Childhood Obesity

Where do we fit?

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Disclosure

a. Candace Percival, MD has no relationships with commercial companies to disclose.
b. This discussion represents the opinions of the speaker and not the opinion of the US Air Force

Learning Objectives

At the end of this presentation the participant will be able to:

1. Define, recognize, and diagnose obesity in the pediatric population
2. Improve evaluation and treatment of obesity and its co-morbid conditions
3. Incorporate motivational interviewing and behavior modification into counseling for obese pediatric patients

Body Mass Index

Defined based on BMI

- Metric
  - BMI = kg ÷ m²

- English
  - BMI = lbs ÷ in² × 703

- BMI and BMI Percentile should be calculated at EVERY VISIT!

Terminology for BMI Categories

<table>
<thead>
<tr>
<th>BMI Category</th>
<th>Former Terminology</th>
<th>Recommended Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5th percentile</td>
<td>Underweight</td>
<td>Underweight</td>
</tr>
<tr>
<td>5th – 84th percentile</td>
<td>Healthy weight</td>
<td>Healthy weight</td>
</tr>
<tr>
<td>85th – 94th percentile</td>
<td>At risk for overweight</td>
<td>Overweight</td>
</tr>
<tr>
<td>≥95th percentile</td>
<td>Overweight or Obesity</td>
<td>Obesity</td>
</tr>
<tr>
<td>≥120% x 95th percentile</td>
<td>Morbid Obesity</td>
<td>Class 2 Obesity</td>
</tr>
<tr>
<td>≥140% x 95th percentile</td>
<td>Morbid Obesity</td>
<td>Class 3 Obesity</td>
</tr>
</tbody>
</table>

2014 JAMA: Pediatrics 2007;120;S164
2014 JAMA: Pediatrics 2007;120;S164
2014 JAMA: Pediatrics 2007;120;S164
BMI vs BMI Percentile

United States Obesity Prevalence—2013

Increasing Number of Overweight Children Around the World

Children of all ages are twice as likely to be obese in the most deprived areas as in the least deprived areas.
Why the sudden change?

- Human physiology is skewed towards conservation of energy, hence weight gain
- Sedentary lifestyle
  - Only 43% of boys and 26% of girls exercising
  - Screen time!
- Energy dense diet
  - Natural preference for “rapid energy”
  - Food that is easy, available, and advertised
- Genetic influence
  - Polygenic changes common
  - Epigenetics (“grammar” vs. “letters”)

Why is it so important?

This is the first generation of US children expected to have a shorter life spans than their parents.
Obesity contributes to:

- T2 DM
- Insulin Resistance
- PCOS
- Metabolic syndrome
- Hypertension
- Dyslipidemia
- Gallbladder disease
- GERD
- NAFLD
- Pseudotumor Cerebri
- Vitamin D insufficiency
- Joint pain
- SCFE
- Blount Disease
- Sleep Apnea
- Social stigma
- Eating Disorder
- Depression
- Early Death

What are we already doing?

- Identifying patients
- History
- Physical
- Labs
- Counseling
- Referrals

Addressing rising global obesity...

Today: 30%

2030: 41%

Obesity has roughly the same economic impact as smoking or armed conflict.

The Economic Costs of Obesity, 2009

Source: CDC Behavioral Risk Factor Surveillance System; U.S. Census Bureau, population densities; Dec. 2009

Identification → Risk Assessment
Look for Exam Findings
- Acanthosis Nigricans
- Skin tags
- Striae
- Adipose distribution
- Buffalo Hump
- Moon facies
- Proximal Muscle weakness
- Blurred optic discs
- Hirsutism
- Dysmorphism
- Genital exam/Tanner Stage
- Hepatomegaly
- Thyroid exam
- Gait

Growth Pattern Can Aid in your Differential

Exogenous Cause

Endogenous Cause

TABLE 6 Laboratory Assessments to be Considered in Primary Care

<table>
<thead>
<tr>
<th>Setting</th>
<th>BMI</th>
<th>Tests</th>
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</thead>
<tbody>
<tr>
<td>&gt;80th/95th percentile, with no risk factor</td>
<td>Fasting lipids levels, AST and ALT levels, and fasting glucose levels</td>
<td></td>
</tr>
<tr>
<td>&gt;80th/95th percentile, with risk factors (e.g., family history of obesity-related diseases, elevated blood pressure, elevated lipid levels, or tobacco use)</td>
<td>Fasting lipids levels, AST and ALT levels, and fasting glucose levels</td>
<td></td>
</tr>
</tbody>
</table>

Others to consider:
- Fasting insulin, FSH/LH, testosterone, TSH/T4, CBC, 24h urinary free cortisol, A1c, 25 OH Vit D, CO2, 17-OHP, DHEA-S, OGTT, genetic testing (MC4R, PWS, Leptin deficiency)

Counseling

Let's Go!

Indications for Referral
- Cardiologist
- Abnormal EKG
- Exertion symptoms
- Gastroenterologist
- Abnormal LFTs
- Hepatomegaly
- Nephrologist
- Hypertension
- Genetics
- Dysmorphic appearance
- Very early accelerated weight gain
- Sleep Medicine
- Snoring
- Endocrinologist
- Abnormal T1/T2
- Hyperlipidemia
- PCOS
- Hirsutism, Oligomenorrhea
- Precocious Puberty
- Goiter
- Poor linear growth
- Diabetes Mellitus
- ALWAYS URGENT IN PEDIATRICS
Why do we struggle so much?

We lack confidence!

Barriers to Discussing and Treating Obesity
- Only 30% providers feel good-to-excellent at providing obesity counseling
- Only 10% feel obesity counseling is effective
- Time consuming
- Poor reimbursement
- Patients/parents not motivated to change
- Parents not concerned
- Families eat fast food often
- Families don’t exercise
- Families watch too much TV

The Barrier Equation

Perceived Patient Indifference + Perceptions of Treatment Futility = Low Practitioner Confidence

Motivational Interviewing
- Egalitarian, empathetic, without judgement
- Key components:
  - Reflective Listening
  - Shared Decision making
  - Agenda setting
  - Behavior change driven by intrinsic personal motivation
- Encouraging
- Gaining
- Guiding
Motivational Interviewing
- Elicit → Provide → Elicit
  - On a scale of 1-10 how important is it to you to get to a healthier weight?
  - On a scale of 1-10 how confident are you that you could get to a healthier weight?
- Help understand and resolve ambivalence
  - Patient leads the exploration

Does it Work?
- Few Studies in Childhood Obesity

Behavioral Therapy
- Based on the principles of classical conditioning
  - “Mindless” eating occurs based on cues strongly linked to food intake
- Behavioral treatment:
  - Help identify cues that trigger inappropriate eating
  - Learn new responses to cues
  - Reward the adoption of positive behaviors

Clinic Design
- Multidisciplinary
  - Comprehensive medical management
  - Organized physical activity
  - Education
  - Behavioral modification
- Specialists
  - Pediatrician
  - Dietician
  - Clinical Psychology
  - Fitness Trainers
  - RN/LPN/Med Tech

Healthy Habits Clinic—Intake
- Introduction to behavior change
  - Healthy breakfast
  - Weight of the Nation—Children in Crisis
  - Stages of Change
  - Case examples
  - 9-5-2-1-0 Let’s Go!
  - SMART Goal setting
Healthy Habits Clinic—Intake

- I have not given any thought at all to healthy eating.
  Pre-Contemplation
- I think about healthy eating from time to time, and then put the matter out of my head.
  Contemplation
- I keep meaning to do something to improve my eating habits, but have not gotten around to it.
  Preparation
- From time to time I shop/cook healthy food, but occasionally I go back to eating what my family likes or what is available.
  Action
- I now spend consciously planning preparing healthy meals and snacks for my family for 6 months or more.
  Maintenance

What is a SMART Goal?

- S Specific
- M Measurable
- A Attainable
- R Realistic and Reasonable
- T Timely

Agenda Setting/Goal Setting

- Comprehensive medical assessment
  - Complete history/physical
  - Evaluation for co-morbidities
  - Fasting lab screening
  - Screening Questionnaires
    - Mental Health Screen
    - Diet/Exercise Habit Survey
    - Sleep Apnea Questionnaire

Healthy Habits Clinic—Follow-up

- Outside of traditional “clinic” setting
- Vitals: Height, Weight, HR, BP
- Goal reassessment individually
- Group Physical Activity—45 minutes
- Group Education—40 minutes
- Group Behavior Modification—20 minutes

- Group Education
  - Focus on nutrition and behavior change
  - Spectrum of “Healthy”
What if it is not working?

Dealing With Nonadherence

- Assume lack of planning/skills vice motivation
- Recognize barriers to help determine backup plan
- Instill hope and offer encouragement
- Help patient assume responsibility for actions
- Avoid criticism. *preserve the patient’s self-esteem*
- Vent to your colleagues—no one has yet cured obesity!
Pharmacotherapy

- Few medications FDA approved in <18 age group
  - Metformin
  - Orlistat
- Adults: phentermine, phendimetrazine, phentermine-topiramate, benzphetamine, diethylpropion, orlistat, lorcaserin, naltrexone/bupropion
  - Off-Label: Topiramate, Exendin-4, Cetilistat, Pramlintide, Caffeine/Ephedrine, etc
  - Sibutramine and Fenfluramine/Phentermine taken off the market in the US

Approved Pediatric Pharmacotherapy

- **Metformin** (Glucophage)
  - Oral hypoglycemic
  - Approved in >10y
    - Type II DM only
  - Used off label for obesity, PCOS, insulin resistance, metabolic syndrome
  - Dose: 1-2g bid
  - Side Effects: primarily GI, no lactic acidosis in kids reported

- **Orlistat** (Xenical, Alli)
  - Pancreatic lipase inhibitor (avoid 30% fat absorption)
  - Approved in >12y
  - Obesity failing treatment after 1 year
  - Dose: 120mg with meals up to tid
  - Side Effects: decreased estradiol in girls, ADEK, gallstones, GI symptoms

Surgical Options

- BMI>50 (>40 with significant co-morbidities)
- Capable of adhering to post-op management
- Roux-en-Y
- Gastric Sleeve
- Lap Band

Where do you fit?

- You will likely encounter obese patients daily
- ALL specialties are affected
- Motivational Interviewing can be a useful tool in the management of pediatric obesity—a little empathy goes a long way!
- A Healthy Habits Clinic can be developed in many different treatment settings
- Get involved if you are interested!!!
- A TEAM effort will be most successful