

# CHILDHOOD Obesity

Part 2

Special  
Pediatrics



# Parent Education Key to Beating Early Childhood Obesity

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There is a current emphasis on reducing the number of overweight children. Prevention, early recognition, and treatment are recommended. One barrier to providing this type of counseling is the lack of easy-to-implement tools for use in pediatric primary care practice.<sup>1</sup> Using provider- and patient-friendly protocols and handouts should make counseling these patients easier and more efficient. The aim of these protocols is to target generally healthy children, starting in infancy and continuing through preschool age, in the out-patient office setting. At no other time in children's lives will they be so accessible to a health-care provider (HCP). If adhering to the recommended well-child schedule, these children will have contact with an HCP at least every 2 to 6 months prior to age 2 years and then annually. This offers incredible follow-up and reinforcement of anticipatory guidance and teaching.

## Background

Research from the Centers for Disease Control and Prevention recently indicated that children younger than 5 years of age have had a significant rate of increase for overweight.<sup>2</sup> Using the 1999-2000 National Health and Nutrition Examination Survey data, Ogden, Flegal, Carroll, et al.<sup>3</sup> reported the prevalence of overweight or at risk for overweight in 2- to 5-year-old children at 20.6%.

The protocols discussed are based on a literature review of risk factors in infants and young children that are associated with obesity later in life, tested interventions in children under 5 years of age, and current recommendations of reputable agencies. The following information supports the development of age-appropriate protocols and accompanying parent information handouts.

## Literature Review and Protocol Development

The literature reviewed revealed there are many factors potentially associated with becoming overweight in childhood, adolescence, and adulthood. Unfortunately, the review of the literature is somewhat limited for intervention studies targeted at children younger than 5 years of age.

Risk factors for developing obesity include African-

***Rapid weight gain in the first 4 months of life is associated with an increased risk of obesity by 7 years of age.***



American or Hispanic descent, maternal obesity, low family income, and lower cognitive stimulation.<sup>3-6</sup> Some risk factors are not modifiable but may be environmentally mediated. Healthcare providers can identify modifiable risk factors and address them with families to increase awareness of risk for overweight.

Reported birth weight and growth velocity in the first 2 years of life was associated with an increased prevalence of obesity in adolescents.<sup>7</sup> Additionally, rapid weight gain in the first 4 months of life is associated with an increased risk of obesity by 7 years of age.<sup>8</sup> From the early months of life, infants' weight for height should be plotted and assessed. While it may be inappropriate to consider an infant overweight, there should be concern for infants above the 95th percentile on weight-for-height charts. These patients may be at risk for becoming overweight.

Following infancy, the next factor associated with the development of obesity in childhood is an early adiposity rebound. It is normal for body mass index (BMI) to fall during the toddler and preschool years until 4 to 6 years of age. After this age, the BMI gradually increases through adoles-

**Prevention Checklist for Healthcare Providers: Infants and Children Under 5 Years of Age**

**Risk Factors**

- Identify risk factors
- Share risk factors with parents

**Measurements**

**Infants**

- Plot weight, height, head circumference, weight for height
- Determine percentiles

**Toddlers**

- Plot under 2 years for weight, height, head circumference, weight for height
- Plot children over 2 years for weight, height, BMI
- Determine percentiles

**Preschooler**

- Look for early adiposity rebound

**Nutrition**

**Infants**

- Promote breastfeeding
  - Offer encouragement and advice
    - Educate parents about benefits
    - Offer reliable local resources
    - If formula feeding, ensure iron-fortified formula
- Teach parents signs of hunger and satiety
- Discourage force-feeding
- Delay introduction of solid foods until age 4 to 6 months and developmentally ready
  - Iron-fortified rice cereal followed by pureed vegetables and fruits with one new introduction per week
  - Let babies dictate quantity
  - By 6 months, offer solids two to three times a day; by 9 months increase types and amounts of safe, soft, moist table foods; by 12 months offer solids three meals a

day plus two to three healthy snacks, aim for milk intake of 16 to 24 ounces daily

- Repeatedly introduce healthy foods
- Delay cow's milk until 12 months
- Discourage fruit juice until after 6 months of age; discourage offering over 2 to 4 ounces of 100% fruit juice daily

**Toddlers**

- Offer three meals a day plus two healthy snacks
- Repeatedly introduce healthy foods
- Offer whole milk until age 2
- Discontinue bottles
- Encourage parents to let children regulate how much they eat

**Preschooler**

- Recommend five servings of fruits and vegetables daily
- Recommend three low-fat milk/dairy servings daily
- Recommend daily fiber intake of 5 grams plus the child's age in years
- Recommend gradual transition to a diet by age 5 consisting of saturated fats accounting for <10% of total daily energy, and total fat over several days accounting for 20% to 30% of total daily energy
- Discourage fast food

**Toddlers and Preschoolers**

- Do not offer only the foods the child prefers
- Do not totally restrict sweet or salty foods
- Balance meals over days, not individual meals
- Only offer 100% fruit juice and no more than 4 to 6 ounces per day

- Do not use food as bribes or rewards
- Eat meals together at the table at consistent times
- Encourage parents to be good role models in what and how they eat

**Physical Activity**

**Infants**

- Encourage a safe, supervised, stimulating environment for babies
- Discourage television
- Encourage parents to play with their children

**Toddlers**

- Offer opportunities for safe exploration and toddler initiative
- Encourage social activities
- Encourage family outings and activities
- Discourage television under age 2

**Preschooler**

- Offer opportunities for safe exploration, structured and unstructured play
- Encourage participation in preschool programs with adequate, safe physical activity
- Discourage television
- Encourage parents to model proper physical activity

**Sleep**

Encourage adequate sleep; consistent, healthy routines

**Consistent**

Ensure all caregivers are consistent with nutrition, activities, and routines

**Praise**

Praise parents for good practices

cence.<sup>9</sup> The point at which the BMI begins to increase is called the adiposity rebound. An adiposity rebound that occurs before 4 years of age is considered early. This is an indicator of increased risk for overweight in childhood as well as adulthood.<sup>7,10,11</sup> Children 2 years of age and older should be plotted annually for height, weight, and BMI. Accurate measurement of a child's height and weight and calculation of BMI provides objective data to share with parents and to start a discussion on weight and health.

The length of time a child is breastfed appears to have a positive effect against obesity. Von Kreis et al.<sup>12</sup> demonstrated that obesity risk decreased with an increase in the number of

months breastfed. Armstrong and Reilly also determined that breastfeeding was associated with a reduction of risk for overweight in children.<sup>13</sup> Bottle feeding has been associated with an increased risk of overweight with the hypothesis that the infant has less control over feedings than if breastfed.<sup>4,12,13</sup> In the protocol, breastfeeding is strongly encouraged.

There are also developmental feeding behaviors that increase the risk of developing childhood obesity. A developmental task of infancy is that of self-regulation. Self-regulation encompasses many areas including control over energy intake, which is guided by hunger and satiety cues. This delicate developmental process can be derailed if par-

### Checklist for Healthcare Providers: Overweight Children Under 5 Years of Age\*

- Obtain detailed nutritional, activity, environmental history
- Identify areas of concern

#### Ask parents:

- Are you concerned about the nutrition or activity level of your child?
- Do you think a higher state of health is possible for your child?
- What, if any, changes do you think need to be made?
- Review specifics of protocol and with parents, determine reasonable changes
- If parents are unmotivated, provide information and encourage follow-up
- Praise parents for good practices and/or for being motivated to participate in the health of their child
- Schedule monthly follow-up visits

\* Infants over 95% of weight for height; toddlers over 95% of weight for height or >85th percentile for BMI; preschoolers >85th percentile for BMI

ents impose strict feeding practices that do not allow children to learn self-control and regulation.<sup>14-16</sup> One example is introduction of solid foods before the child is developmentally able to refuse<sup>17</sup>.

Newman and Taylor<sup>18</sup> evaluated preschool children's behavior in response to coaxing feeding tactics, such as requiring that a child must eat the means snack in order to receive the reward food. Findings showed that children in the intervention group had a decreased preference for the means snack and increased preference for the reward food even though at the start both snacks were equally liked. This resulted in a recommendation for parents to treat food unpreferentially.

Fisher and Birch<sup>19</sup> studied restricting access to preferred foods. They found that limiting access to palatable foods was not a good way to teach children to moderate intake of these foods and that attempts to do so may, in the long run, encourage consumption of these foods. These studies support the recommendations in the checklists on the process of, or behaviors related to, feeding and eating.

The American Dietetic Association (ADA) advocates healthful eating habits and engaging in routine physical activity. They also recommend that children consume three servings of milk or dairy products daily.<sup>19</sup> The ADA supports the American Academy of Pediatrics (AAP)<sup>20</sup> recommendation that children over age 2 years gradually reach a diet with less than 10% of total energy from saturated fatty acids and less than 30% from total fat by 5 years of age. Cholesterol

### Parent Handout: Infancy

#### Breastfeed

- Do this for at least the first year
- Optimal nutrition for babies; breast milk content is adjusted to the baby's specific needs
- Inform your HCP of problems breastfeeding
- Use iron-fortified formula if formula feeding

#### Learn hungry and full signs

- Hunger is often indicated by crying, rooting, opening the mouth, leaning forward
- Fullness is often indicated by not opening the mouth, turning away, and leaning back
- Do not make baby finish every bottle

#### Solid food

- Try not to introduce solid food until 4 to 6 months
- Start with rice cereal followed by pureed vegetables and fruits
- Let baby tell you how much he/she wants by responding to cues
- Continue to reintroduce healthy foods to baby even if he/she does not like them at first

#### Fruit juice

- 100% fruit juice is acceptable for infants over 6 months of age, but no more than 2 to 4 ounces each day

#### Environment

- Provide a safe, supervised, stimulating environment
- It is best for baby to not watch television
- It is important to interact with baby every day
- Offer baby supervised tummy time daily

#### Sleep routines

- Ensure baby gets enough sleep and provide consistent routines

#### Caregivers

- Share these thoughts with all of baby's caregivers to ensure consistency

intake of less than 300 mg per day is also recommended.<sup>18</sup>

The AAP<sup>21</sup> is also concerned about fruit juice consumption and recommends no fruit juice in children less than 6 months of age, no juice in bottles or in transportable covered cups that are carried around, and no fruit juice at bedtime. Juice should be restricted to 4 to 6 ounces per day in children ages 1 to 6 years and 8 to 12 ounces per day in children 7 to 18 years of age. Whole fruits should be promoted over juice.

Television viewing time is also a significant risk factor for obesity in children. Children 3 to 6 years of age were followed and those with an increase in television viewing had an increased risk for overweight. Additionally, those who

**Parent Handout: Toddlers and Preschoolers**

**Nutrition**

- Let your child regulate how much he/she eats.
- Offer three meals a day plus two healthy, planned snacks.
- Balance meals over several days not each meal.
- Encourage your child to eat five servings of fruits and vegetables daily.
- Encourage three low-fat milk/dairy servings daily.
- Encourage your child to eat 5 grams of fiber daily plus their age in years.
- Gradually transition to a diet by age 5 that consists of saturated fats accounting for <10% of total daily energy and total fat over several days that consists of 20% to 30% of total daily energy needs.
- Limit intake of cholesterol to 300 mg daily.
- 100% fruit juice is acceptable, but no more than 4 to 6 ounces daily.
- Do not restrict your child from sweet or salty foods—offer these sparingly.
- Continue to reintroduce healthy foods even if your child does not like them at first.
- Do not offer your child only his/her favorite foods.
- Try not to use food as a reward or as a bribe.
- Avoid fast food.
- Eat family meals together at consistent times.

**Activity**

**Toddlers**

- Offer to safely explore and to initiate activities with your child.
- Allow your child to interact with other children.
- Play with your child often.
- Go on family outings together.
- Limit television time for your toddler.

**Preschoolers**

- Offer your child chances to safely explore, to play in structured activities, to have free play.
- Involve your child in a preschool program that provides safe, adequate physical activity.
- Limit television for your preschooler.
- Ensure your child gets enough sleep; provide consistent routines.
- Share these thoughts with all your child's caregivers to ensure consistency.

were the least physically active had an increase in risk for overweight.<sup>22,23</sup> Dennison et al.<sup>24</sup> attempted to intervene in preschool-aged children to reduce television watching. While their program resulted in reduced television viewing, results did not show a significant difference in children's growth or adiposity between the intervention and the control group.

Although the data on television viewing in this age group is inconclusive, studies with older children demonstrate more convincingly that decreased viewing time does increase active time. Because health habits begin early in life, it seems wise to recommend limited television viewing in this age group.<sup>22</sup>

**Discussion**

The AAP,<sup>22</sup> the Expert Committee, the Maternal Child Health Bureau, the Health Resources and Services Administration, and the Department of Health and Human Services<sup>25</sup> advocate prevention, while recognizing that data for successful treatment interventions are limited. Ensuring that the family is ready for change, involving all family members and caregivers, making changes gradually, and focusing on permanent changes rather than quick fixes are important for success. These policies advocate for HCPs to educate families about the health complications associated with obesity and for HCPs to be encouraging and not critical. Healthful food choices such as vegetables, fruits, low-fat dairy foods, and whole grains should be encouraged, as should children's self-regulation of food intake.

For those children who plot as overweight or at risk for overweight on BMI curves, or children who are showing an early adiposity rebound, obtain a detailed history regarding nutrition, activity, and environment. Food restriction and reduction of weight are not appropriate in this young age group; a weight maintenance concept should be encouraged.

Asking parents about their child's nutrition and activity level, whether they think a higher state of health is possible, and what changes the child/parent think are necessary is a good way to start. Be sure to ask parents for their ideas. Help parents find practical ways to reach protocol standards. It is important not to lecture parents, but to empower them to help their children be as healthy as possible. In order for there to be changes made, caretakers must be motivated.

In addition to HCP prevention protocols (see Table: "Prevention Checklist for Healthcare Providers: Infants and Children Under 5 Years of Age" and Table: "Checklist for Healthcare Providers: Overweight Children Under 5 Years of Age"), there are accompanying handouts for parents of infants, toddlers, and preschoolers (see Table: "Parent Handout: Infancy" and Table "Parent Handout: Toddlers and Preschoolers"). These protocols and parent handouts focus on family involvement. In this age group, parents are crucial as nutritional decision makers and role models, and setting the tone for activity level and choices for the family. Unless practical suggestions are offered to parents early, potential bad habits and poor choices may be repetitively reinforced from the start of the child's life . 

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## AUTHORS DISCLOSURE

The authors have disclosed that they have no significant relationship or financial interest in any commercial companies that pertain to the educational activity.

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