Update in Childhood Obesity Diagnosis and Treatment:
How to use the new SCMA Childhood Obesity Taskforce Toolkit

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CCI-Annual Symposium
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Educational Objectives

1. To correctly diagnose obesity and screen for co-morbid conditions
2. To use best practices in the treatment of childhood obesity (Stages 1-3) and referral for tertiary care when needed (Stage 4)
3. To use the new SCMA Childhood Obesity Taskforce Toolkit and other resources in your practice

THE SPEAKERS HAVE NO CONFLICTS TO DISCLOSE
Prevalence of obesity (body mass index >95th percentile) among children and adolescents 2 to 19 years of age in the United States between 1971 to 1974 and 2009 to 2010

Lakshman R et al. Circulation. 2012;126:1770-1779

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South Carolina

Child Obesity Rate
South Carolina is the 3rd most obese state in the U.S. for children.
39.2%
*Child Health Data

Adult Obesity Rate
South Carolina is the 7th most obese state in U.S. for adults.
31.6%
*2013 F as in Fat Report

South Carolina has the 3rd highest childhood obesity rate in the United States. Currently 39.2% of youth in South Carolina are overweight or obese.

Obese children are more likely to become obese adults. And if you’re overweight as a child, your obesity in adulthood is likely to be more severe. So the changes you make now can help your state provide the next generation with the most opportunities to live a longer and healthier life.

Physical Inactivity Rate: 27.2%
*2012 F as in Fat Report (p. 10)

This is the percentage of adults that live a lifestyle with no or irregular physical activity. Research shows that the amount of time parents spend physically active can influence the amount of time their children are physically active. Adults need at least 30 minutes of physical activity every day and youth need at...
Current rates of overweight and obesity in South Carolina

<table>
<thead>
<tr>
<th>AGE</th>
<th>% OVERWEIGHT or OBESE</th>
<th>% OBESE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADULT (&gt; 18)</td>
<td>67</td>
<td>32</td>
</tr>
<tr>
<td>HIGH SCHOOL</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td>2-5</td>
<td>28</td>
<td>13</td>
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[accessed 3-25-2014](http://www.cdc.gov/obesity/stateprograms/fundedstates/south_carolina.html)
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BODY MASS INDEX (BMI):
What is it and how does it work?

“Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems.” CDC

CDC BMI Calculator:

- Quetelet Index initially created by Adolphe Quetelet (1796-1874)
- Dr. Ancel Keys (the Mediterranean Diet) proposed use of BMI in 1970’s
- 1985 NIH Consensus Development Panel promoted use in practice

Dr. Ancel Keys
Caveats about BMI

• Assumes proportion of muscle, fat, bone, fluid so does not actually measure obesity = excess fat
• Cannot be used in children less than 2 years old
• Height and weight measurements must be accurate

BMI video located on the Lean Team website:
http://academicdepartments.musc.edu/lean_team/physicians/bmicheck.html
Definition of Overweight and Obesity in Children and Adolescents

• % Based on BMI distribution in 1970’s
• Risk categories based on adult morbidity
• Overweight = BMI ≥ 85% - 94%
• Obese = BMI ≥ 95% or
• Obese = BMI ≥ 30

Pediatrics 2007 120, (suppl 4)
1. Normal BMI for children varies by age and gender

2. BMI normative data not available for children < 2 years old

3. Adiposity rebound before 5 associated with >3 BMI units increase by age 18-21*

4. BMI $\geq 30.0$ is obesity regardless of percentile

*Taylor et al *Current Opinion in Clinical Nutrition & Metabolic Care* 2005
Consequences of obesity in children and adolescents

- 9X risk of hypertension
- Early onset puberty in girls*
- 25% impaired glucose tolerance**
- 4% type 2 diabetes mellitus**
- 80% adult obesity,
  1/4 of whom will have metabolic syndrome***

** NEJM 346(11):802,2002
*** JAMA 287(3):356,2002
Of the following:

- Elevated fasting triglycerides
- Low HDL cholesterol
- Elevated fasting glucose
- Increased waist circumference
- Elevated systolic BP

Among 1960 children ≥ 12 years old in NHANES:
2/3 had one finding of metabolic syndrome
1/10 had metabolic syndrome (1/3 of those with BMI ≥ 85%)
(Circulation 2004;110:2494-2497)

* No standard definition of pediatric metabolic syndrome
Additional Screening for an Obese Child*

- Insulin Resistance – random/fasting insulin
- Diabetes – random / fasting BS, hgb a1c
- Hyperlipidemia – random/fasting cholesterol/lipid panel
- Hypertension - accurate blood pressure
- Obstructive sleep apnea - sleep study
- NAFLD – Liver function tests
- Hypothyroidism - only if short, sudden onset, or additional symptoms

*Expert Committee recommendations of the Assessment, Prevention and Treatment of Childhood and Adolescent Obesity 2007

Pediatric Obesity Evaluation & Management (POEM) available for evaluation of co-morbid conditions and referral to treatment as needed
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Obesity Prevention / Treatment in Well Child Care

- Assessment of BMI at least annually
- Promotion of healthy lifestyle
- 5-2-1-0 Plan
- Stage I – IV Treatment Plan
**Staying Healthy:**
- Weight
- Fruit
- Vegetables
- Whole grain
- Calcium
- Physical activity

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**Bright Futures Previsit Questionnaire**

**5 Year Visit**

*For us to provide your child with the best possible health care, we would like to know how things are going.*

**What would you like to talk about today?**

We are interested in answering your questions. Please check off the boxes for the topics you would like to talk about the most today.

- **Ready for School**
  - [ ] Your child’s leisure about school
  - [ ] After school care
  - [ ] Talking with your child’s teacher
  - [ ] Your child’s friends
  - [ ] Bullying
  - [ ] Your child feeling sad

- **Your Child and Family**
  - [ ] Family time together
  - [ ] How your child handles feelings
  - [ ] Your child being angry

- **Staying Healthy**
  - [ ] Your child’s weight
  - [ ] Eating habits
  - [ ] Eating vegetables
  - [ ] Eating whole grains
  - [ ] Getting enough calcium
  - [ ] 1 hour of physical activity per day

- **Healthy Teeth**
  - [ ] Regular dentist visits
  - [ ] Brushing teeth twice daily
  - [ ] Flossing daily

- **Safety**
  - [ ] Street safety
  - [ ] Booster seats
  - [ ] Always wearing safety helmets
  - [ ] Swimming safety
  - [ ] Sunscreen
  - [ ] Preventing sexual abuse
  - [ ] Fire escape and fire drill plan
  - [ ] Carbon monoxide alarm in your home
  - [ ] Gun safety

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**Questions About Your Child**

- Have any of your child’s relatives developed new medical problems since their last visit? If yes, please describe:
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

- **Lead**
  - [ ] Does your child have a sibling or playmate who has or had lead poisoning?
  - [ ] Does your child live in or regularly visit a house or child care facility built before 1978 that is being or has recently been (within the past 6 months) renovated or remodeled?

- **Tuberculosis**
  - [ ] Was your child born in a country at risk for tuberculosis (countries other than the United States, Canada, Australia, New Zealand, or Western Europe)?
  - [ ] Has your child traveled (that contact with resident population) for longer than 1 week to a country at risk for tuberculosis?
  - [ ] Has a family member or contact had tuberculosis or a positive tuberculin skin test?

- **Amebiasis**
  - [ ] Is your child infected with HIV?

- **Anemia**
  - [ ] Does your child’s diet include iron-rich foods such as meat, eggs, iron-fortified cereals, or beans?

- **Does your child have any special health care needs?**
  - [ ] Yes
  - [ ] No
  - [ ] Unsure

- **Have there been any major changes in your family lately?**
  - [ ] Move
  - [ ] Job change
  - [ ] Separation
  - [ ] Divorce
  - [ ] Death in the family
  - [ ] Any other changes?

- **Does your child live with anyone who uses tobacco or spend time in any place where people smoke?**
  - [ ] No
  - [ ] Yes

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**Your Growing and Developing Child**

- [ ] Listens well and follows simple instructions
- [ ] Draws a person with 6 body parts
- [ ] Copies squares, triangles
- [ ] Counts to 10
- [ ] Names at least 4 colors
- [ ] Balances on 1 foot
- [ ] Hope, asks, climbs
- [ ] Writes some letters and numbers
- [ ] Ties a shoe

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*American Academy of Pediatrics*

*Dedicated to the Health of All Children*
5-2-1-None

- \( \geq 5 \) fruits/vegetables
- \( \leq 2 \) hours of screen time
- \( \geq 1 \) hour of physical activity
- No sugar sweetened drinks

http://www.choosemyplate.gov/
STAGE 1: 5-2-1-0 and lifestyle counseling (breakfast, limit eating out, family meals 5-6/week). Allow child to self regulate. Monthly FU. Goal of weight maintenance with growth.

STAGE 2: Diet plan limiting energy dense foods, structured meals and snacks, supervised active play 1 h/d and screen time ≤ 1 h/d. Goal of weight maintenance to decrease BMI or lose ≤ 1 lb/m.

STAGE 3: Multidisciplinary team with structured behavioral modification program about food and activity. Goal weight loss 1 lb/month age 2-5y or up to 2 lb/week > 5 years

STAGE 4: Referral to pediatric tertiary weight management center (MUSC Heart Health) Referral to next stage if no improvement in 3-6 months.
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Pediatric Obesity Toolkit

5-2-1-NONE RECOMMENDATIONS

• Developed in collaboration with SCMA, Dr. James Simmons, ESMMSMC, MUSC Boeing Center, BCBSSC, DHEC
• Pilot testing completed
• Contents include:
  – 5-2-1-0 age-appropriate questionnaires
  – 5-2-1-0 Handouts
  – Prescription pads for nutrition and exercise
Improving BMI Interpretation Of Pediatric Patients At WCC Visits Study

• Study Design
  – RCT (6 practices, 3 groups)
    • Academic detailing plus toolkit vs toolkit only vs control
  – Chart Review/Data abstraction post intervention
  – Focus Groups with providers in each group

• Practice Recruitment
  – Practices from the South Carolina Pediatric Practice Research Network that used EHR
Randomized, controlled trial comparing BMI assessment & communication with AD plus toolkit vs distribution of toolkit vs control.

Funded by Select Health
Physician behavior rarely (? never) changes with CME or journal articles or clinical practice guidelines
Academic detailing

- Based on pharmaceutical model & academic detailing literature
- Dr. Key shadowed pharmaceutical rep before intervention
- Expert-led peer to peer education
- Presentation tailored to practice needs & results
- Materials hand-delivered and explained
- Follow up visit to review progress, solicit feedback, refresh materials
- Relaxed atmosphere, with lunch provided!
Academic detailing improves communication of BMI assessment in pediatric practices*

The AAP National Convention and Exhibit 2014

<table>
<thead>
<tr>
<th>Group</th>
<th>Baseline</th>
<th>After 1st AD visit</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>3%</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>Toolkit only</td>
<td>11%</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Academic Detailing</td>
<td>0%</td>
<td>0%</td>
<td>45%</td>
</tr>
</tbody>
</table>

6 pediatric practices (2 in each condition)
Data from 1269 well child patient visits
  547 baseline, 182 after AD visit, 535 final
3-17 years old; 49% female; 52% white, 37% AA
49% Medicaid, 48% private insurance

* Funded by Select Health
Focus Groups

- 5 conducted
  - One with providers from 2 control practices
  - One with providers from each of 4 intervention practices
  - 26 participants (table 1)
- Semi-structured questions using interview guide and probes
<table>
<thead>
<tr>
<th>Variable</th>
<th>Percent (n) or Mean ± SD (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>69.2 (18)</td>
</tr>
<tr>
<td>Male</td>
<td>30.8 (8)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>92.3 (24)</td>
</tr>
<tr>
<td>Black</td>
<td>7.7 (2)</td>
</tr>
<tr>
<td><strong>Office Role</strong></td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td>57.7 (15)</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>15.4 (4)</td>
</tr>
<tr>
<td>RN</td>
<td>7.7 (2)</td>
</tr>
<tr>
<td>Other</td>
<td>19.2 (5)</td>
</tr>
<tr>
<td><strong>Total Years in Health Care</strong></td>
<td>19.0 ± 10.4 (0.5 – 39.0)</td>
</tr>
<tr>
<td><strong>Total Years in Current Office</strong></td>
<td>12.4 ± 8.8 (0.5 – 30.0)</td>
</tr>
</tbody>
</table>
Focus Group Findings

• Intervention arms
  – Toolkit facilitates conversations about BMI and healthy lifestyles
  – Unified approach to addressing overweight/obesity
    • AD groups reported more consistent approach
  – Preferences for toolkit elements varied
  – Frequency of use varied
    • AD groups reported more frequent use
Focus Group Findings

• **Intervention Arms continued**
  – Inadequate time to deliver materials and discuss during well visits
  – Providers felt parents/caregivers liked and understand toolkit materials
  – Providers felt that parents/caregivers openness/receptiveness varied
# 5-2-1-0 Healthy Habits Questionnaire (Ages 2-9)

We are interested in the health and well-being of all our patients. Please take a moment to answer the following questions.

**Patient Name:**

**Age:**

**Today’s Date:**

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**How many servings of fruits or vegetables does your child eat a day?**
- One serving is most easily identified by the size of the palm of your child’s hand.
  - 1 or less
  - 2-3
  - 4
  - 5 or more

**How many times a week does your child eat dinner at the table together with the family?**
- 1 or less
- 2-3
- 4-5
- 6-7

**How many times a week does your child eat breakfast?**
- 1 or less
- 2-3
- 4-5
- 6-7

**How many times a week does your child eat takeout or fast food?**
- 1 or less
- 2-3
- 4-5
- 6 or more

**How many hours a day does your child watch TV/movies or sit and play video/computer games?**
- 1 or less
- 1-2
- 2-3
- Greater than 3

**Does your child have a TV in the room where he/she sleeps?**
- Yes
- No

**Does your child have a computer in the room where he/she sleeps?**
- Yes
- No

**How much time a day does your child spend in active play (faster breathing/heart rate or sweating)?**
- Less than 30 minutes
- 30 minutes to 1 hour
- More than an hour

**How many 8-ounce servings of the following do you drink a day?**
- 0
- 1
- 2
- 3 or more

<table>
<thead>
<tr>
<th>Beverage</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Juice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit drinks or sports drinks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soda</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-fat or reduced fat milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Based on your answers, is there ONE thing you would like to help your child change now?** Please check one box.
- Eat more fruits & vegetables.
- Spend less time watching TV/movies and playing video/computer games.
- Take the TV out of the bedroom.
- Eat less fast food/takeout.
- Play outside more often.
- Drink less soda, juice, or sports drinks.
- Switch to skim or low fat milk.
- Drink more water.
Primary Techniques of Motivational Interviewing

• Open-ended questions vs close-ended
• Reflective listening
• Affirmations
• Summary statements
• Evocation of change talk vs importance and ability rulers
Using the Toolkit Questionnaire:

- Have patients/parents fill it out during triage/while waiting
- Use for all patients not only those who are overweight/obese
- Review during interview
- Base MI on “change talk” selected by patient
- Focus on only one thing at a time
- Use handout for that one item
- FU in 1 month
- Celebrate success
**Example:**

"Based on your answers, is there ONE thing you would like to help your child change now"

Eat more fruits and vegetables *(Preparation stage of change)*

**MI:**

Good choice! You can do it!

Fruits & vegetables are ...

Have you tried:

- The 3 bite rule
- Low fat salad dressing dip
- Fruit smoothie

Don’t give up; it takes 7-10 times to get a kid to like a new food

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<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
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<tbody>
<tr>
<td>How many servings of fruits or vegetables does your child eat a day?</td>
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<tr>
<td>Soda</td>
<td>3 or more, 2, 1, 0</td>
</tr>
<tr>
<td>Water</td>
<td>0, 1-2, 3-4, 5 or more</td>
</tr>
<tr>
<td>Whole milk</td>
<td>3 or more, 2, 1, 0</td>
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Janice Key, MD
Coleen Martin, MS, RD  Lucie Kramer, MS, RD
Carolyn Lindstrom  Ellen Munson, MS, RD  Aynsley Birkner

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