

State of Alaska

Measuring Height/Weight and

Calculating BMI

Guidelines for Schools

2/1/2011
Reprinted 3/15/2012



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**State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools**

Acknowledgements:

This guideline document was developed in collaboration with the Alaska Department of Health and Social Services, Division of Public Health, Section of Women's, Children's, & Family Health, School Nursing/School Health Program, the School Health Nurse Advisory Committee, and the Section of Chronic Disease Prevention & Control, Obesity Prevention & Control Program.

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**State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools**

Table of Contents

INTRODUCTION AND PURPOSE	1
Burden of Overweight & Obesity	
How schools can help with Screening & Surveillance	
BEST PRACTICE DETERMINANTS.....	3
Best practice considerations	
Establishing policy and procedures	
Safeguards for successful implementation	
DEFINITIONS	5
EQUIPMENT.....	5
Critical Components	
Calibration of Equipment and Use of Up to Date Screening Tools	
Weight - Scales	
Height – Stadiometers	
PROTOCOL/PROCEDURE	7
When to screen	
The Process	
INSTRUCTIONS FOR MEASURING WEIGHT	
INSTRUCTIONS FOR MEASURING HEIGHT	
CALCULATING BMI	
PLOTTING BMI VALUES ON APPROPRIATE GROWTH CHARTS	
INTERPRET BMI-FOR AGE PERCENTILE SCORE	
REPORT RESULTS TO PARENTS OR GUARDIANS	
ROLE OF THE SCHOOL NURSE	11
COLLABORATING WITH THE DIVISION OF PUBLIC HEALTH.....	12
RESOURCES.....	13
Resources for kids	
FORMS	
Appendices	14
Appendix A: Sample Pre-Screening Notification to School Faculty and Staff	
Appendix B: Sample Pre-Screening Notice to Parents and Guardians	
Appendix C: Sample Pre-screening Notification of Local Primary Care Providers	
Appendix D: Sample Referral Letter to Parents and Guardians for BMI Screening Referral	
Appendix E: Sample Screening Results for Parents and Guardians	
Appendix F: Sample Physician Post-Screening Notification Letter	
Appendix G: Blood Pressure Values Requiring Further Evaluation, According to Age and Gender	
REFERENCES.....	21

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

INTRODUCTION AND PURPOSE:

The purpose of the Division of Public Health's Measuring Height/Weight and Calculating BMI Guidelines for Schools is to provide school staff with the necessary information and tools to successfully and accurately collect heights and weights, calculate BMI, utilize criteria for referral, communicate effectively with parents and guardians, and provide aggregate surveillance data to the Division of Public Health as desired. These guidelines are offered as best practice information from which school district policy and procedures may be based. The guidelines are not mandatory and each school district may adopt the standards that best meet the needs of their student population.

Burden of Overweight & Obesity

Children who are not of a healthy weight are at risk for a variety of health problems, making early identification of weight status important. Eating disorders such as anorexia, bulimia and binge eating can result in both serious long-term health problems and poor school performance.¹

Obesity has become a major health problem for Americans and Alaskans. About a third of the adult population is now obese and an additional one-third is overweight. Since the 1980's, the national overweight and obesity rates have tripled for youth. Currently between 27 and 40% of Alaska's children are overweight and obese.²

Obese children are at increased risk of a number of chronic conditions including Type 2 diabetes, hypertension, high cholesterol, asthma, certain forms of cancer and nonalcoholic steatohepatities (fatty liver). Obese youth may also experience social stigmatization and discrimination, as well as psychological problems. Obese students are less likely to report earning mostly A's and B's in high school than normal weight students. In addition, children and adolescents who are overweight and obese have an increased risk of being overweight or obese as adults.²

How schools can help with Screening & Surveillance

Obtaining height and weight measurement values is the most practical method available for assessing children's growth. These values can be plotted on a CDC U.S. 2000 growth chart for comparison with other children of the same age and sex. The values can be utilized to calculate the Body Mass Index (BMI) which is the ratio of weight (kg) to height in meters squared. BMI is used to assess weight status and to estimate a person's risk of weight-related health problems. A BMI measurement is relatively easy to measure, inexpensive, non-invasive, quick to obtain and correlates with body fat.³ In children and adolescents, BMI changes with age and sex. As children age, BMI increases. Therefore, for children and adolescents, BMI values must then be plotted on a sex-specific growth curve to determine the percentile for sex and age in order to estimate the student's risk of weight-related health problems. It should be noted that BMI should not be used alone to determine weight status of an individual child. Rather it should be used to identify children and adolescents who need to be examined further by a health care provider to obtain an informed diagnosis.^{3,4} School-based BMI measurement programs are conducted for **surveillance** and/or **screening** purposes.

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

BMI surveillance programs assess the weight status of the school population to identify the percentage of students who are potentially at risk for weight-related health problems.

BMI screening programs assess the weight status of individual students to identify those at risk and provide parents with information to help them take appropriate action.³

BMI screening information will enable a school health professional to:

- Identify students who may be at nutritional risk
- Identify students who are at risk for eating disorders
- Identify students who are underweight, overweight, or obese
- Encourage discussions between families and health care providers about their child's growth and development
- Promote healthy eating and physical activity in the school environment¹

The purpose of **BMI surveillance** is to:

- Create awareness among school and health personnel, community members, and policy makers of the extent of weight problems in specific populations
- Provide an evaluation measure for the effectiveness of school district wellness policies, practices, programs and efforts to improve school health
- Strengthen school district grant applications by clearly identifying need, target populations, and by providing an evaluation mechanism
- Provide local community health agencies information for monitoring community health, describing trends in weight status over time, identifying disparate populations, evaluating community health promotion efforts and determining priorities for targeting prevention efforts and treatment programs
- Assist the State of Alaska Division of Public Health to provide better technical assistance to school districts and local agencies to help identify health risks, develop interventions, and determine how to target limited financial resources^{2,3}

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

BEST PRACTICE DETERMINANTS

Best practice considerations

Because of the numerous advantages of using BMI-for-age to assess overweight in children and adolescents, expert committees and advisory groups have recommended BMI-for-age as the accepted measure. In 1997, an international conference convened by the International Obesity Task Force concluded that BMI is a reasonable measure for assessing overweight in children and adolescents worldwide.⁵ Although BMI is used to screen for overweight and obesity in children and teens, BMI is not a diagnostic tool. Many factors contribute to youth height and weight, and there are undoubtedly cultural differences in the distribution of those factors. Nonetheless, because there currently is no clinically significant difference in the relationship between BMI and body composition in different racial and ethnic groups, it is recommended that the same BMI standards be applied to all racial and ethnic subpopulations.^{6,7} The same holds true for athletes with potentially more lean muscle mass than fat composition. To determine whether a child or teen has excess fat, further assessment would be needed.

4

The American Public Health Association, The American Heart Association and the Institute of Medicine endorse the use of BMI measurement for **surveillance** purposes in clinical settings as well as schools. However, views on BMI **screening** vary. In 2005, the U.S. Preventative Services Task Force concluded there was insufficient evidence to recommend for or against BMI screening programs for youth in clinical settings as a means to prevent adverse health outcomes. The Institute of Medicine endorses annual school-based BMI screening. BMI screening meets some of the criteria that the American Academy of Pediatrics (AAP) developed to guide decisions on whether schools should implement a screening program, but not all.⁸ AAP has indicated BMI is an acceptable measure of weight status and schools are the logical measurement site. Because obesity is prevalent and weight status is often misperceived, effectively administered BMI screening could help correct misperceptions which contribute to unsafe weight-control behaviors.³ The American Medical Association and 12 other organizations recommend BMI calculation annually by the primary health care provider.⁸ However, low rates of obesity identification by physicians may warrant alternative approaches to obesity screening such as universal school-based programs, especially in high-risk communities.⁹

The State of Arkansas successfully instituted statewide school based BMI screening and did not see an increase in the feared harmful behaviors such as teasing, student use of diet pills, or excessive concerns with weight by students. Instead, Arkansas' school based BMI screening enhanced awareness among parents and children as well as increased engagement by school, clinical, public health, and community leaders to address the burden of obesity. Additionally, a halt in the progression of the obesity epidemic was observed after implementation of comprehensive state-wide obesity prevention and control program that included school based BMI screening.¹⁰ Five studies of parental perceptions of BMI screening in schools found that parents support and respond positively to BMI screening in their children's schools. Parents support programs that provide: advance notice, an opportunity to decline consent, assurance that measurements are obtained in a private and respectful manner that minimizes weight-related teasing, and results in a letter that uses a neutral tone and does not assign blame.⁸

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Establishing policy and procedures

Since the needs of students and families vary, each individual school district needs to determine if a BMI surveillance and/or screening program would be beneficial for their students, families, and community. School-based BMI screening programs must establish procedures that do not stigmatize students that may lead to harmful behaviors. Before launching a BMI measurement program, schools should attempt to minimize potential harm and maximize benefits by:

- assuring a safe and supportive environment for students of all body sizes (universal bullying – prevention programs that address weight discrimination, curricula fostering acceptance of healthy weight, professional development and resources in place for staff)
- implementing comprehensive set of science-based strategies to promote physical activity and healthy eating
- establishing safeguards that ensure respect for student privacy and confidentiality, protect students from potential harm, and increase the likelihood of a positive impact⁸

Safeguards for successful implementation

While it is important that height and weight measurements be done accurately, it is equally important that measuring and weighing be done in a respectful and sensitive manner. School districts who establish height/weight/BMI screening and/or surveillance programs should adhere to the following safeguards:

- ✓ introduce the program to school staff and community members and obtain parental consent
- ✓ train staff in administering the program (ideally, implementation will be led by a highly qualified staff member, such as the school nurse)
- ✓ establish safeguards to protect student privacy
- ✓ obtain and use accurate equipment
- ✓ accurately calculate and interpret the data
- ✓ develop efficient data collection procedures
- ✓ avoid using BMI results to evaluate student or teacher performance
- ✓ regularly evaluate the program and its intended outcomes and unintended consequences⁸

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

DEFINITIONS

- BMI or Body Mass Index: a measure of body fat that is the ratio of the weight of the body in kilograms to the square of its height in meters
- Calibration: the use of standard test weights and measuring rods to check the accuracy of equipment
- Height: a standing measurement in inches or meters
- Frankfort Horizontal Plane: imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye (see Figure 2)
- Mid-Axillary Line: an imaginary line through the axilla (armpit) parallel to the long axis of the body and midway between its ventral (front or anterior) and dorsal (back or posterior) surfaces (see Figure 1)
- Private: not openly or in public
- Scale: instrument for measuring weight
- Stadiometer: instrument for measuring height
- Weight: a measurement in pounds or kilograms
- Zeroed: assuring the scale balances at 'zero or 00' before the student steps on the platform¹¹

EQUIPMENT

Critical Components

Accuracy and reliability are the two most critical components of height/weight assessment and are to some degree a function of the quality of the equipment. Equipment must also be properly used and maintained. Quality, easily calibrated and well maintained equipment is a good investment and will provide years of accurate and reliable service.

- Accuracy – degree to which a measurement of an individual corresponds to his/her actual weight or stature
- Reliability – degree to which successive measurements of the same child agree with specified limits¹²

Calibration of Equipment and Use of Up to Date Screening Tools

Weight – Scales

A properly calibrated, high quality balance beam or electronic digital scale should be used to measure children and adolescents. The scale should:

- Be used for the purpose for which it was designed
- Be used in a private location
- Weigh in 0.1 kg (100 gm) or ¼ lb increments
- Be stable and have a large enough platform for support for the individual being weighed
- For balance beam scales, is capable of being 'locked' in and is at eye level of the measurer
- Can be 'zeroed'
- Can be calibrated through professional service or by standard known weight
- Not have wheels attached^{12,13,14,15}

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Scales should be calibrated regularly to ensure accurate measurements.

- Use known weights (a set of standard weights purchased from a sports store) on the scale or a professional service to check accuracy
- Send the scale for professional calibration if the standard weight and the scale weight are off by $\frac{1}{4}$ pound or more. For a digital scale, change the batteries and if it is still off after checking again with the standard weights, send scales for professional calibration and/or check the owner manual for scale instructions
- Re-calibrate if the scale has been moved to a different surface
- Portable digital scales, frequently moved, should be calibrated monthly
- For scales that are not moved or used excessively, calibrate at least annually^{1,14,15}

Height – Stadiometers

A portable or wall-mounted stadiometer should be used. The tool should:

- Be used for the purpose for which it was designed
- Not include tapes, yardsticks or graphics attached to the wall
- Measure in 0.1 cm or $\frac{1}{8}$ inch increments
- Have an easily moveable horizontal headboard at least 3 inches wide that can be brought into contact with the most superior part of the head
- Should have a wide and stable platform or firm uncarpeted floor as the base
- Not use metal height attachment attached to a scale^{1,12,13,15}

Check the stadiometer regularly to be sure the base is stable and measures are accurate.

- Length rods, a standard measuring test rod, should be used to verify accuracy at least annually
- Portable stadiometers should be checked more frequently
- If a discrepancy is found in accuracy, contact the manufacturer for advice^{12,14}

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

PROTOCOL/PROCEDURE

When to screen

Ideally, growth screening should take place each year in a school child's life. A series of measures over time are valuable in determining a student's growth pattern. Deviations from the student's normal growth pattern may indicate some intrinsic illness/disease process or environmental concerns. These deviations warrant a comprehensive evaluation by a health care provider.¹³

If school district capacity cannot support annual height, weight and BMI measurements, policies for school screening should reflect the following critical times:

- Kindergarten
- Latency period – 9-10 year old/5th grade for most students
- Early adolescence – 9th grade¹³

The Process

Accuracy is important in obtaining height and weight measurements because these measurements will be used to calculate the BMI which, in turn, is utilized to assess healthy weight status and/or provide for surveillance data. Accurate weighing and measuring have three critical components:

- Technique – standardized and appropriate technique for each measure must be utilized
- Equipment – must be calibrated and accurate
- Trained measurers – measures should be performed by a trained measurer¹²

The process **steps**, depending on the school district BMI program, are as follows:

1. Measure weight and height (surveillance and screening)
2. Calculate BMI (surveillance and screening)
3. Plot BMI value on an appropriate growth chart (screening)
4. Interpret the BMI-for-Age Percentile Score (screening)
5. Report results to parents (screening)
6. Collaborate with the Division of Public Health (optional, surveillance)

INSTRUCTIONS FOR MEASURING WEIGHT

- Set the scale at zero reading
- Have the student remove shoes, heavy outer clothing (jacket, vest, sweater, hat), and empty pockets (cell phones, iPods) to extent possible
- Have the student step on the scale platform, facing away from the scale read out, with both feet on the platform, and remain still with arms hanging naturally at side and looking forward
- Read the weight value to the nearest ¼ pound or 0.1 (1/10) kilogram
- Have the student step off the scale and take a second measurement, repeating the steps above (measurements should agree within 0.1 kilogram or ¼ pound; if not, re-measure until this standard is met)
- For confidentiality and to avoid stigma or harassment, do not call out weight value
- Record the weight value immediately on the student health record or data log
- If using a balance beam scale, return the weights to zero position

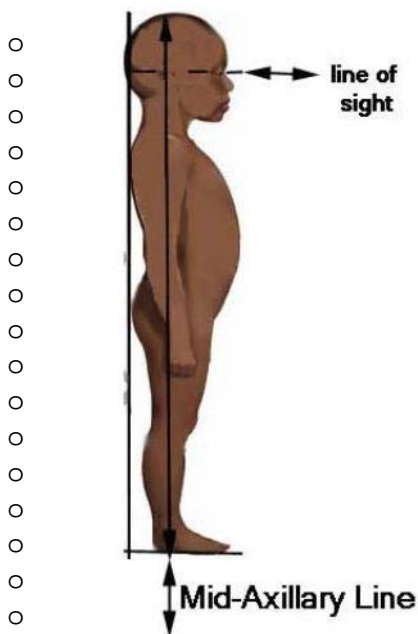
State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

INSTRUCTIONS FOR MEASURING HEIGHT

- Have the student remove shoes, hat, and hair ornaments /buns,/braids to extent possible
- Have the student stand on the footplate or uncarpeted floor with back against stadiometer rule
- Have the student bring legs together (in contact at some point, whatever touches first)
- Assure student's legs are straight, arms are at sides, and shoulders are relaxed
- Assure the back of the student's body touches/has contact with the stadiometer at some point, preferably with heels, buttocks, upper back and head touching the measuring surface
- Assure that the student's body is in a straight line (mid-axillary line parallel to the stadiometer), see Figure #1

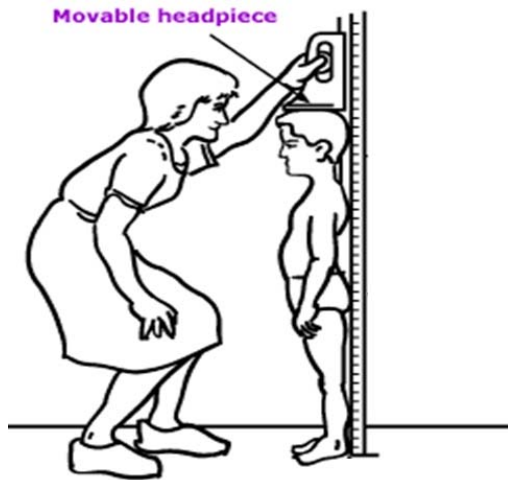
Figure #1 Mid-axillary Line

Figure #2 Frankfort Horizontal Plane



- Assure the head is in the appropriate position (Frankfort plane) see Figure #2
- Ask the student to breathe in and hold his/her breath while being measured

**State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools**



- >Lower the headpiece until it touches the crown of the head firmly, compressing the hair
- >Position yourself so that your eyes are parallel with the head piece and read the measurement to the nearest 0.1 cm or 1/8 inch, make note of the first measurement
- >Move the headboard away, check the posture, and re-measure the student
- >Measurements should agree within 1 cm or ¼ inch, re-measure and select the average of the two measures that agree the most
- >Immediately record the results in the student health record or data log^{12,13,14,15}

CALCULATING BMI

After collecting the student’s height and weight, the BMI can be calculated. There are several methods to determine BMI:

- BMI Wheel
- BMI calculation computer software
- BMI Table, found online at the CDC website
<http://cdc.gov/nccdphp/dnpa/healthyweight/assessing/bmi/00binaries/bmi-tables.pdf>
- The Children's BMI Tool for Schools:
http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html
 - This Excel spreadsheet can be used by school, child care, and other professionals who want to compute Body Mass Index (BMI)-for-age for a group of up to 2000 children, such as for a school class room or grade.
- If using electronic health records, the program may calculate and plot BMI on the growth chart
- BMI Percentile Calculator for Child and Teen <http://apps.nccd.cdc.gov/dnpabmi/>
- BMI calculation by mathematical equation⁴

BMI =	(weight in pounds) divided by (height in inches X height in inches)	X 703
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OR

BMI =	(weight in kilograms) divided by (height in meters X height in meters)
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State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

PLOTTING BMI VALUES ON APPROPRIATE GROWTH CHARTS

Once BMI is determined, the student’s age and gender are used to select the appropriate growth chart.

These growth charts can be found on the CDC website:

http://www.cdc.gov/growthcharts/clinical_charts.htm

Using the gender-correct growth chart titled *BMI-for-age*, find the student’s age (to the nearest ¼ year) on the horizontal axis and the BMI on the vertical axis. The point of intersection is the student’s BMI-for-age percentile. After graphing a set of measurements, check to see if they are consistent with those from previous measurements, if possible. A significant percentile change should be rechecked for errors in measuring, recording, or graphing.^{13,16,17}

INTERPRET BMI-FOR AGE PERCENTILE SCORE

Utilize the following table to classify the student’s BMI percentile score for interpretation.^{2,16}

BMI Classification for Children 2-20 Years Old

BMI for Age Percentiles	Weight Classification
<5 th	Underweight
5 th to <85 th	Healthy Weight
85 th to <95 th	Overweight
≥95 th	Obese

REPORT RESULTS TO PARENTS OR GUARDIANS

If your school district has introduced and utilizes a BMI **screening** program, communicating the results of the height/weight/BMI screening with parents and guardians is an important component of the program. Ensuring that all parents receive a clear and respectful explanation of the results and appropriate follow up actions is imperative to the success of a BMI screening program.³ The screening results along with information about resources available will give them the knowledge they need to begin a conversation with their health care provider about their child’s weight status, eating habits, and physical activity behaviors. For sample letters to parents, staff, and health care providers see Appendix A-F. NOTE: it is recommended to consult your school district policies and procedures before utilizing any sample letters.

Refer students for further evaluation by a health care provider who:

- Have a BMI ≥95th
- Have a BMI 85th to 94th, especially if they have:
 - a family history of diabetes
 - elevated blood pressure (see Appendix G for blood pressure values requiring further evaluation)
 - a large change in BMI percentile (more than 2 BMI points) within the past year
 - are concerned about their weight
- Have a BMI <5th with a recent decrease in BMI
- Any student with no growth progress or a large shift in percentiles^{13,15,18}

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

ROLE OF THE SCHOOL NURSE

School nurses can provide essential leadership in helping students maintain a healthy weight and identifying those children who may need intervention for their weight status. According to the National Association of School Nurses, school nurses are knowledgeable experts in the areas of nutrition, weight maintenance, and exercise. The school nurse can utilize his/her knowledge in prevention programs and interventions for students who are of unhealthy weight.¹⁷

The role of the school nurse in the BMI measurement process is to:

- Notify parents and guardians, students, school administrators and staff about the purpose and process of the school's BMI screening initiative prior to collecting the height/weight/BMI measurements. Parent, student, and school staff support is an essential component of the program success. Notification can be provided in newsletters, school district websites, registration information, or specific letters (see Appendix A, B). Consider including community health care providers in your efforts to enlist support (see Appendix C).
- Provide parents and guardians with the opportunity to opt out of the BMI screening.
- Check scales and stadiometers for accuracy (calibrate) with standard weights at least annually.
- Establish and follow standards and appropriate procedures for obtaining height and weight values to assure accurate assessments.
- Provide training, monitoring and follow-up of all screening activities.
- Train staff involved in the screening process. To improve accuracy, especially if mass screening of students, it is recommended that at least two staff conduct the BMI screening: one to measure the child and one to record the data. Training should involve:
 1. Proper use of equipment for accurate and precise measurement
 2. Review of forms for the recording of information
 3. Emphasis on the importance of privacy and confidentiality for the students
 4. Appropriate and sensitive communication with students regarding height and weight measurement (e.g., saying "Let's check your weight" instead of "Let's see how big you are"; reassuring students that kids' bodies come in different sizes and shapes; avoiding labels such as "obese", "overweight", "too thin", or "too short"; and responding to teasing by modeling "we respect the bodies of others even though they are different from our own"). If a child asks "am I too fat?" Or "too skinny?" say that you don't know the answer and suggest the child ask his/her doctor this question.
- Students must be weighed and measured in a setting that provides for privacy and confidentiality. No other students should be present or within sight or hearing of the student being screened.
- Students' height/weight/BMI screening results should be recorded in the student health record, are strictly confidential and should not be discussed with anyone other than the student and his/her parent or guardian.

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

- When reporting results to the family, utilize a meaningful format. Avoid complicated graphs without clear explanation. Ensure privacy of information when selecting a method to send home results. Working with the principal to develop a mechanism to share this information with parents is strongly recommended.
- Students who are taking medications which can affect their height or weight as well as students in a weight classification other than normal should be screened more routinely.
- For students with special health care needs, alternative methods of measurement and/or interpretation of results may be necessary. Children with scoliosis, trisomy 21, cerebral palsy, Prader-Willi, Turner Syndrome, and those with contractures or who are wheel-chair bound, to name a few, have considerations that may alter the protocol for determining healthy weight for that individual.^{1,3,11,12,13,17,20} To learn more regarding CDC growth charts for special health care needs go to: <http://depts.washington.edu/growth/cshcn/text/page1a.htm>

COLLABORATING WITH THE DIVISION OF PUBLIC HEALTH

If your school district is interested in utilizing BMI data for **surveillance** purposes and wishing to collaborate with the Division of Public Health please contact the State of Alaska Obesity Prevention and Control program to determine the data collection protocol.

Email: Obesity@alaska.gov

Phone: 907.269.3457 or 907.269.2020

Web: <http://www.hss.state.ak.us/dph/chronic/obesity/>

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

RESOURCES

American Academy of Pediatrics www.aap.org
BMI Percentile Calculator for Child and Teen <http://apps.nccd.cdc.gov/dnpabmi/>
CDC Healthy Youth website with key strategies to prevent obesity:
www.cdc.gov/HealthyYouth/KeyStrategies
CDC Growth Information for Children with Special Health Care Needs
<http://depts.washington.edu/growth/cshcn/text/moduleprint.doc>
Healthier US - broad presidential agenda designed to help Americans, especially children, live longer and healthier lives www.healthierus.gov
Human Resources and Services Administration (HRSA), Maternal Child Health Bureau, Growth Charts Training Modules <http://depts.washington.edu/growth/index.htm>
Let's Move - national initiative for improving health, nutrition, physical activity for <http://www.letsmove.gov/>
National Association of Anorexia Nervosa and Associated Disorders www.anad.org
President's Council on Physical Fitness and Sports www.fitness.gov
Robert Wood Johnson Foundation - not for profit organization for obesity prevention <http://www.rwjf.org/childhoodobesity/>
Team Nutrition initiative of the USDA Food and Nutrition Service www.fns.usda.gov/tn
School Health Index - assessment and planning guide for improvement of programs, physical activity, healthy eating, tobacco use and safety policies
<http://www.cdc.gov/HealthyYouth/SHI/use.htm>
State of Alaska Obesity Prevention and Control <http://www.hss.state.ak.us/dph/chronic/obesity/>
WeCan! Ways to Enhance Children's Activity & Nutrition - national program for families and communities to help children maintain a healthy weight
<http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan/index.htm>

Resources for kids:

BAM! Body and Mind interactive website developed by the CDC that gives kids aged 9-13 healthy lifestyle information <http://www.bam.gov/>
EmpowerME website developed by the Alliance for Healthier Generation designed to inspire kids to eat healthier and move more www.empowerme2b.org
Kids' Health http://kidshealth.org/kid/stay_healthy/fit/overweight.html
Smart Mouth interactive website developed by the Center for Science in the Public Interest that gives information on how the food industry's drive for profit affects what kids eat
<http://www.smart-mouth.org>
YourSELF publication by USDA Team Nutrition developed especially for middle school students
www.fns.usda.gov/tn/tnrockyrun

FORMS:

CDC website to obtain clinical growth charts:
<http://www.cdc.gov/growthcharts/>

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix A

Sample Pre-Screening Notification to School Faculty and Staff

[School Letterhead]

[Date]

Dear Faculty and Staff:

I am writing to inform you about our Body Mass Index (BMI) screening program so that you, along with students, parents, guardians, and the community, can help make this year's program a success.

Although assessment of height and weight are not specifically required by Alaska Statute, assessment of height and weight using BMI is an important clinical tool in assessing the health and growth of a child. Our school/district has been assessing heights and weights of students each year since the [year].

The results of the BMI screening will be kept confidential in each student's school health record and will be mailed or directly communicated in writing to the parents or guardians; not sent home with the student. The parent or guardian letter will include a description of the screening program and interpretation of the results as well as recommendations to share the results with their child's primary health care provider.

Because students may react in a variety of ways to the BMI screening in school, it is important that you are aware that this screening is taking place so that you can respond appropriately. For example, if a child makes a negative comment about his/her body, a sensitive response might be, "Kids come in different sizes and shapes." You can help by being objective and open about your students' concerns about their weight in your responses.

The screenings will be conducted on [Insert dates] in [Insert locations]. Letters with results of the screening for parents or guardians will be sent on [Insert date].

This is an opportunity for our school to coordinate efforts to communicate with students, parents or guardians, and the community about the positive steps our school is taking to support healthy eating and physical activity. At the present time, we provide [Insert programs that are coordinated within the district and/or school to encourage healthy eating and active living for both students and staff], and are planning [Insert information about the positive things you would like to start at your school (e.g., school health council, parent presentation, physical education programs or health education classes)]

Parents are given the opportunity to opt out of the BMI screening and will be asked to notify me by [date] if they are not interested in having their child participate in this screening.

Please take a moment to stop by my office, or email me to let me know if you have any questions about this screening program or if you'd like to be a part of our school's efforts to create a healthier environment. Together we can make a real difference in the health and wellness of our students!

Thank you for your time and consideration.

Sincerely,

School Nurse [you may also consider having the principal co-sign the letter]

Letter adapted from Massachusetts Department of Public Health, Comprehensive School Health Manual

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix B

Sample Pre-Screening Notice to Parents and Guardians

[School Letterhead]

[Date]

Dear Parent or Guardian:

This letter is to let you know about the Body Mass Index (BMI) Screening Program that will be happening soon at your child's school.

A Body Mass Index, or BMI, is a measure that is used to show a person's "weight for height for age." It is calculated using an individual's height and weight. Just like a blood pressure reading or an eye screening test, a BMI can be a useful tool in identifying possible health risks.

The purpose of the BMI Screening Program is to give you information about your child's weight status and ideas for living a healthy life. In [name of school or district], we address our children's health and wellness with a comprehensive approach that includes health screenings and [insert list of initiatives].

Each child's height and weight will then be used to calculate their BMI. The results will be mailed home or directly communicated in writing to you.

The school nurse will supervise your child's screening and will make sure your child's privacy is respected at all times. The results of your child's height, weight, and BMI measurements are strictly confidential – the results will be kept in your child's school health record and given to you directly by [state what form of direct communication will be used].

A BMI does not tell the whole story about your child's health status. BMI does not distinguish between fat and muscle. For example, if a child is very athletic and has a lot of muscle, his or her BMI may be high even though he or she is not overweight. That is why we encourage you to share the results with your child's health care provider. Your child's doctor or nurse is in the best position to evaluate his or her overall health and can explain the results of his or her BMI screening. They can also talk with you about whether there are steps you can take to encourage healthy eating and physical activity.

We are very interested in making sure that all our students are healthy. This year, the BMI screening will take place in [insert month of screening]. All children in grades [list grades] will have their height and weight measured and will have their Body Mass Index (BMI) calculated. If you are not interested in having your child participate in this important health screening, please let me know by [date]

Please feel free to call me at [insert phone number] with any questions you may have about the BMI screening. Additional information about children's wellness and fitness is available upon request or you may access the Centers for Disease Control and Prevention resources at

http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html

Sincerely,

School Nurse [you may also consider having the principal co-sign the letter]

Letter adapted from Massachusetts Department of Public Health, Comprehensive School Health Manual

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix C

Sample Pre-screening Notification of Local Primary Care Providers

[School Letterhead]

Dear Primary Care Provider:

The health and wellness of our children is a national priority. However, the latest federal data continue to show increases in rates of childhood obesity and incidence of eating disorders. The United States Department of Health and Human Services estimates that by 2010, 20% of children and youth in the United States will be considered obese. Researchers have found that childhood obesity is associated with a number of disorders including hypertension, insulin resistance, sleep apnea, menstrual abnormalities, and orthopedic problems (GAO,2006)

Parents and guardians will be notified of the results of this screening for each of their school-age children. [State what form of direct communication will be used] BMI results will be mailed or directly communicated to parents and guardians of each student screened. A recommendation to discuss the results with the child's primary care provider will be made for those children whose BMI-for-age screening place them underweight ($\leq 5^{\text{th}}$ percentile) or overweight/obese ($\geq 85^{\text{th}}$ percentile) categories .

As you know, the American Academy of Pediatrics recommends screening all children annually after the age of 2. Often children are not seen on a yearly basis in the primary care setting and schools can play an important role in obtaining BMI screening in the effort to promote healthy weight in children.

Please be aware that the [insert school name] and/or the town of [insert town name] have several resources available to help combat obesity in our youth. [Insert list of resources]. Other resources that you may find useful include:

- Assessment of Child and Adolescent Overweight and Obesity: A Supplement to Pediatrics
http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.dtl
- *The Healthy Care for Healthy Kids Toolkit - Management and Treatment - Office Tools* developed by NICHQ and Blue Cross Blue Shield of MA are available at
http://www.nichq.org/childhood_obesity/toolkit_prevention_office.html

If you have any questions concerning the BMI Screening Program being implemented at the [insert school name] School, please contact either [insert principal name], the school principal at [insert principal's phone] or [insert school nurse name], the school nurse at [insert phone number].

Thank you for your efforts to maintain the health of Alaska's children.

Sincerely,

School Nurse [you may also consider having the principal co-sign the letter]

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix D

Sample Referral Letter to Parents and Guardians for BMI Screening Referral

[School Letterhead]

[Date]

Dear Parent or Guardian:

_____ was recently weighed and measured in our school as
(Student name)

part of the school's growth screening program. Your child's measurements were:

Weight _____ Height _____

This information is used to calculate a "Body Mass Index" (BMI) that is adjusted for age and sex to determine appropriate growth and weight by health professionals.

Your child's BMI for age and sex percentile is ____%. This BMI is considered:

underweight ____ healthy weight ____ overweight ____ obese ____

Children who are not in the normal weight range are at risk for certain health problems. We recommend that you talk with your child's health care provider to identify ways to ensure your child's optimal health. The best person to evaluate your child's weight status is your child's regular doctor or health care provider.

Ask your doctor for advice about good nutrition and physical activity. Health care providers recommend the following for all children:

- 5 – Five servings of fruits and vegetables per day
- 2 – Less than 2 hours screen time per day
- 1 – One hour of physical activity per day
- 0 – Zero soda or sugared sweetened beverages per day.

If you do not have health insurance or access to health care, please contact me for information about possible medical services.

If you have any questions, please call _____, School Nurse at
(School nurse name)

_____. Email _____
(Phone #)

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Measuring Height/Weight and Calculating BMI
Guidelines for Schools**

Appendix E

Sample Screening Results for Parents and Guardians

[School Letterhead]

[Date]





Dear Parent or Guardian:

Your child, *[insert name of student]*, was weighed and measured as part of our school's BMI Screening Program. A Body Mass Index (BMI)-for-Age percentile was also calculated.

The purpose of the BMI Screening Program is to inform you about your child's weight status and let you know if your child is in a healthy weight range, overweight, obese, or underweight. The result of your child's BMI screening is strictly confidential, and will not be discussed with anyone other than you.

Your child's measurements were: Height: _____ Weight: _____ BMI Percentile: _____



-  underweight, less than the 5th percentile
-  healthy weight, 5th percentile to less than the 85th percentile
-  overweight, 85th to less than the 95th percentile
-  obese, 95th percentile or greater

If your child's BMI is below the 5th percentile he/she may be underweight. If your child's BMI is above the 85th percentile, he/she may be overweight or obese. You should share these results with your child's health care provider. If your child does not have a regular health care provider or you don't have health insurance for him/her, please contact us for information about obtaining health insurance coverage or finding a provider.

BMI does not tell the whole story about your child's weight status. Many factors other than height and weight can influence your child's weight such as family history. Also, BMI does not distinguish between muscle and fat. For example, if a child is very athletic and has a lot of muscle, his or her BMI may be high even though he or she is not overweight. Please see the information that has been included with this letter to help you understand what your child's BMI means and what you can do to help keep your child healthy and physically active. More information is available at the Centers for Disease Control and Prevention website:

http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html.

If you have any questions, please call me at *[insert phone number]*.

Sincerely,

School Nurse

Letter adapted from Massachusetts Department of Public Health, Comprehensive School Health Manual

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix F

Sample Physician Post-Screening Notification Letter

Sample Letter : Physician notification post-client/patient screening to be included in the mailing to parents or guardians of children with BMIs below the 5th or above the 85th percentile

[School Letterhead]
[Date]

Dear Health Care Provider [or "Physician" or name of physician]:

This letter is to notify you that your patient, [insert student name], was measured for height and weight during the [insert school name] School's Body Mass Index (BMI) Screening Program, as part of our district routine health screening. The following is the child's BMI results: Ht_____ Wt_____ BMI Percentile _____

To assist in identifying community resources to promote healthy eating and physical activity, we are including a resource list [list resources]. Additional resource that you might find useful are the *Healthy Care for Healthy Kids Toolkit - Management and Treatment - Office Tools* available at http://www.nichq.org/childhood_obesity/toolkit_prevention_office.html and *Assessment of Child and Adolescent Overweight and Obesity: A Supplement to Pediatrics* http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.dtl

We welcome your feedback and any recommendations you may have that will help in planning for this child's school program. If you have any questions concerning the BMI Screening Program being done at the [insert school name] School, please contact either [insert principal name], the school principal at [insert principal's phone] or [insert school nurse name], the school nurse at [insert nurse's phone].

Thank you for your efforts to keep your patients and our students healthy.

Sincerely,

School Nurse

✂-----✂-----✂-----✂-----✂-----

HEALTH CARE PROVIDER: Please complete and return to [insert School Nurse, School & Address]

I have checked (child's name) _____ on (date) _____
with the following findings:

BMI: _____ Percentile: _____

Recommendations:

Signature/Title: _____ Date: _____

Letter adapted from Massachusetts Department of Public Health

State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

Appendix G

Blood Pressure Values Requiring Further Evaluation, According to Age and Gender

Age, y	Blood Pressure, mm Hg			
	Male		Female	
	Systolic	Diastolic	Systolic	Diastolic
3	100	59	100	61
4	102	62	101	64
5	104	65	103	66
6	105	68	104	68
7	106	70	106	69
8	107	71	108	71
9	109	72	110	72
10	111	73	112	73
11	113	74	114	74
12	115	74	116	75
13	117	75	117	76
14	120	75	119	77
15	120	76	120	78
16	120	78	120	78
17	120	80	120	78
≥18	120	80	120	80

These values represent the lower limits for abnormal blood pressure ranges, according to age and gender. Any blood pressure readings equal to or greater than these values represent blood pressures in the prehypertensive, stage 1 hypertensive, or stage 2 hypertensive range and should be further evaluated by a physician.

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State of Alaska
Measuring Height/Weight and Calculating BMI
Guidelines for Schools

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State of Alaska
Measuring Height/Weight and Calculating BMI
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