Childhood Obesity in Primary Care
Attendees: Prior to the start of the activity, please review the below information to ensure successful participation in this Enduring Activity

Accreditation and Designation Statements

• The American Academy of Pediatrics (AAP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

• The AAP designates this enduring material for a maximum of 1.0 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

• This activity is acceptable for a maximum of 1.0 AAP credits. These credits can be applied toward the AAP CME/CPD Award available to Fellows and Candidate Members of the American Academy of Pediatrics.

• The American Academy of Physician Assistants (AAPA) accepts certificates of participation for educational activities certified for AMA PRA Category 1 Credit™ from organizations accredited by ACCME. Physician assistants may receive a maximum of 1.0 hours of Category 1 credit for completing this program.

• This program is accredited for 1.0 NAPNAP CE contact hours of which 0 contain pharmacology (Rx), (0 related to psychopharmacology) (0 related to controlled substances), content per the National Association of Pediatric Nurse Practitioners (NAPNAP) Continuing Education Guidelines.
Purpose of Course
The Childhood Obesity in Primary Care Modules are designed to provide evidence-based practice for obesity prevention and treatment and use of effective strategies with families. The modules also aim to create healthcare systems that better supports evidence-based practice, increasing the likelihood of effective and sustainable changes in practice. In addition, the modules also enhance collaboration of providers with other healthcare professional and with broader community initiatives.

Learning Objectives
Upon completion of this activity, participants will be able to:
- Describe the three critical elements of a comprehensive obesity assessment in the context of well-child visit
- Define an augmented obesity-specific family history, physical exam and review of systems
- Identify possible laboratory and diagnostic tests for those at risk of comorbidities
Disclosure of Commercial Support for AAP CME Activities

The AAP gratefully acknowledges support for Childhood Obesity in Primary Care: Module 3 in the form of educational support from Nestlé Nutrition.

Disclosure of Financial Relationships and Resolution of Conflicts of Interest for AAP CME Activities Grid

The AAP CME/CPD program develops, maintains, and improves the competence, skills, and professional performance of pediatricians and pediatric healthcare professionals by providing quality, relevant, accessible, and effective educational experiences that address gaps in professional practice. The AAP CME/CPD program strives to meet the educational needs of pediatricians and pediatric healthcare professionals and support their lifelong learning with a goal of improving care for children and families. (AAP/CME/CPD Program Mission Statement, May 2015)

The AAP recognizes that there are a variety of financial relationships between individuals and commercial interests that require review to identify possible conflicts of interest in a CME activity. The “AAP Policy on Disclosure of Financial Relationships and Resolution of Conflicts of Interest for AAP CME Activities” is designed to ensure quality, objective, balanced, and scientifically rigorous AAP-CME activities by identifying and resolving all potential conflicts of interest prior to the confirmation of service of those in a position to influence and/or control CME content. The AAP has taken steps to resolve any potential conflicts of interest.

All AAP CME activities will strictly adhere to the Accreditation Council for Continuing Medical Education (ACCME) Standards for Commercial Support: Standards to Ensure the Independence of CME Activities. In accordance with these Standards, the following decisions will be made free of the control of a commercial interest: Identification of CME needs; determination of educational objectives; selection and presentation of content; selection of all persons and organizations that will be in a position to control the content, selection of educational methods, and evaluation of the CME activity.

The purpose of this policy is to ensure all potential conflicts of interest are identified and mechanisms to resolve them prior to the CME activity are implemented in ways that are consistent with the public good. The AAP is committed to providing learners with commercially unbiased CME activities.

Activity Title: Childhood Obesity in Primary Care Module 3: Introduction to the New Obesity Algorithm: An algorithm to support the Primary Care Provider with assessment, prevention, and management of childhood obesity

Activity Location: Online/Enduring Material

Activity Date: November 1, 2015 – November 1, 2018

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Relevant Financial Relationship</th>
<th>Name of Commercial Interest(s)</th>
<th>Disclosure of Off-Label (Unapproved)/Investigational Uses of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria Rogers, MD, FAAP</td>
<td>Faculty/Planning Committee</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Jeanne Lindros, MPH</td>
<td>Planning Committee</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Janice Lieblart, MS</td>
<td>Planning Committee</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Corrie Pierce</td>
<td>Disclosure Admin</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
</tbody>
</table>

*All conflicts identified were reviewed and resolved.

**Disclosure of Unfunded Educational Support**

No educational support was provided by an entity that influences the content of the activity, nor were the providers compensated for their participation in this activity.

No educational support was provided by an entity that influences the content of the activity, nor were the providers compensated for their participation in this activity.
**DISCLOSURE OF FINANCIAL RELATIONSHIPS**

All individuals in a position to influence and/or control the content of AAP CME activities are required to disclose to the AAP and subsequently to learners that the individual either has no relevant financial relationships or any financial relationships with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in CME activities. Listed below are the disclosures provided by individuals in a position to influence and/or control CME activity content.

* A commercial interest is defined as any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients.

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Relevant Financial Relationship</th>
<th>Name of Commercial Interest(s)*</th>
<th>Disclosure of Off-Label (Unapproved)/Investigational Uses of Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Michael Foulds, MD</td>
<td>AAP Reviewer</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Zoey Goore, MD</td>
<td>AAP Reviewer</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Ivor Hill, MD</td>
<td>AAP Reviewer</td>
<td>Yes</td>
<td>I have a paid Consultant relationship with Abbvie Inc.</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Robert Wiebe, MD</td>
<td>AAP Reviewer</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>Rickey Williams, MD</td>
<td>AAP Reviewer</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
<tr>
<td>D. Corey Lachman, MD,</td>
<td>AAP Reviewer</td>
<td>No</td>
<td>None</td>
<td>Do not intend to discuss</td>
</tr>
</tbody>
</table>
AAP gratefully acknowledges support for its Childhood Obesity in Primary Care Modules in the form of an educational grant provided by Nestlé.

**Product-Specific Advertising / Links to Product Websites**
No product-specific advertising of any type appears in this activity. No links to product websites appear in this activity.

**List of Principal Faculty and Credentials**
- Victoria W. Rogers, MD, FAAP

**Method of Participation**
Participants will participate in the module online. Upon completion of the webinar, participants will complete an assessment in order to receive CME credit.

**Minimum Performance Level**
Per the 2010 revision of the American Medical Association (AMA) Physician’s Recognition Award (PRA) and credit system, a minimum performance level must be established on enduring material and journal-based CME activities that are certified for *AMA PRA Category 1 Credit™*. In order to successfully complete this Ambulance Safety for the 21st Century Webinar CME activity for *AMA PRA Category 1 Credit™*, learners must demonstrate a minimum performance level of 70% or higher on the post-activity assessment, which measures achievement of the educational purpose and objectives of the activity.
Medium or Combination of Media Used

Enduring Material

List of hardware/software requirements
Our Technical Support team would like to ensure that you have a great experience with our streaming media services. Due to variations in PC and network security configurations, we recommend that you test the ability to receive streaming media before the day of this event on the computer you will be using to view the event. To do this, click the "Test Your Computer Now" button below. You will hear a short announcement and see slide information.

If you are unable to open and play the presentation, the test has failed. In this case, you may either need to try another computer or consult with your network administrator to obtain privileges required to view streaming media. This process could take some time, so please conduct this test as soon as possible.

System requirements
The system requirements for viewing a streaming media event are:

Windows
- Windows XP, Windows 2003 or Windows Vista
- Display resolution of 800x600 pixels or greater
- Microsoft Internet Explorer 6.0 SP1 or later, Firefox 2.0 or later, or Google Chrome 1.0
- For Firefox and Chrome, Silverlight 1.0 or later
- Windows Media Player 9.0 or later
- Broadband Internet connection (256 Kbps & above)
- No network blocks or filters that disable streaming media

Mac
- Mac OS X 10.4.8 or later
- Safari 2.0.4 or later (or Firefox 2.0 or later)
- Silverlight 1.0
- Broadband Internet connection (256 Kbps & above)
- No network blocks or filters that disable streaming media

Need more help?
If you need further assistance, please call KRM Customer Service Monday–Friday at 800.775.7654 or 715.833.5426 between 7:00 am and 5:00 pm CT, or email us at support@krm.com.

Provider Contact Information
If you have questions about this course or encounter technical problems, please contact Nikki Berry at nberry@aap.org

Privacy and Confidentiality Statement
Childhood Obesity in Primary Care
Introduction to the New Childhood Obesity Algorithm

Victoria W. Rogers, MD, FAAP
Associate Director, Institute for Healthy Childhood Weight
The Barbara Bush Children’s Hospital at Maine Medical Center
Disclosure Statement

Victoria W. Rogers, MD, FAAP

✓ I have no relevant financial relationships with the manufacturers(s) of any commercial products(s) and/or provider of commercial services discussed in this CME activity.

✓ I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.
About Tory

- Director, The Kids CO-OP (Clinical Outcomes and Outreach Program), The Barbara Bush Children’s Hospital at Maine Medical Center
- Director, Let’s Go! A Community-Based, Multi-setting Childhood Obesity Prevention Program
- Associate Director, American Academy of Pediatrics Institute for Healthy Childhood Weight
**VISION**
The Institute serves as a translational engine for pediatric obesity prevention, assessment, management and treatment; and moves policy and research from theory into practice in American healthcare, communities, and homes.

**MISSION**
The Institute will empower pediatricians, families and children to:

- Better **prevent, assess and treat** obesity and its comorbidities;
- **Enhance partnerships with families** to find and navigate individual pathways to healthy active living; and
- **Catalyze stakeholders and communities** to build and enhance capacity for healthy active living.
Learning Objectives

- Describe the three critical elements of a comprehensive obesity assessment in the context of well-child visit
- Define an augmented obesity-specific family history, physical exam and review of systems
- Identify possible laboratory and diagnostic tests for those at risk of comorbidities
Why a new Algorithm?

- Children with overweight and obesity may be sick
- PCPs need to screen for comorbidities
- To the extent possible, patients should be cared for in their medical home
- Providers have asked for guidance
A few points about the algorithm

- Contains a lot of information
- Starts at the well-child visit
- Continues on in planned follow up visits
- Is not a protocol
How did we develop the algorithm?

- Engaged a small group of experts
- Relied on existing guidelines
- Utilized new research and new consensus statements
Take Home Messages

- Assessment is a critical piece of the puzzle
- This assessment is doable in the primary care setting
- Children who have a BMI ≥ 85% may be sick and may need:
  - Special consideration to determine if they are ill
  - Laboratory tests
  - Additional work-up for comorbidities as determined by positive signs and symptoms and family history
Assess Behaviors
Assess healthy eating and active living behaviors
Why Focus on Assessment

A core element of pediatrics is assessing healthy growth and development of a child

Overweight and obesity must be identified because:

- Early intervention is critical
- Some of these children are sick with comorbidities and need to be treated
In general, most young children:

- Are not eating enough fruit and vegetables (if any)
- Eat and drink more sugar than recommended
- Spend a lot of time in front of a screen
- Sleep less than the recommended amount
In Your Practice: Assessing behaviors

**Who:** Which *team member* will assess patient behaviors?

**What:** What strategy/method will you use to ensure assessment across all patients?

**How:** How will you document the findings?
Behavioral Risk Assessment ≥ 2

- Fruits and vegetable consumption
- Screen time
- Active play/exercise
- Sugary drink consumption
- Sleep – duration and quality
- Eating out – frequency and type
- Family meals – how often
- Routines for eating, activity and sleeping
Healthy Habits Questionnaire

- Gets conversation started between parent and child
- Keeps conversation going throughout appointment
- Can be used as a HEDIS measure
Provide prevention counseling

5 (fruits & vegetables) 2 (hours or less of screen time) 1 (hour or more of physical activity) 0 (sugary drinks) every day!
A Simple Framework

For more information about 5-2-1-0 visit www.letsgo.org
Healthy Weight (BMI 5-84%)

- Family History
- Review of Systems
- Physical Exam

Risk Factors Absent

Overweight (BMI 85-94%)

- Family History
- Review of Systems
- Physical Exam

Augmented (obesity-specific)¹

Determine Health Risk Factors*

Obesity (BMI ≥ 95%)

- Family History
- Review of Systems
- Physical Exam

Augmented (obesity-specific)¹

Risk Factors Present

¹Based on behaviors, family history, review of systems, and physical exam or adult and weight classification.
Expectations in Primary Care: Growth

- Accurately measure and chart growth
  - Birth to 23 months – weight-for-length
  - 2 years and older – weight, height, BMI, BMI% and weight classification
- Identify and note concerns
What do we know about current practice?

- 2003: AAP recommends BMI for all children over 2
- 2007: Expert Panel recommendations released
- 2013: CDC/WHO release growth charts and weight-for-length recommendations

<table>
<thead>
<tr>
<th>Periodic Survey Date</th>
<th>BMI</th>
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<tbody>
<tr>
<td>2006</td>
<td>59% of respondents use BMI percentiles</td>
</tr>
<tr>
<td>2010</td>
<td>88% of respondents use BMI percentiles</td>
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</table>
In Your Practice: Assessing Growth

Who is going to:

- Measure and document growth
- Communicate weight classification to family/patient

Office considerations:

- Standardized procedures for length and height
- Standardized procedures for weight
- Privacy and patient-centeredness at measurement stations
Accurately Measure & Chart Growth < 2 yrs

Weight-for-length

- Weight: determined using a hospital-grade platform scale
- Length: measured lying down
- Plot on World Health Organization weight-for-length growth chart
< 2 years old: The WHO Growth Charts

Advantages

✓ Based on breastfed children

✓ Chart growth in optimal conditions; longitudinal growth considered

✓ Frequent data points
Accurately Measure & Chart Growth ≥ 2 yrs

- Accurately measure height and weight
- Calculate BMI
- Plot BMI and determine BMI percentile
- Classify weight
BMI Considerations

BMI is an imperfect tool but it can be effective
### 2 years old: CDC Growth Chart

<table>
<thead>
<tr>
<th>Weight Status Category</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>

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

- A 10-year-old boy with a BMI of 23 would be in the obese category (95th percentile or greater).
- A 10-year-old boy with a BMI of 21 would be in the overweight category (85th to less than 95th percentile).
- A 10-year-old boy with a BMI of 18 would be in the healthy weight category (5th percentile to less than 85th percentile).
- A 10-year-old boy with a BMI of 13 would be in the underweight category (less than 5th percentile).
Words

What words do you use when referring to the patient’s BMI?

- Be sensitive and direct
- Share why you, as the provider, care
- Avoid colloquialisms
- Use the “O” word carefully
Childhood Obesity in Primary Care

**Assess Behaviors**
Assess healthy eating and active living behaviors

**Provide Prevention Counseling**
5 (fruits & vegetables) 2 (hours or less of screen time) 1 (hour or more of physical activity) 0 (sugary drinks) every day!

**Determine Weight Classification**
Accurately determine weight and height, calculate and plot Body Mass Index (BMI) and determine BMI percentile.
Healthy Weight
(BMI 5-84%)

- Family History
- Review of Systems
- Physical Exam

Routine Care
- Provide ongoing positive reinforcement for healthy behaviors.
- For patients in the healthy weight category, screen for genetic dyslipidemia by obtaining a non-fasting lipid profile for all children between the ages of 9-11 and again between 18-21.
- For patients in the overweight category, obtain a lipid profile.
- Maintain weight velocity:
  - Crossing 2 percentile lines is a risk for obesity
  - Reassess annually
  - Follow up at every well-child visit.
Prevention Under 2

- Breastfeeding
- Improved feeding practices for infants
  - Understanding hunger and satiety cues
  - Appropriate introduction of complimentary food and drink
- Foster self-feeding and responsive eating
  - Encourage feeding self with finger and utensils
  - Allow child to determine when they are “all done”
- Encourage movement and activity
  - Limit time spent in devices that restrain movement
Prevention Goals for All Children/Families

- Eat more fruits and vegetables
- Drink/eat less sugar
- Move more
- Limit screen time
- Establish eating, activity and sleeping routines
- When possible, eat together as a family
- Foster self-feeding and responsive feeding
Pausing for a Moment

- These kids could be sick
- Children at greater than 85th percentile are at a higher risk for comorbidities
- We are going to look at 3 ways to fine-tune/augment your assessment:
  - Family History
  - Review of Systems
  - Physical Exam
Augmented Obesity-specific Family History

- Obesity
- Type 2 Diabetes
- Hypertension
- Lipid level abnormalities
- Heart disease

# Augmented Obesity-specific Review of Systems

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Probable causes</th>
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</thead>
<tbody>
<tr>
<td>Snoring/sleep disturbances</td>
<td>Obstructive sleep apnea</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>GERD, constipation, gall bladder disease, NAFLD</td>
</tr>
<tr>
<td>Menstrual irregularities</td>
<td>Polycystic ovary syndrome/Prader-Willi syndrome</td>
</tr>
<tr>
<td>Hip, Knee, Leg pain</td>
<td>SCFE</td>
</tr>
<tr>
<td>Foot Pain</td>
<td>Musculoskeletal stress from weight</td>
</tr>
<tr>
<td>Polyuria/Polydipsia</td>
<td>Type 2 DM</td>
</tr>
<tr>
<td>Anxiety, school avoidance, social isolation</td>
<td>Depression</td>
</tr>
<tr>
<td>Severe recurrent headaches</td>
<td>Pseudotumor cerebri</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Asthma</td>
</tr>
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</table>

Augmented Obesity-specific Physical Exam

<table>
<thead>
<tr>
<th>Findings</th>
<th>Possible Explanations</th>
</tr>
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<tbody>
<tr>
<td>Elevated Blood Pressure (correct cuff)</td>
<td>Hypertension on 3 or more occasions</td>
</tr>
<tr>
<td>Short Stature</td>
<td>Underlying endocrine conditions</td>
</tr>
<tr>
<td>Acanthosis nigricans</td>
<td>Increased risk of insulin resistance</td>
</tr>
<tr>
<td>Acne, Hirsutism</td>
<td>Polycystic ovary syndrome</td>
</tr>
<tr>
<td>Skin irritation, inflammation</td>
<td>Intertrigo</td>
</tr>
<tr>
<td>Papilledema, cranial nerve VI paralysis</td>
<td>Pseudotumor cerebri</td>
</tr>
<tr>
<td>Tonsillar hypertrophy</td>
<td>Obstructive sleep apnea</td>
</tr>
<tr>
<td>Goiter</td>
<td>Hypothyroidism</td>
</tr>
<tr>
<td>Wheezing</td>
<td>Asthma</td>
</tr>
<tr>
<td>Tender Abdomen</td>
<td>GERD, gallbladder disease, NAFLD</td>
</tr>
<tr>
<td>Abnormal gait, limited hip range</td>
<td>SCFE</td>
</tr>
<tr>
<td>Bowing of tibia</td>
<td>Blount disease</td>
</tr>
<tr>
<td>Small hands and feet, polydactyly</td>
<td>Some genetic syndromes</td>
</tr>
<tr>
<td>Reproductive (Tanner stage, apparent micropenis, undescended testes)</td>
<td>Premature puberty, may be normal penis buried in fat, Prader-Willi syndrome</td>
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</table>

Algorithm for the Assessment and Management of Childhood Obesity in Patients 2 Years and Older

Assess Behaviors
Assess healthy eating and active living behaviors

Provide Prevention Counseling
5 (fruits & vegetables) 2 (hours or less of screen time) 1 (hour or more of active play)

Healthy Weight (BMI 5-84%)
- Family History
- Review of Systems
- Physical Exam

Risk Factors Absent

Overweight (BMI 85-94%)
- Family History
- Review of Systems
- Physical Exam

Augmented (obesity-specific) 1
- Family History
- Review of Systems
- Physical Exam

Determine Health Risk Factors*

Obesity (BMI ≥ 95%)
- Family History
- Review of Systems
- Physical Exam

Augmented (obesity-specific) 1

Risk Factors Present

Your Clinical Judgement
Health Risk Factors: Overweight

- Healthy eating and active living behaviors
- Family history
- Review of systems
- Physical exam
Overweight: Absent risk factors

Routine Care
- Provide ongoing positive reinforcement for healthy behaviors.
- For patients in the healthy weight category, screen for genetic dyslipidemia by obtaining a non-fasting lipid profile for all children between the ages of 9-11 and again between 18-21.
- For patients in the overweight category, obtain a lipid profile.
- Maintain weight velocity:
  - Crossing 2 percentile lines is a risk for obesity
  - Reassess annually
  - Follow up at every well-child visit.
Overweight: Risk factors present

These children have increased risk for obesity related conditions and need to move to the right side of the algorithm.
Obesity
(BMI ≥ 95%)

Augmented (obesity-specific)

- Family History
- Review of Systems
- Physical Exam
Lab Screening

- The 2007 Expert Committee Recommendations\(^1\) state that a fasting glucose and fasting lipid profile along with ALT and AST should be obtained.
- Additionally, guidelines from the ADA and Endocrine Society recommend using A1C, fasting glucose or oral glucose tolerance to test for diabetes or pre-diabetes. The ADA notes that there are presently limited data supporting A1C for diagnosing diabetes in children and adolescents; however, they are continuing to recommend A1C at this time.\(^5\)
- For patient convenience, some providers are obtaining non-fasting labs.
- Clinical judgment, local preferences and availability of testing should be used to help determine the timing of follow up of abnormal labs.
- Of note, some subspecialty clinics are screening for Vitamin D deficiency and insulin resistance by obtaining labs for Vitamin D and fasting insulin. The clinical utility and cost effectiveness of such testing is yet to be determined.
- Currently, there are no guidelines on when to start laboratory testing for patients with obesity. Based upon the patient’s health risk, some experts may start screening patients at 2 years of age.
The recommended tests:

- Fasting Glucose
- Fasting Lipid Panel
- ALT
- AST

Additional laboratory test should be obtained as indicated
Obesity-related Conditions: The following conditions are associated with obesity and should be considered for further work-up. Additional lab tests may be warranted if indicted by the patient’s clinical condition. In 2014, consensus statements from The Children’s Hospital Association described the management of a number of these conditions.

Endocrine:
- Polycystic ovarian syndrome (PCOS)
- Precocious puberty
- Prediabetes: Impaired fasting glucose and/or impaired glucose tolerance as demonstrated during a GTT
- Premature adrenarche
- Type 2 Diabetes
Gastrointestinal:
- Cholelithiasis
- Constipation
- GERD
- Nonalcoholic fatty liver disease or steatohepatitis

Neurological:
- Pseudotumor cerebri

Orthopedic
- Blount’s Disease
- Slipped capital femoral epiphysis (SCFE)
Algorithm for the Assessment and Management of Childhood Obesity in Patients 2 Years and Older

Assess Behaviors
Assess healthy eating and active living behaviors.

Provide Prevention Counseling
Accurately determine weight and height, calculate and plot Body Mass Index (BMI) and determine BMI percentile.

Healthy Weight
- BMI 5-84%
- Family History
- Review of Systems
- Physical Exam

Overweight
- BMI 85-95%
- Family History
- Review of Systems
- Physical Exam

Obesity
- BMI ≥96%
- Family History
- Review of Systems
- Physical Exam

Augmented obesity-specific
- Family History
- Review of Systems
- Physical Exam

Risk Factors Absent

Routine Care
- Provide ongoing positive reinforcement for healthy behaviors.
- For patients in the healthy weight category, screen for genetic predisposition by obtaining a non-fasting lipid profile for all children between the ages of 9-11 and again between 18-21.
- For patients in the overweight category, obtain a lipid profile.
- Maintain weight velocity.
- Crossing 2 percentile lines is a risk for obesity.
- Reasons annually.
- Follow up at every well-child visit.

Determine Health Risk Factors

Lab Screening
- The 2007 Expert Committee Recommendations state that a fasting glucose and fasting lipid profile along with ALT and AST should be obtained.
- Additionally, guidelines from the ADA and Endocrine Society recommend using HbA1c, fasting glucose, or oral glucose tolerance test for insulin resistance in children and adolescents but are not recommended by the ADA at this time.
- For patient convenience, some providers are obtaining non-fasting labs.
- Clinical judgment, local preferences and availability of testing should be used to help determine the timing of follow up abnormal labs.
- Of note, some subclinical changes are screening for Vitamin D deficiency and insulin resistance by obtaining labs for Vitamin D and fasting insulin. The clinical utility and cost effectiveness of such testing is yet to be determined.
- Currently, there are no guidelines on when to start laboratory testing for patients with obesity. Based on patient’s health risk, some experts may select screening patients at 3 years of age.

Psychological/Behavioral Health:
- Anxiety
- Binge eating disorder
- Depression
- Teasing/bullying

Obesity-related conditions: The following conditions are associated with obesity and should be considered for further work up. Additional lab tests may be warranted if indicated by the patient’s clinical condition. In 2014, consensus statements from The Children’s Hospital City of the Year described the management of a number of these conditions.

Dermatologic:
- Acne
- Nissan
- Intertrigo

Endocrine:
- Polycystic ovary syndrome (PCOS)
- Precocious puberty
- Prediabetes: impaired fasting glucose and/or impaired glucose tolerance as demonstrated during a GTT
- Premature adrenarche
- Type 2 Diabetes

Gastrointestinal:
- Cholestasis
- Constipation
- GERD
- Non-alcoholic fatty liver disease or steatohepatitis

Neuropsychological:
- Pseudobulbar palsy

Orthopedic:
- Osteoarthritis
- Skipped capital femoral epiphysis

Psychological/Behavioral Health:
- Anxiety
- Binge eating disorder
- Depression
- Teasing/bullying
The consensus statements presented in this article may help keep the management of these children in their medical home and provide guidance to those sites that may not have subspecialists available.

Estrada E, Eneli I, Hampl S, et al, Children’s Hospital Association consensus statements for comorbidities of childhood obesity
Management and Treatment

Key Points:

• Not every patient is ready
• Fear tactics don’t work
• There are no quick fixes
• Frequent visits over time work
• Small behavior changes can have profound effects
• Motivational Interviewing works
• The stages are a guide
• The Next Steps guide and approach can be useful
Management and Treatment Stages for Patients with Overweight or Obesity

- Patients should start at the least intensive stage and advance through the stages based on the response to treatment, age, BMI, health risks and motivation.

- An empathetic and empowering counseling style, such as motivational interviewing, should be employed to support patient and family behavior change.

- Children age 2 – 5 who have obesity should not lose more than 1 pound/month; older children and adolescents with obesity should not lose more than an average of 2 pounds/week.

Stage 1 Prevention Plus

**Where/By Whom:** Primary Care Office/Primary Care Provider  
**What:** Planned follow-up themed visits (15-20 min) focusing on behaviors that resonate with the patient, family and provider.  
**Consider partnering with dietician, social worker, athletic trainer or physical therapist for added support and counseling.**  
**Goals:** Positive behavior change regardless of change in BMI. Weight maintenance or a decrease in BMI velocity.

**Follow-up:** Tailor to the patient and family motivation. Many experts recommend at least monthly follow-up visits. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 2.

Stage 2 Structured Weight Management

**Where/By Whom:** Primary Care Office/Primary Care Provider with appropriate training  
**What:** Same intervention as Stage 1 while including more intense support and structure to achieve healthy behavior change.  
**Goals:** Positive behavior change. Weight maintenance or a decrease in BMI velocity.

**Follow-up:** Every 2 – 4 weeks as determined by the patient, family and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 3.

Stage 3 Comprehensive Multi-disciplinary Intervention

**Where/By Whom:** Pediatric Weight Management Clinic/Multi-disciplinary Team  
**What:** Increased intensity of behavior changes, frequency of visits, and specialists involved. Structured behavioral modification program, including food and activity monitoring, and development of short-term diet and physical activity goals.

**Goals:** Positive behavior change. Weight maintenance or a decrease in BMI velocity.

**Follow-up:** Weekly or at least every 2 – 4 weeks as determined by the patient, family, and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 4.

Stage 4 Tertiary Care Intervention

**Where/By Whom:** Pediatric Weight Management Center/Providers with expertise in treating childhood obesity  
**What:** Recommended for children with BMI > 95% and significant comorbidities if unsuccessful with Stages 1 - 3. Also recommended for children > 99% who have shown no improvement under Stage 3. Intensive diet and activity counseling with consideration of the use of medications and surgery.

**Goals:** Positive behavior change. Decrease in BMI.

**Follow-up:** Determine based upon patient’s motivation and medical status.

**References**


Management and Treatment Stages for Patients with Overweight or Obesity

- Patients should start at the least intensive stage and advance through the stages based upon the response to treatment, age, BMI, health risks and motivation.
- An empathetic and empowering counseling style, such as motivational interviewing, should be employed to support patient and family behavior change.\(^8,^9\)
- Children age 2 – 5 who have obesity should not lose more than 1 pound/month; older children and adolescents with obesity should not lose more than an average of 2 pounds/week.

### Stage 1 Prevention Plus

**Where/By Whom:** Primary Care Office/Primary Care Provider

**What:** Planned follow-up themed visits (15-20 min) focusing on behaviors that resonate with the patient, family and provider.

**Goals:**
- Positive behavior change
- Weight maintenance or a decrease in BMI velocity

**Follow-up:** Weekly or at least every 2 – 4 weeks as determined by the patient, family, and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 4.

### Stage 2 Weight Management

**Where/By Whom:** Specialty Care Office/Providers

**What:** Frequent follow-up visits (usually 1-2 visits

**Goals:**
- Positive behavior change
- Decrease in BMI

**Follow-up:**
- Determine based upon patient’s motivation and medical status.

### Stage 4 Tertiary Care Intervention

**Where/By Whom:** Pediatric Weight Management Center/Providers with expertise in treating childhood obesity

**What:** Recommended for children with BMI ≥ 95% and significant comorbidities if unsuccessful with Stages 1 - 3. Also recommended for children > 99% who have shown no improvement under Stage 3. Intensive diet and activity counseling with consideration of the use of medications and surgery.

**Goals:**
- Positive behavior change
- Decrease in BMI

**Follow-up:**
- Determine based upon patient’s motivation and medical status.

References
**Stage 1 Prevention Plus**

**Where/By Whom:** Primary Care Office/Primary Care Provider

**What:** Planned follow-up themed visits (15-20 min) focusing on behaviors that resonate with the patient, family and provider. Consider partnering with dietician, social worker, athletic trainer or physical therapist for added support and counseling.

**Goals:** Positive behavior change regardless of change in BMI. Weight maintenance or a decrease in BMI velocity.¹

**Follow-up:** Tailor to the patient and family motivation. Many experts recommend at least monthly follow-up visits. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 2.
Stage 2 Structured Weight Management

Where/By Whom: Primary Care Office/Primary Care Provider with appropriate training

What: Same intervention as Stage 1 while including more intense support and structure to achieve healthy behavior change.

Goals: Positive behavior change. Weight maintenance or a decrease in BMI velocity.

Follow-up: Every 2-4 weeks as determined by the patient, family and physician. After 3–6 months, if the BMI/weight status has not improved consider advancing to Stage 3.
Stage 3 Comprehensive Multi-disciplinary Intervention

Where/By Whom: Pediatric Weight Management Clinic/Multi-disciplinary Team

What: Increased intensity of behavior changes, frequency of visits, and specialists involved. Structured behavioral modification program, including food and activity monitoring, and development of short-term diet and physical activity goals.

Goals: Positive behavior change. Weight maintenance or a decrease in BMI velocity.

Follow-up: Weekly or at least every 2 – 4 weeks as determined by the patient, family, and physician. After 3 – 6 months, if the BMI/weight status has not improved consider advancing to Stage 4.
Stage 4 Tertiary Care Intervention

Where/By Whom: Pediatric Weight Management Center/Providers with expertise in treating childhood obesity

What: Recommended for children with BMI > 95% and significant comorbidities if unsuccessful with Stages 1 - 3. Also recommended for children > 99% who have shown no improvement under Stage 3. Intensive diet and activity counseling with consideration of the use of medications and surgery.

Goals: Positive behavior change. Decrease in BMI.

Follow-up: Determine based upon patient’s motivation and medical status.
What can be done in a well-child visit?

- Assessment: Is the patient at risk for complications due to his/her weight status?
- Begin the conversation (tailored to family and risk)
- Set the stage
- Gauge patient and family interest in continuing the conversation
- Arrange for follow-up:
  - Are labs necessary?
  - Is a referral necessary?
  - Does the patient and family want to keep talking about what to do to get healthy?
Take Home Messages

- Assessment is a critical piece of the puzzle
- This assessment is doable in the primary care setting
- Children who have a BMI $\geq 85\%$ may be sick and may need:
  - Special consideration to determine if they are ill
  - Laboratory tests
  - Additional work-up for comorbidities as determined by positive signs and symptoms and family history
Now the fun begins!

- Try implementing some or all of the algorithm in your office
- Keep the conversation going – let me know how it’s working – or isn’t working
- Email Tory at rogerv@mmc.org
- Find the algorithm online at aap.org/healthyweight (Resources page)
References


Thank you!

aap.org/healthyweight

@AAPHealthyWt