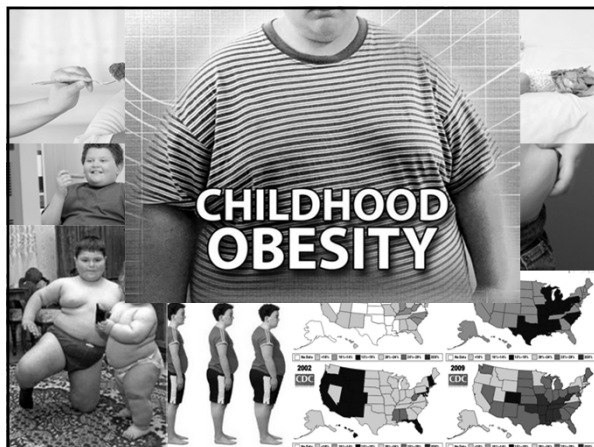


Childhood Obesity
Where do we fit?

Candace Percival, MD
Major, MC, USAF
June 15, 2014

DISCLOSURE

I do not have any relevant
financial/non-financial relationships with
any proprietary interests



CHILDHOOD OBESITY

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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 = $\text{kg} \div \text{m}^2$
- English
 - BMI = $\text{lbs} \div \text{in}^2 \times 703$
- BMI and BMI Percentile should be calculated at **EVERY VISIT!**

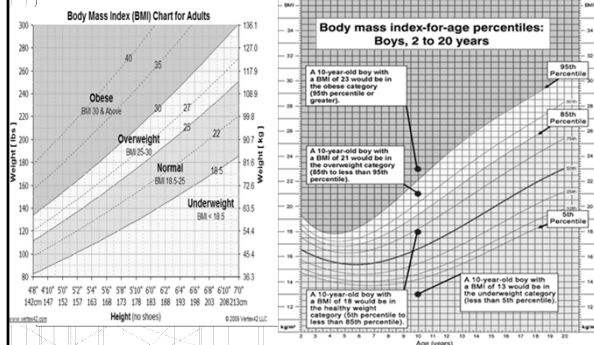


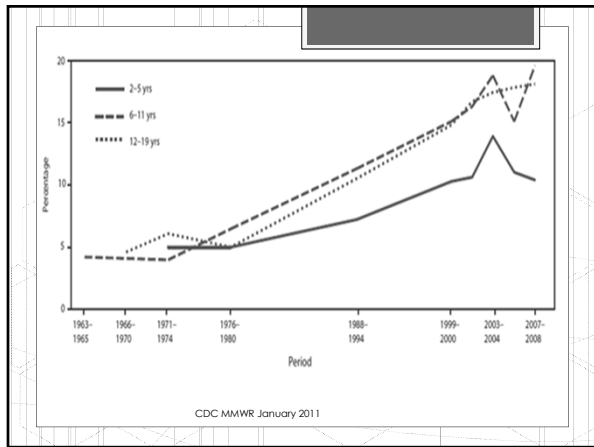
Terminology for BMI Categories

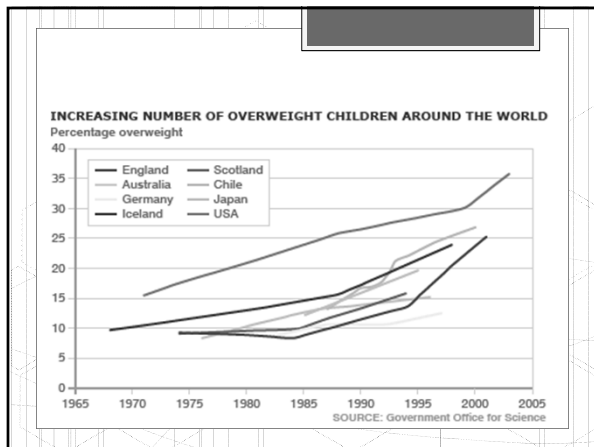
BMI Category	Former Terminology	Recommended Terminology
<5 th percentile	<i>Underweight</i>	Underweight
5 th – 84 th percentile	<i>Healthy weight</i>	Healthy weight
85 th – 94 th percentile	<i>At risk for overweight</i>	Overweight
≥95 th percentile	<i>Overweight or Obesity</i>	Obesity

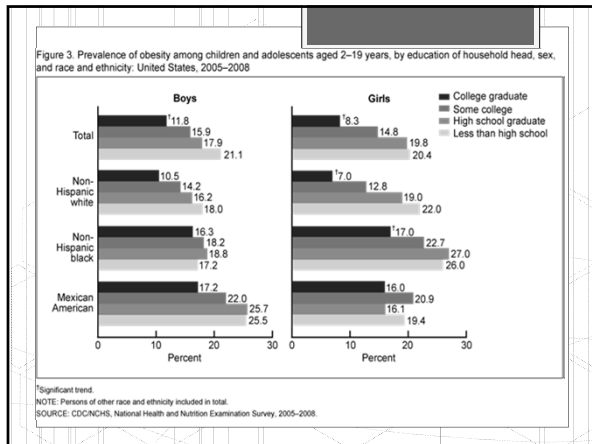
Pediatrics 2007;120:S164

BMI vs BMI Percentile











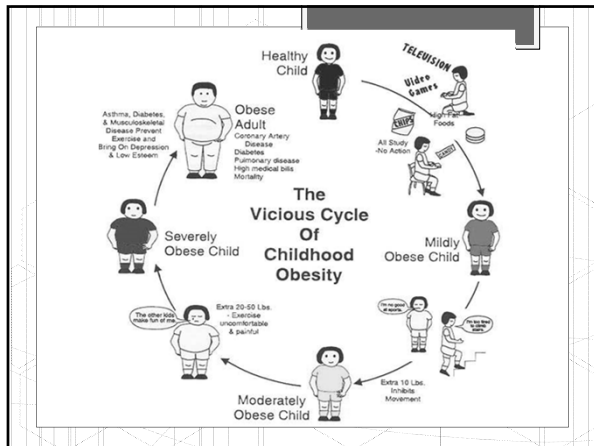
Pediatric Obesity

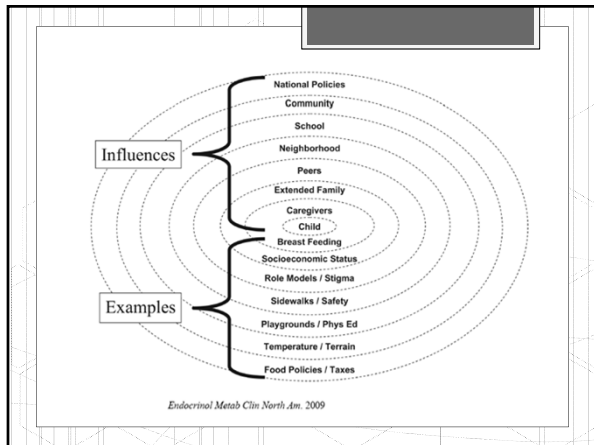
- Military dependent population is not spared

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





Why is it so important?

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

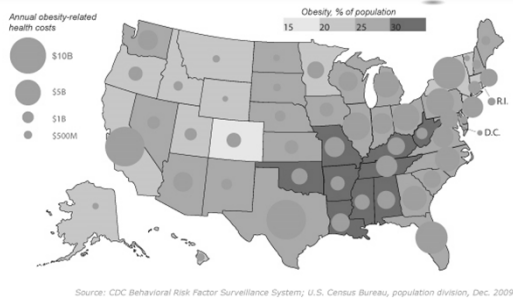
N Engl J Med Vol. 352(11) March 2005.

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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

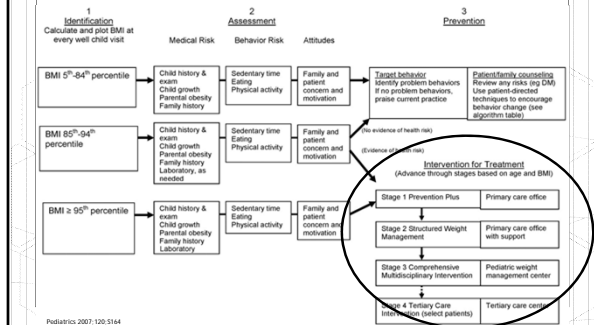
The Economic Costs of Obesity, 2009



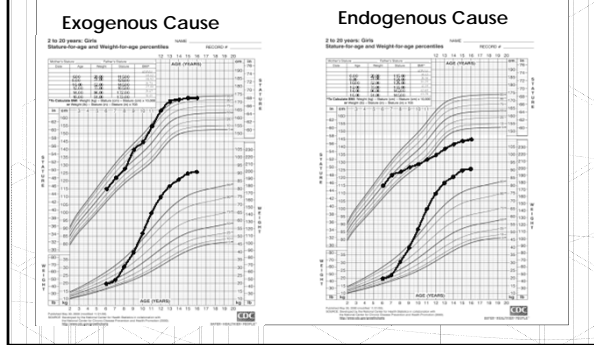
What are we already doing?

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

Identification → Risk Assessment



Exam Can Help Your Differential



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

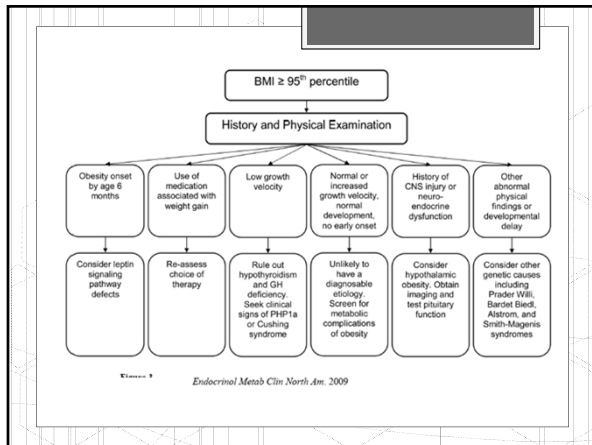


TABLE 8 Laboratory Assessments to be Considered in Primary Care Settings

BMI	Tests
>85th–94th percentile, with no risk factors	Fasting lipid levels
>85th–94th percentile, with risk factors (eg, family history of obesity-related diseases, elevated blood pressure, elevated lipid levels, or tobacco use)	Fasting lipid levels, AST and ALT levels, and fasting glucose levels
≥95th percentile	Fasting lipid levels, AST and ALT levels, and fasting glucose levels

AST indicates aspartate aminotransferase; ALT, alanine aminotransferase.

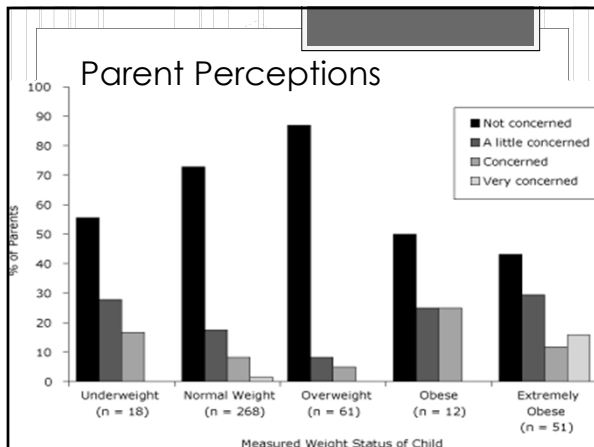
- Others to consider:
Fasting insulin, FSH/LH, testosterone, 17-OHP, DHEA-S, TSH/FT4, 24h UFC, 25 OH Vit D, CO2, A1c, OGTT
Genetic testing: MC4R, PWS, Leptin deficiency

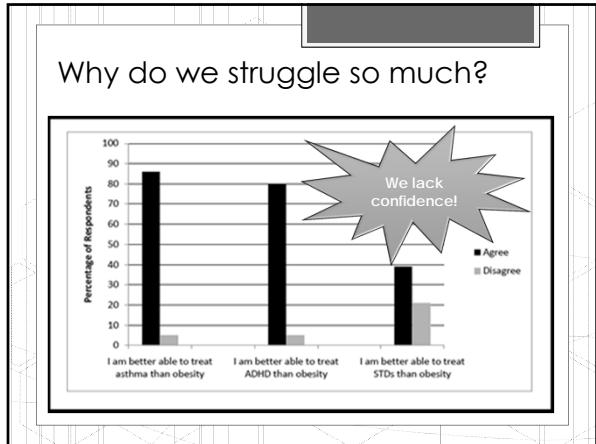




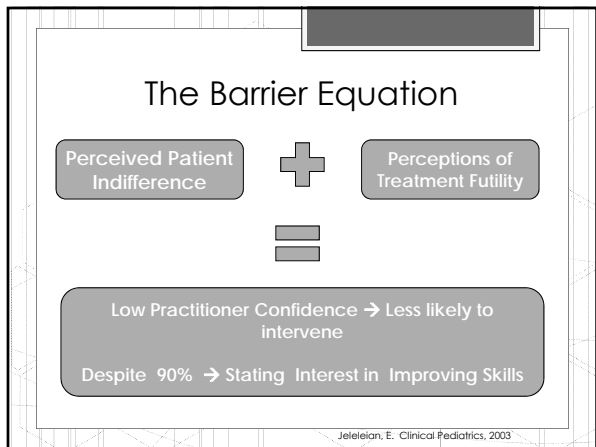
Indications for Referral

- 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***





- ### 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
-
- Katagalla, L. Obesity Research, 2004. Spivack, J. et al. Obesity, 2010



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What might we do to...



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

Table 1. Studies using motivational interviewing for control of pediatric weight, diet, and physical activity

Study	Starting number	Age (y)	Outcome/design	Intervention	Interventionist
Healthy Lifestyles, Dietz and colleagues (unpublished)	89	3-7	BMI* Pilot	Standard care Moderate-1 MP (MD) [†] High-2 MI (MD)+2 MI (RD) [†]	Pediatricians Dietitians
Go Girls, Resnicow and colleagues, 2005 (37)	47	12-16	BMI RCT*	Multicomponent Group session and 4-6 phone MI	Health educators Psychologists
DISC, Berg-Stremmel and colleagues, 1999 (21)	127	13-17	Diet Lipids No control	1 in person MI 1 phone MI	Health educators Dietitians
Channon and colleagues, 2003 (38)	40	14-18	HbA1c* Nonparticipants as controls	Variable 1-9 mean 4.7	Investigator
Knight and colleagues, 2003 (39)	20	13-16	Perceptions about DM*	Six 1-hr sessions Qualitative response	Registered nurse Senior registrar

Resnicow, K. Journal of the American Dietetic Association, 2006.

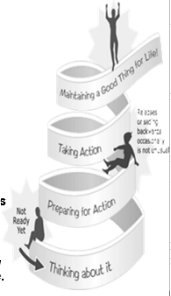
Behavioral Therapy



- Based on conditioning
- “Mirror” link between behavior and environment
- Behavior change through:
 - Healthier choices
 - Learn new responses to cues
 - Reward the adoption of positive behaviors

Stages of Change

- 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 have been consciously planning/preparing healthy meals and snacks for my family for 6 months or more.
Maintenance



Goal Setting

What is a SMART Goal?

- S Specific
- M Measurable
- A Attainable
- R Realistic and Reasonable
- T 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, Phentermine-Topiramate, Exendin-4, Cefixime, Pramlintide, Caffeine/Ephedrine, etc
 - Meridia (sibutramine) taken off the market

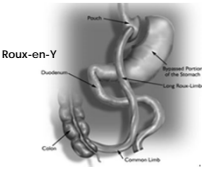


Approved Pediatric Pharmacotherapy

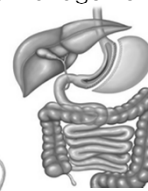
<ul style="list-style-type: none"> ● Metformin (Glucophage) ● Oral hypoglycemic ● Approved in >10y ● Type II DM only ● Used off label for obesity, PCOS, insulin resistance, metabolic syndrome ● Dose: 1-2g bid ● Side Effects: primarily GI, no lactic acidosis in kids reported 	<ul style="list-style-type: none"> ● 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
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Surgical Options

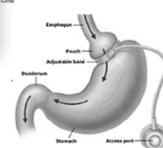
- BMI>50 (>40 with significant co-morbidities)
- Capable of adhering to post-op management



Roux-en-Y

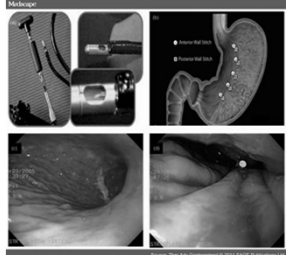


Gastric Sleeve



Lap Band

Experimental Interventions



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

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

- American Diabetes Association Clinical Practice Recommendations. *Diabetes Care*. 37(S1), 2014.
- Cowley J, Maclean JC. Unfit for service: the implications of rising obesity for US military recruitment. *Health Econ*. 21(11): 1348-66, 2012.
- Center for Disease Control MMWR. 60 (2): 42-45, 2011.
- CDC.gov
- Crocker MK, Yanovski JA. Pediatric Obesity: Etiology and Treatment. *Endocrinol Metab Clin North Am*. 38(3): 525-548, 2009.
- Dayehin BKA, Thompson CC. Obesity and Bariatrics for the Endoscopist: New Techniques. *Ther Adv Gastroenterol*. 4(6):433-442, 2011
- Dileepan K, Feldt M. Type 2 Diabetes Mellitus in Children and Adolescents. *Pediatrics in Review*. 34: 541-548, 2013.
- Finn S, et al. Management of newly diagnosed type 2 diabetes mellitus in children and adolescents. *Pediatrics*.
- Foster GD, Makis AP, Baller BA. Behavioral Treatment of obesity. *The American Journal of Clinical Nutrition*. 82 (suppl): 230S-235S, 2005.
- Hsu LL, Nevins RL, Totler SK, Rubelton, MV. Trends in overweight and obesity among 18-year-old applicants to the United States Military, 1993-2006. *J. Adolesc Health*. 41: 610-612, 2007.
- Lee L, Sanders R. Metabolic Syndrome. *Pediatrics in Review*. 33: 459-468, 2012.
- Lindquist CH, Bray RM. Trends in overweight and physical activity among US military personnel. *Preventive Medicine*. 32(1): 57-65, 2001.
- Olishansky SJ, Passaro DJ, et al. A Potential Decline in Life Expectancy in the United States in the 21st Century. *NEJM*. 352: 1138-1145, 2005.
- Rencicow, K. Motivational Interviewing for pediatric obesity: Conceptual issues and evidence review. *Journal of the American Dietetic Association*. 106 (12): 2024-2033, 2006.
- Rome E. Obesity Prevention and Treatment. *Pediatrics in Review*. 32: 363-373, 2011.
- Smith TJ, Mantzoff SP, et al. Overweight and Obesity in Military Personnel: Sociodemographic Predictors. *Obesity*. 1-5, 2012.
- Sherafat-Kazemzadeh R, Yanovski SZ, Yanovski JA. Pharmacotherapy for childhood obesity: present and future prospects. *International Journal of Obesity*. 37: 1-15, 2012.
- Spear BA, Barlow SE, et al. Recommendations for Treatment of Child and Adolescent Overweight and Obesity. *Pediatrics*. 120: S254-S288, 2007.
- Too Fat to Fight: Retired Military Leaders Want Junk Food Out of America's Schools. April 2010.