



Overweight Clinical Guidelines (2006)

- 5** - Eat fruits & vegetables at least 5 or more times on most days. Limit 100% fruit juice.
- 2** - Cut screen time to 2 hours or less daily.
- 1** - Participate in at least 1 hour or more of moderate physical activity every day & 20 minutes of vigorous activity at least 3 times a week.
- 0** - Restrict soda and sugar-sweetened sports & fruit drinks.
Instead, drink water and 3-4 servings/day of fat-free/skim or 1% milk.



This flipchart was developed by the Maine Youth Overweight Collaborative (MYOC), a joint initiative of the Maine Center for Public Health, the Maine-Harvard Prevention Research Center, and the Maine Chapter of the American Academy of Pediatrics. We particularly want to acknowledge the Kids COOP at The Barbara Bush Children's Hospital at Maine Medical Center, MaineHealth & Eastern Maine Healthcare. By providing the tools and resources included, the Collaborative seeks to provide practical support and guidance to health care practices across the state to help improve care and outcomes for overweight youth. These tools are a result of the hardwork and support of many individuals associated with the Collaborative who are dedicated to promoting healthy lifestyles for Maine families, with special thanks to the Kaiser Permanente Medical Group & BlueCross BlueShield of Massachusetts for sharing their tools.

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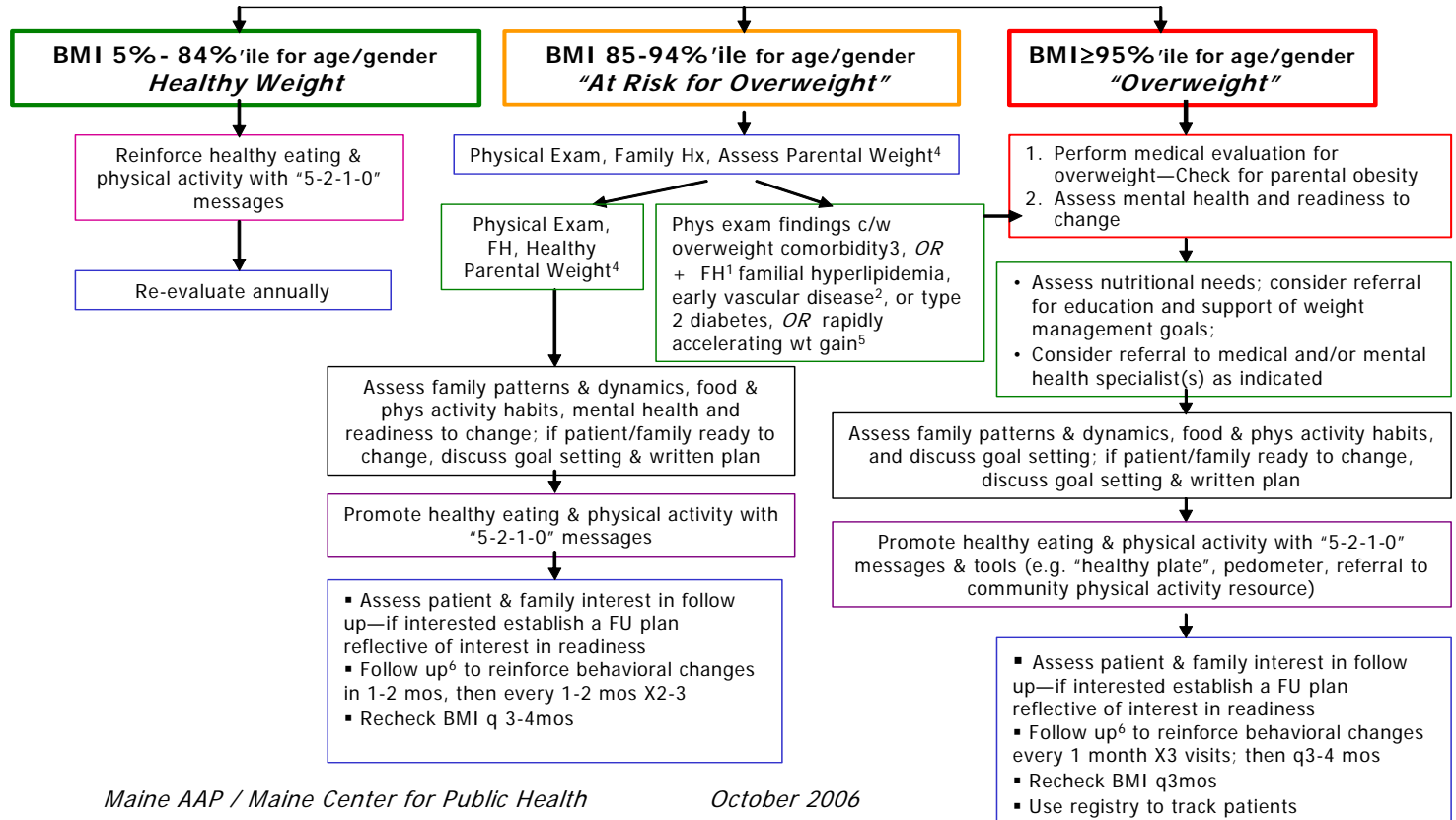
The materials included here are for use in the pilot "Maine Youth Overweight Collaborative" program by participating clinicians in the diagnosis and management of youth at-risk for overweight and obesity. The information has been gathered from a variety of sources, and reflects a synthesis of current clinical consensus and expert opinion from Maine & around the nation. Please be advised that these tools collectively represent a body of work that is in progress, and may be revised in the future as guidelines and standards of care evolve. These tools are not intended to replace clinical judgment, or to promote specific care recommendations for providers outside of our pilot initiative.

Guidelines for Prevention & Management of Overweight in Children 2-18 yrs



ALL PATIENTS at ANNUAL Preventive Well-Child Check

1. Measure and plot Ht & Wt
2. Calculate BMI and plot BMI% for age/gender → classify weight
3. Ask patient / family to complete "Keep ME Healthy 5-2-1-0" Survey
4. Consider parental weight-i.e. are one or both parent obese? (BMI \geq 30)



Maine AAP / Maine Center for Public Health

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Guidelines for Prevention & Management of Overweight in Children 2-18 yrs (Notes over)

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NOTES:

- (1) +FH = Family Hx of condition in parents, siblings, aunts/uncles, or grandparent.
- (2) Early vascular disease = Parent or grandparent with coronary atherosclerosis, MI, angina, PVD, CVD or sudden cardiac death at ≤ 55 years (men) or ≤ 65 years (women)
- (3) Overweight comorbidities include HTN, metabolic syndrome (defined in age 5+), PCOS, liver disease, depression, sleep apnea, asthma, mental health, orthopedic problems. Metabolic syndrome def'd as 3 or more risk factors: TG's; HDL; SBP or DBP; abd girth all $> 90^{\text{th}}$ %ile; impaired fasting glucose (> 100)
- (4) Parental Obesity = One or both parents with BMI ≥ 30 (approximately 30 lbs or more overweight)
- (5) Rapidly accelerating weight gain = annual increase in BMI or ≥ 3 -4 units/year
- (6) Follow up: Initial follow-up visit recommended to be face-to-face visit to reinforce behavioral changes; may be appropriate to utilize range of clinical staff (e.g. nurse, dietician, health educator) for visit

Guidelines for the Medical Evaluation of Overweight Child 3-18yrs¹



BMI ≥95%¹ile for age/gender OR...

BMI 85-94%¹ile for age/gender AND one or more risk factors:

- Fam Hx of familial hyperlipidemia, early CAD, or type 2 diabetes, OR
- Clinical signs of overweight comorbidity²
- Rapidly accelerating weight gain (annual increase in BMI of ≥3-4 units/yr)
- Consider parental weight – i.e. are one or both parents obese? (BMI≥30)

Recommended Steps

Age 3+: 	<p>Assess BP (use largest cuff that fits comfortably around arm; cuff should cover at least 2/3's arm elbow -> shoulder)</p> <p>Assess growth velocity, predicted height (consider parental height)</p> <p>Physical exam, including abd girth</p>	<p>Dx HTN if SBP or DBP >95%ile for age/gender/ht on 3 visits If HTN, assess for secondary causes HTN; obtain echocardiogram to assess for LVH³; consider specialist referral. If BP90-94th % (pre-HTN), follow closely</p> <p>NOTE: Abd girth >90%ile for age may indicate increased risk for <i>metabolic syndrome</i> [Metabolic syndrome defined by 3 or more risk factors: TG's; HDL; BP; abd girth all >90%ile; impaired fasting glucose ≥100]</p>
<p>AND, IF poor growth velocity or abnormal physical findings</p>	<p>Assess for potential <i>syndromes / causes of endogenous obesity</i></p>	<p>If poor linear growth velocity and otherwise nl exam, consider <i>hypothyroidism</i>; assess with TSH, FT4; consider specialty referral</p> <p>If abnormal facies, developmental delays, abnormal genitalia, digital abnormalities, consider <i>Prader-Willi, Turners, Laurence-Moon-Biedl-Biedle</i>; consider specialty referral</p> <p>If hirsutism, moon facies, violaceous striae, HTN, consider <i>Cushings</i>; assess with 24hr urine free cortisol/creatinine; consider specialty referral</p>
<p>AND, If 10+ yrs or pubertal</p>	<p>1) Assess for <i>hyperlipidemia</i></p> <p>2) Assess for <i>liver disease</i> (steatohepatitis)</p> <p>3) Assess <i>risk factors for type 2 diabetes</i> – i.e.</p> <ul style="list-style-type: none"> • FH type 2 diabetes • Ethnicity with high prevalence type 2 diabetes (African American, Hispanic, Native American) • Signs of insulin resistance (acanthosis nigrans, HTN, dyslipidemia, abd girth>90%ile age; PCOS) 	<p>Check fasting lipid profile (check once during adolescence; consider screen at younger age if +FH familial dyslipidemia)</p> <p>Check ALT/AST → if elevated (>1.5X nl), continue wgt mngmnt interventions X3mos, then recheck; if still elevated, check abd US and consider med rx and/or GI consult If pt continues rapid rate of wt gain check annually; if rate of wt gain returns to normal, check q2yrs</p> <p>If ≥2 risk factors for type 2 diabetes, screen for diabetes with FBS</p> <p><i>Interpretation of FBS results:</i></p> <ul style="list-style-type: none"> • <100: Normal; re-evaluate every 2 yrs • 100-125: Impaired Fasting Glucose → perform 2hr Modified OGTT • ≥ 126 (X2 occasions) → type 2 diabetes mellitus
<p>AND, for all ages</p>	<p>Use directed hx & phys exam to assess for <i>comorbidities of overweight</i>², including mental health issues; refer for specialty evaluation as indicated</p>	<p>If pubertal and evidence of PCOS (oligo/amenorrhea, hirsutism), consider DHEAS, free testosterone, FBS, fasting insulin (if FBS elevated, do 2hr mod OGTT)and/or endo consult</p> <p>Mental Health: consider screening with Pediatric Symptom Checklist; depression screening (Child Depression Inventory), assessment of self esteem</p> <p>Resp: assess for dyspnea, asthma, sleep apnea, daytime sleepiness (consider sleep study)</p> <p>Musculoskeletal: assess for spinal asymmetry, flat feet, genu varus/valgus, bowed legs (Blount's disease), slipped capital epiphysis, tibia vara</p>

(1) Based on "Obesity Eval & Treatment: Expert Comm Rec's", *Peds*, 102(2), Sept98 and expert opinion

(2) Also see Comorbidity Quick Reference Guide, ME Youth Overwgt Collab

(3) See "4th Report on Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents," *Peds*, 114(2), Aug2004

Maine AAP / Maine Center for Public Health

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Guidelines for Medical Evaluation of Overweight Child 3-18 yrs (Reference Lab Values over)

Reference Values (See separate reference page for BP)

Glucose testing	Normal	Impaired	Diabetes	Reference values from American Diabetes Association 2005 Standards of Care				
FBS	<100	≥100-125 (Impaired Fasting Glucose)	≥126 (repeat X2)					
2 hr Modified OGTT*	<140	140-199 (Impaired Glucose Tolerance)	>200 (repeat X2)	(*use 1.75gm/kg Glucola, to max 75gms)				
Fasting glucose/insulin		<4.4 (MAY indicate insulin resistance)						
				DHEAS	Male		Female	
Lipids	Acceptable	"Borderline"	Abnormal	Tanner Stage	Age	DHEAS	Age	DHEAS
Total cholesterol	<170 mg/dl	170-199	≥200	1	<9.8yr	13-83 ug/dL	<9.2 yr	19-114 ug/dl
LDL	<110	110-129	≥130	2	9.8-14.5	42-109	9.2-13.7	34-129
HDL	>40		(<40 is Low)	3	10.7-15.4	48-200	10.0-14.4	32-326
Triglycerides	Normal		Lipid Ref values from Pediatrics Vol. 101(1) pg 145 Jan. 1998 Trig. Ref values from NHANES III (1988-1994)	4	11.8-16.2	102-385	10.7-15.6	58-260
8-9 yrs	25-90 mg/dl	30-115 mg/dl		5	12.8-17.3	120-370	11.8-18.6	44-248
10-11 yrs	30-105	35-130			Adult	180-450	Adult	60-255
12-15 yrs	35-130	40-125		Reference values from Esoterix Labs (Calabassas, CA)				
16-19 yrs	40-145	40-145						
Thyroid Fxn	Pre-pubertal	Pubertal	Reference values from Esoterix Labs (Calabassas, CA)					
TSH (2-20yo)	0.6-5.5 mIU/L	0.5-4.8 mIU/L						
Free T4 (2yrs- adult)	0.8-2.3 ng/dL							
Abd Girth 90%ile	8yrs	12 yrs	15 yrs	Adult	Reference values from Fernandez et al. J Pediatrics 2004;145:439-44			
Male	71 cm	85 cm	94 cm	102 cm				
Female	70 cm	82 cm	90 cm	89 cm				

BMI Calculators / Info:

- www.cdc.gov/growthcharts/
2000 CDC Growth Charts
- <http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>
Children's BMI risk category is dependent on age
- www.cdc.gov/nchs/about/major/nhanes/growthcharts/zscore/zscore.htm
Z Score Data Files from the CDC
- www.medscape.com/viewprogram/2640
Medscape: Using the BMI-for-Age Growth Charts
- www.kidsnutrition.org/bodycomp/bmiz2.html
Children's BMI Calculator including plot to graph-Directed at parents
- <http://pediatrics.about.com/od/obesity/>
Various information for parents

Free Download for Palm OS Handhelds:

www.statcoder.com/growthcharts.htm

Maine Statistics & Data:

- <http://www.mekids.org/>
Maine Children's Alliance / Maine Kids Count Data Book
- http://www.state.me.us/newsletter/may2001/maine_census_data.htm
Maine Census Data

Find Registered Dieticians by zip code:

- www.eatright.org

Professional Resources:

- www.aap.org/bst/index.cfm
American Academy of Pediatrics book store
- www.fns.usda.gov/tn/healthy/calltoaction.html
Call to Action; Healthy School Nutrition Environments
- www.Brightfutures.aap.org/web/
Bright Futures in Practice
- www.aap.org/obesity
Obesity-related AAP Child Health Initiatives

Community & Parent Resources:**Healthy Maine Partnerships:**

- www.healthymainepartners.org
Healthy Maine Partnership Info & Contacts by Town
- www.healthymainewalks.org
About Healthy Maine Walks & Sites

Physical Activity & Nutrition for Children:

- www.kidnetic.com
Healthy eating and activities for kids & parents
- www.maine-nutrition.org
Maine Nutrition Network
- www.cdc.gov/youthcampaign/
Overview of the VERB campaign which encourages young people ages 9-13 (twens) to be physically active every day.
- WWW.verbnow.com
Tween website
- www.linkmaine.org (check out the "Maine Recreation Station")
A listing of low or no cost events by area
- www.mainephysicalactivity.org
Maine Governor's Council on Physical Fitness & Sports

**Web Resources**

Effective Communication with Families

Scott Gee, MD, Jodi Ravel, MPH, Sandra Roberts, RN, Amanda Wylie

Regional Health Education – Kaiser Permanente Northern California

Communication Techniques

Lifestyle Advice – Well Child or Urgent Visit

- < 1 minute
- Children not currently at risk for overweight

Brief Focused Advice – Well Child Visit

- < 3 minutes
- Children who are overweight or at risk for overweight

Brief Negotiation & Cognitive Behavioral Skills - Follow up Visit or Weight Management Intervention

- 10 + minutes: single or multiple sessions
- Children who are overweight or at risk for overweight

Who Do You Communicate With? (based on child's level of understanding)

2 - 8 Years Old

- Communicate with Parent
- Child in Room

9 - 12 Years Old

- Communicate with Parent or Both
- The First Encounter Consider Taking Parent to Your Office to Discuss in Private First

Over 12 Years Old

- Communicate with Teen or Both
- The First Encounter Consider Having Parent Leave Exam Room First

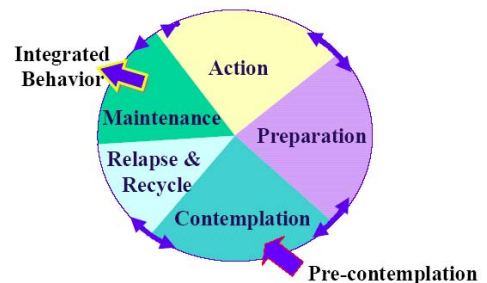
Brief Negotiation Skills – Particularly Effective for Contemplative/Ambivalent Patients

- Asking open ended questions
- Listening
- Summarizing
- Clinician Style: empathetic, accepting, collaborative

Cognitive Behavior Skills – For Patients Ready and Willing to Make Changes

- Develop awareness of eating habits, activity and parenting behavior
- Identification of problem behaviors
- Problem solving and modification of problem behaviors
- Weekly goal setting for children and parents on dietary, activity and self-esteem/parenting goals
- Positive reward systems
- Record keeping
- Weight checks

Stages of Behavior Change



Prochaska & Di Clemente: *Transtheoretical Model of Behavior Change*

REVIEW OF SYSTEMS		
<ul style="list-style-type: none"> • Developmental delay (genetic disorder) • Poor linear growth <ul style="list-style-type: none"> ○ Hypothyroidism ○ Cushing's syndrome ○ Prader-Willi syndrome • Headaches <ul style="list-style-type: none"> ○ Pseudotumor cerebri • Nighttime breathing difficulty • Daytime somnolence <ul style="list-style-type: none"> ○ Sleep apnea ○ Obesity hypoventilation syndrome 	<ul style="list-style-type: none"> • Increased thirst and urination • New onset bed-wetting • More frequent nighttime urination <ul style="list-style-type: none"> ○ Type 2 diabetes • Abdominal pain <ul style="list-style-type: none"> ○ Gall bladder disease 	<ul style="list-style-type: none"> • Hip or knee pain <ul style="list-style-type: none"> ○ Slipped capital femoral epiphysis • Oligomenorrhea or amenorrhea <ul style="list-style-type: none"> ○ Polycystic ovary syndrome • Psycho-Social <ul style="list-style-type: none"> ○ Family behavior ○ Self-esteem ○ Depression
PHYSICAL EXAM		
<ul style="list-style-type: none"> • Height, weight, blood pressure, and BMI • Truncal obesity <ul style="list-style-type: none"> ○ Risk of cardiovascular disease ○ Cushing's syndrome • Dysmorphic features <ul style="list-style-type: none"> ○ Genetic disorders ○ Prader-Willi syndrome • Acanthosis nigricans <ul style="list-style-type: none"> ○ Diabetes ○ Insulin resistance 	<ul style="list-style-type: none"> • Hirsutism <ul style="list-style-type: none"> ○ Polycystic ovary syndrome ○ Cushing's syndrome • Violaceous striae <ul style="list-style-type: none"> ○ Cushing's syndrome • Optic disks <ul style="list-style-type: none"> ○ Pseudotumor cerebri • Tonsils <ul style="list-style-type: none"> ○ Sleep apnea • Abdominal tenderness <ul style="list-style-type: none"> ○ Gall bladder disease 	<ul style="list-style-type: none"> • Undescended testicle <ul style="list-style-type: none"> ○ Prader-Willi syndrome • Limited hip range of motion <ul style="list-style-type: none"> ○ Slipped capital femoral epiphysis • Lower leg bowing <ul style="list-style-type: none"> ○ Blount's disease

Adapted from Wellpoint.com Patient Counseling Guidelines for Families with Overweight Children and Adolescents

TREATMENT INTERVENTIONS FOR THE OVERWEIGHT CHILD (BMI \geq 95%thile for age/gender)

- 1) **Choose and/or tailor interventions** to ensure they are appropriate for patient's age, and to meet patient and family's readiness to change. **Keys: start early/aim long term behavioral change; small steps/gradual change; family support/praise; measurable.**
- 2) **Use Motivational interviewing with brief negotiation and brief focused advice** to engage patient and family in goal setting for specific behaviors. Patient chooses option; scale motivation; co-sign contract; measurable goals with specific lifestyle/behavior change. **Keys to Motivation: fun; challenge ("ask for less; they'll give you more"); responsive to peer/social approval; sensitive to appearance; simple/ explicit steps; set goals that are measurable ("if you can't count it you can't change it"); empathize don't criticize.**
- 3) **Consider mental health consult** (e.g. child psychology) to evaluate family stressors and co-morbidities (e.g. depression, anxiety, PTSD, etc) and need for mental health intervention (e.g. family counseling, individual, medications.)
- 4) **Promote healthy eating and nutritional education:**
 - a) Assess patient and family's dietary habits using MYOC "Provider Tool for Diet Assessment"
 - b) Facilitate child/family nutritional consult, to include appropriate interventions – e.g.
 - Provide practical advice and visual portion size education using "healthy plate" method
 - Advise balanced age-appropriate diet emphasizing 5 fruits/vegetables each day; lower carbohydrates/refined sugars; healthy fats and proteins; and skim or 1%lowfat milk (versus whole milk, or juice and soda)
 - Encourage healthy family food behaviors – e.g. regular breakfasts, structured family suppers, limited fast food restaurants, "parent provides/child decides", not using food as bribe or reward.
 - Aim for reasonable daily target for calorie reduction (e.g. 200-300 calories less daily).
- 5) **Promote increased physical activity:**
 - a) Assess patient and family's physical activity habits, using MYOC "Physical Activity Survey"
 - b) Advise physical activity of 60 minutes or more daily (including walking), and 20 minutes vigorous aerobic activity at least 3 days week. Emphasize OUTDOOR physical activity.
 - c) Encourage a decrease in physical inactivity: advise family to limit *total*/screen time to 2 hours or less per day (TV, computer, video games, etc)
 - d) Advise no TV in bedroom! (and/or remove TV from bedroom)
 - e) Refer to specific community physical activity program (e.g. local YMCA/YWCA; Boys/Girls Club; before/after school physical activity program)
 - f) Encourage development of family physical activity plan (e.g. "Move and Improve")
 - g) Provide free pedometers with age appropriate goal of daily steps for BOTH patient and parent.
- 6) **Sub-specialist Referral** with persisting co-morbidities despite 4-6 months intensive, focused healthy lifestyle interventions above: nutritionist; peds endocrinology with persisting metabolic syndrome/ Type 2 Diabetes; peds GI with progressive ALT elevation; polysomnography with persistent sleep disorder/ daytime fatigue; orthopedics with hip/ knee pain; neurology with headaches/ pseudo-tumor cerebri; psychology with persistent depression, etc.

Tips for Busy Clinicians

Deliver a set of consistent key messages—5210.

Keep a list of good websites to give your patients. Have appropriate books and magazines available in your waiting room. Provide books, puzzles and activity sheets—especially for children—that help promote healthy eating and active living.

Display educational posters and create a bulletin board for community partners to update.

Know your community resources and refer patients to them. These will help support families once they leave your office.

Be a good role model—be physically active everyday and work to make healthy food choices.

Use a team approach to patient care. Behavior change is a long-term process and involving other qualified staff will help assure success.

Frame your discussions to expand the patient / families perception of what healthy lifestyle changes they can make. Keep goals small, simple and concrete. Allow for personal choices. Selections a child enjoys will be more easily sustained.

Have patients set specific behavioral goals and actions plans and be sure to ask about these during the next visit or follow up contact.

Encourage involvement and change for the whole family & all caregivers.

ABCs of Counseling and Motivating Overweight Children and Families

Ask Open-Ended Questions

- ✓ How do you feel about us talking about your physical activity, TV watching, and eating today?
- ✓ Assess what the patient knows
- ✓ How concerned are you about the patient's weight?
- ✓ What practices need to be changed?

Body Language

- ✓ Put patient at ease
- ✓ Use eye contact without barriers
- ✓ Convey respect
- ✓ Counsel in a private setting

Care and Empathy

- ✓ Do not criticize
- ✓ Acknowledge patient's feelings
- ✓ Answer questions without sign of judgment
- ✓ Use language that is nonjudgmental:
 - Healthier food vs. bad food
 - Healthier weight vs. ideal weight
 - Overweight vs. obese

Tips for Busy Clinicians (Brief Negotiation over)

Open the Encounter

Ask Permission

- *Would you be willing to spend a few minutes discussing your lifestyle? / Are you interested in discussing ways to stay healthy and energized?*

Ask an Open-Ended Question – Listen – Summarize

- *What do you think/How do you feel about your lifestyle? / What have you tried so far to work toward a healthier lifestyle?*

Share BMI / Weight (optional)

- *Your current weight puts you at risk for developing heart disease and diabetes. / Your BMI is at the 92nd percentile. The recommended level for your age is 85 or below.*
- Ask for the patient's interpretation: *"What do make of this?"*
- Add your own interpretation or advice as needed AFTER eliciting the patient's / parent's response.

Negotiate the Agenda

- *Some ideas for staying healthy include...(see tool kit)*
- *What are your ideas for working toward a healthy weight?*

5 Eat fruits & vegetables at least 5 or more times on most days. Limit 100% fruit juice.


2 Keep screen time to 2 hours or less daily.

1 Participate in at least 1 hour or more of moderate physical activity every day & 20 minutes of vigorous activity at least 3 times a week.

0 Restrict soda and sugar-sweetened sports and fruit drinks.

Instead, drink water and 3-4 servings/day of fat-free/skim or 1% milk.

- *Is there one of these you'd like to discuss further today? Or perhaps you have another idea that isn't listed here?*

Overweight Sensitivity "Do no harm"		
INSTEAD OF...		USE...
• Obesity		• Overweight
• Ideal Weight		• Healthier Weight
• Personal Improvement		• Family Improvement
• Focus on Weight		• Focus on Lifestyle
• Diets or Bad Foods		• Healthier Food Choices
• Exercise		• Physical Activity

Assess Readiness

- *On a scale from 0 to 10, how ready are you to consider [option chosen above]?*
- Straight question: *Why a 5?*
- Backward question: *Why a 5 and not a 3?*
- Forward question: *What would it take to move you from a 5 to a 7?*

0	1	2	3	4	5	6	7	8	9	10
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Explore Ambivalence

Step 1: Ask a pair of questions to help the patient explore the pros and cons of the issue.

- *What are the things you like about _____? AND What are the things you don't like about _____? OR*
- *What are the advantages of keeping things the same? AND What are the advantages of making a change?*

Step 2:

- Summarize ambivalence: *Let me see if I understand what you've told me so far....* (begin with reasons for maintaining the status quo, end with reasons for making a change)
- Ask: *Did I get it all? / Did I get it right?*

Tailor the Intervention

Stage of Readiness	Key Questions
Not Ready 0 - 3 <ul style="list-style-type: none">• Raise Awareness• Elicit Change Talk• Advise and Encourage	<ul style="list-style-type: none">• <i>Would you be interested in knowing more about healthier lifestyles?</i>• <i>How can I help?</i>• <i>What might need to be different for you to consider a change in the future?</i>
Unsure 4 – 6 <ul style="list-style-type: none">• Evaluate Ambivalence• Elicit Change Talk• Build Readiness	<ul style="list-style-type: none">• <i>Where does that leave you now?</i>• <i>What do you see as your next steps?</i>• <i>What are you thinking / feeling at this point?</i>• <i>Where does _____ fit into your future?</i>
Ready 7 – 10 <ul style="list-style-type: none">• Strengthen Commitment• Elicit Change Talk• Facilitate Action Planning	<ul style="list-style-type: none">• <i>Why is this important to you now?</i>• <i>What are your ideas for making this work?</i>• <i>What might get in the way? How might you work around the barriers?</i>• <i>How might you reward yourself along the way?</i>

Close the Encounter

- Summarize: *Our time is almost up. Let's take a look at what you've worked through today...*
- Show Appreciation / Acknowledge willingness to discuss change: *Thank you for being willing to discuss your lifestyle.*
- Offer advice, emphasize choice, express confidence: *I strongly encourage you to be more physically active. The choice to increase your activity, or course, is entirely yours. I am confident that if you decide to be more active you can be successful.*
- Confirm next steps and arrange for follow up: *Are you able to come back in 1 month so we can continue to work together?*

Adapted from the Permanente Medical Group, Inc. Northern California Regional Health Education

Brief Negotiation

BLOOD PRESSURE LEVELS FOR THE 90TH AND 95TH PERCENTILES OF BLOOD PRESSURE FOR GIRLS AGE 1 TO 17 YEARS BY PERCENTILES OF HEIGHT

Age	Height Percentiles* →	BP†	Systolic BP (mm Hg)							Diastolic BP (mm Hg)						
			5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
1	90th	↓	97	98	99	100	102	103	104	53	53	53	54	55	56	56
	95th		101	102	103	104	105	107	107	57	57	57	58	59	60	60
2	90th		99	99	100	102	103	104	105	57	57	58	58	59	60	61
	95th		102	103	104	105	107	108	109	61	61	62	62	63	64	65
3	90th		100	100	102	103	104	105	106	61	61	61	62	63	63	64
	95th		104	104	105	107	108	109	110	65	65	65	66	67	67	68
4	90th		101	102	103	104	106	107	108	63	63	64	65	65	66	67
	95th		105	106	107	108	109	111	111	67	67	68	69	69	70	71
5	90th		103	103	104	106	107	108	109	65	66	66	67	68	68	69
	95th		107	107	108	110	111	112	113	69	70	70	71	72	72	73
6	90th		104	105	106	107	109	110	111	67	67	68	69	69	70	71
	95th		108	109	110	111	112	114	114	71	71	72	73	73	74	75
7	90th		106	107	108	109	110	112	112	69	69	69	70	71	72	72
	95th		110	110	112	113	114	115	116	73	73	73	74	75	76	76
8	90th		108	109	110	111	112	113	114	70	70	71	71	72	73	74
	95th		112	112	113	115	116	117	118	74	74	75	75	76	77	78
9	90th		110	110	112	113	114	115	116	71	72	72	73	74	74	75
	95th		114	114	115	117	118	119	120	75	76	76	77	78	78	79
10	90th		112	112	114	115	116	117	118	73	73	73	74	75	76	76
	95th		116	116	117	119	120	121	122	77	77	77	78	79	80	80
11	90th		114	114	116	117	118	119	120	74	74	75	75	76	77	77
	95th		118	118	119	121	122	123	124	78	78	79	79	80	81	81
12	90th		116	116	118	119	120	121	122	75	75	76	76	77	78	78
	95th		120	120	121	123	124	125	126	79	79	80	80	81	82	82
13	90th		118	118	119	121	122	123	124	76	76	77	78	78	79	80
	95th		121	122	123	125	126	127	128	80	80	81	82	82	83	84
14	90th		119	120	121	122	124	125	126	77	77	78	79	79	80	81
	95th		123	124	125	126	128	129	130	81	81	82	83	83	84	85
15	90th		121	121	122	124	125	126	127	78	78	79	79	80	81	82
	95th		124	125	126	128	129	130	131	82	82	83	83	84	85	86
16	90th		122	122	123	125	126	127	128	79	79	79	80	81	82	82
	95th		125	126	127	128	130	131	132	83	83	83	84	85	86	86
17	90th		122	123	124	125	126	128	128	79	79	79	80	81	82	82
	95th		126	126	127	129	130	131	132	83	83	83	84	85	86	86

*Height percentile determined by standard growth curves.

†Blood pressure percentile determined by a single measurement.

NIH Publication #96-3790

Blood Pressure Reference - 90% Girls (Boys over)

BLOOD PRESSURE LEVELS FOR THE 90TH AND 95TH PERCENTILES OF BLOOD PRESSURE FOR BOYS AGE 1 TO 17 YEARS BY PERCENTILES OF HEIGHT

Age	Height Percentiles* BP†	Systolic BP (mm Hg)							Diastolic BP (mm Hg)						
		5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
		↓													
1	90th	94	95	97	98	100	102	102	50	51	52	53	54	54	55
	95th	98	99	101	102	104	106	106	55	55	56	57	58	59	59
2	90th	98	99	100	102	104	105	106	55	55	56	57	58	59	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
3	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	111	112	113	63	63	64	65	66	67	67
4	90th	102	103	105	107	109	110	111	62	62	63	64	65	66	66
	95th	106	107	109	111	113	114	115	66	67	67	68	69	70	71
5	90th	104	105	106	108	110	112	112	65	65	66	67	68	69	69
	95th	108	109	110	112	114	115	116	69	70	70	71	72	73	74
6	90th	105	106	108	110	111	113	114	67	68	69	70	70	71	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
7	90th	106	107	109	111	113	114	115	69	70	71	72	72	73	74
	95th	110	111	113	115	116	118	119	74	74	75	76	77	78	78
8	90th	107	108	110	112	114	115	116	71	71	72	73	74	75	75
	95th	111	112	114	116	118	119	120	75	76	76	77	78	79	80
9	90th	109	110	112	113	115	117	117	72	73	73	74	75	76	77
	95th	113	114	116	117	119	121	121	76	77	78	79	80	80	81
10	90th	110	112	113	115	117	118	119	73	74	74	75	76	77	78
	95th	114	115	117	119	121	122	123	77	78	79	80	80	81	82
11	90th	112	113	115	117	119	120	121	74	74	75	76	77	78	78
	95th	116	117	119	121	123	124	125	78	79	79	80	81	82	83
12	90th	115	116	117	119	121	123	123	75	75	76	77	78	78	79
	95th	119	120	121	123	125	126	127	79	79	80	81	82	83	83
13	90th	117	118	120	122	124	125	126	75	76	76	77	78	79	80
	95th	121	122	124	126	128	129	130	79	80	81	82	83	83	84
14	90th	120	121	123	125	126	128	128	76	76	77	78	79	80	80
	95th	124	125	127	128	130	132	132	80	81	81	82	83	84	85
15	90th	123	124	125	127	129	131	131	77	77	78	79	80	81	81
	95th	127	128	129	131	133	134	135	81	82	83	83	84	85	86
16	90th	125	126	128	130	132	133	134	79	79	80	81	82	82	83
	95th	129	130	132	134	136	137	138	83	83	84	85	86	87	87
17	90th	128	129	131	133	134	136	136	81	81	82	83	84	85	85
	95th	132	133	135	136	138	140	140	85	85	86	87	88	89	89

*Height percentile determined by standard growth curves.

†Blood pressure percentile determined by a single measurement.

NIH Publication #96-3790

Definition of Hypertension

- **Hypertension** is defined as average SBP and/or diastolic BP (DBP) that 95th percentile for gender, age, and height on ≥ 3 occasions.
- **Prehypertension** in children is defined as average SBP or DBP levels that are ≥ 90 th percentile but < 95 th percentile; as with adults, adolescents with BP levels $\geq 120/80$ mm Hg should also be considered prehypertensive.
- A patient with BP levels > 95 th percentile in a physician's office or clinic, who is normotensive outside a clinical setting, has “white-coat hypertension.” Ambulatory BP monitoring (ABPM) is usually required to make this diagnosis.

Table 7: Clinical Evaluation of Confirmed Hypertension

Study or Procedure	Purpose	Target Population
Evaluation for identifiable causes		
History, including sleep history, family history, risk factors, diet, and habits such as smoking and drinking alcohol; physical examination	History and physical examination help focus subsequent evaluation	All children with persistent BP ≥ 95 th percentile
BUN, creatinine, electrolytes, urinalysis, and urine culture	R/O renal disease and chronic pyelonephritis	All children with persistent BP ≥ 95 th percentile
CBC	R/O anemia, consistent with chronic renal disease	All children with persistent BP ≥ 95 th percentile
Renal U/S	R/O renal scar, congenital anomaly, or disparate renal size	All children with persistent BP ≥ 95 th percentile
Evaluation for comorbidity		
Fasting lipid panel, fasting glucose	Identify hyperlipidemia, identify metabolic abnormalities	Overweight patients with BP at 90th–94th percentile; all patients with BP ≥ 95 th percentile; family history of hypertension or CVD; child with chronic renal disease
Drug screen	Identify substances that might cause hypertension	History suggestive of possible contribution by substances or drugs.
Polysomnography	Identify sleep disorder in association with hypertension	History of loud, frequent snoring
Evaluation for target-organ damage		
Echocardiogram	Identify LVH and other indications of cardiac involvement	Patients with comorbid risk factors* and BP 90th–94th percentile; all patients with BP ≥ 95 th percentile
Retinal exam	Identify retinal vascular changes	Patients with comorbid risk factors and BP 90th–94th percentile; all patients with BP ≥ 95 th percentile
Additional evaluation as indicated		
ABPM	Identify white-coat hypertension, abnormal diurnal BP pattern, BP load	Patients in whom white-coat hypertension is suspected, and when other information on BP pattern is needed
Plasma renin determination	Identify low renin, suggesting mineralocorticoid-related disease	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Renovascular imaging	Identify renovascular disease	Positive family history of severe hypertension Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Isotopic scintigraphy (renal scan)		
MRA		
Duplex Doppler flow studies		
3-Dimensional CT		
Arteriography: DSA or classic		
Plasma and urine steroid levels	Identify steroid-mediated hypertension	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension
Plasma and urine catecholamines	Identify catecholamine-mediated hypertension	Young children with stage 1 hypertension and any child or adolescent with stage 2 hypertension

BUN, blood urea nitrogen; CBC, complete blood count; R/O, rule out; U/S, ultrasound.

* Comorbid risk factors also include diabetes mellitus and kidney disease.

Hypertension in Children (Hypertension Management Algorithm over)

Fig. 1: Hypertension Management Algorithm

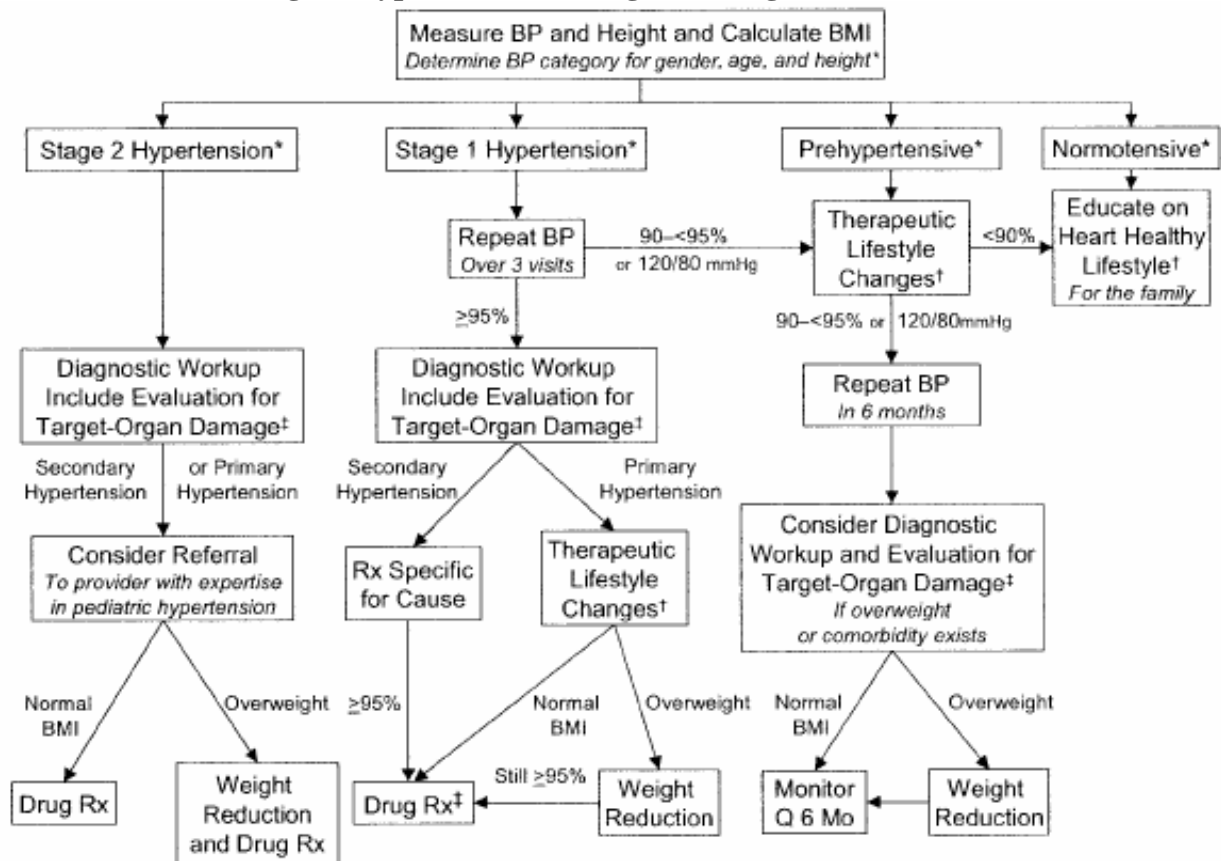


Fig 1. Management algorithm. Rx indicates prescription; Q, every. *, See Tables 3, 4, and 5; †, diet modification and physical activity especially if younger, very high BP, little or no family history, diabetic, or other risk factors.

THERAPEUTIC LIFESTYLE CHANGES

- Weight reduction is the primary therapy for obesity-related hypertension. Prevention of excess or abnormal weight gain will limit future increases in BP.
- Regular physical activity and restriction of sedentary activity will improve efforts at weight management and may prevent an excess increase in BP over time.
- Dietary modification should be strongly encouraged in children and adolescents who have BP levels in the prehypertensive range as well as those with hypertension.
- Family-based intervention improves success.

Table 6. Indications for Antihypertensive Drug Therapy in Children

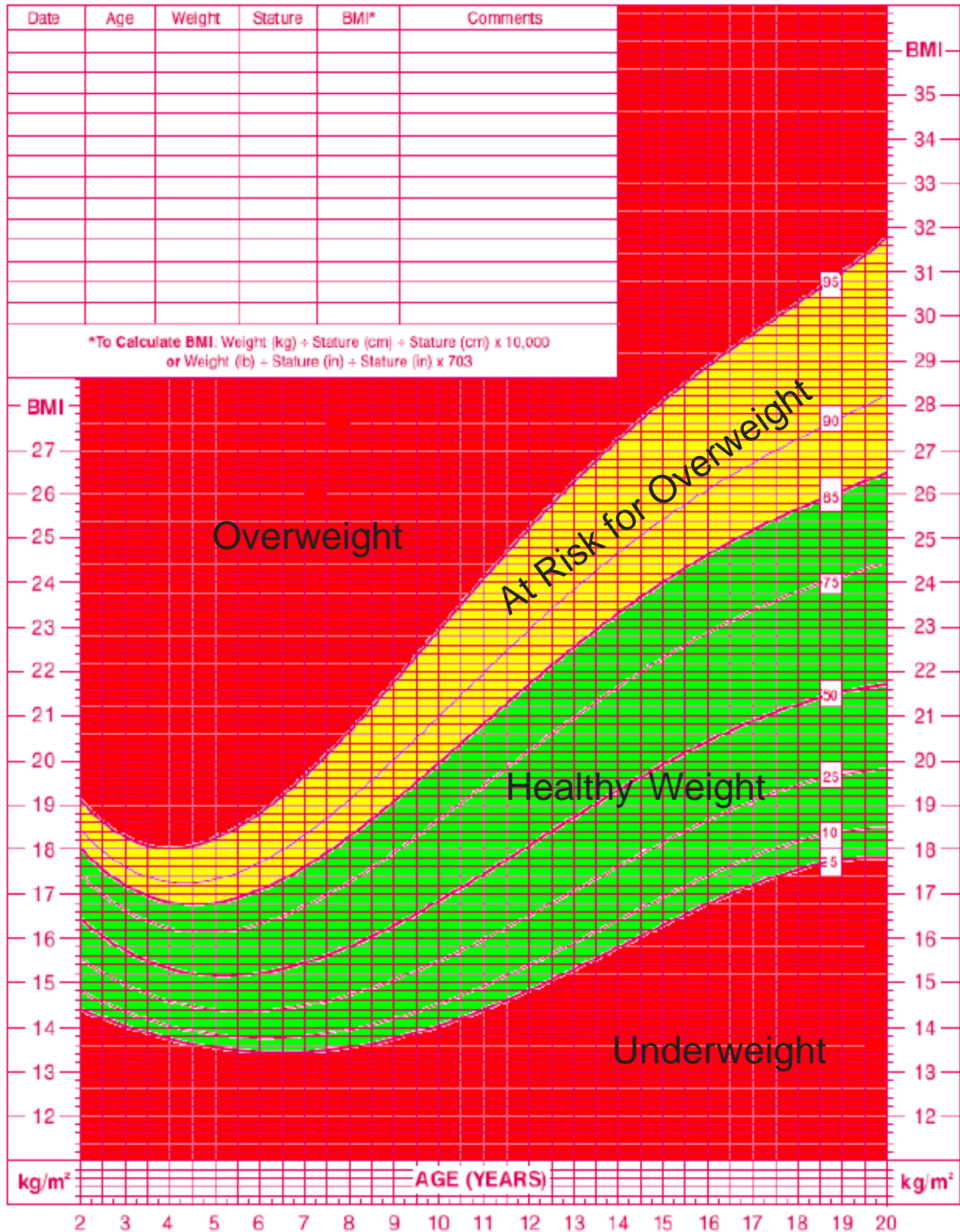
- Symptomatic hypertension
- Secondary hypertension
- Hypertensive target-organ damage
- Diabetes (types 1 and 2)
- Persistent hypertension despite nonpharmacologic measures

Selected excerpts from "The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents," *Pediatrics*, Vol. 114, No. 2, August 2004 - Revised May 2005

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

NAME _____

RECORD # _____



Published May 30, 2000 (modified 10/16/09).
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>



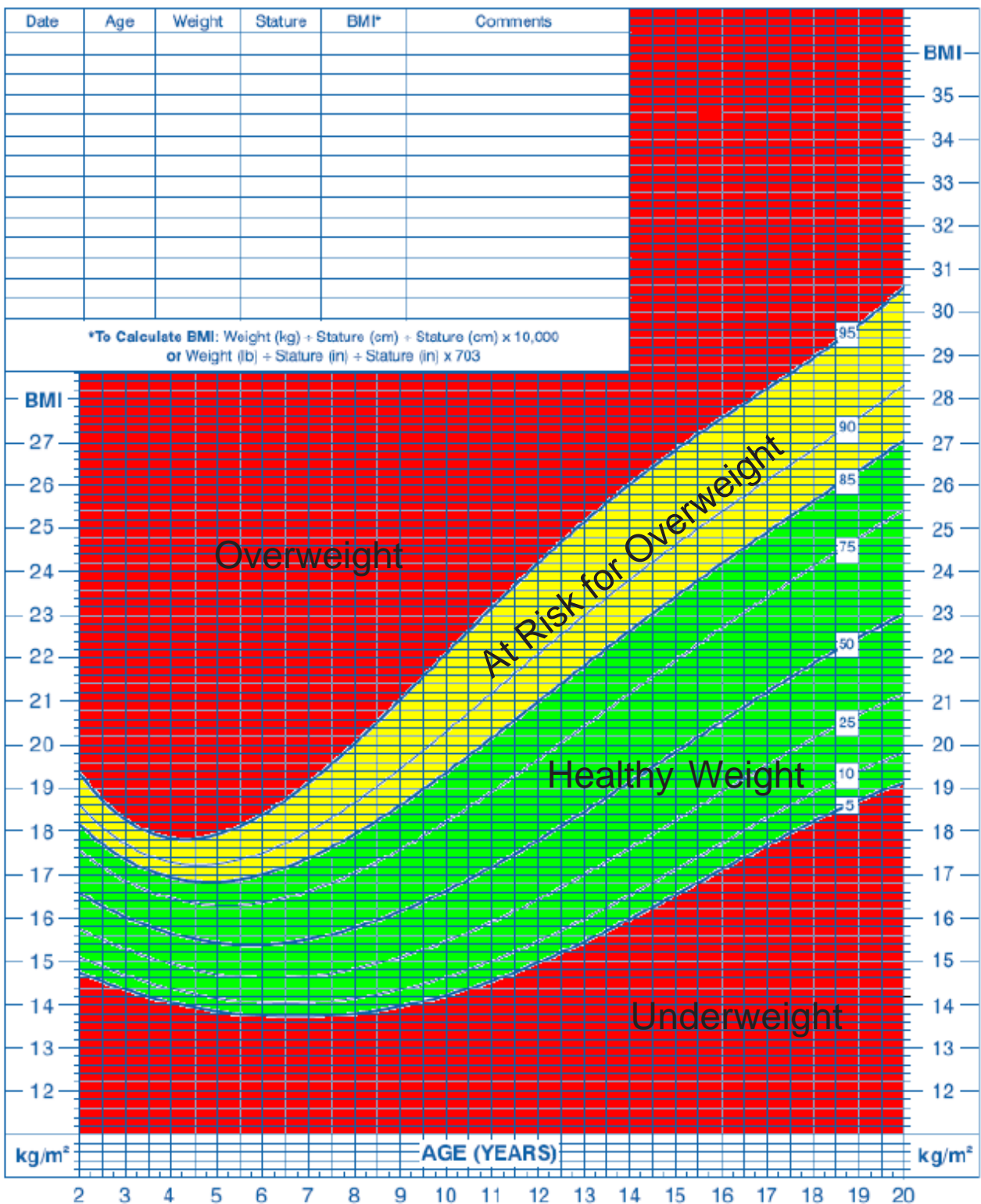
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Body Mass Index(BMI) - Girls (Boys over)

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>



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What Are The Potential Limitations to BMI?

William Dietz, MD, PHD, Director, Division of Nutrition & Physical Activity – Centers for Disease Control & Prevention

There are several potential limitations to Body Mass Index which require that it not be used as the exclusive standard by which to judge a child at risk of overweight or obesity. The first limitation is that, as you know, BMI is weight divided by height squared.

Weight and height do not directly measure body fatness, so that an additional criteria that should be used for determining whether somebody who is overweight (as indicated by BMI greater than the 95th percentile) is overfat, is a measure of a skinfold thickness – like the tricep skinfold thickness. This will help differentiate children and teenagers who are both overweight and overfat from those who are overweight because of increased muscle mass or bone mass.

One of the questions is how sensitive and specific the BMI is for the identification of children with increased fatness. We compared body fatness in children and teenagers measured by DEXA (which is a definitive measure of body composition) with children with a BMI over the 95th percentile. The overwhelming majority of those children – 95 percent of those children with a BMI greater than the 95th percentile – also had increases in percent body fat compared to the general population.

The second consideration is how valid Body Mass Index is as a predictor of risk.

We know, from studies of 5 to 10 year-old children whose BMI is greater than the 95th percentile, that 60 percent have a least one additional cardiovascular disease risk factor – like elevated systolic or diastolic blood pressure, elevated cholesterol or triglycerides, or elevated insulin levels. In addition about 15 percent of those same children (with a BMI greater than the 95th percentile) have two or more risk factors.

Therefore, BMI not only identifies children who have increased body fatness, but in addition BMI also indicates that those children who are overweight have associated risk factors.

Smoothed 95th Percentiles of Triceps Skinfold
Thickness for NHANES 1 Subjects¹

To determine triceps skinfold measurements: measure the midpoint between the acromion and olecranon process on the posterior surface of the right arm and mark it. With the patient's arm relaxed, grasp the skinfold about 1 cm above the midpoint, taking care to exclude muscle from the grasp. Measure the skinfold thickness with calipers, such as Lange or Holtain calipers, that provide standardized pressure. Repeat two to three times.

Males	95 th Percentile	Females	95 th Percentile
Years	mm	Years	mm
6-6.9	14	6-6.9	16
7-7.9	16	7-7.9	18
8-8.9	17	8-8.9	20
9-9.9	19	9-9.9	22
10-10.9	21	10-10.9	24
11-11.9	22	11-11.9	26
12-12.9	23	12-12.9	28
13-13.9	24	13-13.9	30
14-14.9	23	14-14.9	31
15-15.9	22	15-15.9	32
16-16.9	22	16-16.9	33
17-17.9	22	17-17.9	34
18-18.9	22	18-18.9	34
19-19.9	22	19-19.9	35

¹ Barlow SE and Dietz WH. Obesity recommendations and treatment. *Journal of Pediatrics* 1998; 102(3).

Funding for MYOC2 (the second Maine Youth Overweight Collaborative) was provided by the Bingham Program, Jessie B. Cox Charitable Trust, MaineHealth & Eastern Maine Healthcare.