

**PROCEDURES FOR THE
GROWTH SCREENING PROGRAM
FOR
PENNSYLVANIA'S SCHOOL-AGE
POPULATION**



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PREFACE

The “Procedures for the Growth Screening Program for Pennsylvania’s School Age Population” represents the first edition of this manual provided to school districts and other educational entities. The Department of Health’s Division of Chronic Disease Intervention and Division of School Health developed this manual.

Nationally, 15.3% of children aged six to eleven years and 15.5% of adolescents aged twelve to nineteen years in the United States were overweight in 1999-2000 (National Health and Nutrition Examination Survey). Risk factors for heart disease, such as high cholesterol and high blood pressure, occur with increased frequency in overweight children and adolescents compared to children with a healthy weight. In 2002 the Pennsylvania Department of Health through Penn State University conducted an assessment of overweight children and youth. A review of 25,266 students’ health records over a 3-year period indicated that 18% and another 17% needed to be evaluated for overweight and at risk of being overweight, respectively. In early 2003, the Department of Health unveiled the Pennsylvania Nutrition and Physical Activity Plan to Prevent Obesity and Related Chronic Diseases. One of the goals of this plan is to increase parent/guardian awareness of the BMI-for-Age measure as a screening tool to assess growth patterns in children and youth.

The purpose of the manual is to address the importance of proper growth screening of school age children and adolescents. The manual represents the minimal program that each district is to provide. Included in the manual are procedures for performing proper measures of height and weight. These procedures also incorporate the use of revised growth charts, including new charts for plotting Body Mass Index (BMI), developed by the Centers for Disease Control and Prevention (CDC). BMI is a weight for stature index that can be used to help determine whether the student is within a normal growth pattern, overweight, at risk of becoming overweight or underweight. The manual provides guidance to schools for notification to parents/guardians of the screening results and offers additional information regarding possible interventions and resources.

PROCEDURES FOR THE GROWTH SCREENING PROGRAM FOR PENNSYLVANIA'S SCHOOL-AGE POPULATION

I. INTRODUCTION

Growth screening enables school health professionals to:

- Monitor growth and development patterns of students
- Identify students who may be at nutritional risk or who may have a common nutritional problem
- Notify parents/guardians of screening results with a recommendation to share findings with the student's health care provider for further evaluation and intervention, if necessary.

School health professionals may also take the lead in promoting healthy lifestyle behaviors by being a valued health resource to the school and the community.

Nutrition is recognized as a critical factor in the promotion of health and the prevention of disease. Moderate malnutrition can have lasting effects on children's cognitive development and school performance. When children are hungry or undernourished, they have difficulty resisting infection and therefore are more likely than other children to become sick, to miss school, and to fall behind in class. They are irritable and have difficulty concentrating; and they have low energy levels. Unhealthy eating patterns may result in under-nutrition, iron deficiency anemia, and overweight and obesity.

Overweight and obesity in children and adolescents represents one of the most challenging conditions to treat. Yet intervention is necessary as recent data from the National Center for Health Statistics (NCHS) indicates approximately one in five children in the United States is overweight, a statistic that has doubled in the last three decades. Overweight is associated with an increased incidence and prevalence of hypertension and diabetes mellitus before and during adulthood as well as with the later development of cardiovascular disease in adults (Krauss, et al. 2000).

Eating disorders are increasingly prevalent and now are the third most common illness among America's adolescents. Disordered eating behaviors are closely associated with poor school achievement, lack of communication and caring within families, and "health-compromising behaviors" like drug abuse.

II. LEGAL BASIS FOR THE GROWTH SCREENING PROGRAM

School health services have provided for the screening of the growth of Pennsylvania's school children and adolescents since 1949. Section 1402 (a) (3) of the Public School Code requires that each child of school age (public and non-public schools) be measured for height and weight by the school nurse or teacher.

Public School Code of 1949

1402 Health Services
(a) Each child of school age shall be given by methods established by the Advisory Health Board,
(3) A measurement of height and weight by a school nurse or teacher.

28 Pa. Code, Chapter 23, Section 23.7 - School Health Regulations of the Pennsylvania Department of Health implement the Public School Code. These regulations require annual height and weight measurements and that effort be made to determine the growth pattern of each child.

28 Pennsylvania Code

Section 23.7. Height and weight measurements
(a) Height and weight measurements shall be conducted at least once annually and preferably twice annually. Every effort shall be made to determine the pattern of growth for each child so that his weight and height can be interpreted in light of his own growth patterns rather than those of his classmates.
(b) Height and weight measurements shall be conducted by a nurse or teacher.

In addition, Section 1402 (d) of the Public School Code and Section 23.11 of the School Health Regulations provide for special examination of children who appear to deviate from their normal growth and development.

These statutes and regulations set forth the legal basis for growth screening in Pennsylvania's schools. Because physical growth is one of the best indicators of the nutritional status of children, growth patterns form the core of nutrition screening activities in the school setting.

III. PRE-SCREENING EDUCATION

Prior to performing the growth screening procedure, the Department recommends that schools provide information to parents/guardians about the growth screening program. This should include information about the use of Body Mass Index as a tool to evaluate a student's growth pattern. Educating parents/guardians prior to their receiving screening results will help to lessen anxiety and confusion as they interpret the findings. The Department's pilot test of these procedures has shown that there is a more positive response from parents when they are prepared/educated about the upcoming measurements.

Schools may use a variety of ways to communicate to parents/guardians including but not limited to: student handbook, letters/handouts sent home, school website or newsletter, local cable access channel, school physician communication, PTO meetings, community forums, local newspaper.

IV. SCREENING PROCEDURE

Equipment:

- Properly calibrated scale (balance beam, dial or digital)
Note: To maintain accuracy, scales should be periodically validated. Recalibrate as needed. (See A. Weight, page 3, below)
- Device to measure height (stadiometer preferred)
- A ruler or right angle (will help to assure accuracy)
- Two gender-appropriate growth charts (Stature-for-Age Percentiles and Body Mass Index-for-Age Percentiles –NCHS 2000 version) per student (Appendix A) *
- Tool for determining BMI:
 - ➔ CDC BMI Table for viewing or printing, found at:
<http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-tables.pdf>
 - ➔ BMI wheel (available from medical/school health catalogs.)
 - ➔ BMI calculator (available from medical/school health catalogs.)
 - ➔ Computer application (See Section VI, 1d)

* Although there are small differences between the 1977 and 2000 Stature-for-Age growth charts, the older chart can be used for comparative purposes. The BMI-for-Age growth chart was newly introduced in 2000.

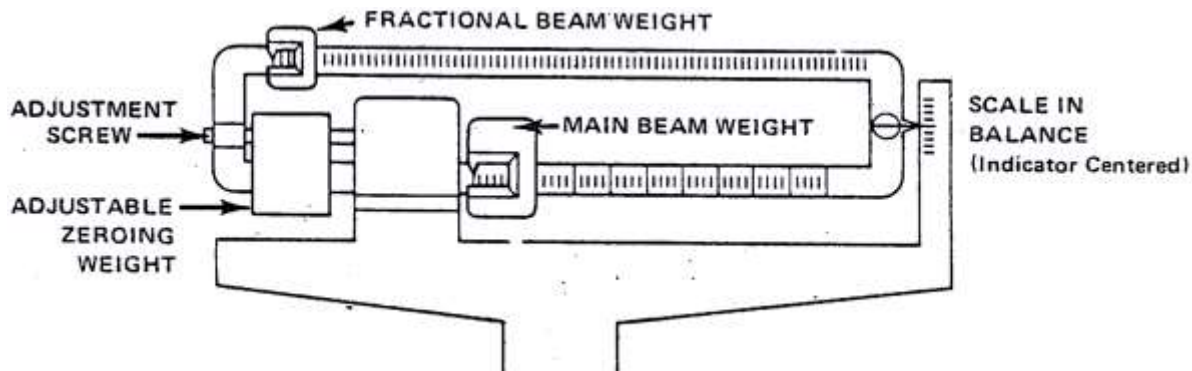
Grades to be screened: K-12 annually

Procedure:

Note: Students should be weighed and measured in a setting that provides privacy. Confidentiality is always important and care should be taken that findings are not accessible to other students or shared with staff. Students react in a variety of ways to being weighed and measured at school. Girls are most often concerned about being overweight regardless of their actual size. Boys worry about being short and too thin. During screening, neutral comments like “Kids bodies come in different sizes and shapes” are encouraged. Screeners should be prepared to be objective, calm and open to students’ concerns. Some students may need to meet with the school nurse at a later time to discuss their concerns.

A. WEIGHT

BALANCE BEAM SCALE



Weight is measured with an appropriately sized balance beam scale that measures weights to the nearest ¼ pound or 100 gm. Before the student is weighed, the scale is balanced by setting it at zero and noting if the balance registers exactly in the middle of the mark. If the end of the balance beam rises to the top or bottom of the mark, more or less weight, respectively, is added. Some scales are designed to allow for self-correction, but others need to be re-calibrated by the manufacturer. Scales vary in their accuracy. If using a dial or digital scale, refer to the manufacturer's instructions for proper use and calibration.

Note: To determine/assure validity of the measure, contact your local County Courthouse, Weights and Measurements Officer. If one is not available, contact the Pennsylvania Department of Agriculture's Regional Office nearest you, which can be found in the blue pages of the telephone book under State Government, or check the yellow pages for businesses that service and calibrate scales.

- 1) Students should be wearing light clothing (without shoes and jackets or coats). Have the student empty his/her pockets. (If the student must be weighed wearing a special device, such as a prosthesis, then this is noted when weight is recorded).
- 2) Place the scale in the "zero" position before the child steps on the scale. (CDC, 2001)
- 3) Position the student with both feet in the center of the platform (CDC, 2001) with his/her back to the scale.
- 4) Read the measurement to the nearest ¼ pound (100 gms) (CDC, 2001) and immediately document student's weight in lb. or kg. in the box provided on the gender appropriate NCHS 2000 Body Mass Index-for-Age Percentile growth chart (See Appendix A). (As a reminder, 2.2 pounds is equal to 1 kilogram), OR input data into a computer application (See Appendix F, #5 and #22).
- 5) The graphing of this measurement is neither necessary nor required because weight alone is not used to classify children and adolescents as under or over weight.
- 6) Ask the student if he/she would like to know the weight; if you suspect an eating disorder, use caution in reporting the weight as this can trigger a compensatory event.

B. STATURE (HEIGHT)*

The vertical distance is measured by placing a firm, flat surface against the vertex or crown of the head, while the student stands against a measuring device attached to a wall or flat surface. For the most accurate measurement, a wall-mounted unit (stadiometer) should be used. One way of improvising a flat surface for measuring length is to attach a paper or metal tape or yardstick to the wall, position student adjacent to the tape, and place a three-dimensional object, such as a thick book or box, on top of the head. The side of the object must rest firmly against the wall to form a right angle.

* Definition of **Stature**: Natural height in an upright position. The terms stature and height are used interchangeably throughout this manual and in the CDC resource materials.

- 1) Student should be measured without shoes, hat, and bulky clothing such as a coat or sweater. Undo or adjust hairstyles and remove hair accessories that interfere with measurement.

- 2) The student should stand erect, with shoulders level, hands at sides, knees or thighs together and his/her weight evenly distributed on both feet. The student's feet should be flat on the floor or foot piece, with both heels comfortable together and touching the base of the vertical board. When possible, all four contact points (i.e., the head, back, buttocks, and heels) should touch the vertical surface while maintaining a natural stance (see Figure 1). Some students will not be able to maintain a natural stance if all four contact points are touching the vertical surface. For these students, at a minimum, two contact points – the head and buttocks, or the buttocks and heels – should always touch the vertical surface.

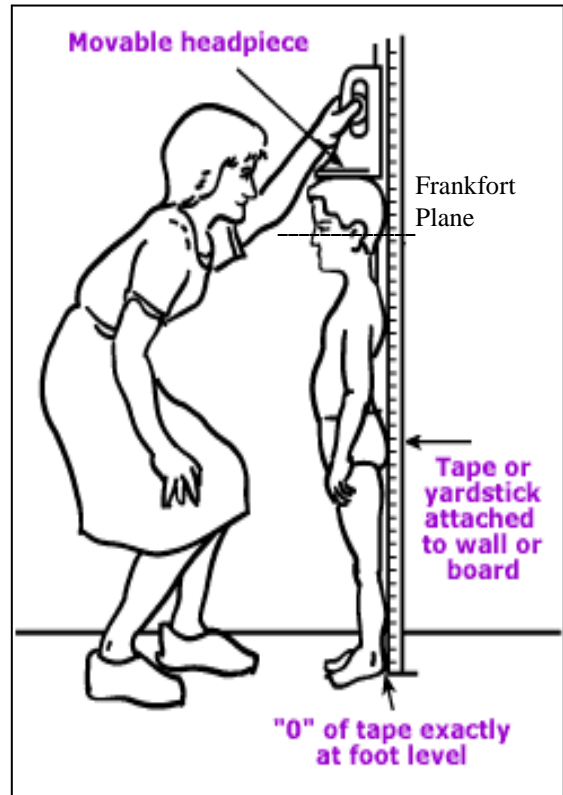


Figure 1

- 3) Position the student's head by placing a hand on the chin to move the head into the Frankfort Plane as shown in Figure 1. The Frankfort Plane is an imaginary line from the lower margin of the eye socket to the notch above the tragus of the ear. When aligned correctly, the Frankfort Plane is parallel to the horizontal headpiece and perpendicular to the vertical back piece of the stadiometer. This is best viewed and aligned when the examiner is directly to the side and at eye level with the student.
- 4) Lower the headpiece until it firmly touches the crown of the head and is at a right angle with the measurement surface. Check contact points as shown in Figure 1 to ensure that the lower body stays in the proper position and heels remain flat. Some students may stand up on their toes, but verbal reminders are usually sufficient to get them in proper position.
- 5) Immediately document the student's stature or length in inches or centimeters to the nearest $\frac{1}{4}$ -inch or 1 mm in the box provided on the gender appropriate NCHS 2000 Body Mass Index-for-Age Percentile growth chart (See Appendix A), OR input data into a computer application (See Appendix F, #5 and #22).

V. AVERAGE GROWTH VELOCITY

“Normal” growth covers a wide range. Most healthy children have stable, steady growth rates, staying within one or two growth channels on the NCHS growth charts. Growth channels are smoothed percentile curves depicting the growth percentiles of 3, 5, 10, 25, 50, 75, 90, 95 and 97. Incremental growth velocity provides an additional measure of “normal” growth. If the student is assessed as growing normally, then no further intervention is indicated.

Incremental Average Growth Velocity of Healthy Children

AGE GROUP	STATURE VELOCITY (inches or cm per year)	WEIGHT VELOCITY (pounds or kg per year)
Children 6 years to 12 years	2.4 inches or 6 cm	5.5 pounds or 2.5 kg
Adolescents Boys Girls	1.2 to 4.7 inches or 3 to 12 cm 1.3 to 3.9 inches or 3.4 to 10 cm	30.8 pounds or 14 kg (at peak of growth spurt)

VI. BODY MASS INDEX

“Pediatric growth charts have been used by pediatricians, nurses, and parents to track the physical growth of infants, children, and adolescents in the United States since 1977. The original charts were developed by the National Center for Health Statistics (NCHS) as a clinical tool for health professionals to determine if the physical growth of a child is adequate or inadequate. With more recent and comprehensive national data now available from the National Health and Nutrition Examination Survey (NHANES), along with improved statistical procedures, NCHS (now a part of CDC) initiated the process to revise the existing growth charts to make them an even more valuable clinical tool for health professionals.” (CDC, 2000)

The charts have been used to educate parents. Properly used, the charts document patterns of adequate or inadequate growth, identify goals for changes, and evaluate and reinforce changes in growth over time. The general growth pattern over a period of time is more important than a single measurement plotted at any one time. For many people, overweight begins in childhood and tracks into adulthood. Once a person becomes overweight, weight reduction and weight maintenance are extremely difficult to achieve, so prevention is by far the most effective solution to the problem. (CDC, 2000)

NCHS released revised growth charts in June 2000 using BMI-for-Age as an indicator for overweight in children and adolescents. BMI is a weight-for-stature index that can be used to determine whether the student is within a normal growth pattern, overweight, at risk of becoming overweight or underweight. BMI is the standard obesity assessment in adults, and its use in children provides a consistent screening measure across age groups. BMI provides a reasonable index of adiposity since the measurement is reliable, non-intrusive, and it has been validated against measures of body density.

“The new BMI growth charts will allow school health care providers to detect, at early ages, the students who are showing signs of being at risk for overweight/obesity or under-nutrition. Not only is BMI predictive of body fat, but it can also be used throughout the age range to compare individuals to their peers and to characterize underweight or risk of underweight (though no expert guidelines exist for the classification of underweight based on BMI).” (CDC, 2000 and 2004)

NOTE: BMI should be considered a screening tool and not a definitive measure of overweight and obesity as the indicator does have limitations. For example, athletes, dancers and other physically active students may have a high BMI due to their increased muscle mass, which weighs more than fat mass.

Procedure:

1) Determine the student's BMI (choose one):

- a. Use the CDC Table for viewing or printing, found at <http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-tables.pdf>.

BMI Rounding Rule: Whenever a child's specific height or weight measurement is not listed in the table, round to the closest number. If the height or weight measurement is at the midpoint or equal distance between two units, round down to the previous unit. (Ex. 26¼ lbs.= 26; 26¾ lbs.= 26½; 60¾ lbs.= 61; 34¾ in.= 34½) Note: Upper weight limit for table is 250 pounds and the BMI limit is 35.0. A different tool is needed for weights in excess of 250 lbs.

- b. Use a BMI wheel.
c. Use a BMI calculator.
d. Use a computer application*

* There are several computer applications available that calculate and graph BMI and some that can track a student's growth. The Baylor College of Medicine's website provides a program that calculates BMI and graphs BMI percentiles for children. (See Appendix F, #21).

The CDC's NutStat program, part of its Epi Info program, is public domain and can be obtained from the Internet free of charge (Only operates from a Windows platform). CDC's program will not only calculate BMI and graph percentiles, but can also store and analyze data for tracking growth from year to year and generate reports. (See Appendix F, #5).

There are other commercial programs available, or one may be developed by a school Information Technology Department.

- 2) Document student's BMI in the box provided on the gender appropriate NCHS 2000 Body Mass Index-for-Age Percentile growth chart (See Appendix A). Documentation on the growth chart is not necessary if the data is available and recorded in a computer application.
- 3) Using the gender-appropriate NCHS 2000 Body Mass Index-for-Age Percentile growth chart (Appendix A), plot the BMI-for-Age to determine the BMI percentile, OR this can be done by the computer application. (Interpretations for BMI percentiles can be found under Parent Notification and Referral Criteria, pages 8-9). Note: BMI's in excess of 35.0 cannot be plotted on these growth charts.
- 4) When a student's BMI percentile is ≤ 10 percent, plot the student's Stature-for-Age percentile using the gender appropriate NCHS 2000 growth chart (See Appendix A). The primary purpose for determining Stature-for-Age percentile is to assess students who may be at risk for undernutrition (Interpretations for BMI percentiles can be found under Parent Notification and Referral Criteria, pages 8-9).

NOTE: To expedite the screening process, the screener may elect to calculate the BMI and BMI percentile at a later time, preferably within 30 days.

VII. PARENT/GUARDIAN NOTIFICATION AND REFERRAL CRITERIA:

Interpretation of NCHS 2000 Growth Chart Findings and Referral Criteria

A. Weight Within Acceptable Range

Based upon school district experience and findings from the Department’s pilot test of these procedures, Parent/Guardian Notification (See Appendix D) should be sent home even if the student’s measurements fall within acceptable range. This should decrease the possibility of students being singled out as overweight. Parents always have a right to know what is happening to their children at school, and it is important to report results of measurement to them in a timely manner. Educational materials may also be provided with the Parent/Guardian Notification (See Appendices F-H).

B. Weight Less Than 5th Percentile

Students with a BMI-for-Age below the 5th percentile (or a BMI below 18.5 if age 18 and older) are identified as at risk for undernutrition. Refer to the list of physical indicators of nutrition risk (Appendix B) as an additional screening tool. Consider whether the student has grown along the similar growth pattern, as their short stature or weight for stature may be their “normal” pattern. For example, Asian children may fall below the 5th percentile for stature for age, but they will continue to grow along this pattern as their “normal.”

<i>Parameter</i>	<i>Usual Interpretation for Healthy Child</i>	<i>Alternative Interpretation for Child with Special Health Care Needs</i>	<i>Intervention</i>
BMI-for-Age < 5 th percentile*	At risk for acute undernutrition	May be common in conditions that limit muscle bulk such as spastic quadriplegia	<ul style="list-style-type: none"> ▪ Send Parent/Guardian Notification home in a timely manner (See Appendix D). If an eating disorder is suspected, communicate directly with parent/guardian. Additional considerations: <ul style="list-style-type: none"> ▪ Recommend that the student’s nutritional status be evaluated by the primary care provider. ▪ Provide educational materials with the Parent/Guardian Notification (See Appendices F-H). ▪ Provide a list of community-based food supplementation programs in the area if undernutrition may be related to an inadequate food supply: <ul style="list-style-type: none"> ▪ Local food pantries; WIC Program. ▪ County Cooperative Extension Agencies ▪ Local programs offering education to low-income families about stretching food dollars while maximizing nutrient value.
Stature-for-Age below 5 th percentile or Student has dropped by more than 2 channels on the growth chart	Uncommon, may be at risk for long term undernutrition <ul style="list-style-type: none"> ◆ Check parents’ stature ◆ Consider genetic basis 	Usually seen in neurologic disorders with microcephaly <ul style="list-style-type: none"> ◆ May be related to prenatal factor or genetic disorder 	

*This guideline can be reasonably applied to assess underweight or risk for underweight, although expert guidelines do not currently exist (NCHS 2000). At age 18 and beyond, a BMI of <18.5 should be used to identify possible undernutrition.

PARENT/GUARDIAN NOTIFICATION AND REFERRAL CRITERIA (continued):

Interpretation of NCHS 2000 Growth Chart Findings and Referral Criteria (continued)

C. Weight Equal To or Greater Than 85th Percentile

<i>Parameter</i>	<i>Usual Interpretation for Healthy Child</i>	<i>Alternative Interpretation for Child with Special Health Care Needs</i>	<i>Intervention</i>
BMI-for-Age ≥ 95th percentile	Overweight		<ul style="list-style-type: none"> ▪ Send Parent/Guardian Notification home in a timely manner (see Appendix D). Communicate directly with parent/guardian if needed. <p>Additional considerations:</p> <ul style="list-style-type: none"> ▪ Recommend that the student be evaluated by his/her primary care provider to assess: <ul style="list-style-type: none"> ▪ Blood pressure ▪ Total cholesterol ▪ Family history ▪ Exogenous causes of overweight & obesity (e.g., Prader-Willi Syndrome) ▪ Type II diabetes in children ▪ Encourage healthy eating behaviors and regular physical activity. ▪ Provide age-appropriate educational materials on nutrition, physical activity and weight management with the Parent/Guardian Notification. (See appendices F-H). ▪ Refer student to a school-based healthy lifestyle program, if offered. (See Appendix F for suggested resources). <p>Please note:</p> <ul style="list-style-type: none"> ▪ For students with a BMI ≥ 95 percentile, support implementation of a treatment plan if recommended by the primary care physician ▪ For students with a BMI between the 85th and 95th percentiles, encourage/monitor a weight maintenance plan if implemented by the primary care physician.
BMI-for-Age ≥ 85 th and < 95 th percentile	At risk for overweight	Common in conditions that cause skeletal deformities, such as spina bifida, Down’s syndrome, scoliosis	

VIII. SPECIAL HEALTH CARE NEEDS

Many students with special health care needs are not similar to the population that was the basis for the NCHS Growth Charts. There are both nutritional and non-nutritional bases for their different growth pattern. Specialized growth charts are available for certain conditions - Down Syndrome, Prader-Willi Syndrome, Turner Syndrome, Achondroplasia, Williams Syndrome, Cornelia deLange Syndrome, Rubinstein-Taybi Syndrome, and Marfan Syndrome. Some clinicians may elect to use them, for example, to illustrate to families how a specific condition can alter a student's growth potential. Special charts have also been developed to assess growth of children who have conditions with no genetic or chromosomal basis for an altered growth pattern, such as cerebral palsy. These charts are not recommended by the CDC. The current CDC recommendation is to use the CDC growth charts in all cases (CDC, 2003).

For the non-ambulatory student, obtaining body weight may be difficult. If unable to weigh a student, weight should be requested from the student, parent/guardian or primary care provider. If the student is unable to stand erect, then the measurement of **length** should be used. With the student lying supine, place the feet firmly against a solid surface. Use a wall if you do not have a measurement box. Align the student as well as possible and use a block of wood or another object to obtain a right angle to determine length. Measure the student's length between the wall and head position with a tape measure. Be sure to record this measurement as length instead of stature (height).

Teen pregnancy is a concern for school nurses. Adolescence is a time of rapid physical growth and the additional energy and nutrient demands of pregnancy place adolescents at nutritional risk. The school nurse can play a significant role in caring for pregnant teens. (See Appendix E).

IX. FOLLOW UP AND CASE MANAGEMENT

A. Eating Disorders or Undernutrition

Eating disorders are complex disorders involving two sets of issues and behaviors: those directly relating to food and weight and those involving the relationships with oneself and with others. It is estimated that more than one million Americans, mostly adolescents, are affected with eating disorders - mainly anorexia nervosa or bulimia nervosa. The desire for thinness is evident in girls as young as 5 years. Abramovitz and Birch (2000) studied this group and found 7% had already dieted and up to 65% considered dieting. By middle childhood, reports of dieting are more prevalent among school age girls with about 30% of third graders and 60% of sixth graders reporting that they have dieted (Gustafson-Larson and Terry, 1992). Disordered eating behaviors are closely associated with poor school achievement, lack of communication and caring within families, and "health-compromising behaviors" like drug abuse.

Although considered to be mental disorders, eating disorders are remarkable for their nutrition-related problems. In anorexia nervosa, nutrition-related problems include refusal to maintain a minimally healthy body weight (e.g., 85% of that expected), dramatic weight loss, fear of gaining weight even though underweight, preoccupation with food, and abnormal food consumption patterns. Anorexia nervosa is 10 times more common in females, especially just after onset of puberty, peaking at ages 12-13.

Bulimia nervosa is an eating disorder with food addiction as the primary coping mechanism. In bulimia nervosa, problems include recurrent episodes of binge eating, a sense of lack of control over eating, and compensatory behavior after binge eating to prevent weight gain (e.g., self-induced vomiting, abuse of laxatives or diuretics, fasting). Body weight is often normal or slightly above normal.

For a person with either diagnosis to recover fully, issues concerning food-intake patterns, food- and weight-related behaviors, body image, and weight regulation must be resolved. The registered dietitian is the logical member of the treatment team to address these issues with people recovering from anorexia nervosa and bulimia nervosa.

Keep in mind that a diagnosis of an eating disorder can be made only by a physician or an appropriate health care provider. (See Appendix C, “*Diagnostic Criteria for Anorexia Nervosa and Bulimia Nervosa*”).

Students identified to be at risk for undernutrition, failure-to-thrive or suspected eating disorders should be referred to a primary care provider for in-depth medical assessment. These nutrition-related conditions must be addressed cautiously and expediently. Aside from psychological disturbances, eating disorders can lead to serious electrolyte imbalances and dehydration. Long-term effects include osteoporosis and Cushing's disease. Death can occur in extreme cases. Because of the serious nature of these potential conditions, it is imperative that school health personnel communicate observations and concerns **directly** (letter, phone call or face-to-face) to the parent/guardian. Effective treatment for eating disorders involves medical and psychological treatment, nutritional counseling, and family and school support.

B. Obesity or Overweight

Nutrition and physical activity play key roles affecting overweight and obesity in children. Only one in five children eats five servings of fruits and vegetables a day, and the vegetables most frequently consumed are potato chips and French fries. (Krebs-Smith, S.M., et al, 1996.) The average child spends 24 hours a week watching television, of which 80% of commercials during children's programs advertise food products. Efforts must be targeted at improving the nutritional quality of diets and increasing the level of physical activity.

Because of the value placed on physical appearance and the common social belief that obesity results from laziness or lack of willpower, overweight students and their families often feel embarrassed and ashamed. School health professionals must treat them with sensitivity, compassion, and a conviction that obesity is an important, chronic medical problem that can be treated. For students at risk for overweight, prolonged weight maintenance allows for a gradual decline in BMI as the students grow in stature. Some organized programs for overweight children exist in the Commonwealth and others are being developed (See Appendix F).

Schools can play a proactive role in helping these students achieve a healthy weight by offering support and guidance. Professional judgment should be used in the distribution of nutrition, physical education, and weight management materials.

1. Materials can be obtained from the Pennsylvania Department of Health and from other resources noted in Appendix F.

2. A 24-hour diet history can be obtained from the student and analyzed on the U.S. Department of Agriculture's website: <http://www.usda.gov/cnpp>. The website provides a detailed computerized analysis of dietary intake in comparison with the Food Guide Pyramid and the Healthy Eating Index.
3. Establish an intervention group for students identified at highest risk for obesity and offer special programming, such as the SKYSHAPERS program (See Appendix F).
4. Develop and keep a list of community resources available to help students lead more active lifestyles. The list may contain local park areas, Rails-to-Trails, boys and girls clubs, and after school activities.
5. The Food Guide Pyramid provides a guide to healthy eating. Students can compare their dietary intake to the Food Guide Pyramid using this interactive website: <http://www.usda.gov/cnpp>.
6. Encourage the consumption of low fat, not necessarily fat-free, products. Dairy products, such as 1% milk or skim milk, can be substituted for 2% or whole milk. Low fat foods have 3 grams of fat or less per serving.
7. Encourage the intake of 5 servings of fruits and vegetables every day. One serving of fruit is equivalent to 6 oz. of 100% fruit juice, a medium size apple, 4" of a banana, 1 cup of melon or berries, or 1/2 cup canned fruit. One serving of vegetables is 1 cup of raw vegetables or 1/2 cup cooked vegetables.
8. Encourage consumption of water and moderation in consuming sweetened beverages. Juice and soda intake has increased significantly.
9. Encourage moderation with sweets and grain-based snack foods. These foods contribute excess calories of little nutrient value.
10. Encourage 30 to 60 minutes of cumulative physical activity, 5 days a week. Exercise tends to have a negative connotation with some children who view defined periods of exercise as boring or punitive. Encourage fun physical activities such as riding a bicycle or playing soccer with friends.
11. Encourage walking to school as a way to incorporate physical activity. Safety issues should be addressed when discussing this intervention.
12. Encourage team sports for children who enjoy these activities. However, the child must be active in the sport, not sitting on the bench. Swimming, dance, and martial arts may appeal to children who dislike team sports.
13. Encourage family activity where possible. Basketball, walking, and biking with parents or siblings are all enjoyable and inexpensive activities.

X. REPORTING

Every school district shall submit to the Pennsylvania Department of Health aggregate information regarding the growth screening program as specified in the Instruction Manual for the annual "Request for Reimbursement and Report of School Health Services" due September 30.

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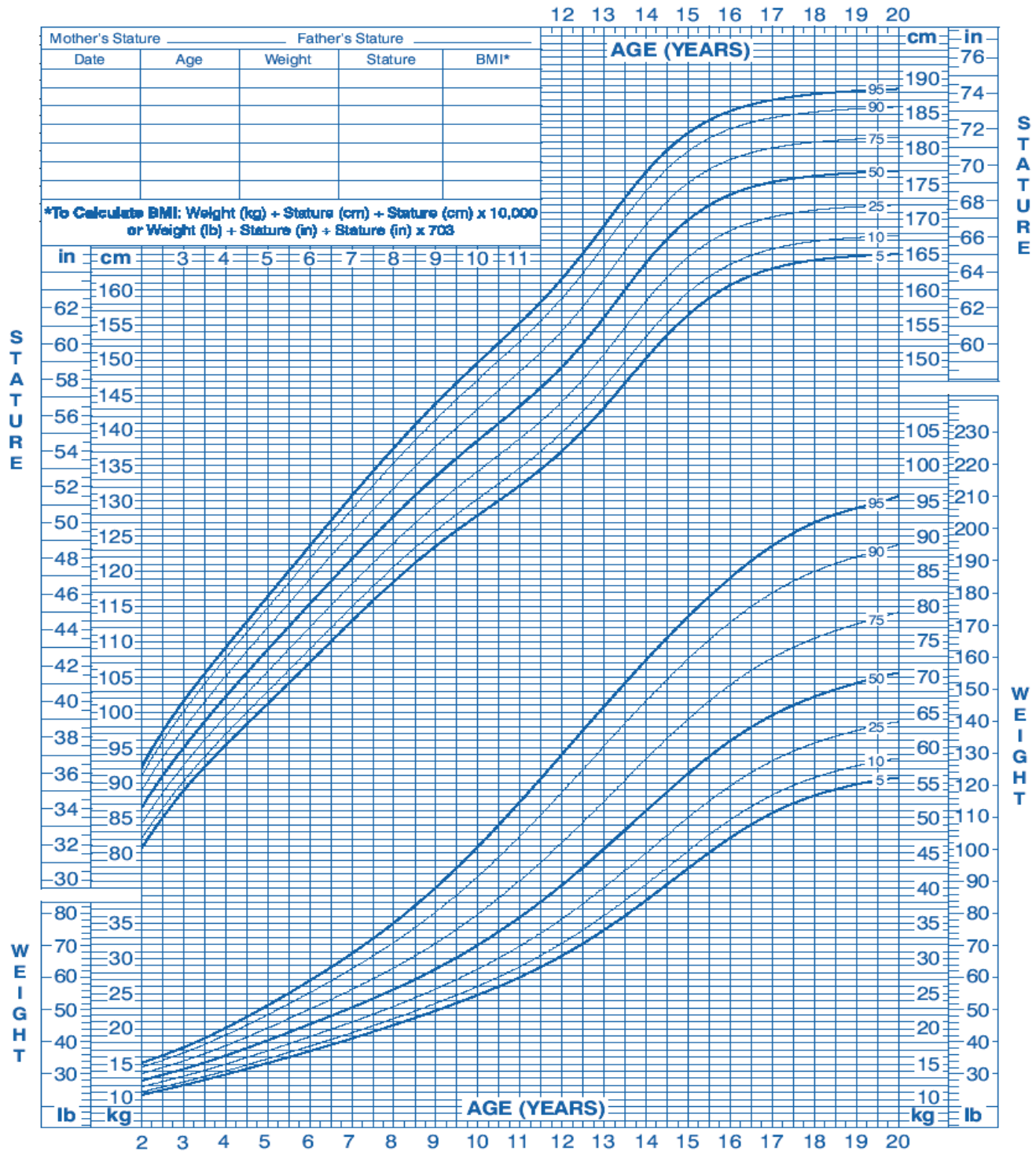
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2 to 20 years: Boys
Stature-for-age and Weight-for-age percentiles

NAME _____

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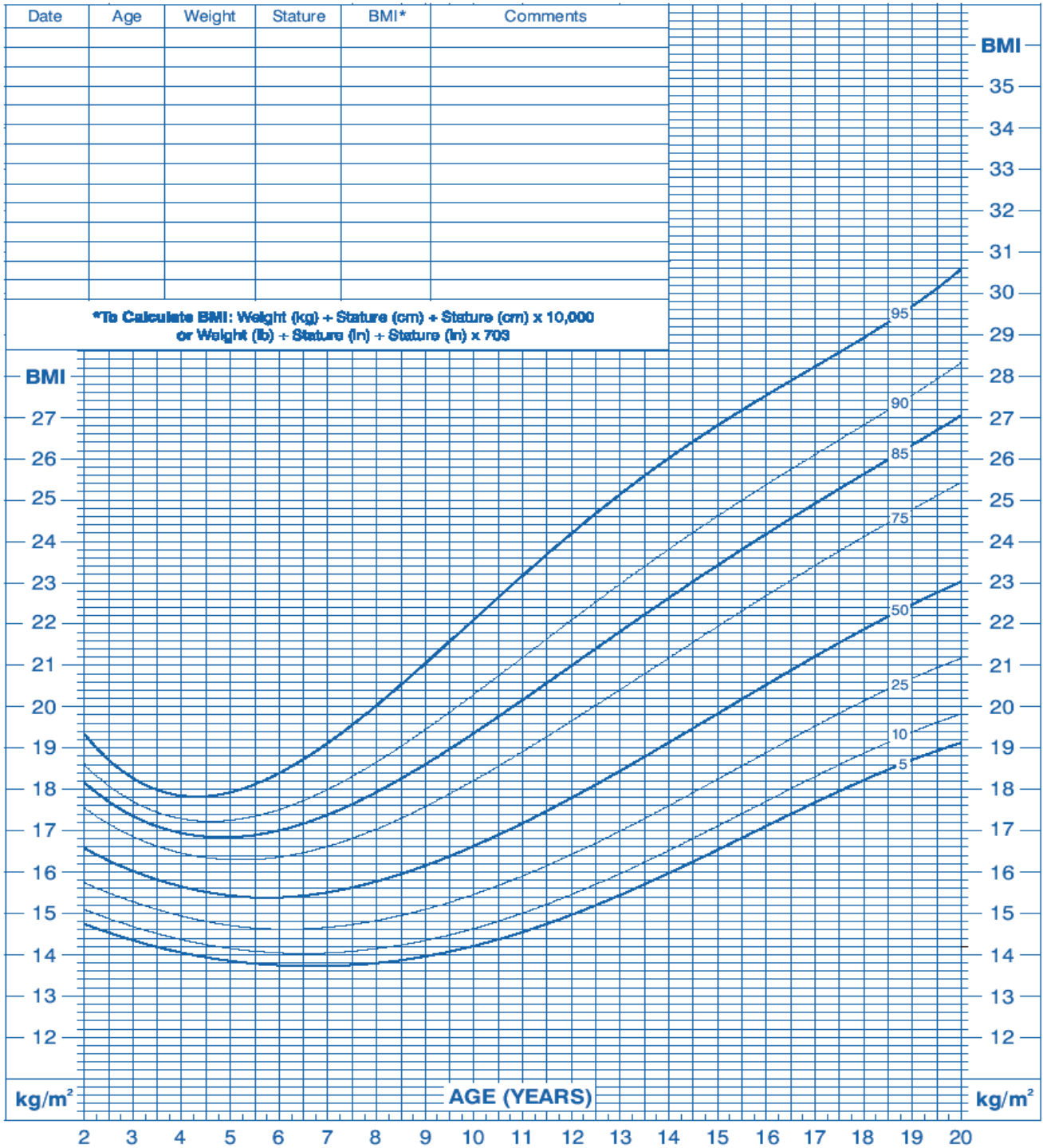
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 SOURCE: Developed by the National Center for Health Statistics in collaboration with
 the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>



2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 10/16/00).

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>



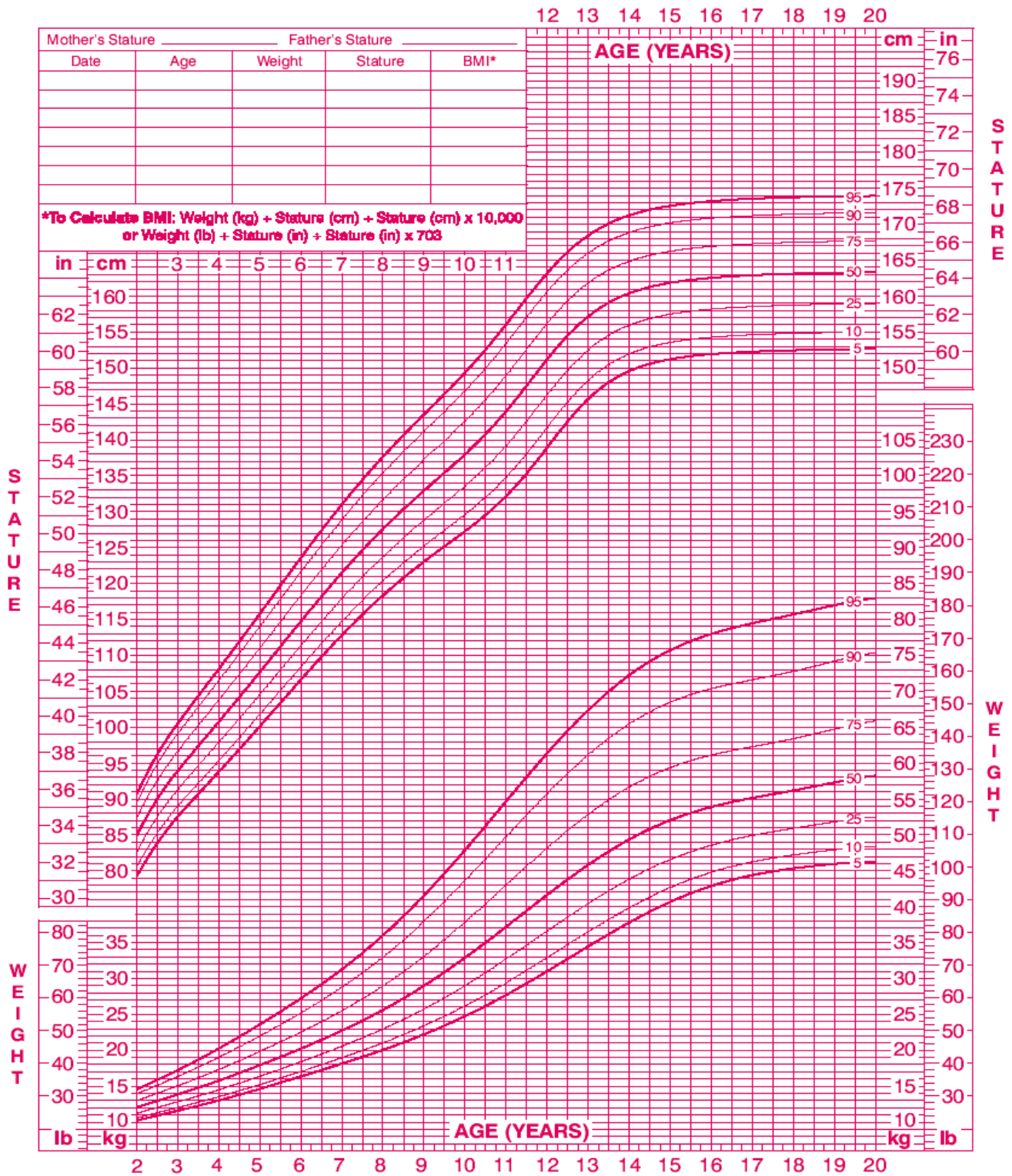
PENNSYLVANIA DEPARTMENT OF HEALTH

H514.026.1

2 to 20 years: Girls
Stature-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____

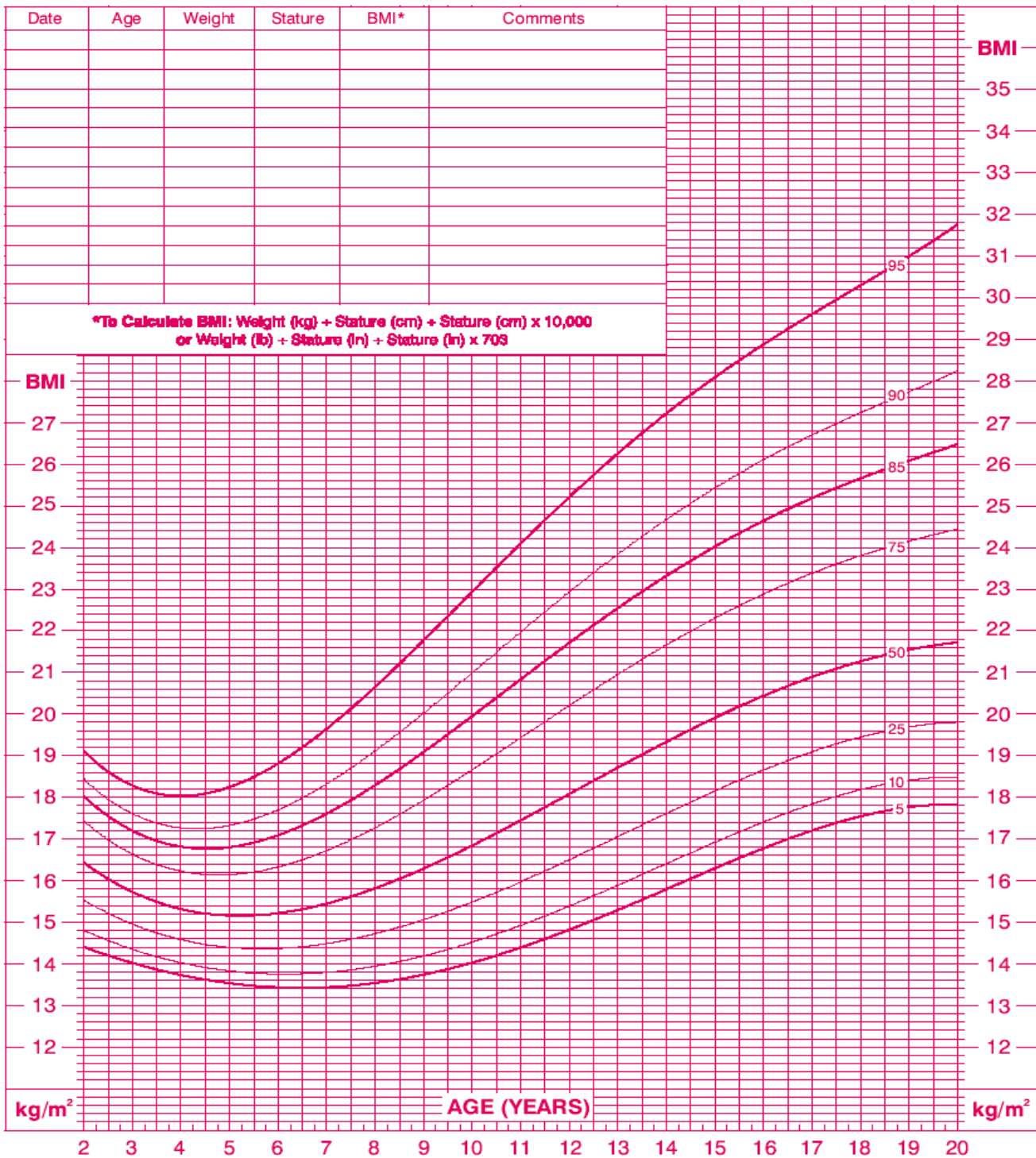


Published May 30, 2000 (modified 11/21/00).
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2 to 20 years: Girls
Body mass index-for-age percentiles

NAME _____
 RECORD # _____



Published May 30, 2000 (modified 10/16/00).
 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>



Physical Indicators of Nutrition Risk

The general observation of students' physical signs and overt behavior can provide valuable screening information. Most often physical signs are associated with undernutrition and nutritional deficiencies. The school health professional should evaluate physical signs in conjunction with other nutrition screening parameters. Only what is actually observed should be reported.

<i>Body Part / Area</i>	<i>Signs Associated with Nutrition Risk</i>	<i>Probable Nutrition Implication</i>
Abdomen	Edematous; protruding	Lack of protein or calories; water retention secondary to protein or calorie depletion; obesity
Eyes	Redness and fissuring of eyelid corners, redness of membranes, Bitot's spots Pale membranes Night blindness	Chronic lack of vitamin B complex (riboflavin and niacin); general poor nutrition Chronic deficiency of iron, vitamin B12, and/or folic acid. Chronic deficiency of vitamin A
Gums	Bleeding, spongy, swollen	Chronic deficiency of vitamin C
Face	Swollen, moon face, enlarged parotid glands, scaling of skin around nostrils	Lack of protein and calories; riboflavin, niacin, pyridoxine deficiencies
Hair	Thin, sparse; easily pluckable; and/or thick covering of pale hair on arms	Multiple nutrient deficiencies; lack of protein and calories
Lips	Cracks in corners of mouth	Chronic deficiency of vitamin B complex
Nails	Brittle, spoon-shaped or ridged	Iron deficiency
Nervous System	Listlessness, irritability, mental confusion	Lack of protein and calories; thiamin or vitamin B12 deficiency
Skin	Rashes; dry, flaking scalp Petechiae	Vitamin A or B complex deficiency Vitamin C deficiency
Tongue	Swollen, smooth, pale	Vitamin B complex deficiencies; iron deficiency
Teeth	Cavities, missing teeth	Excessive intake of sugar; general poor nutrition

Diagnostic Criteria for Anorexia Nervosa and Bulimia Nervosa

(*Diagnostic and Statistical Manual of Weight Disorders, 4th Edition, Text Revision, 2000*).

307.1 Anorexia Nervosa

- | |
|--|
| <p>A. Refusal to maintain body weight at or above a minimally normal weight for age and stature (e.g. weight loss leading to maintenance of body weight less than 85% of that expected, or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).</p> <p>B. Intense fears of gaining weight or becoming fat, even though being underweight.</p> <p>C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.</p> <p>D. Amenorrhea in postmenarchal women, that is, the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her menstrual periods occur only after administration of hormones such as estrogen).</p> |
|--|

Specify type:

Restricting type: During the episode of anorexia nervosa, the person does not regularly engage in binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
--

Binge eating/purging type: During the episode of anorexia nervosa, the person regularly engages in binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

307.51 Bulimia Nervosa

- | |
|---|
| <p>A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:</p> <ol style="list-style-type: none"> 1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances, and 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating). <p>B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.</p> <p>C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months.</p> <p>D. Self-evaluation is unduly influenced by body shape and weight.</p> <p>E. The disturbance does not occur exclusively during episodes of anorexia nervosa.</p> |
|---|

Specify type:

Purging type: The person regularly engages in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.



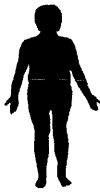

Non-purging type: The person uses other inappropriate compensatory behaviors, such as fasting or excessive exercise, but does not regularly engage in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

[SCHOOL INFORMATION]

[Today's Date]

Dear Parent /Guardian:

On [insert screening date], [Child's First Name] was weighed and measured in school and his/her BMI (Body Mass Index) was recorded. BMI-for-age percentile was calculated using your child's BMI and comparing it to that of other children of the same age and sex. These measurements are used to screen for weight categories that may lead to health problems. Keep in mind, checking a child's growth over time is more important than a one-time measurement and it is necessary for all children, regardless of BMI, to be active and eat healthy.

[Child's First and Last Name]'s Results:			
[Child's First Name]'s BMI-for-age percentile is XX%.			
Underweight	Healthy Weight	Overweight	Obese
Less than the 5th percentile	5th percentile up to the 85th percentile	85th to less than the 95th percentile	Equal to or greater than the 95th percentile
			
[Child's First Name]'s height is X ft. X in. and weight is XXX lbs.			

If [Child's First Name] is not in the healthy weight category, it is recommended that you schedule a visit with his/her health care provider and share these results.

What are the health risks of being overweight or obese?

- Increased risk of being overweight or obese as an adult.
- Increased risk for problems such as diabetes, heart disease, asthma, high blood pressure and poor self-esteem.

Here are some suggestions for your family to reach and/or maintain a healthy weight.

- Get up, get moving and limit screen time.
- Serve water instead of drinks with added sugar.
- Eat a variety of fruits and vegetables every day.
- For more tips visit www.pennstatehershey.org/PROwellness

For more information about BMI, visit www.cdc.gov/healthyweight/assessing/bmi or contact the School Nurse.

Sincerely,

Name of School Nurse
Phone: (555) 555-5555

Pennsylvania requires schools to report BMI for all children in the same way they report vision and hearing screenings. BMI-for-age percentile shows how your child's weight compares to that of other children of the same age and sex.

Adolescent Pregnancy

Both the teen pregnancy rate and the number of teens who report being sexually active have decreased since 1991. However, teen pregnancy continues to be a concern for school nurses. Adolescence is a time of rapid physical growth with nutritional requirements increasing significantly to support growth and development. The additional energy and nutrient demands of pregnancy place adolescents at nutritional risk. Pregnant adolescents may require higher energy intakes. In general, pregnant adolescents should not consume less than 2000 calories per day and in many cases may need higher intakes. There may be other factors that place a pregnant adolescent at risk, for example a vegan diet, pre-existing anemia, substantial under or over weight status prior to conception and the developmental status of the mother. If the teen is still growing or underweight there may be competition for nutrients with the fetus. Many adolescents do not seek early prenatal care and those who do may fail to cooperate with recommendations, especially those focusing on nutrition.

Pre-pregnancy weight for height (or BMI) is used to determine appropriate gestational weight gain. All women are encouraged to increase weight to achieve at least the lower limit of weight specified for their “weight for height” category.

Recommended Total Weight Gain Ranges for Pregnant Women ^{a,b}		
Prepregnancy Weight-for-Height Category	Recommended Total Gain	
	lb	kg
Low (BMI < 19.8)	28-40	12.5-18
Normal (BMI 19.8 to 26)	25-35	11.5-16
High (BMI > 26.0 to 29.0)	15-25	7.0-11.5
Obese (BMI > 29.0)	≥15	≥7.0

^a Adapted from *Nutrition During Pregnancy*.
^b For singleton pregnancies. The range for women carrying twins is 35 to 45 lb (16 to 20 kg). Young adolescents (≤2 years after menarche) and African-American women should strive for gains at the upper end of the range. Short women (≤62 in. or ≤157 cm) should strive for gains at the lower end of the range.

Source: Institute of Medicine. Nutrition during pregnancy and lactation. National Academy Press, Washington DC 1992:44.

*

* Institute of Medicine recommendations were developed prior to the revised CDC growth charts, and are currently under review.

Graphing permits visual tracking of weight gain by week of gestation and simplifies detection of an abnormal change in weight over time. Identifying major deviations in rate of gain may signal the need for further assessment. For women with normal pre-pregnancy Body Mass Index (BMI) the recommendation is to gain at a rate of approximately 0.4kg (1 lb) per week in the second and third trimesters of pregnancy. If the female is underweight, they should strive for a somewhat higher rate of 0.5kg and if overweight a slightly lower rate of 0.3kg per week. Women who are identified as obese should have their rate of weight gain determined by their prenatal care provider on an individual basis.

School nurses can play an important role in caring for pregnant teens. They can act as a resource providing the teen information and encouragement to seek early prenatal care; encourage breastfeeding; discourage the use of tobacco, drugs and alcohol; help the students obtain assistance for government and social services, as needed, for example Pregnant and Parenting Teen programs and Women, Infants, Children (WIC) programs. They can provide case management and monitoring of the student's weight gain, blood pressure and general well being both in the prenatal and postnatal periods. Teens have reported that they are often disturbed by the weight gain during pregnancy and the psychosocial issues that develop if the weight gain remains to any degree after delivery. If problems become significant the school nurse may need to develop an Individual Health Plan (IHP) for the student.

Good nutritional recommendations for all students are no less important for the pregnant student: eat a variety of healthy foods; eat three meals a day and two to three healthy snacks per day; limit high fat/low nutrient foods, like chips and soft drinks and manage weight through appropriate eating habits and regular physical activity.

RESOURCES

School health professionals are encouraged by the Centers for Disease Control and Prevention to take a lead in preventative programs to promote healthy lifestyle behaviors through the distribution of educational materials, individual advice, small group discussions, and presentations. Suggestions for resources and programs follow.

1. Action for Healthy Kids

Nationwide initiative to create health-promoting schools that support sound nutrition and physical activity as a part of a total learning environment.

Website: <http://www.actionforhealthykids.org>

2. American Academy of Pediatrics

Northwest Point Boulevard
Elk Grove Village, IL 60009
Phone: (708) 228-5005

Website: <http://www.aap.org>

Pennsylvania Chapter: <http://www.paaap.org>

3. American Dietetic Association

The National Center for Nutrition and Dietetics
120 South Riverside Plaza
Suite 2000
Chicago, IL 60606-9431

Consumer Nutrition Hotline: (800) 366-1655

Find a Registered Dietitian in your area to provide expert nutrition counseling, medical nutrition therapy, and weight management interventions.

Website: <http://www.eatright.org>

**4. Department of Health and Human Services (DHHS)
Centers for Disease Control and Prevention (CDC)
School Health Index**

A self-assessment and planning tool that enables schools to identify strengths and weaknesses of health promotion policies and programs, develop an action plan for improving student health, and involve teachers, parents, students, and the community in improving School policies and progress.

Website: <http://www.cdc.gov/nccdphp/dash/SHI/index.htm>

- 5. Department of Health and Human Services (DHHS)
Centers for Disease Control and Prevention (CDC)
Epidemiology Program Office
Division of Public Health Surveillance and Informatics
Epi Info/NutStat**

NutStat is a nutrition anthropometry program that calculates BMI, BMI percentiles and Z-scores using the 2000 CDC growth reference. NutStat is a component of Epi Info, a public domain microcomputer program for handling public health data. Data can be entered per individual or imported from a file. Individual BMI-for-Age Percentile graphs and notification letters can be generated. This application can be used to analyze data and create output reports.

Website: <http://www.cdc.gov/epiinfo>

- 6. Department of Health and Human Services (DHHS)
Centers for Disease Control and Prevention (CDC)
National Center for Chronic Disease Prevention and Health Promotion
BMI for Children and Teens**

Provides information about and CDC links to obesity and overweight, 2000 CDC growth charts, growth chart training modules, software tools (Epi Info which contains NutStat, a program for calculating BMI and BMI-for-Age Percentiles and graphs results).

Website: <http://www.cdc.gov/growthcharts>

- 7. Department of Health and Human Services (DHHS)
Centers for Disease Control and Prevention (CDC)
National Center for Chronic Disease Prevention and Health Promotion
Adolescent and School Health**

Website includes: 1) Program for Health Youth, with links to information and resources about nutrition and physical activity, the Youth Risk Behavior Surveillance System, and the School Health Policies and Programs Study, and 2) the eight components of a Coordinated School Health Program.

Website: <http://www.cdc.gov/nccdphp/dash/about/index.htm>

- 8. Dole 5 A Day for Kids Program**

Provides free educational materials to all elementary schools and special education classes, as requested by individual teachers.

Website: <http://www.dole5aday.com>

- 9. National Cancer Institute's 5 A Day program**

Interactive site to log fruit and vegetable intake and minutes of physical activity. Promotional materials available in limited quantities for cost of shipping and handling. Phone: 1-800-4-CANCER

Website: <http://www.5aday.gov>

- 10. National Dairy Council**
Website for educators, parents, and school food service professionals. Provides fun and easy-to-use activities to teach students about nutritious foods and a healthy diet.
Website: <http://www.nutritionexplorations.com>
- 11. National Heart, Lung, and Blood Institute Information Center, Obesity Education Initiative**
P.O. Box 30105
Bethesda, MD 20824-0105
Phone: (301) 251-1222
Website: <http://www.nhlbi.nih.gov/about/oei/index.htm>
- 12. Pennsylvania Advocates for Nutrition and Activity (PANA)**
4750 Lindle Road
P.O. Box 8600
Harrisburg, PA 17105-8600
Phone: (717) 561-5256
Website: <http://www.panaonline.org/>
See Appendix H.
- 13. Pennsylvania Department of Education
Division of Food and Nutrition**
333 Market Street, Harrisstown 2
Harrisburg, PA 17126-0333
Phone: (717) 783-6788
Website: <http://www.pde.state.pa.us>
- 14. Pennsylvania Department of Health (PADOH)**
District Resource Center
Phone: 1-877-PAHEALTH (1-877-724-3258)
Website: <http://www.health.state.pa.us>
- 15. President's Council on Physical Fitness and Sports**
701 Pennsylvania Avenue, NW, Suite 250
Washington, DC 20004
Phone: (202) 272-3421
Website: <http://www.fitness.gov>
- 16. President's Challenge Physical Activity and Fitness Awards Program**
Provides a series of programs for all ages designed to improve activity level. Offers personal activity logs to track one's progress online and awards for reaching one's goals.
Website: <http://www.presidentschallenge.org>

- 17. SHAPEDOWN**
The nation's leading weight management program for children and adolescents for over 20 years. There are at least four providers of this program in Pennsylvania as of 2000.
Website: <http://www.shapedown.com>
- 18. SKYSHAPERS**
Interactive program that encourages children to discover and reach for their dreams leading healthy, active lives. Entire program can be downloaded in *pdf* format for educators.
Website: <http://www.skyshapers.com>
- 19. Surgeon General's Public Health Priorities**
Surgeon General's website includes speeches, testimony, and various resources related to obesity, diet and nutrition, physical activity, and fitness.
Website: <http://www.surgeongeneral.gov/publichealthpriorities.html>
- 20. U.S. Department of Agriculture (USDA)**
Food and Nutrition Information Center
Website: <http://www.nal.usda.gov/fnic>
- 21. USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine
Children's BMI and Percentile Graph Calculator**
Based on revised growth charts from the CDC, provides a "snapshot" of a child's weight and height for age, including BMI and BMI Percentile. It also plots the child's BMI Percentile on a growth chart, which is printable.
Website: <http://www.kidsnutrition.org>
- 22. U.S. Department of Health and Human Services
Health Resources and Services Administration
Maternal and Child Health Bureau**
Growth Charts Training – A training site offering a set of self-directed, interactive training modules for health care professionals using the new pediatric growth charts in clinical and public health settings to assess growth.
Website: <http://depts.washington.edu/growth>
- 23. U.S. Public Health Service
National Institutes of Health (NIH)
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
Weight-control Information Network (WIN): Helping Your Overweight Child**
Website: <http://www.niddk.nih.gov/health/nutrit/pubs/helpchld.htm>



Background

Pennsylvania Advocates for Nutrition & Activity (PANA) is the only statewide organization seeking systems change on three fronts simultaneously, in communities, schools and healthcare settings to create environments that promote active lifestyles and healthy food choices.

Supported by the Pennsylvania Department of Health through a grant from the Centers for Disease Control and Prevention (CDC), PANA facilitates the implementation of Pennsylvania's Nutrition and Physical Activity Plan to Prevent Obesity and Related Chronic Diseases.

PANA operates through a diverse coalition of partners representing state agencies, universities, non-profit organizations, professional associations, and the business community. There are approximately 80 leadership team members who provide expertise and resources in developing and implementing state-wide activities. In addition, there are more than 400 local partners who work to implement environment and policy change strategies in local communities.

Mobilizing Change

In order to generate statewide action to combat the epidemic of overweight and sedentary youth, PANA initiated a Keystone Healthy Zone Schools program in 2004. Over 900 Pennsylvania schools have signed on as Keystone Healthy Zones (2004), committed to supporting physical activity and healthy eating as part of the total learning environment.

PANA Policy Priorities

PANA is working with Keystone Healthy Zone Schools to improve physical activity and nutrition in three priority areas. These include:

1. The quality of food and beverages sold in schools (Competitive Food Sales)
2. The time provided for physical education classes and the quality of programs offered (Quality and Quantity Physical Education)
3. Improving safety of routes within one mile of a school for children to walk to school (Safe Routes to School)

To find out more about the Keystone Healthy Zone program and other PANA activities, visit <http://www.panaonline.org>

<http://www.panaonline.org>



Be Physically Active and Enjoy a Variety of Foods

The Surgeon General recommends:

- **Be physically active.** It is recommended that Americans accumulate at least 30 minutes (adults) or 60 minutes (children) of moderate physical activity most days of the week.
- **Plan family activities** that provide everyone with exercise and enjoyment.
- **Provide a safe environment for your children** and their friends to play actively; encourage swimming, biking, skating, ball sports, and other fun activities.
- **Reduce the amount of time you and your family spend in sedentary activities**, such as watching TV or playing video games. Limit TV time to less than 2 hours a day.
- **Follow the Dietary Guidelines for healthy eating** (www.health.gov/dietaryguidelines).
- **Eat meals together as a family** as often as possible.
- **Carefully cut down on the amount of fat and calories** in your family's diet.
- **Don't place your child on a restrictive diet.**
- **Avoid the use of food as a reward** and avoid withholding food as punishment.
- **Aim to eat at least 5 servings of fruits and vegetables** each day.
- **Eating a healthy breakfast is a good way to start the day** and may be important in achieving a healthy weight.



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