Pediatric Obesity – A Case Study

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Objectives

- Utilize ADIME in a pediatric weight management intervention
- Review the R.D.’s role in pediatric obesity treatment
- Discuss an alternative approach to traditional physical activity
Pediatric Overweight and Obesity
## BMI Classification and Statistics

<table>
<thead>
<tr>
<th>BMI Classification</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;5&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>Healthy Weight</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; - &lt;85&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85&lt;sup&gt;th&lt;/sup&gt; - &lt;95&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>&gt;95&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>Severely Obese</td>
<td>&gt;99&lt;sup&gt;th&lt;/sup&gt; percentile</td>
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</table>

16.9% of 2- to 19-year-olds have a BMI > 95<sup>th</sup> percentile
Pediatric Obesity – A Case Study
Background

- Referred by Pediatrician and Cardiologist
- Reason for visit
  - Abnormal weight gain & weight management
Assessment
Patient History

- **PMH**
  - Dextrocardia w/mitral atresia and double outlet right ventricle s/p Fontan Palliation (2010)
  - Per mom – always overweight, weight 10 lb at birth

- **Family History**
  - Diabetes (mom & maternal grandmother)

- **Weight history**
  - Weight gain of 13.1 kg (29 lb) since 1/28/14 (14 months)
  - Gaining 31 g/day over 14 months
    - Appropriate weight gain for 6-10 year olds = 7-9 g/day
Anthropometrics and Nutrition Focused Physical Findings

<table>
<thead>
<tr>
<th></th>
<th>RD Visit (3/17/15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>49.8 kg</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>127.0 cm</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>30.9</td>
</tr>
<tr>
<td>IBW (kg)</td>
<td>28 kg</td>
</tr>
<tr>
<td>Weight-for-age</td>
<td>&gt;99&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>Height-for-age</td>
<td>75&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>BMI/age</td>
<td>&gt;99&lt;sup&gt;th&lt;/sup&gt; percentile</td>
</tr>
<tr>
<td>% IBW</td>
<td>178% (based on 85&lt;sup&gt;th&lt;/sup&gt; percentile)</td>
</tr>
</tbody>
</table>

- Obese, otherwise well-nourished
- No swallowing difficulties
- Does not tolerate certain foods (vomits after consuming Gatorade, cheese pizza)
- Good appetite, will ask for more of favorite foods
- Lab data and other medical tests unremarkable
### Stature-for-Age and Weight-for-Age

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight (%ile)</th>
<th>Height (%ile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 28, 2014</td>
<td>36.7 kg (&gt;99th %ile)</td>
<td>118.0 cm (75th %ile)</td>
</tr>
<tr>
<td>Jan. 27, 2015</td>
<td>47.8 kg (&gt;99th %ile)</td>
<td>125.8 cm (75th %ile)</td>
</tr>
<tr>
<td>March 17, 2015</td>
<td>49.8 kg (&gt;99th %ile)</td>
<td>127.0 cm (75th %ile)</td>
</tr>
<tr>
<td>Date</td>
<td>BMI (%ile)</td>
<td>Classification</td>
</tr>
<tr>
<td>------------------</td>
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<td>----------------</td>
</tr>
<tr>
<td>Jan. 28, 2014</td>
<td>26.9 (&gt;99\textsuperscript{th} %ile)</td>
<td>Overweight</td>
</tr>
<tr>
<td>Jan 27, 2015</td>
<td>30.7 (&gt;99\textsuperscript{th} %ile)</td>
<td>Overweight</td>
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<tr>
<td>March 17, 2015</td>
<td>30.9 (&gt;99\textsuperscript{th} %ile)</td>
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To Calculate BMI: Weight (kg) / Stature (cm) x Stature (cm) x 10,000 or Weight (lb) / Stature (in) x Stature (in) x 703
Food/Nutrition Related History

- Current Medications: Enalapril, baby aspirin
- No daily vitamin/minerals
- No food allergies
- Food preparation
  - Mom packs lunch everyday and makes dinner most night. Rarely eats out when with mom, but will occasionally go to Ledos or IHOP. Recently stopped McDonalds.
  - Grandma/aunt will take XX out to eat after school 2x per week (Cheesecake factory)
### Food/Nutrition Related History

<table>
<thead>
<tr>
<th>Time</th>
<th>Meal</th>
<th>Description</th>
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| 7:00 am| Breakfast  | *Home* – 1 sausage link, egg & cheese sandwich, water  
OR  
*School* – organic muffin or cereal w/yogurt |
| 12:00 am| Lunch      | PB&J sandwich on wheat, applesauce, juice, Ritz crackers, 4 cookies (packed) |
| 4:00 pm| Snack      | Typically leftovers from lunch 
*Yesterday* – vending machine Funyuns & pink lemonade |
| 7:30-8:00 pm| Dinner    | 3 homemade, hard-shell tacos with ground turkey, cheese and taco sauce. No veggies, but will eat salad if offered. Lemonade to drink. |
Diagnosis

Unintended weight gain related to excess caloric intake as evidence by BMI>99th percentile
1. History of Overweight/Obesity
   ▪ High birth weight (10 lb per mom)

2. Frequent consumption of calorically dense foods
   ▪ Cookies, crackers, packaged snacks etc.
   ▪ Sugary beverages 1-2 times per day
   ▪ Fast food or eats out >2 times/week

3. Physical Inactivity
   ▪ Right leg injury – recent knee sprain and chronic poor blood flow (per mom)
     ▪ No P.E. class
   ▪ Mild right ankle edema – hx of bilateral femoral vein thrombosis, doctor considering a diuretic
   ▪ Note – cardiologist supports as much physical activity as possible

History of Diagnosis

Unintended weight gain related to excess caloric intake as evidence by BMI>99th percentile
Intervention
Nutrition Counseling Approaches

- Multidisciplinary treatment of pediatric obesity: nutrition evaluation and management
  - Nutrition Assessment – 24hr recall + suggestions for change
  - Tailor behavior intervention to Stages of Change
  - Motivational Interviewing w/R.D
  - Components of pediatric behavior change
    - Self- Monitoring
    - Stimulus control
    - Goal Setting
  - Diet intervention – Stop Light Diet, glycemic index, low-carb
  - Step-wise multidisciplinary treatment
    - Identify psychological and financial stressors via 24 hr recall and refer out

In Practice – allow the client to choose or suggest the behavior change
Increasing Physical Activity with Video Games

- Effects of a Pediatric Weight Management Program With and Without Active Video Games
  - Active video games have a positive effect on physical activity and relative weight
  - Program with active gaming group vs. program-only group
    - Program-only group
      - Decline or no change in moderate-to-vigorous activity and vigorous activity
      - Significant reduction in percentage overweight and BMI z-scores
    - Active gaming group
      - Significant increase in moderate-to-vigorous activity and vigorous activity
      - Significantly greater reduction in percentage overweight and BMI z-scores

In Practice – children with lower leg injuries or unsafe outdoor environments
Estimated Energy Requirements

- Mifflin St. Jeor = 5 + (10 x 28 kg) + (6.25 x 127.0 cm) – (5 x 7 years) = 1,040 cal
  - Activity Factor (1.3) x 1,200 calories = 1,350 cal/day
  - IBW used

- Protein = 0.95 g x 49.8 kg = 47 g pro/d
  - DRI for children 7-8 years-old used

- Fluid = 1500 ml + [(49.8 kg – 20kg) x 20] = 2,100 ml/d
  - Holiday-Segar method and ABW used
Nutrition Education

- Healthier beverage and snack options
- More accurate portion sizes
- Limiting fast food
- Increasing physical activity (with a leg injury)
- Exclude starch/carbohydrates at dinner time

Handouts Provided

- Ideas for healthy snacks and school lunches
- Age specific sample meal plan
- Portion sizing guide
Goal Setting

1. Choose water over sugary beverages
2. Measure portion sizes according to guide provided
   ▪ Limit starches to one serving per meal
3. Limit eating out to once/week
   ▪ Regardless of caretaker!
4. Pack a healthier lunch and snack
   ▪ Recommend ½ sandwich, fruit, vegetables, and water
5. Increase physical activity
   ▪ Ex. Just Dance Wii, indoor swimming
Follow-up (2-3 Months)

- Weight & weight-for-age
- Height & height-for-age
- BMI & BMI-for-age
- Types of food/meals
- Amount of food
- Physical Activity (type, duration, frequency)

