Expert Committee Recommendations on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity - 2007

- An Implementation Guide from the Childhood Obesity Action Network -

Overview:

In 2005, the AMA, HRSA and CDC convened an Expert Committee to revise the 1998 childhood obesity recommendations. The initial recommendations were released on June 6, 2007 with the complete recommendations published in December 2007 in a Supplement to Pediatrics ("Assessment of Child and Adolescent Overweight and Obesity" PEDIATRICS Volume 120, Supplement 4, December 2007, Pages S163-S288).

In 2006, the National Initiative for Children's Healthcare Quality (NICHQ) launched the Childhood Obesity Action Network (COAN). With more than 50 healthcare organizations and 1,500 health professionals, the network is aimed at rapidly sharing knowledge, successful practices and innovation. The COAN 10 year goal is to reverse the childhood obesity epidemic in all 50 states. This Implementation Guide is the first of a series of products designed for healthcare professionals by COAN to accelerate improvement in the prevention and treatment of childhood obesity.

The Implementation Guide combines key aspects of the 2007 Expert Committee Recommendations with practical tips and practice tools from the members of COAN. The comprehensive set of practice tools available to COAN members on the COAN Extranet include some tools developed before the 2007 Expert Recommendations and there may be some inconsistencies such as the term *overweight* instead of *obesity* for BMI ≥ 95%ile. The tools are intended as a source of ideas and to facilitate implementation. As tools are updated or new tools developed based on the Expert Recommendations, the Implementation Guide will be updated. The Implementation Guide defines 3 key steps to the implementation of the 2007 Expert Committee Recommendations:

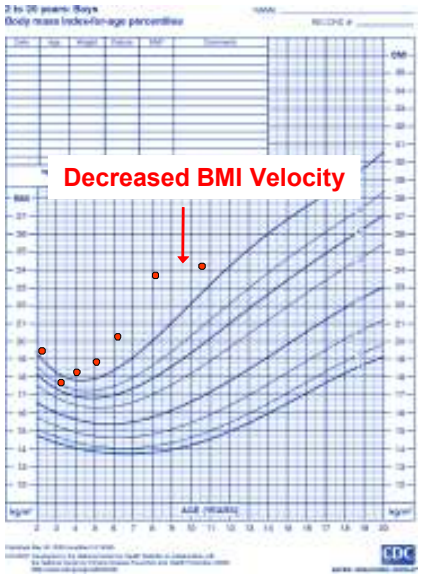
- **Step 1 – Obesity Prevention at Well Care Visits** (Assessment & Prevention)
- **Step 2 – Prevention Plus Visits** (Treatment)
- **Step 3 – Going Beyond Your Practice** (Prevention & Treatment)

Step 1 – Obesity Prevention at Well Care Visits (Assessment & Prevention)

Action Steps	Expert Recommendations	Action Network Tips and Tools
Assess all children for obesity at all well care visits 2-18 years	Physicians and allied health professional should perform, at a minimum, a yearly assessment.	A **presentation** for your staff and colleagues can help implement obesity prevention in your practice.
Use Body Mass Index (BMI) to screen for obesity	▪ **Accurately measure height and weight** ▪ **Calculate BMI** BMI (English):[weight (lb) ÷ height (in) ÷ height (in)] x 703 BMI (metric):[weight (kg) ÷ height (cm) ÷ height (cm)] x 10,000 ▪ **Plot BMI on BMI growth chart** ▪ Not recommended: skinfold thickness, waist circumference	BMI is very sensitive to measurement errors, particularly height. Having a standard measurement protocol as well as training can improve accuracy. **BMI calculation** tools are also helpful. Use the CDC BMI %ile-for-age **growth charts**.
Make a weight category diagnosis using BMI percentile	▪ < 5%ile Underweight ▪ 5-84%ile Healthy Weight ▪ 85-94%ile Overweight ▪ 95-98%ile Obesity ▪ ≥ 99%ile	Until the BMI 99%ile is added to the growth charts, **Table 1** can be used to determine the 99%ile cut-points. **Physicians should exercise judgement when choosing how to inform the family. Using more neutral terms such as *weight, excess weight, body mass index, BMI, or risk for diabetes and heart disease* can reduce the risk of stigmatization or harm to self-esteem.**
Measure blood pressure	▪ Use a cuff large enough to cover 80% of the upper arm ▪ Measure pulse in the standard manner	Diagnose hypertension using **NHLBI tables**. An abbreviated table is shown below (**Table 2**).
Take a focused family history	▪ Obesity ▪ Type 2 diabetes ▪ Cardiovascular disease (hypertension, cholesterol) ▪ Early deaths from heart disease or stroke	A child with one obese parent has a 3 fold increased risk of becoming obese. This risk increases to 13 fold with 2 obese parents. Using a **clinical documentation** tool can be helpful.

Take a focused review of systems	Take a focused review of systems	See **Table 3**. Using a **clinical documentation** tool can be helpful.
Assess behaviors and attitudes	**Diet Behaviors** ▪ Sweetened-beverage consumption ▪ Fruit and vegetable consumption ▪ Frequency of eating out and family meals ▪ Consumption of excessive portion sizes ▪ Daily breakfast consumption **Physical Activity Behaviors** ▪ Amount of moderate physical activity ▪ Level of screen time and other sedentary activities **Attitudes** ▪ Self-perception or concern about weight ▪ Readiness to change ▪ Successes, barriers and challenges	Using **behavioral risk assessment** tools can facilitate history taking and save clinician time.
Perform a thorough physical examination	Perform a thorough physical examination	See **Table 3**. Using a **clinical documentation** tool can be helpful.
Order the appropriate laboratory tests	**BMI 85-94%ile Without Risk Factors** ▪ Fasting Lipid Profile * **BMI 85-94%ile Age 10 Years & Older With Risk Factors** ▪ Fasting Lipid Profile ▪ ALT and AST ▪ Fasting Glucose **BMI ≥ 95%ile Age 10 Years & Older** ▪ Fasting Lipid Profile ▪ ALT and AST ▪ Fasting Glucose ▪ Other tests as indicated by health risks	Consider ordering ALT, AST and glucose tests beginning at 10 years of age and then periodically (every 2 years). Provider **decision support** tools can be helpful when choosing assessment and treatment options. Lab test thresholds are shown in **Table 6**. Delivering lab results can be one way to open the conversation about weight and health with a family. * The AHA and AAP recommend screening at 2 years of age if there is a family history of lipid abnormalities or if risk factors are present in the absence of a positive family history.
Give consistent evidence-based messages for all children regardless of weight	▪ Limit sugar-sweetened beverages ▪ Eat at least 5 servings of fruits and vegetables ▪ Moderate to vigorous physical activity for at least 60 minutes a day ▪ Limit screen time to no more than 2 hours/day ▪ Remove television from children's bedrooms ▪ Eat breakfast every day ▪ Limit eating out, especially at fast food ▪ Have regular family meals ▪ Limit portion sizes	An example from the Maine Collaborative: ▪ **5** fruits and vegetables ▪ **2** hours or less of TV per day ▪ **1** hour or more physical activity ▪ **0** servings of sweetened beverages Exam and waiting room **posters** and family **education materials** can help deliver these messages and facilitate dialogue. Encourage an authoritative parenting style in support of increased physical activity and reduced TV viewing. Discourage a restrictive parenting style regarding child eating. Encourage parents to be good role models and address as a family issue rather than the child's problem.
Use Empathize/Elicit - Provide - Elicit to improve the effectiveness of your counseling	Assess self-efficacy and readiness to change. Use Empathize/Elicit - Provide - Elicit to improve the effectiveness of your counseling. **Empathize/Elicit** ▪ Reflect ▪ What is your understanding? ▪ What do you want to know? ▪ How ready are you to make a change (1-10 scale)? **Provide** ▪ Advice or information ▪ Choices or options **Elicit** ▪ What do you make of that? ▪ Where does that leave you?	A possible dialogue: **Empathize/Elicit** "Yours child's height and weight may put him/her at increased risk for developing diabetes and heart disease at a very early age." "What do make of this?" "Would you be interested in talking more about ways to reduce your child's risk?" **Provide** "Some different ways to reduce your child's risk are…" "Do any of these seem like something your family could work on or do you have other ideas?" **Elicit** "Where does that leave you?" "What might you need to be successful?" **Communication guidelines** can helpful when developing communication skills.

Step 2 – Prevention Plus Visits (Treatment)

Action Steps	Expert Recommendations	Action Network Tips and Tools
Develop an office based approach for follow up of overweight and obese children	A staged approach to treatment is recommended for ages 2-19 whose BMI is 85-94%ile with risk factors and all whose BMI is ≥ 95%ile. In general, treatment begins with Stage 1 Prevention Plus (**Table 4**) and progresses to the next stage if there has been no improvement in weight/BMI or velocity after 3-6 months and the family is willing/ready. The recommended weight loss targets are shown in **Table 5**. **Stage 1 - Prevention Plus** ▪ Family visits with physician or health professional who has had some training in pediatric weight management/behavioral counseling. ▪ Can be individual or group visits. ▪ Frequency - individualized to family needs and risk factors, consider monthly. ▪ **Behavioral Goals** – - Decrease screen time to 2 hr/day or fewer - No sugar-sweetened beverages - Consume at least 5 servings of fruits and vegetables daily - Be physically active 1 hour or more daily - Prepare more meals at home as a family (the goal is 5-6 times a week) - Limit meals outside the home - Eat a healthy breakfast daily - Involve the whole family in lifestyle changes - More focused attention to lifestyle changes and more frequent follow-up distinguishes Prevention Plus from Prevention Counseling ▪ **Weight Goal** – weight maintenance or a decrease in BMI velocity. The long term BMI goal is <85%ile although some children can be healthy with a BMI 85-94%ile. ▪ Advance to Stage 2 (Structured Weight Management) if no improvement in weight/BMI or velocity in 3-6 months and family willing/ready to make changes.	Prevention Plus visits may include: ▪ Health **education materials** ▪ **Behavioral risk assessment and self-monitoring** tools ▪ **Action planning and goal setting** tools ▪ **Clinical documentation** tools ▪ **Counseling protocols** ▪ Other health professionals such as dietitians, psychologists and health educators Besides behavioral and weight goals, improving self-esteem and self efficacy (confidence) are important outcomes. Although weight maintenance is a good goal, more commonly, a slower weight gain reflected in a decreased BMI velocity is the outcome seen in lower intensity behavioral interventions such as Prevention Plus. Measuring and plotting BMI after 3-6 months is an important step to determine the effectiveness of obesity treatment. 
Use motivational interviewing at Prevention Plus visits for ambivalent families and to improve the success of action planning	Use patient-centered counseling – motivational interviewing	Research suggests that motivational interviewing may be an effective approach to address childhood obesity prevention and treatment. Motivational interviewing is particularly effective for ambivalent families but can also be used for action planning. Instead of telling patients what changes to make, you elicit "change talk" from them, taking their ideas, strengths, and barriers into account. **Communication guidelines** and **communication training** can be helpful with skill development.
Develop a reimbursement strategy for Prevention Plus visits		**Coding strategies** can help with reimbursement for Prevention Plus visits. Advocacy through professional organizations to address reimbursement policies is another strategy.

Step 3 – Going Beyond Your Practice (Prevention & Treatment)

Action Steps	Expert Recommendations	Action Network Tips and Tools
Advocate for improved access to fresh fruits and vegetables and safe physical activity in your community and schools	The Expert Committee recommends that physicians, allied healthcare professionals, and professional organizations advocate for: ▪ The federal government to increase physical activity at school through intervention programs as early as grade 1 through the end of high school and college, and through creating school environments that support physical activity in general. ▪ Supporting efforts to preserve and enhance parks as areas for physical activity, informing local development initiatives regarding the inclusion of walking and bicycle paths, and promoting families' use of local physical activity options by making information and suggestions about physical activity alternatives available in doctors' offices.	Physicians and health professionals can play a key role in advocating for policy and built environment changes to support healthy eating and physical activity in communities, child care settings, and schools (including after-school programs). **Advocacy tools and resources** can be helpful in advocacy efforts. Partnering with others and using evidence-based strategies are also critical to the success of **multi-faceted community interventions**.
Identify and promote community services which encourage healthy eating and physical activity	Promote physical activity at school and in child care settings (including after school programs), by asking children and parents about activity in these settings during routine office visits.	Public Health Departments and Parks and Recreation are good places to start looking for community programs and resources. You can work on developing your own partnerships with community organizations (Physical Activity Directory template and/or referral forms).
Identify or develop more intensive weight management interventions for your families who do not respond to Prevention Plus	The Expert Committee recommends the following staged approach for children between the ages of 2 and 19 years whose BMI is 85-94%ile with risk factors and all whose BMI is ≥ 95%ile: ▪ **Stage 2 - Structured Weight Management** (Family visits with physician or health professional specifically trained in weight management. Monthly visits can be individual or group.) ▪ **Stage 3 - Comprehensive, Multidisciplinary Intervention** (Multidisciplinary team with experience in childhood obesity. Frequency is often weekly for 8-12 weeks with follow up.) ▪ **Stage 4 - Tertiary Care Intervention** (Medications - sibutramine, orlistat, Very-low-calorie diets, weight control surgery - gastric bypass or banding.) Recommended for select patients only when provided by experienced programs with established clinical or research protocols. Gastric banding is in clinical trials and not currently FDA approved.	Stage 2 could be done without a tertiary care center if community professionals from different disciplines collaborated. For example, if a physician provided the medical assessment, a dietitian provided classes, and the local YMCA provided an exercise program. Partnering with your community tertiary care center can be an effective strategy to develop or link to more intensive weight management interventions (Stages 3 and 4) as well as referral protocols to care for families who do not respond to Prevention Plus visits. Provider **decision support** tools can be helpful when choosing appropriate treatment and referral options. **Weight management protocols and curriculum** can also be helpful when getting started.
Join the Childhood Obesity Action Network to learn from your colleagues and accelerate progress		The Childhood Obesity Action Network has launched "The Healthcare Campaign to Stop the Epidemic." **Join the network** (www.NICHQ.org) to learn from our national obesity experts, share what you have learned and access the tools in this guide. ***Together we can make a difference!***

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Table 1 – BMI 99%ile Cut-Points (kg/m^2)

Age (Years)	Boys	Girls
5	20.1	21.5
6	21.6	23.0
7	23.6	24.6
8	25.6	26.4
9	27.6	28.2
10	29.3	29.9
11	30.7	31.5
12	31.8	33.1
13	32.6	34.6
14	33.2	36.0
15	33.6	37.5
16	33.9	39.1
17	34.4	40.8

Table 2 – Abbreviated NHLBI Blood Pressure Table

Blood Pressure 95% by Age, Sex and Height %

AGE	BOYS HEIGHT %		GIRLS HEIGHT %	
	50%	**90%**	**50%**	**90%**
2 Yr	106/61	109/63	105/63	108/65
5 Yr	112/72	115/74	110/72	112/73
8 Yr	116/78	119/79	115/76	118/78
11 Yr	121/80	124/82	121/79	123/81
14 Yr	128/82	132/84	126/82	129/84
17 Yr	136/87	139/88	129/84	131/85

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Table 3 – Symptoms and Signs of Conditions Associated with Obesity

Symptoms	Signs
➢ **Anxiety, school avoidance, social isolation** (Depression)	➢ **Poor linear growth** (Hypothyroidism, Cushing's, Prader-Willi syndrome)
➢ **Polyuria, polydipsia, weight loss** (Type 2 diabetes mellitus)	➢ **Dysmorphic features** (Genetic disorders, including Prader–Willi syndrome)
➢ **Headaches** (Pseudotumor cerebri)	➢ **Acanthosis nigricans** (NIDDM, insulin resistance)
➢ **Night breathing difficulties** (Sleep apnea, hypoventilation syndrome, asthma)	➢ **Hirsutism and Excessive Acne** (Polycystic ovary syndrome)
➢ **Daytime sleepiness** (Sleep apnea, hypoventilation syndrome, depression)	➢ **Violaceous striae** (Cushing's syndrome)
➢ **Abdominal pain** (Gastroesophageal reflux, Gall bladder disease, Constipation)	➢ **Papilledema, cranial nerve VI paralysis** (Pseudotumor cerebri)
➢ **Hip or knee pain** (Slipped capital femoral epiphysis)	➢ **Tonsillar hypertrophy** (Sleep apnea)
➢ **Oligomenorrhea or amenorrhea** (Polycystic ovary syndrome)	➢ **Abdominal tenderness** (Gall bladder disease, GERD, NAFLD)
	➢ **Hepatomegaly** (Nonalcoholic fatty liver disease (NAFLD))
	➢ **Undescended testicle** (Prader-Willi syndrome)
	➢ **Limited hip range of motion** (Slipped capital femoral epiphysis)
	➢ **Lower leg bowing** (Blount's disease)

Table 4 – A Staged Approach to Obesity Treatment

	BMI 85-94%ile No Risks	BMI 85-94%ile With Risks	BMI 95-98%ile	BMI >= 99%ile
Age 2-5 Years	Prevention Counseling	**Initial:** Stage 1 **Highest:** Stage 2	**Initial:** Stage 1 **Highest:** Stage 3	**Initial:** Stage 1 **Highest:** Stage 3
Age 6-11 Years	Prevention Counseling	**Initial:** Stage 1 **Highest:** Stage 2	**Initial:** Stage 1 **Highest:** Stage 3	**Initial:** Stage 1-3 **Highest:** Stage 3
Age 12-18 Years	Prevention Counseling	**Initial:** Stage 1 **Highest:** Stage 3	**Initial:** Stage 1 **Highest:** Stage 4	**Initial:** Stage 1-3 **Highest:** Stage 4

Stage 1	**Prevention Plus**	Primary Care Office
Stage 2	**Structured Weight Management**	Primary Care Office with Support
Stage 3	**Comprehensive, Multidisciplinary Intervention**	Pediatric Weight Management Center
Stage 4	**Tertiary Care Intervention**	Tertiary Care Center

Table 5 – Weight Loss Targets

	BMI 85 -94% ile No Risks	BMI 85 -94% ile With Risks	BMI 95 -98% ile	BMI >= 99% ile
Age 2 -5 Years	Maintain weight velocity	Decrease weight velocity or weight maintenance	Weight maintenance	Gradual weight loss of up to 1 pound a month if BMI is very high (>21 or 22 kg/m2)
Age 6 -11 Years	Maintain weight velocity	Decrease weight velocity or weight maintenance	Weight maintenance or gradual loss (1 lb per month)	Weight loss not to exceed an average of 2 pounds per week*
Age 12 -18 Years	Maintain weight velocity. After linear growt h is complete, maintain weight	Decrease weight velocity or weight maintenance	Weight loss not to exceed an average of 2 pounds per week*	Weight loss not to exceed an average of 2 pounds per week*

* If greater loss is noted, monitor for causes of excessive weight loss

Table 6 – Laboratory Test Thresholds

Lab Test	Borderline	Abnormal*	Follow Up Tests
Total Cholesterol	170-199 mg/dL	≥ 200 mg/dL	ECG, Lipoprotein (a)
Low-Density Lipoprotein	110-129 mg/dL	≥ 130 mg/dL	ECG, Lipoprotein (a)
Triglyceride		≥ 110 mg/dL	ECG, Lipoprotein (a)
High-Density Lipoprotein		≤ 40 mg/dL	ECG, Lipoprotein (a)
Fasting Glucose	100-125 mg/dL Prediabetes	≥ 126 mg/dL	OGTT, Urinary Microalbumin or Microalbumin/ Creatinine Ratio
Serum Alanine/Aspartate Aminotransferase (ALT, AST)		> 60 U/L or 2 times normal levels	Ultrasound, α_1-Antitrypsin, Ceruloplasm, ANA, Hepatitis Antibodies

* Abnormal tests may indicate the need for Follow Up Tests and discussion with a specialist