bartlett SJ, Macera CA, Andersen RE. Television watching, energy intake, and obesity in US children: results from the Third National Health and Nutrition Examination Survey, 1988–1994. *Arch Pediatr Adolesc Med* 2001;155(3):360–365; Dennison BA, Erb TA, Jenkins PL. Television viewing and television in bedroom associated with overweight risk among low-income preschool children. *Pediatrics* 2002;109(6):1028–35.

³⁵ Surgeon General's Call to Action <http://www.surgeongeneral.gov/topics/obesity/>

³⁶ IHS Report to Congress 2001.

³⁷ Gilbert TJ, Percy CA, Sugarman JR, Benson L, Percy C. Obesity among Navajo adolescents. Relationship to dietary intake and blood pressure. *Am J Dis Child* 1992;146:289-95.

³⁸ Harvey-Berino J, Wellman A, Hood V, Rourke J, Secker-Walker R. Preventing obesity in American Indian children: when to begin. *J Am Diet Assoc* 2000;100:564-6.

³⁹ Fontvieille AM, Kriska A, Ravussin E. Decreased physical activity in Pima Indian compared with Caucasian children. *Int J Obes Relat Metab Disord* 1993;17:445-52.

Note: Helping at-risk children and youth balance their energy intakes and their energy expenditures requires an understanding of the complex and interacting influences of the social, economic, and built environments and the adverse environmental conditions that low-income and racially/ethnically diverse populations encounter as they regularly attempt to obtain affordable foods, beverages, and meals that contribute to a healthful diet.⁴⁰

Strategies

For children, the role of parents and caregivers is particularly important. Family and parental involvement is critical.⁴¹

Encourage all families to do the following:

- Limit juice and other sweetened drinks to no more than 4 ounces daily (2-4 ounces for toddlers), or less than one small cup per day.
- Replace one can of soda with water every day, with the goal of eventually replacing all soda with water.
- Encourage water as the only in-between meal drink.
- Eat five servings or helpings of fruits and vegetables a day. (A serving equals 1T of fruit or vegetable per year of age up to age 6.)
- Avoid using food as a reward for good behavior.
- Eat meals together as a family whenever possible.
- Discourage TV viewing during mealtimes.
- Learn about calorie and fat content of foods consumed.
- Play or get active every day, at least 30-60 minutes every day.
- Reduce TV and screen time (e.g. video games, computers) to no more than 2 hours every day.
- Avoid putting TVs in children's bedrooms.
- Follow the "5-2-1-0" model. Make sure to do the following *every day*:
 - 5: Eat 5 servings of fruits and vegetables each day.
 - 2: Limit TV and other screen time to no more than 2 hours a day.
 - 1: Engage in 1 hour of physical activity.
 - 0: Limit sugar-sweetened beverages—none is best.

⁴⁰ IOM, *Progress in Preventing Childhood Obesity: How do we measure up?* p.75.

⁴¹ Barlow SE, Dietz WH. Obesity evaluation and treatment: expert committee recommendations. The Maternal and Child Health Bureau, Health Resources and Services Administration and the Department of Health and Human Services. *Pediatrics* 1998;102:E29.

Other Strategies for Providers

- Encourage parents to wean infants from the bottle to the cup at or before 12 months of age.
- Emphasize to parents that infants should not be offered food other than breast milk or infant formula until they can sit with support and have good control of the head and neck, at about 4 to 6 months.
- Explain that no nutritional advantage is known, but disadvantages may exist, in introducing supplemental foods before their baby is developmentally ready, at about 4 to 6 months.⁴²
- Emphasize that if the infant does not like a new food, she should not be forced to eat it. The food can be offered at a later time. It may take 15 to 20 attempts before an infant accepts a particular food.⁴³
- Tell parents children 1 to 3 years of age need 4– 6 servings per day of fruits and vegetables as well as smaller serving sizes. See the table in *Appendix H: Serving Size Portions*.
- Instruct parents to serve children 1 to 2 years of age whole milk. For older children, reduced-fat (2 percent), low-fat (1 percent), or fat-free (skim) milk is acceptable.⁴⁴
- Teach the concept of “everyday” and “sometimes” foods. Everyday foods come from the food groups on the food guide pyramid. “Sometimes foods” are okay to eat but only sometimes or in small amounts, like chips, candy, fried foods, and desserts.
- Encourage parents and children not to skip meals.
- Serve as a role model for healthful eating and regular physical activity and encourage parents and other caregivers to serve as role models.⁴⁵
- Serve as an advocate in your community, especially schools, to promote a healthier environment, including healthier school menus and school vending machine policies as well as regular physical activity for all school children. Encourage parents and caregivers to advocate as well.
- Advocate for increased outdoor playtime for school-aged children.
- Record patient education in CRS; use “Cheat Sheets” for data entry.

⁴² Kleinman RE, ed. *Pediatric Nutrition Handbook*, 4th ed. Elk Grove Village, IL: American Academy of Pediatrics; 1998.

⁴³ Satter E. *Your Child's Weight: Helping Without Harming, Birth through Adolescence*. Kelcy Press; 2005.

⁴⁴ Kleinman RE, ed. *Pediatric Nutrition Handbook*, 4th ed. Elk Grove Village, IL: American Academy of Pediatrics, 1998.

⁴⁵ IOM, *Preventing Childhood Obesity: Health in the Balance*, p. 223.

Resources

USDA “My Pyramid for Kids” website

<http://www.mypyramid.gov/kids/>

USDA “My Pyramid” website

<http://www.mypyramid.gov/mypyramid/index.aspx>

State of Alaska WIC Program

<http://www.hss.state.ak.us/dpa/programs/nutri/WIC/WICEducation.htm>

Gerber Web site

<http://www.gerber.com/feedingplan>

Bright Futures materials on nutrition and physical activity

<http://www.brightfutures.org/nutrition/index.html>

<http://www.brightfutures.org/physicalactivity/pdf/>

We Can! Web site

<http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan>

* Additional Resources can be found in *Appendix B: Resources* in this document

Recommendation 4: Counseling and Referrals

Patients Already Overweight or Obese

For patients who are already overweight or obese, assess for complications and comorbidities, provide counseling, and identify and refer patients to resources that promote weight-reduction, weight management, nutrition, and physical activity.

Behavior change is the mainstay of obesity treatment. A study of successful weight-control strategies concluded that “providers who can use counseling techniques to motivate families, guide parents in consistent limit setting and reinforcement techniques, and identify and address family conflicts that interfere with change will likely be most successful in helping families.”⁴⁶ Providers are encouraged to seek additional training to increase their proficiency in behavioral counseling.

Providers should identify resources in their communities that can assist children and families in combating overweight. Examples of such resources are community health programs and Women, Infants and Children’s (WIC) nutrition programs available through state agencies. This document provides a template for providers to use to document the resources available to facilities and their patients. (See *Appendix B: Resources*)

⁴⁶ Barlow S, Dietz W. Management of Child and Adolescent Obesity: Summary and Recommendations Based on Reports From Pediatricians, Pediatric Nurse Practitioners, and Registered Dietitians. *Pediatrics* 2002;110(1):236-238.

Strategies

- Assess overweight patients for complications and co-morbidities associated with childhood overweight.
- Provide *culturally-competent* counseling for children and families to work on specific goals for behavior change.

Note: Cultural competence is the ability of individuals to consider ethnic/racial, and cultural aspects in all dimensions of their work relative to obesity prevention and population health programs and interventions. Cultural competence is optimized when programs involve clients or recipients in all phases of a program, from planning to implementation, monitoring, and evaluation.

Goals for behavior change should include the following:

- Reducing family intake of sugar sweetened drinks and fast food.
- Parental monitoring and modeling of positive eating behaviors.
- Increasing physical activity.
- When counseling children and families:
 - Develop a clear but culturally competent message about your concern for the child’s weight and the potential for positive change.
 - Avoid using the term “obesity;” use the term “overweight.”
 - Encourage and empathize rather than criticize.
 - Acknowledge patient feelings.
 - Answer questions without showing judgment; e.g. use terms like “healthier food” instead of terms like “bad food.”
 - Promote permanent lifestyle changes, not short-term diets.
 - Urge them to set simple, concrete goals, which lead to sense of success.
- Involve family and all caregivers in the treatment process.
- Use motivational interviewing techniques.
- Learn more about the attitudes of the tribe(s) of the service unit towards food and why certain foods may be valued.
- Locate and document appropriate community resources for referrals.
 - Complete Community Resources Template with contact information. (See Appendix E)
 - Provide training to providers on using community resources.
- Refer obese and overweight children and their caregivers to Registered Dietitians (RDs) if possible.
- Adopt a team approach—involve all qualified staff, RNs, RDs, health educators, physical therapists, wellness staff, and behavioral health specialists.

Resources

- Community Resources Template (See *Appendix E*)

Recommendation 5: Community Education

Promote and Advocate Healthful Eating

Advocate for and promote healthful eating and regular physical activity in the larger community.

The epidemic of childhood obesity is not only a Native American issue, but a national and international issue as well. The children we serve live in communities in the United States that are influenced by media, marketing, and other external factors that influence their choices on a daily basis. While our clinical focus is individual and family change, communities can support and enhance these positive changes.

Strategies

- Assess school-based wellness policies in place in your community - especially for children in grades K-8.
- Using the community resource form:
 - Assess school and community resources available as adjuncts to clinical resources for overweight and obese children.
 - Assess and advocate for community venues and programs for physical activity that can be promoted to children and families.
- Assess and advocate for increased community availability of healthier food choices, and develop culturally competent and realistic recommendations for families seeking positive lifestyle changes.

Other Strategies

- Increase choices of healthier foods in the lunch room, vending machines, in school stores, in academic incentives, rewards and fund-raising.
- Create FOOD-FREE ZONES within walking distance of schools.
- Minimize food advertising and teach media literacy to help kids and parents become informed consumers.
- Prohibit schools from displaying advertisements promoting junk foods, including those on vending machines.
- Require a closed campus during lunch in elementary and middle schools.
- Prohibit schools from using junk food coupons as a reward for students.
- Require school food service managers to be well trained in food preparation techniques to provide school meals that are lower in saturated fat, sodium, and

sugar and to offer healthy food choices that include lean meats, fruits, vegetables, whole grains and low-fat or non-fat dairy foods.

- Require the classroom, the school dining room, and other school activities to provide clear and consistent messages that explain and reinforce healthy eating and physical activity habits.
- Encourage PTA/PTO, student groups and clubs to choose activities and fundraisers that do not focus on food.
- Encourage PTA/PTO to coordinate one health-related event per year that includes parents and teachers.
- Encourage the use of locally-grown produce in schools.
- Work with schools in helping students participate in at least 60 minutes of moderate intensity physical activity most days of the week.
- Work with school systems to help address issues related to time available, space and facilities available for physical activity and physical education.
- Explore relationships with sporting goods companies and the Sporting Goods Association to provide sports equipment packages at discounted rates that enable schools to increase the amount and range of physical activity available to students.
- Secure in-kind donations of sports equipment for schools with limited resources.
- Encourage schools, K– 12, to have certified physical education specialists.
- Increase the percentage of students who walk, wheel or ride a bike for transportation.
- Encourage parents, students and school employees to participate in a Walk to School day.
- Have a mile walking track with a goal for each student to walk at least one mile per week.
- Encourage the availability of biking lanes on reservation roads.
- Make sure bike racks are accessible on school campuses.
- Provide access to intramural interscholastic sports programs and other physical clubs, programs and lessons: in-school and after-school.
- Allow after-school use of school facilities and community centers for physical fitness activities.

Community Education Resources

CDC Division of Adolescent and School Health key strategies to prevent obesity at schools Web site: <http://www.cdc.gov/healthyyouth/keystrategies/index.htm>

CDC Healthy Youth and schools Web site:
<http://www.cdc.gov/HealthyYouth/index.htm>

IHS Best Practice for Indian Health Diabetes Programs on School Health:
<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsBPList>

National Diabetes Education Program's American Indian/Alaska Native Work Group's Youth Campaign: *Move It!*:
<http://ndep.nih.gov/diabetes/AIAN/moveit.htm>

U.S. Department of Agriculture Team Nutrition Changing the Scene– Improving the School Nutrition Environment toolkit:
<http://teamnnutrition.usda.gov/Resources/changing.html>

Best Practices Benchmarks

AAP/AAFP

The American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP) endorse universal screening using body mass index (BMI) and use of BMI growth curves to identify obese and overweight children.

Institute of Medicine (IOM)

Preventing Childhood Obesity: Health in the Balance 2005

The IOM committee argued that although the clinical evidence for the effectiveness of obesity reduction programs is limited, the epidemic of childhood obesity is a problem that requires immediate intervention with the best available methods: “Because the obesity epidemic is a serious public health problem calling for immediate reductions in obesity prevalence and in its health and social consequences, the committee believed strongly that actions should be based on the best available evidence—as opposed to waiting for the best possible evidence. However, there is an obligation to accumulate appropriate evidence not only to justify a course of action but to assess whether it has made a difference.”

Recommendation: Health Care

“Pediatricians, family physicians, nurses, and other clinicians should engage in the prevention of childhood obesity. Health-care professional organizations, insurers, and accrediting groups should support individual and population-based obesity prevention efforts.

Implementation of Recommendation

- Health care professionals should routinely track body mass index, offer relevant evidence-based counseling and guidance, serve as role models, and provide leadership in their communities for obesity prevention efforts.
- Professional organizations should disseminate evidence-based clinical guidance and establish programs on obesity prevention.
- Training programs and certifying entities should require obesity prevention knowledge and skills in their curricula and examinations.
- Insurers and accrediting organizations should provide incentives for maintaining healthy body weight and include screening and obesity preventive services in routine clinical practice and quality assessment measures.”

Recommendation: Home

“Parents (defined broadly to include primary caregivers) have a profound influence on their children by fostering certain values and attitudes, by rewarding or reinforcing specific behaviors, and by serving as role models. A child’s health and well-being are thus enhanced by a home environment with engaged and skillful parenting that

models, values, and encourages healthful eating habits and a physically active lifestyle. Parents play a fundamental role as household policy makers. They make daily decisions on recreational opportunities, food availability at home, and children's allowances; they determine the setting for foods eaten in the home; and they implement countless other rules and policies that influence the extent to which various members of the family engage in healthful eating and physical activity. Older children and youth, meanwhile, have responsibilities to be aware of their own eating habits and activity patterns and to engage in health-promoting behaviors. Parents should promote healthful eating behaviors and regular physical activity for their children.

Implementation of Recommendation

- Choose exclusive breastfeeding as the method for feeding infants for the first four to six months of life.
- Provide healthful food and beverage choices for children by carefully considering nutrient quality and energy density.
- Assist and educate children in making healthful decisions regarding types of foods and beverages to consume, how often, and in what portion size.
- Encourage and support regular physical activity.
- Limit children's television viewing and other recreational screen time to less than two hours per day.
- Discuss weight status with their child's health-care provider and monitor age- and gender-specific BMI percentile.
- Serve as positive role models for their children regarding eating and physical-activity behaviors."

United States Preventive Services Task Force (USPSTF) Recommendation

"The USPSTF concludes that the evidence is insufficient to recommend for or against routine screening for overweight in children and adolescents as a means to prevent adverse health outcomes."

Rating: I Recommendation

Rationale: Approximately 15 percent of children and adolescents aged 6-19 years are overweight and are at risk for diabetes, elevated blood lipids, increased blood pressure and their sequelae, as well as slipped capital femoral epiphysis, steatohepatitis, sleep apnea, and psychosocial problems. The USPSTF found fair evidence that body mass index (BMI) is a reasonable measure for identifying children and adolescents who are overweight or are at risk for becoming overweight. There is fair evidence that overweight adolescents and children aged eight years and older are at increased risk for becoming obese adults. The USPSTF found insufficient evidence for the effectiveness of behavioral counseling or other preventive interventions with

overweight children and adolescents that can be conducted in primary care settings or to which primary care clinicians can make referrals. There is insufficient evidence to ascertain the magnitude of the potential harms of screening or prevention and treatment interventions. The USPSTF was, therefore, unable to determine the balance between potential benefits and harms for the routine screening of children and adolescents for overweight. These ratings are available online at:

<http://www.ahrq.gov/clinic/3rduspstf/ratings.htm#irec>

However, the USPSTF also attached a commentary in which it mentions the following:

“The USPSTF adheres strongly to a policy of making recommendations (either for or against delivery of preventive services) only in the presence of sufficient evidence of adequate quality. The USPSTF cannot make a recommendation for or against screening even for a practice that may be supported by expert consensus or less rigorous evidence. It is important to note that the USPSTF did not recommend that primary care clinicians not weigh and measure children or ignore parental concerns about weight.”

CRS and GPRA: Childhood Weight Control and Breastfeeding Measures

Childhood Weight Control Measure (GPRA)

Denominator: GPRA: Active Clinical Patients 2-5 for whom a BMI could be calculated, broken out by age groups.

Numerators

1. Patients with BMI 85-94%.
2. **GPRA:** Patients with a BMI 95% and up.
3. Patients with a BMI \geq 85%.

Definitions

1. **Age:** All patients who are between the ages of two and five at the beginning of the Report Period and who do not turn age six during the Report Period are included in this measure. Age in the age groups is calculated based on the date of the most current BMI found. For example, a patient may be two at the beginning of the time period but is three at the time of the most current BMI found. That patient will fall into the Age 3 group.

2. **BMI:** CRS looks for the most recent BMI in the Report Period. CRS calculates BMI at the time the report is run, using NHANES II. A height and weight must be taken on the same day any time during the Report Period. The BMI values for this measure are reported differently than in Obesity Assessment since this age group is children ages 2-5, whose BMI values are age-dependent. The BMI values are categorized as *Overweight* for patients with a BMI between 85-94% and *Obese* for patients with a BMI of 95%. Patients whose BMI either is greater or less than the Data Check Limit range will not be included in the report counts for Overweight or Obese. The following table provides an example of BMI Standard Reference Data.

BMI STANDARD REFERENCE DATA					
Low-High Ages	Sex	BMI		BMI	
		\geq (Overwt.)	\geq (Obese)	Data Check BMI >	Limits BMI <
2-2	Male	17.7	18.7	36.8	7.2
	Female	17.5	18.6	37.0	7.1
3-3	Male	17.1	18.0	35.6	7.1
	Female	17.0	18.1	35.4	6.8
4-4	Male	16.8	17.8	36.2	7.0
	Female	16.7	18.1	36.0	6.9
5-5	Male	16.9	18.1	36.0	6.9
	Female	16.9	18.5	39.2	6.8

Performance Measure Description: In FY 2009, this measure is eliminated as an annual measure and is changed to a long term measure and has no annual target.

Patient List: Patients ages 2-5 with current BMI.

Breastfeeding Measure

Note: Breastfeeding rates are calculated by CRS but as of FY 2007 breastfeeding is not a GPRA measure.

Denominator

Active Clinical patients who are 45-394 days old.

Numerators

1. Patients who have been screened for infant feeding choice.

A. Patients who, at the age of two months (45-89 days) old, were either exclusively or mostly breastfed.

B. Patients who, at the age of six months (165-209 days) old, were either exclusively or mostly breastfed.

C. Patients who, at the age of nine months (255-299 days) old, were either exclusively or mostly breastfed.

D. Patients who, at the age of one year (350-425 days), were either exclusively or mostly breastfed.

Definitions

Infant Feeding Choice: The documented feeding choice from the file *V Infant Feeding Choice* that is closest to the exact age that is being assessed will be used. For example, if a patient was assessed at 45 days old as $\frac{1}{2}$ breastfed and $\frac{1}{2}$ formula and assessed again at 65 days old as mostly breastfed, the mostly breastfed value will be used since it is closer to the exact age of 2 months (i.e. 60 days). Another example is a patient who was assessed at 67 days as mostly breastfed and again at 80 days as mostly formula. In this case, the 67 days value of mostly breastfed will be used.

The other exact ages are 180 days for 6 months, 270 days for 9 months, and 365 days for 1 year. In order to be included in the age-specific screening numerators, the patient must have been screened at the specific age range. For example, if a patient was screened at 6 months and was exclusively breastfeeding but was not screened at 2 months, then the patient will only be counted in the 6 months numerator. Another documented as exclusively breastfed at 60 days old, but changed to $\frac{1}{2}$ breastfed and $\frac{1}{2}$ formula fed at 80 days old, the exclusively breastfed value will be used.

Measure Description: Establish the baseline rate of infants aged 45-89 days old who are either exclusively or mostly breastfed during the Report Period.

Breastfeeding Only (Exclusively Breastfed): Formula supplementing fewer than 2 times per week.

Mostly breastfed: Formula supplementing 3 or more times per week, but otherwise mostly breastfeeding.

Patient List: Patients 45-394 days old, with infant feeding choice value, if any.

Resource and Contact Information

Community Resource Directory

This directory can also be found in Appendix E for more convenient printing.

NUTRITION EDUCATION

Hospital

Classes offered:

Clinic:

Medical Center

Individual training:

Meal planning

Group classes:

WIC SERVICES

LOCAL WIC Office:

Other WIC OFFICES 1-800-800-1850

Spanish

Other

DIET

Weight Management (Group Health Patients)

Weight Talk (telephonic counseling)

Shapedown

TOPS (Take Off Pounds Sensibly)

www.tops.org

Weight Watchers 1-800-651-6000

www.weightwatchers.com

COUNSELING

Dr.

Dr.

GROUP SUPPORT

Hospital

Free day and evening meetings

Other Group Support

EXERCISE/RECREATIONAL CLUBS

Fitness Club

Address

Gold's Gym

Address

Jazzercise

Address

Pool

Address

YMCA

Address

Fitness

Address

OTHER

Resource

Address

Resource

Address

Resource

Address

COMMUNITY HEALTH RESOURCES

Resource

Address

Memorial Hospital

Address

RESOURCES-WEB SITES

www.familydoctor.org Family doctor education

www.eatright.org The American Dietetic Association

www.jdrf.org Juvenile Diabetes Research Foundation

www.cdc.gov Centers for Disease Control Public Health Resource

www.ghc.org My Group Health patient website

Appendix A: References for Selected Research

Childhood Weight Control Research

Barlow SE, and the Expert Committee, Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report *Pediatrics* 2007 120: S164-S192
http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.shtml

Barlow SE, Dietz WH. Management of child and adolescent obesity: Summary and recommendations based on reports from pediatricians, pediatric nurse practitioners and registered dietitians. *Pediatrics* 2002;110:236-238.

Barlow SE, Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations. *Pediatrics* 1998;102(3):E29.
www.pediatrics.org/cgi/content/full/102/3/e29

Berg-Smith SM, Steven VJ, Brown KM, Van Horn L, Gernhofer N, Peters E., et al. A brief motivational intervention to improve dietary adherence in adolescents. *Health Education Research Theory & Practices* 1999;14:399-410.

Berkey CS, Rockett HR, Gillman MJ. One-year changes in activity and inactivity among 10 to 15 year old boys and girls: Relationship to changes in body mass index. *Pediatrics* 2003;111:836-843.

Berkowitz RI, Wadden TA, Tershakovec AM, Cronquist JL. Behavior therapy and sibutramine for the treatment of adolescent obesity: a randomized controlled trial. *JAMA* 2003;289(14):1805-12.

Caballero B, Himes JH, Lohman T, Davis SM, Stevens J, Evans M, Going S, Pablo J; Pathways Study Research Group. Body composition and overweight prevalence in 1704 schoolchildren from 7 American Indian communities. *Am J Clin Nutr* 2003; 78(2):308-12.

Casey VA, Dwyer JT, Coleman KA, Valadian I. Body mass index from childhood to middle age: a 50-y follow-up. *Am J Clin Nutr* 1992;56(1):14-8.

Clarke WR, Lauer RM. Does childhood obesity track into adulthood? *Crit Rev Food Sci Nutr* 1993;33(4-5):423-30.

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http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.shtml

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<http://www.nihcm.org/finalweb/obesitybrief2006.pdf>
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Appendix B: Resources

BMI and Childhood Weight Control

IHS AI/AN Pediatric Height and Weight Study website

<http://www.ihs.gov/medicalprograms/anthropometrics/index.cfm>

IHS Health Promotion and Disease Prevention Programs, Focus Area: Obesity

<http://www.ihs.gov/NonMedicalPrograms/HPDP/index.cfm?module=focus&option=obesity&newquery=1>

Action for Healthy Kids

www.actionforhealthykids.org/

America on the Move

<http://aom.americaonthemove.org/site/c.hiJRK0PFJpH/b.1310797/k.BF62/Home.htm>

Blubber Buster (site on overweight in children, including information for parents)

<http://www.blubberbuster.com>

CDC: 5 A Day Fruits and Vegetables

<http://www.cdc.gov/nccdphp/dnpa/5ADay/index.htm>

CDC: BMI for children and teens, 2008

<http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>

CDC: Defining overweight and obesity. 2008

<http://www.cdc.gov/nccdphp/dnpa/obesity/defining.htm>

CDC: Growth Charts: <http://www.cdc.gov/growthcharts/>

CDC: CATCH for Improved Physical Activity and Diet in Elementary School (Univ. Texas)

<http://www.cdc.gov/prc/tested-interventions/adoptable-interventions/catch-improved-physical-activity-diet-elementary-school.htm>

CDC: Physical Activity: <http://www.cdc.gov/nccdphp/dnpa/physical/index.htm>

CDC: Planet Health for Obesity Reduction in School Children (Harvard University)

<http://www.cdc.gov/prc/selected-interventions/adoptable-interventions/planet-health-obesity-reduction-school-children.htm>

CDC: Resource Guide for Nutrition and Physical Activity Interventions to Prevent Obesity and Other Chronic Diseases

http://www.cdc.gov/nccdphp/dnpa/pdf/guidance_document_3_2003.pdf

Envision New Mexico (Initiative for Child Healthcare Quality)
<http://www.envisionnm.org/> Provider toolkits, posters, references, and information on community outreach pilot projects. Also includes information on the “Get More Energy” project.

Includes provider flipchart on “General Treatment Principles”:
<http://www.envisionnm.org/files/flipchart/flipchart3a.pdf>

Kids on the Block Program on Combating Childhood Obesity and Overweight
<http://www.kotb.com/kob2.htg/obesity.htm>

NICHQ (National Initiative for Children’s Healthcare Quality) Join their Childhood Obesity Action Network to gain access to their Implementation Guide’s resources and tools
<http://www.nichq.org/NICHQ/Programs/ConferencesAndTraining/ChildhoodObesityActionNetwork.htm>

NIH Aim for a Healthy Weight
http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/index.htm

Surgeon General’s Call to Action to Prevent and Decrease Overweight and Obesity
http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm
<http://www.surgeongeneral.gov/topics/obesity/>

University of California, Agriculture and Natural Resources. *Children and Weight: What Communities Can Do*. Publication 3422
<http://www.cnr.berkeley.edu/cwh/resources/childrenandweight.shtml>

WHO Child Growth Standards
<http://www.who.int/childgrowth/en/>

WIN: Weight-Control Information Network (NIDDK) “Helping your overweight child”
http://win.niddk.nih.gov/publications/over_child.htm

Breastfeeding

American Academy of Pediatrics
<http://www.aap.org/healthtopics/breastfeeding.cfm>

CDC: Breastfeeding Promotion and Support
<http://www.cdc.gov/breastfeeding>
<http://www.cdc.gov/breastfeeding/resources/guide.htm>

HHS Blueprint for action on breastfeeding (2000)
<http://www.cdc.gov/breastfeeding/pdf/bluprntbk2.pdf>

Indian Health Service Breastfeeding Page

<http://www.ihs.gov/MedicalPrograms/MCH/M/bf.cfm>

Indian Health Service Division of Diabetes Best Practices on Breastfeeding

<http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=toolsBPList>

LaLeche League

<http://www.llli.org/nb.html>

National Women's Health Information Center

<http://www.4woman.gov/breastfeeding/index.cfm?page=home>

UNICEF Baby-Friendly Hospital Initiative

<http://www.unicef.org/programme/breastfeeding/baby.htm>

WIC Breastfeeding Promotion

<http://www.fns.usda.gov/wic/Breastfeeding/breastfeedingmainpage.HTM>

WHO (World Health Organization):

WHO: Exclusive Breastfeeding Information

http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/

WHO: The optimal duration of exclusive breastfeeding. A systematic review

http://www.who.int/nutrition/publications/optimal_duration_of_exc_bfeeding_report_eng.pdf

WHO: Evidence for the ten steps to successful breastfeeding

http://www.who.int/nutrition/publications/evidence_ten_step_eng.pdf

WHO: Breastfeeding Counseling: A Training Course

http://www.who.int/child_adolescent_health/documents/who_cdr_93_3/en/

Appendix C: IHS Report to Congress: Obesity Prevention and Control for American Indians and Alaska Natives April 2001

Seven recommendations, as described within this section, were proposed by IHS to address the obesity epidemic.

Recommendation 1

Work collaboratively with Tribal governments to:

Address obesity prevention and treatment in AI/AN children and adults.

Enable Tribal governments, communities, and tribal members to take ownership of health and obesity interventions, including the development, implementation, and evaluation of obesity treatment and prevention, and weight loss maintenance programs.

Develop cross-program initiatives including non-Native services and populations, at the national, state, regional, and tribal community levels to reach AI/AN.

Recommendation 2

Develop a “Healthy Weight and Physical Activity Program for American Indians and Alaska Natives” to potentially plan, implement, and evaluate obesity prevention and control programs in AI/AN communities.

Recommendation 3

Work with other government agencies and departments to potentially develop interventions to reduce obesity among AI/AN communities.

Recommendation 4

Maintain or increase health care provider expertise and access to quality nutrition services.

Train health care professionals and community health workers about obesity prevention and management.

Maintain efforts to recruit and retain registered dietitians to work with AI/AN people.

Maintain or increase current level of access to nutrition services for the AI/AN.

Recommendation 5

Support or encourage the implementation of “best practices” regarding obesity prevention and management in AI/AN communities in order to:

- Identify and disseminate a kit of research-based best practices.
- Select and build upon the successful components of the Pathways Study, Diabetes Prevention Program (DPP), National Diabetes Education Program, Weight Information Network (WIN) and other effective NIH, CDC, or other programs.

Recommendation 6

Support clinical behavioral research and evaluation of public health approaches conducted in partnership with tribes by NIH, CDC, and IHS to prevent and treat obesity in AI/AN populations.

Recommendation 7

Develop a more detailed plan to address the obesity epidemic in AI/AN populations.

Appendix D: IHS Workgroup Report “What Should IHS Do in the Next 2 Years for an Obesity/Healthy Weight Initiative? 2005*

Six goals were proposed by IHS to address the obesity epidemic to achieve the **overall goal**: Reduce overweight and obesity in American Indians and Alaska Natives by eliminating health disparities related to healthy eating and physical activity in a culturally respectful way.

Goal 1

Enhance and create accurate useable data.

Goal 2

Transform policy into action.

Goal 3

Partner with Tribes to build and maximize community capacity.

Goal 4

Create a new organizational workforce model to improve access to quality nutrition and physical activity services.

Goal 5

Enhance integrated quality care systems.

Goal 6

Leverage and strengthen partnerships to mobilize and maximize resources.

*For a copy of the entire report, contact Jean Charles-Azure, IHS Principal Nutrition Consultant Jean.Charles-Azure@ihs.gov

***Indian Health Obesity Strategic Plan Workgroup met in April 2008 as a first step in updating the plan with tribal consultation to address needs in 2008 and beyond with Tribal consultation.**

Appendix E: Community Resources Template

The following list of community resources can be completed, printed, and provided to local patients.

NUTRITION EDUCATION

Hospital

Classes offered:

Clinic:

Medical Center

Individual training:

Meal planning

Group classes:

WIC SERVICES

LOCAL WIC Office:

Other WIC OFFICES **1-800-800-1850**

Spanish

Other

DIET

Weight Management (Group Health Patients)

Weight Talk (telephonic counseling)

Shapedown

TOPS (Take Off Pounds Sensibly)

www.tops.org

Weight Watchers 1-800-651-6000

www.weightwatchers.com

COUNSELING

Dr.

Dr.

GROUP SUPPORT

Hospital

Free day and evening meetings

Other Group Support

EXERCISE/RECREATIONAL CLUBS

Fitness Club

Address

Gold's Gym

Address

Jazzercise

Address

Pool

Address

YMCA

Address

Fitness

Address

OTHER

Resource

Address

Resource

Address

Resource

Address

COMMUNITY HEALTH RESOURCES

Resource

Address

Memorial Hospital

Address

RESOURCES-WEB SITES

www.familydoctor.org Family doctor education

www.eatright.org The American Dietetic Association

www.jdrf.org Juvenile Diabetes Research Foundation

www.cdc.gov Centers for Disease Control Public Health

Resource

www.ghc.org My Group Health patient website

Appendix F: Listing of Co-Morbidities of Childhood Obesity

Childhood overweight is associated with a higher prevalence of risk factors for adverse health outcomes, such as insulin resistance, elevated blood lipids, increased blood pressure, and glucose intolerance and diabetes. Other health consequences include liver disease, gallbladder problems, sleep apnea, and psychiatric and psychological abnormalities.

Approaches for the medical evaluation of children or adolescents who are overweight are available. A few are mentioned here:

- The Maternal and Child Health Bureau, Health Resources and Services Administration, and the Department of Health and Human Services Expert Committee Recommendations on Obesity Evaluation and Treatment published in *Pediatrics* in 1998⁴⁷
- American Heart Association Scientific Statement: Overweight in Children and Adolescents: Pathophysiology, Consequences, Prevention, and Treatment⁴⁸
- Guidelines adapted for use in the Department of Pediatrics at the University of Texas-Houston Health Science Center⁴⁹
- Recommendations for family physicians in the official journal of the College of Family Physicians of Canada⁵⁰

Recommendation 4 directs clinicians to assess children and youth who are already overweight or obese for complications and co-morbidities. An abbreviated listing of these complications and co-morbidities is provided here. Clinicians are referred to the above publications or the list of references for more information.

⁴⁷ Barlow SE, Dietz WH. Obesity evaluation and treatment: Expert Committee recommendations [The Maternal and Child Health Bureau, Health Resources and Services Administration and the Department of Health and Human Services]. *Pediatrics* 1998;102:e29.

⁴⁸ Daniels SR, Arnett DK, Eckel RH, Gidding SS, Hayman LL, Kumanyika S, Robinson TN, Scott BJ, St. Jeor S, Williams C. Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment. *Circulation* 2005;111(15):1999-2012.

⁴⁹ Eissa MA, Gunner KB. Evaluation and management of obesity in children and adolescents. *J Pediatr Health Care* 2004;18:35-8.

⁵⁰ Plourde G. Preventing and managing pediatric obesity: Recommendations for family physicians. *Can Fam Physician* 2006;52:322-8.

Co-Morbidities and Complications

Social stigmatization, poor self-image, depression, and discrimination⁵¹

Eating disorders⁵²

Sleep apnea and obesity hypoventilation syndrome⁵³

Pseudotumor cerebri⁵⁴

Dyslipidemia and accelerated atherosclerosis⁵⁵

Hypertension⁵⁶

Polycystic ovary syndrome⁵⁷

Type 2 diabetes⁵⁸

Slipped capital femoral epiphyses, Blount's disease (tibia vara)⁵⁹

⁵¹ Gidding BS, Leibel RL, Daniels S, Rosenblum M, Van Horn L, Marx OR. Understanding obesity in youth. A statement for healthcare professionals from the Committee on Atherosclerosis and Hypertension in the Young of the Council on Cardiovascular Disease in the Young and Nutrition Committee, American Heart Association, Writing Group. *Circulation* 1996;94:3383-7; Dietz WH. Health consequences of obesity in youth: childhood predictors of adult disease. *Pediatrics* 1998 Mar;101(3 Pt 2):518-25. Review.

⁵² Isnard P, Michel G, Frelut ML, Vila G, Falissard B, Naja W, Navarro J, Mouren-Simeoni MC. Binge eating and psychopathology in severely obese adolescents. *Int J Eat Disord* 2003;34:253-243.

⁵³ Boxer GH, Bauer AM, Miller BD: Obesity-hypoventilation in childhood. *J Am Acad Child Adolesc Psychiatry* 1988;37:552-8; Mallory GB Jr, Fiser DH, Jackson R. Sleep-associated breathing disorders in morbidly obese children and adolescents. *J Pediatr* 1989;115:892-7; Silvestri JM, Weese-Mayer DE, Bass MT, Kenny AS, Hauptman SA, Pearsall SM: Polysomnography in obese children with a history of sleep-associated breathing disorders. *Pediatr Pulmonol* 1993; 16:124-9.

⁵⁴ Weisberg LA, Chutorian AM. Pseudotumor cerebri of childhood. *Am J Dis Child*, 1977;131:1243-48; Reid AC, Teasdale GM, Matheson MS, Teasdale EM: Serial ventricular volume measurements: further insights into the aetiology and pathogenesis of benign intracranial hypertension. *J Neurol Neurosurg Psychiatry* 1981;44:636-40.

⁵⁵ Lauer RM, Lee J, Clarke WR. Factors affecting the relationship between childhood and adult cholesterol levels: the Muscatine Study. *Pediatrics* 1988;82:309-318; Berenson GS, Srinivasan SR, Bao W, Newman WP III, Racy RE, Wattigney WA. Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. The Bogalusa Heart Study. *N Engl J Med* 1998;350:2362-2374;

⁵⁶ Freedman DS, Khan LK, Dietz WH, Srinivasan SR, Berenson GS. Relationship of childhood obesity to coronary heart disease risk factors in adulthood: the Bogalusa Heart Study. *Pediatrics* 2001;108:712-718; Lauer RM, Connor WE, Leaverton PE, et al. Coronary heart disease risk factors in school children: the Muscatine Study. *J Pediatr* 1975;86:697-706; Lauer RM, Clarke WR. Childhood risk factors for high adult blood pressure: the Muscatine study. *Pediatrics* 1989;84:633-641.

⁵⁷ Balen AH, Conway OS, Kalesas G, et al. Polycystic ovary syndrome: the spectrum of the disorder in 1741 patients. *Hum Reprod* 1995;10:2107-11; Bringer J, Lefebvre P, Bouler F, et al. Body composition and regional fat distribution in polycystic ovarian syndrome. Relationship to hormonal and metabolic profiles. *Ann NY Acad Sci* 1993;637:115-23. Richards GE, Cavallo A, Meyer WJ III, et al. Obesity, acanthosis nigricans, insulin resistance, and hyperandrogenemia: pediatric perspective and natural history. *J Pediatr* 1985;107:893-897.

⁵⁸ Pinhas-Hamiel O, Dolan LM, Daniels SR, Szandiford D, Khoury PR, Zeither P. Increased incidence of non-insulin dependent diabetes mellitus among adolescents. *J Pediatr* 1996;128:608-15; Starr CR, Smith JM, Craddock MM, Pihoke C. Characteristics of youth-onset noninsulin-dependent diabetes mellitus and insulin-dependent diabetes mellitus at diagnosis. *Pediatrics* 1997;100:84-91.

⁵⁹ Dietz WH Jr, Gross WL, Kirkpatrick JA Jr. Blount disease (tibia vara): another skeletal disorder associated with childhood obesity. *J Pediatr* 1982;101:735-7; Sorenson KH. Slipped upper femoral epiphysis. *Acta Orthop Scand* 1968;39:499-517; Kelsey JL, Acheson RM, Keggi KJ. The body build of patients with slipped femoral capital epiphysis. *Am J Dis Child* 1972;124:276-281.

Nonalcoholic steatohepatitis ⁶⁰

Cholelithiasis ⁶¹

Resources

National Association of Pediatric Nurse Practitioners' HEATSM (Healthy Eating and Activity Together) Guideline and Resource Kit

<http://www.napnap.org/index.cfm?page=198&sec=220&ssec=486>

American Academy of Pediatrics Bright Futures Guidelines for Health Supervision of Infants, Children, and Adolescents– Third Edition

http://brightfutures.aap.org/3rd_Edition_Guidelines_and_Pocket_Guide.html

<http://www.brightfutures.org/bf2/pdf/>

⁶⁰ Kinugasa A, Tsunamoto K, Furukawa N, et al. Fatty liver and its fibrous changes found in simple obesity of children. *J Pediatr Gastroenterol Nutri* 1984;3:408-414; Strauss RS, Barlow SE, Dietz WH. Prevalence of abnormal serum aminotransferase values in overweight and obese adolescents. *J Pediatr* 2000;136:727-33.

⁶¹ Crichlow RW, Seltzer MH, Jannetta PJ. Cholecystitis in adolescents. *Dig Dis* 1972;17:868-72.

Appendix G: Bottle Feeding

If parents/caregivers choose to bottle feed, then providers should provide appropriate education on feeding in response to hunger cues and avoidance of overfeeding.

Bottle Feeding

Formula feeding, unlike breastfeeding, has not been found to be protective against childhood obesity.⁶² Some researchers have proposed that formula-fed infants may be likely to consume more than needed for satiety, and that this overfeeding may be a potential contributor to childhood obesity.⁶³ Additionally, the uniform composition of formula is unlike that of breast milk, and does not provide the infant with the same hormonal or metabolic cues that may regulate intake.⁶⁴ The combination of the metabolic impact of human hormones found in breast milk, the early learned eating behaviors associated with breastfeeding, as well as the early weight gain patterns unique to breastfed infants, may all be protective against obesity. Formula-fed infants do not enjoy the same protective factors, especially compared to infants who are exclusively breastfed for several months. However, any amount of breastfeeding is beneficial, and all mothers should be encouraged to initiate breastfeeding and continue as long as possible, even after returning to school and/or work.

The third edition of *Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents* promotes the following:

“Exclusive breastfeeding, and avoidance of overfeeding if the parent’s bottle feed their infants, is recommended to ensure adequate growth that is not excessive.”⁶⁵

Strategies

- Instruct parents that any amount of breastfeeding is beneficial for their child; and that even babies that are mostly formula fed can benefit from breast milk, if mothers are willing to nurse part-time or express their milk using a breast pump.

⁶² Dewey KG. Is breastfeeding protective against child obesity? *J Hum Lact* 2003;19(1):9-18. IOM, *Preventing Childhood Obesity: Health in the Balance*. 2005.

⁶³ Bergman KE, Bergmann RL, von Kries R, Bohm O, Richter R, Dudenhausen JW, Wahn U. Early determinants of childhood overweight and adiposity in a birth cohort study: Role of breastfeeding. *Int J Obes Relat Metab Disord* 2003;27(2):162-172; Dewey, 2003; Lederman SA, Akabas S, Moore BJ, Bentley ME, Devaney B, Gillman MW, Kramer MS, Menalla JA, Ness A, Wardle J. Summary of the presentations at the Conference on Preventing Childhood Obesity, December 8, 2003. *Pediatrics* 2004;114:1146-1173.

⁶⁴ Lederman et al. 2004.

⁶⁵ Hagan JF, Shaw JS, Duncan PM, eds. 2008. *Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents*, Third Edition. Elk Grove Village, IL: American Academy of Pediatrics.

- If mothers are unable or unwilling to breastfeed, or can only breastfeed part-time, recommend the use of iron-fortified formula as a substitute for breast milk for full-term infants during the first year of life.
- Instruct parents/caregivers not to add cereal or other foods to formula, unless under specific instruction from a health professional.
- Instruct parents/caregivers to hold their baby close, in a semi-upright position, and to look into their baby's eyes during bottle feeding.
- Counsel parents to avoid propping the bottle or letting their baby feed alone. This will minimize the risk of choking, ear infections, and early childhood caries.⁶⁶
- Counsel parents to check for causes if infant is crying more than usual or seems to want to eat all the time (uncomfortable feeding position, formula prepared incorrectly, bottle nipple too firm or hole too big, unheeded hunger cues, distracting feeding environment).
- Provide useful guidelines for serving sizes based on age for formula fed infants.
 - While parents should be instructed to feed their baby until she seems full, the following guide may be helpful:
 - A month old may drink 1-2 ounces every 2-3 hours
 - 1-2 month old may drink 2-3 ounces every 2-3 hours
 - 2-3 month old may drink 4-5 ounces every 3-4 hours
 - 3-4 month old may drink 5-6 ounces every 3-4 hours⁶⁷
 - The third edition of Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents provides the following guidelines on total daily amounts of formula by age:
 - A newborn at the 50 percentile with appropriate growth may drink an average of 20 oz of formula per day with the amount of formula ranging from 16 to 24 oz per day.
 - The usual 24 hour amount for a 2-month-old infant is about 26 to 28 ounces with a range of 21 to 32 ounces.
 - A 4-month-old may drink an average of 31 oz of formula per day without solid foods with a range of 26 to 36 oz per day.
 - Infants six months and older may drink 24 to 32 oz of formula per day, but larger male infants (6 months old, 90 percentile for eight)

⁶⁶ Tully SB, Bar-Haim Y, Bradley RL. Abnormal tympanography after supine bottle feeding. *J Pediatr* 1995; 126(6):S105-11; Hagan et al. 2008.

⁶⁷ Alaska WIC Program <http://www.hss.state.ak.us/dpa/programs/nutri/WIC/Participants/WICFAQ-bottlefeeding.htm>

may drink as much as 42 oz of formula per day, in addition to solid foods.⁶⁸

- Provide parent/caregiver education on correct formula preparation, appropriate storage of prepared formula, and other important food safety information on formula feeding, including heating of formula and cleaning bottles and nipples.
- Encourage parents and caregivers to wean infants from the bottle to the cup at or before 12 months of age.
- Collaborate with WIC and other programs that have expertise in bottle feeding.

Other Strategies

- Instruct parents to feed their baby when he is hungry. Signs of hunger include hand-to-mouth activity, rooting, facial grimaces, fussing sounds, and crying. Ask parents how they know if their baby is hungry.
- Instruct parents to feed their baby until he seems full. Signs of fullness are turning his head away from the nipple, showing interest in things other than eating, and closing his mouth. Ask parents how they know if their baby has had enough to eat.
- Warn parents against encouraging their baby to finish a bottle when she has demonstrated that she is full by turning her head away from the nipple, closing her mouth, or showing interest in things other than eating.
- Let parents/caregivers know that babies often have a strong urge to suck, unrelated to hunger, and this urge can often be satisfied with a pacifier or thumb.

Bottle Feeding Resources

IHS Child health education protocols—see newborn nutrition section:

http://www.ihs.gov/NonMedicalPrograms/HealthEd/Pepctopics/chn_2007.pdf

State of Alaska WIC Program Bottle Feeding FAQ:

<http://www.hss.state.ak.us/dpa/programs/nutri/WIC/Participants/WICFAQ-bottlefeeding.htm>

American Academy of Pediatrics Bright Futures Guidelines for Health Supervision of Infants, Children, and Adolescents— Third Edition:

http://brightfutures.aap.org/3rd_Edition_Guidelines_and_Pocket_Guide.html
<http://www.brightfutures.org/bf2/pdf/>

⁶⁸ Hagan JF, Shaw JS, Duncan PM, eds. 2008. *Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents*, Third Edition. Elk Grove Village, IL: American Academy of Pediatrics.

Appendix H: Serving Size Portions

Age	1–3 year olds	4–6 year olds	7–12 year olds	Teens
Fruits & Vegetables				
Fruit: Vitamin C rich source daily; Vitamin A source 3-4 per wk				
Cooked or canned	1/4 c	1/4–1/2 c	1/4–1/2 c	1/2 c
Fresh	1/2 piece	1/2–1 small	1 medium	1 medium
Juice	2–4 oz juice	4 oz juice	4 oz juice	4 oz juice
Servings	2–3	2–3	2–3	2–3
Vegetables: Vitamin C rich source daily; Vitamin A source 3-4 per wk				
Cooked	1–3 tbsp	4–6 tbsp	1/2 c	1/2 c
Raw	Few pieces	Few pieces	Several pieces	1 cup
Servings	2–3	2–3	2–3	2–3
Dairy				
Milk	4 oz	4–6 oz	4–8 oz	4–8 oz
Cheese	1/2 oz (1-inch cube)	1/2–3/4 oz	3/4–1 oz	1 oz
Yogurt	1/3 c	1/2 c	1 c	1 c
Servings	2–3	3–4	3–4	3–4
Legumes	2 tbsp cooked	4–5 tbsp cooked	1/2 c cooked	1/2 c cooked
Nuts	Not recommended for this age group	4 tbsp peanut butter 2	4 tbsp peanut butter	4 tbsp peanut butter
Servings per day	2		3–4	3–4
Grain products				
Bread	1/2–1 slice	1 slice	1 slice	1 slice
Rice, pasta cooked	4 tbsp	1/2 c	1/2 c	1/2 c
Cereal, dry	1/4–1/2 c	1 c	1 c	1 c
Cereal, cooked	1/4–1/2 c	1/2 c	1/2–1 c	1/2–1 c
Crackers	1–2	5	5	5
Servings per day	3–4	3–4	4–5	4–5

Adapted from Samour PQ, King K. Handbook of Pediatric Nutrition. Sudbury, MA: Jones and Bartlett; 2005.

*Each day, a child between ages 1 and 3 needs about 40 calories for every inch of height. The amount varies with the child's build and activity level.⁶⁹

⁶⁹ Dietz WH, Stern L, eds. 1999. *Guide to Your Child's Nutrition: Making Peace at the Table and Building Healthy Eating Habits for Life*. New York, NY: Random House, p. 41.

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