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Understanding Body Mass Index (BMI) To Help Determine Weight Status Suggestions for Controlling Your Child's Weight

More than 25% of American children are overweight. Childhood obesity increases the risk of adult obesity. Children who are obese at age 6 have a 50% or greater chance of becoming obese adults. This can put them at risk for many medical problems, including diabetes, high blood pressure, high cholesterol, and sleep apnea. Obesity can also adversely affect self-esteem.

The tendency to be overweight is usually inherited. If both parents are overweight, most of their children will be overweight. If one parent is overweight, half of the children will be overweight. If neither parent is overweight, the children have a 10% chance of being overweight. Less than 1% of obesity has an underlying medical cause. Your physician can easily determine this by a simple physical examination.

Heredity alone (without overeating) accounts for most mild obesity, defined as less than 30 pounds overweight in an adult. Moderate obesity usually results from a combination of heredity, overeating, and under exercising.

Children normally need a certain number of calories each day (energy allowance) that their bodies use as energy for normal daily activities (walking, breathing, etc.). This ranges for boys from 2000 calories for a 7-10 year old, 2500 calories for an 11-14 year old, and 3000 calories for a 15-18 year old. For girls the ranges are from 2000 calories for a 7-10 year old, to 2200 calories for an 11-18 year old. These are only estimates and some children need more (fast metabolism) or less (slow metabolism) of an energy allowance for daily activities.

If a child consumes more food and calories than is required by their energy allowance, then those excess calories are converted to fat for storage. Conversely, if a child consumes less food and calories than is required by their energy allowance, then their body fat is converted to energy for the needed calories.

Your child can lose weight by either dieting (eating fewer calories each day) or by exercising, so that their body needs more energy and uses up more calories. Either way, body fat will be burned and converted to energy and weight will be lost.

Helping children between 5 and 15 years of age lose weight is very difficult because they have access to so many foods outside the home and are not easily motivated to lose weight. It is not quite as difficult to help a child under 5 years lose weight because the parents have better control of the foods the child eats.

To help get your child motivated to exercise and eat healthier, it is important that you provide your child with a healthy lifestyle. This includes having healthy eating habits and participating in a regular exercise program. Also limit how much time that the family watches television.

Pediatricians use growth charts that are used to plot a child's height and weight to make sure their growth is normal. New growth charts have been developed which include a new growth parameter called Body Mass Index (BMI). Adding BMI makes the growth charts a much more useful and accurate tool. BMI can be used to identify children who run the risk of becoming overweight or obese in the future. BMI serves as an early warning signal for future obesity.

How Do I Know If My Child Is Overweight?

Your child is overweight if any of the following criteria are present:

- **Your child's weight is more than 20% over the ideal weight for height.**
- The skin fold thickness (fat layer) of your child's upper arm is more than one inch, as measured with a special instrument.
- **Your child's Body Mass Index (BMI) is high.**

BMI is used to determine if your child is underweight or overweight:

- Below the 5th percentile (for their age) are considered underweight.
- Equal to or above the 85th percentile (for their age) are at risk for being overweight.
- **Equal to or above the 95th percentile (for their age) are considered overweight.**

What are the advantages of using BMI-for-age with children from 2 to 20 years?

- BMI-for-age can be used for adolescents beyond puberty.
- BMI in children and adolescents compares well to laboratory measures of body fat.
- BMI is related to health risks.

Sixty percent of children and teens with a BMI-for-age above the 95th percentile have at least one risk factor while 20 percent have two or more risk factors for cardiovascular disease. Overweight children are likely to become overweight adults.

Body Mass Index, or BMI (wt/ht²), provides a guideline based on weight and height to determine underweight and overweight. As children grow, their body fatness changes over the years. The interpretation of BMI depends on the child's age. Additionally, girls and boys differ in their body fatness as they mature. Therefore, we plot the BMI-for-age according to sex-specific charts.

Each of the CDC BMI-for-age charts contains a series of curved lines indicating specific percentiles. BMI decreases during the preschool years, and then increases into adulthood. The percentile curves show this pattern of growth.

Look at BMI for a boy as he grows, yet remains at the 95th percentile BMI-for-age.

<u>Age</u>	<u>BMI</u>	<u>Percentile</u>
2 years	19.3	95th
4 years	17.8	95th
9 years	21.0	95th
13 years	25.1	95th

In the United States, BMI declines and reaches a minimum around 4 to 6 years of age before beginning a gradual increase through adolescence and most of adulthood. The upward trend after the low point or dip in BMI percentile curves reflects what has been described as the "adiposity rebound." Children whose adiposity rebound begins at younger ages are more likely to have an increased BMI as an adult.

Plot the BMI-for-age as a girl grows from age 3 years to 9.5 years

<u>Girl's Age (Years)</u>	<u>Height (Inches)</u>	<u>Weight (Pounds)</u>	<u>BMI</u>	<u>Percentile</u>
3	37.2	31.0	15.7	50th
5	42.4	38.7	15.1	50th
7	47.8	50.2	15.4	50th
9.5	53.3	66.9	16.5	50th

Low risk of
asthma, orthopedic
problems and
clinical depression

Signs of
diabetes
may appear
around age 50

Signs of
heart disease
may appear
around age 50

Life expectancy
of age 84



Age: 8
Weight: 60 lbs.
Height: 51"
Body Mass Index: 16
BMI Percentile: 50th

High risk of
asthma, orthopedic
problems and
clinical depression

Signs of
diabetes
may appear
around age 20

Signs of
heart disease
may appear
around age 35

Life expectancy
of age 72



Age: 8
Weight: 75 lbs.
Height: 51"
Body Mass Index: 20
BMI Percentile: 95th

Low risk of
asthma, orthopedic
problems and
clinical depression

Signs of
diabetes
may appear
around age 50

Signs of
heart disease
may appear
around age 50

Life expectancy
of age 84



Age: 9
Weight: 53 lbs.
Height: 48"
Body Mass Index: 16
BMI Percentile: 50th

High risk of
asthma, orthopedic
problems and
clinical depression

Signs of
diabetes
may appear
around age 20

Signs of
heart disease
may appear
around age 35

Life expectancy
of age 72



Age: 9
Weight: 70 lbs.
Height: 48"
Body Mass Index: 21.5
BMI Percentile: 95th



Suggestions For Helping Your Child Lose Weight

To help your older child or teenager lose weight without losing self-esteem, try the following:

Protect Your Child's Self-Esteem

Self-esteem is more important than an ideal body weight. Overweight children are aware of the weight problem and are already upset. They need their family to support them and accept them as they are. Parents who become overly concerned about their child's weight can reduce or destroy self-esteem. Avoid these pitfalls:

- Also, make sure your child knows that being overweight doesn't change what kind of person he/she is or how much you love them.
- Don't discuss with your child about being fat unless your child brings up the subject.
- Never try to put your child on a strict diet. Diets are unpleasant and should be self-imposed.
- When hungry, never deprive your child of food. Withholding food eventually leads to overeating.
- Although it may be hard, don't fight with your child over weight or poor eating habits.

Help Your Child Develop Readiness And Motivation To Lose Weight

It is easier for your child to lose weight if motivated to do so. But even without motivation you can still help your child to lose weight by making healthy choices for his meals at home and encouraging regular exercise and physical activity.

You can help your child become more motivated by getting actively involved in the process of eating healthier and exercising regularly. It may also help to use lots of praise and simple rewards for when your child is eating well and is being physically active.

Teenagers can increase their motivation by joining a weight-loss club such as Weight Watchers. Sometimes schools have classes to help children lose weight. A child's motivation can often be improved if the entire family

undertakes diet and exercise programs. A cooperative parent-child weight-loss program with individual goals for each family member is usually more helpful than a competitive program focused on who can lose weight faster.

Set Weight-Loss Goals

The first goal of weight management in kids should be to lessen weight gain and maintain normal growth in height. This way they can grow into their weight. Begin doing this by having your child eat healthier (about 500 fewer calories each day) and begin a program of regular exercise and physical activity.

Once your child has stopped gaining weight and is on a regular program of dieting and exercising, you can set further goals of slow weight loss (about a 10% reduction at a time).

Help your child pick a realistic target weight, depending on his/her bone structure and degree of obesity. The loss of **one pound a week is an attainable goal**, but your child will have to work quite hard to maintain this rate for several weeks. Daily weighing generates too much false hope or disappointment. Keeping a weekly record may provide added motivation.

If losing weight becomes a strain, have your child take a few weeks off from the weight-loss program. During this time, try to help your child stay at a constant weight through exercise and moderation in eating.

Once your child has reached the target weight, the long-range goal is to stay within five pounds of that weight. Maintaining a particular weight is possible only through permanent moderation in eating and a reasonable exercise program. Your child will probably always tend to gain weight easily, and it is important that he understand this.

Help Your Child Consume Fewer Calories

Your child should eat three well-balanced meals a day of average-sized portions. There are no forbidden foods; your child can have a serving of anything family or friends are eating. There are forbidden portions, however. If your child eats until full, no weight will be lost. Your child has to be hungry when leaving the table.

Encourage average portions, and discourage seconds. Shortcuts such as fasting, crash diets, or diet pills rarely work and may be dangerous. Liquid diet preparations are only safe if used according to directions (consult a dietitian if you have any questions).

Help your child keep a weekly journal of food and beverage intake and also of the amount of time that is spent watching television, playing videogames and exercising. You can also record your child's weight each week (but do not weigh your child every day).

Other Suggestions

Fluids: Encourage your child to drink 4-6 glasses of water each day, especially before meals. Water has no calories and it will help make your child feel full. Other drinks can include diet sodas and skim milk. Avoid letting your child drink regular soft drinks or fruit juices, as they are high in calories (150-170 calories per serving).

24 ounces of skim milk and/or orange juice with calcium will provide your child with most of their daily calcium requirements.

Meals: Serve fewer fatty foods (eggs, bacon, sausage, butter). Fat has twice as many calories as the same amount of protein and carbohydrate. Trim the fat off meats. Serve more baked, broiled, boiled, or steamed foods and fewer fried foods. Serve more fruits, vegetables, salads, and grains.

Desserts: Encourage smaller-than-average portions of dessert. Do not serve seconds. Encourage more Jell-O and fresh fruits after meals; avoid serving rich desserts.

Snacks: Serve only low-calorie foods such as raw vegetables (carrot sticks, celery sticks, and pickles), fresh fruits (apples, oranges, and cantaloupe), popcorn, or diet soft drinks. Limit snacks to two a day.

Vitamins: Give your child one multivitamin with iron tablet daily during the weight-loss program.

Help Your Child Develop Good Eating Habits

It is not necessary to count calories, but you and your child should become more educated about the foods you eat and how many calories they contain. You should begin to routinely check the nutrition label of the foods that your family is eating. You want to try and eat foods low in calories and fat. Many low fat or diet foods, may be lower in fat, but may still contain too many calories as sugars.

Begin checking the serving size of prepared meals and snacks. A bag of chips might have 200 calories, but you may be surprised when the serving size is only 10 chips. Eating the whole bag can easily get you over 1000 calories.

To counteract the tendency to gain weight, your youngster must be taught good eating habits that will last a lifetime. You can help your child keep off unwanted pounds by doing the following:

Your child should eat three well-balanced meals of average size each day. Serve fewer fatty foods. It is healthy to prepare foods that are baked, broiled or steamed, rather than fried. Buy diet soft drinks and fresh fruits and vegetables.

In addition to a small serving of lean meat, provide large servings of vegetable

Suggest that your child chew food slowly.

Allow eating in your home only at the kitchen or dining room table. Store food only in the kitchen. Keep it out of other rooms.

- Encourage your child to drink more water before meals.
- Offer seconds only if your child has waited for ten minutes after finishing the first serving. Avoid serving seconds of the main course or desert. Offer more salad or other vegetables if still hungry
- Encourage your child to reward himself/herself for hard work or studying with a movie, TV, music, or a book, rather than food.
- Leave only low-calorie snacks, such as fruit, out on the counter. Put away the cookie jar.
- Discourage your child from eating while watching TV, studying, riding in a car, or shopping. Once eating becomes associated with these activities, the body learns to expect it.
- Discourage skipping any of the three basic meals.
- Discourage your child from continual snacking ("grazing") throughout the day or eating alone.
- Don't buy high-calorie snack foods such as potato chips, candy, or non-diet soda.

Encourage Your Child To Increase Calorie Expenditure Through Exercise

Daily exercise can increase the rate of weight loss and promote a sense of physical well-being. The combination of diet and exercise is the most effective way to lose weight. An essential part of any weight loss or weight management program is regular fitness. Encourage your child to participate in a physical education class in school and extracurricular sports at school or in the community. Try and find physical activities that your child enjoys doing.

Some suggestions to help increase your child's and family's physical activities:

- Encourage regular exercise for 20-30 minutes 4-5 times each week. This can include walking, jogging, swimming, bike riding, rollerblading, riding a skateboard, aerobics class, etc. It can also include playing a new sport, such as basketball, volleyball, tennis, soccer, etc.
- Use stairs instead of escalators or elevators, especially if you have to walk out of your way to find the stairs.
- Family exercise: go for routine family walks or bike rides in the neighborhood or Local Park. Take your dog along for the walk.
- Spending 30 minutes a day exercising or dancing to records or music on TV.
- Using an exercise bike or Hula Hoop while watching TV (Limit time spent sitting in front of the TV set to two hours or less each day.)
- For those who do not want to exercise in front of other people, use the stairs in your home or building where you live. Have your child run up and down the steps until tired. Rest for a few minutes and then run the steps again. This will help increase the heart rate and better condition your child's body. Over time, your child will be able to increase the amount of times the stairs can be run without resting.

Encourage Your Child To Keep His/Her Mind Off Food By Participating In Social Activities

The more outside activities your child participates in, the easier it will be for him/her to lose weight. Spare time fosters nibbling. Most snacking occurs between 3 p.m. and 6 p.m. Help your child fill time after school with activities such as music, drama, sports, or scouts. A part-time job after school may help too. If nothing else, encourage your child to call or visit friends. An active social life almost always leads to weight reduction.

Ways To Trim Fat

1. Blot the grease on the top of pizza with a napkin. You'll eliminate at least a teaspoon-or 4.5 grams-of fat per slice.
2. Make sandwiches with a thin sliced bread (40 cal/slice) and use reduced fat meat and cheese.
3. Leave the last half-inch of take-out Chinese food, and fatty sauce, in the container. By eating only the top of the tub, you get a light taste of the sauce and all the crisp vegetables, and you leave the fat behind.
4. Dip your chicken nuggets or chicken wings in barbecue or sweet and-sour sauces. Avoid creamy dip at all costs-Burger King's ranch sauce, for example, adds 17 grams of fat.
5. Use 1 cup of egg substitute or two egg whites in place of an egg in any recipe.

6. At McDonald's, order two small regular hamburgers instead of one quarter-pound cheeseburger. They're just as filling, and you'll save 10 grams of fat.
7. Prepare packaged macaroni-and-cheese or scalloped potatoes by cutting the added butter or margarine by half, or skipping it entirely. You'll hardly notice the difference.
8. Wipe half of the special sauce off your fast-food sandwich. You'll cut up to 6.5 grams of fat and still enjoy the creamy taste.
9. Make mashed potatoes with buttermilk (2 fat grams per cup) instead of butter and whole milk, or use skim milk and butter buds. You'll taste the butter flavor without the fat.
10. Sauté meat or vegetables in water, chicken broth, fruit juice or Worcestershire sauce instead of oil.
11. Use small-curd low-fat cottage cheese instead of high-fat ricotta in lasagna, manicotti and other Italian dishes.
12. Mix one-fourth to one-third of the margarine, butter or oil in most recipes. It won't affect the flavor of the food.
13. Use a nonstick vegetable cooking spray for frying. A two-second squirt of Pam aerosol, enough to stir-fry chicken and vegetables is just nine calories.
14. Slim down tuna- or chicken-salad sandwiches by replacing the mayonnaise with plain nonfat yogurt.
15. When ordering a side for eggs, remember that ham is leaner than bacon, which in turn is leaner than sausage.
16. When buying ground turkey at the meat counter, make sure it's ground turkey breast. Regular ground turkey can include fattier dark meat and even some skin, which gives it almost as much fat as lean ground beef.
17. Heat the oil in your skillet before you cook. That way, meat will absorb less fat.
18. Choose mustard over mayonnaise for sandwiches.
19. Make your own nonfat chip dip with one part nonfat sour cream and one part medium or hot salsa.

If You Know Your Child's Weight And Height In Pounds And Inches

Ask our office to give you your child's BMI. Follow these steps to calculate your child's BMI. Fractions and ounces must be entered as decimal values. See the table below for conversions to decimals.

BMI = weight in pounds / height in inches x height in inches x 703

1. Convert ounces of weight and fractions of inches into decimals. For example, if your child weighs 35 lb and 8 oz, 8 oz would be 0.5 lb and you would use 35.5 lb as your child's weight.
2. Multiply your child's height in inches by his or her height in inches. For example, if your child is 39.75 in., $39.75 \times 39.75 = 1580.0625$
3. Multiply your child's weight by 703. For example, if your child weighs 35.5 lb, $35.5 \times 703 = 24,956.5$.
4. Divide the answer in number 3 by the answer in step number 2. In the example, divide 24,956.5 by 1,580.0625 = 15.794628.
5. The number you get is your child's BMI. Round it off to one decimal place. In the example, the child's BMI would be 15.8.
6. After calculating your child's BMI, you can use the BMI chart for boys or the BMI chart for girls to find your child's BMI percentile according to his or her age. BMI charts can be found at the end of this handout.

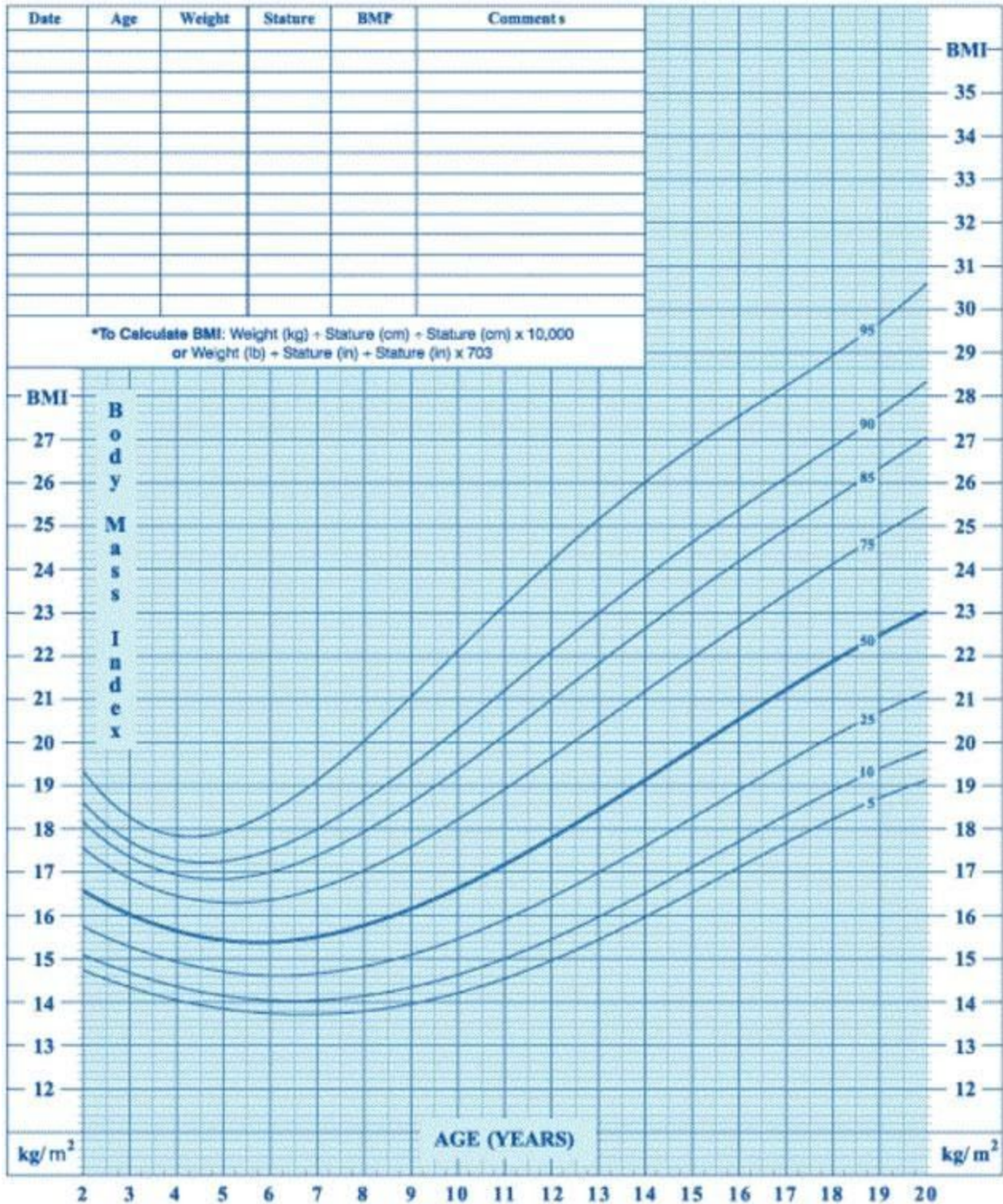
Conversion of height fractions and weight ounces to decimals

Fraction	Ounces	Decimals
1/8	2	0.13
1/4	4	0.25
3/8	6	0.38
1/2	8	0.50
5/8	10	0.63
3/4	12	0.75
7/8	14	0.88

2 to 20 years: Boys

Body mass index-for-age percentiles

NAME _____



SOURCE : Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000). <http://www.cdc.gov/growthcharts>

