Childhood Obesity
Where do we fit?
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DISCLOSURE
I do not have any relevant financial/non-financial relationships with any proprietary interests

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Objectives

- What is the definition of obesity?
- Who is obese?
- How did it happen?
- Why is it so important?
- What are we already doing about it?
- Why do we struggle so much?
- What might we do better?
- What if our strategies aren’t working?
- Where do we fit?

What is pediatric obesity?

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>
</tbody>
</table>

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BMI vs BMI Percentile

CDC MMWR January 2011

Increasing number of overweight children around the world

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Pediatric Obesity

- Military dependent population is not spared

Why the sudden change?

- Human biology skewed towards weight gain
- Genetic influence
  - Polygenic changes common
  - Epigenetics
- Sedentary lifestyle
  - Only 43% of boys and 26% of girls exercising
- Energy dense diet
- Natural preference for “rapid energy”
- Food that is easy, inexpensive, available, and advertised

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Why is it so important?

This is the first generation of US children expected to have 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 Disorders
- Depression
- Early Death

The Economic Costs of Obesity, 2009

What are we already doing?

- Identifying and stratifying patients
- History
- Physical
- Lab evaluation
- Counseling
- Referrals

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Identification → Risk Assessment

Exam Can Help Your Differential

Exogenous Cause
Endogenous Cause

Look for Exam Findings
- Acanthosis Nigricans
- Skin tags
- Striae
- Adipose distribution
- Buffalo Hump
- Moon facies
- Proximal Muscle weakness
- Blurred optic discs
- Hirsutism
- Dymorphism
- Genital exam/Tanner Stage
- Hepatomegaly
- Thyroid exam
- Gait
### TABLE 1: Laboratory Assessments to be Considered in Primary Care

<table>
<thead>
<tr>
<th>BMI</th>
<th>Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;80th - 94th percentile, with no risk factors</td>
<td>Fasting lipid levels</td>
</tr>
<tr>
<td>&gt;80th - 94th percentile, with risk factors (e.g., family history of obesity-related diseases, elevated blood pressure, elevated lipid levels, or tobacco use)</td>
<td>Fasting lipid levels, AST and ALT levels, and fasting glucose levels</td>
</tr>
<tr>
<td>≥95th percentile</td>
<td>Fasting lipid levels, AST and ALT levels, and fasting glucose levels</td>
</tr>
</tbody>
</table>

AST indicates aspartate aminotransferase; ALT, alanine aminotransferase.

- Others to consider:
  - Fasting insulin, FSH/LH, testosterone, 17-OHP, DHEA-S, TSH/T4, 24h UFC, 25 OH Vit D, CO2, A1C, OGTT
  - Genetic testing: MC4R, PWS, Leptin deficiency

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**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
- Hyperlipidemia
- PCOS
- Hirsutism, Oligomenorrhea
- Precocious Puberty
- Goiter
- Poor linear growth
- Diabetes Mellitus
- ALWAYS URGENT IN PEDIATRICS

Problem Solved

Parent Perceptions

![Parent Perceptions Graph](image)

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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 → Less likely to intervene

Despite 90% stating interest in improving skills

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Motivational Interviewing

- Egalitarian, empathetic, without judgement
- Key components:
  - Reflective Listening
  - Shared Decision making
  - Agenda setting
  - Behavior change driven by intrinsic personal motivation
- Directing
- Following
- GUIDING

Does it Work?

- Few Studies in Childhood Obesity

Does it Work?

- Few Studies in Childhood Obesity

<table>
<thead>
<tr>
<th>Study</th>
<th>Age (y)</th>
<th>Outcome/Change</th>
<th>Intervention</th>
<th>Intervention</th>
</tr>
</thead>
</table>

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Behavioral Therapy

- "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

Stages of Change

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

Goal Setting

What is a SMART Goal?

- Specific
- Measurable
- Attainable
- Realistic and Reasonable
- Timely
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, benzphetamine, diethylpropion, orlistat
  - Off-Label: Topiramate, Phentiramine-Topiramate, Exendin-4, Clistat, Pramintide, Caffeine/Ephedrine, etc
  - Meridia (sibutramine) taken off the market
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**

Experimental Interventions

- Endoscopic Vertical Gastroplasty
- Rapid weight loss
- Reversible procedure
- Uses the “Endocinch” Device

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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!
- Get involved if you are interested!!!
- A TEAM effort will be most successful.

References

- Centers for Disease Control and Prevention. The health impact of overweight and obesity—CDC’s healthy weight site, 2013.