Managing Pediatric Obesity in Primary Care

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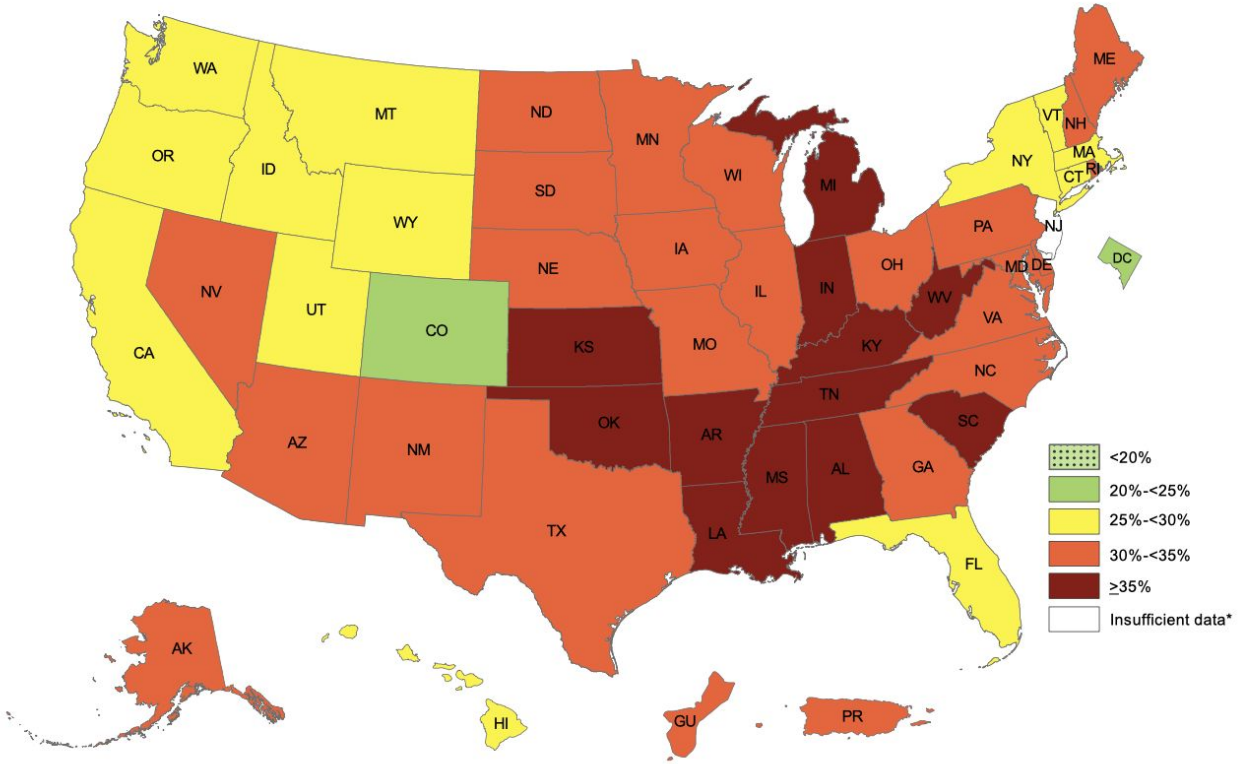
28 April 2021 CUHCC RSS

objectives

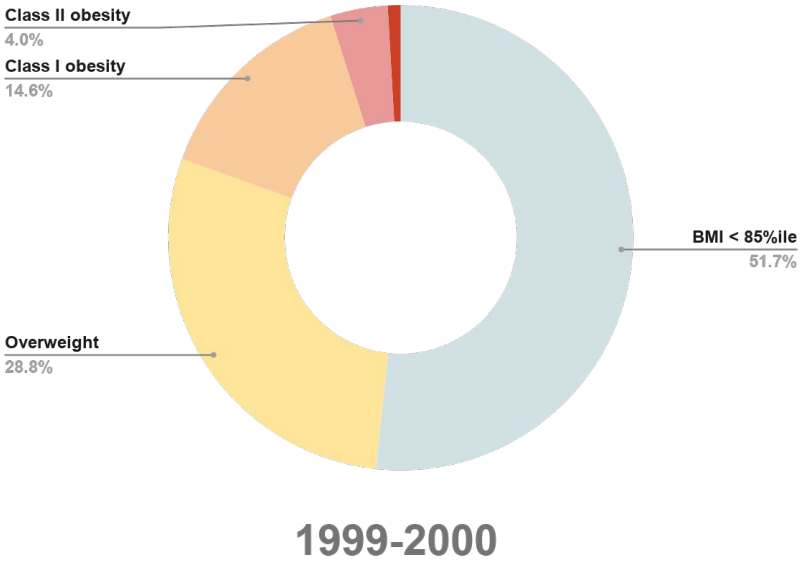
1. Understand the pathophysiology of **obesity as a disease** with biopsychosocial drivers
2. Develop a **framework for evaluation and treatment** of obesity in children and adolescents
3. Discuss how CUHCC can more effectively serve and **support patients and families** in managing excess weight

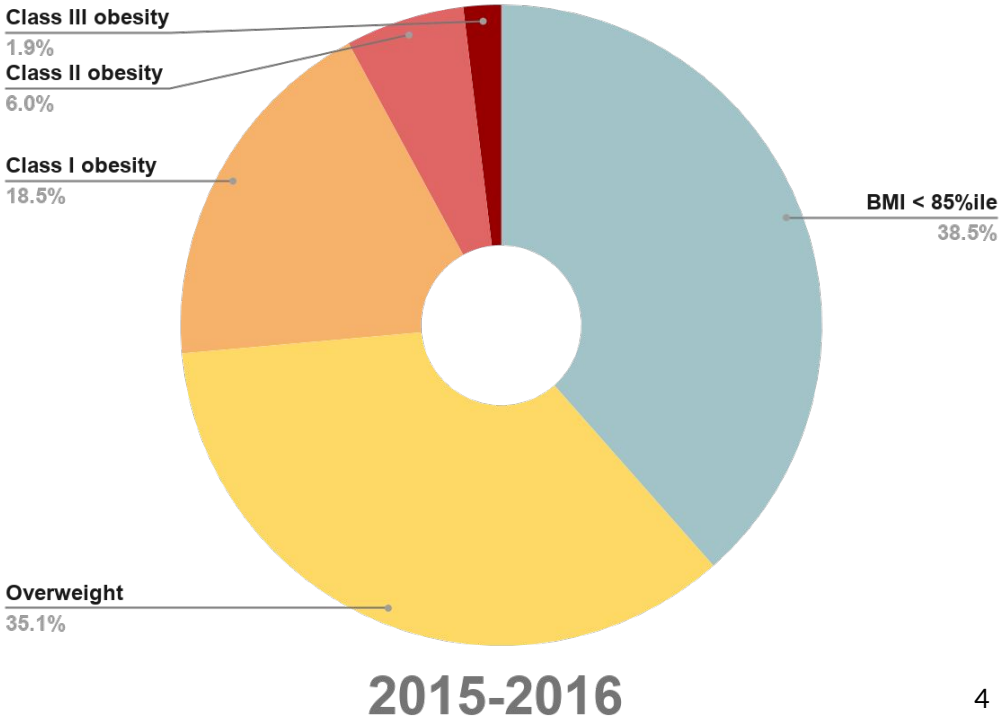
Obesity is becoming more prevalent in the U.S.



CDC - Adult Obesity Prevalence Maps

...not only in adults but also in kids





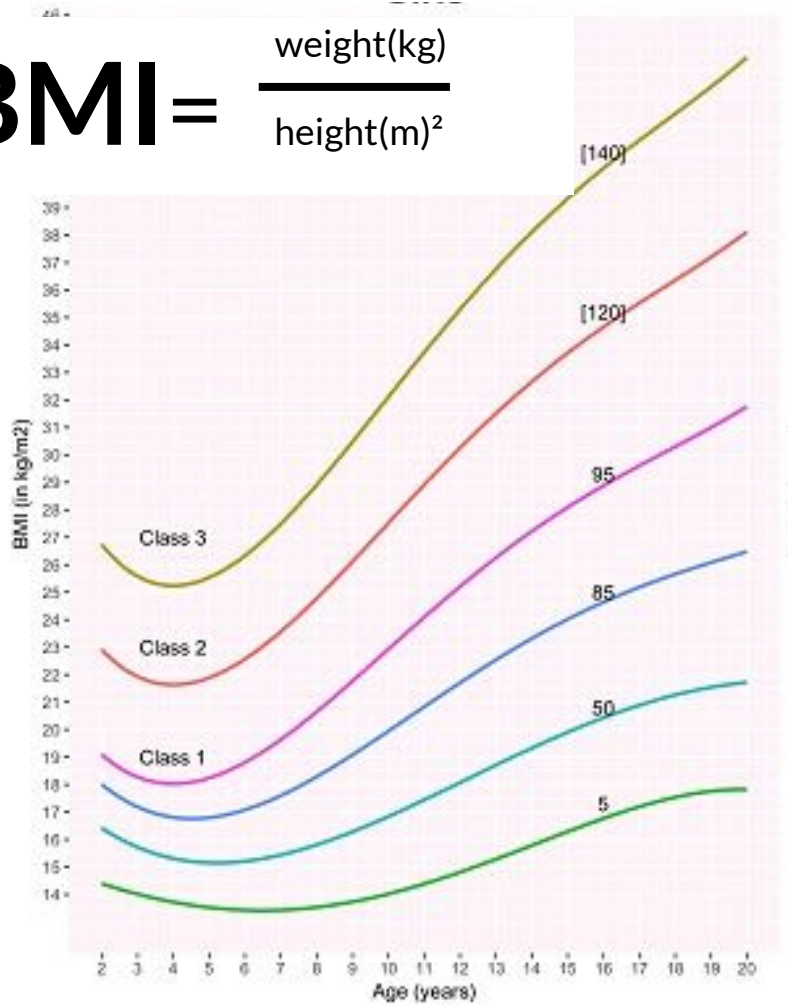
Skinner et al., 2018

667

(AT LEAST)

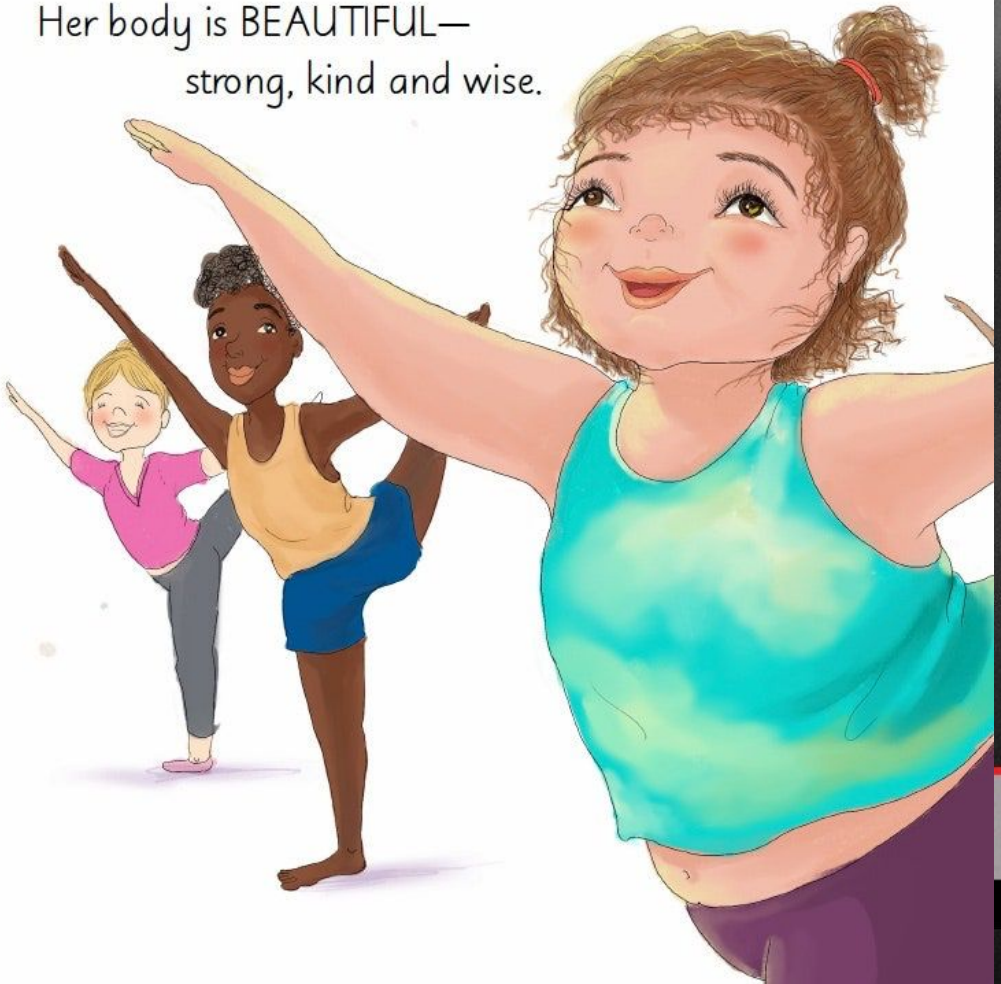
pediatric patients at CUHCC with obesity

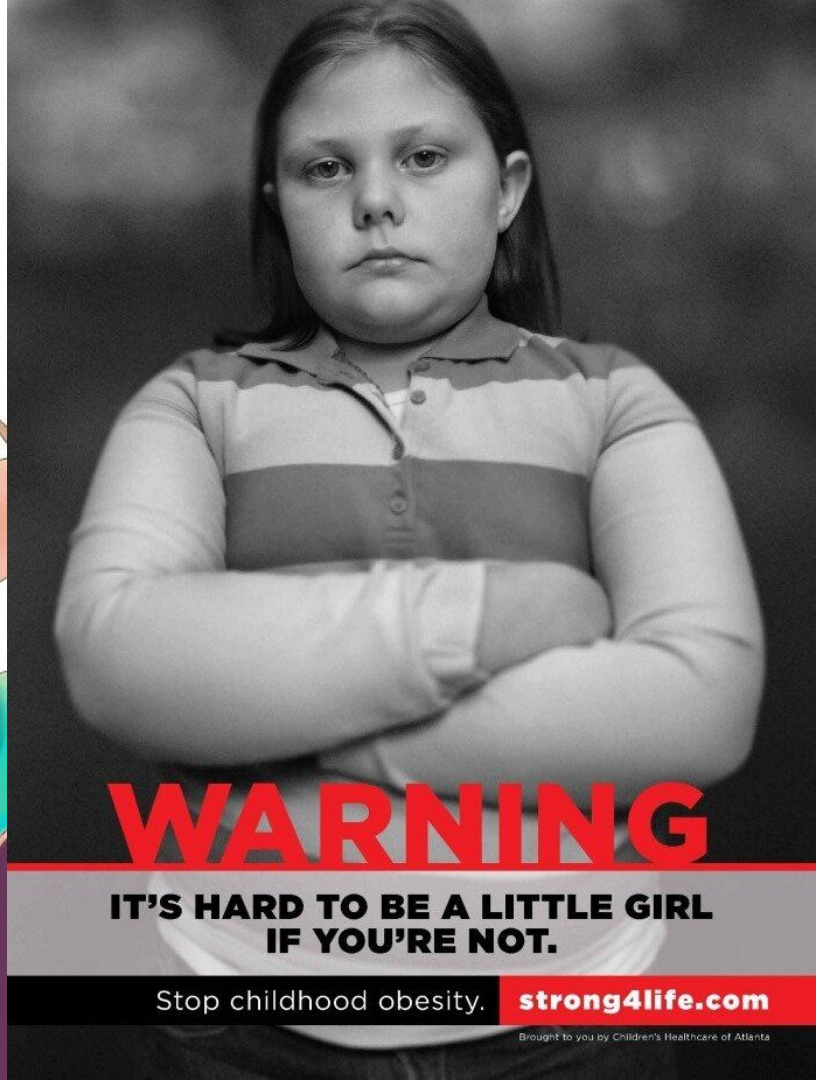
$$BMI = \frac{weight(kg)}{height(m)^2}$$



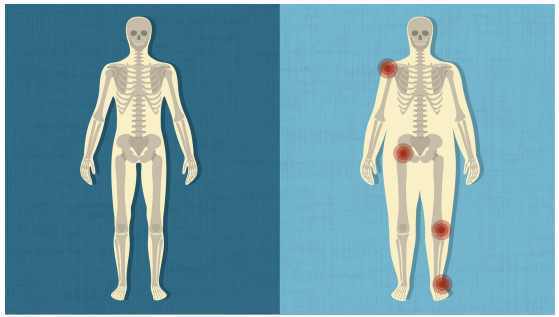
Definitions

BMI	Category
≥ 85%ile	Overweight
≥ 95%ile	Obesity, Class I
≥ 120% of 95%ile	Obesity, Class II
≥ 140% of 95%ile	Obesity, Class III


Her body is BEAUTIFUL—
strong, kind and wise.


WARNING
IT'S HARD TO BE A LITTLE GIRL
IF YOU'RE NOT.
Stop childhood obesity.
strong4life.com
Brought to you by Children's Healthcare of Atlanta

obesity is a disease

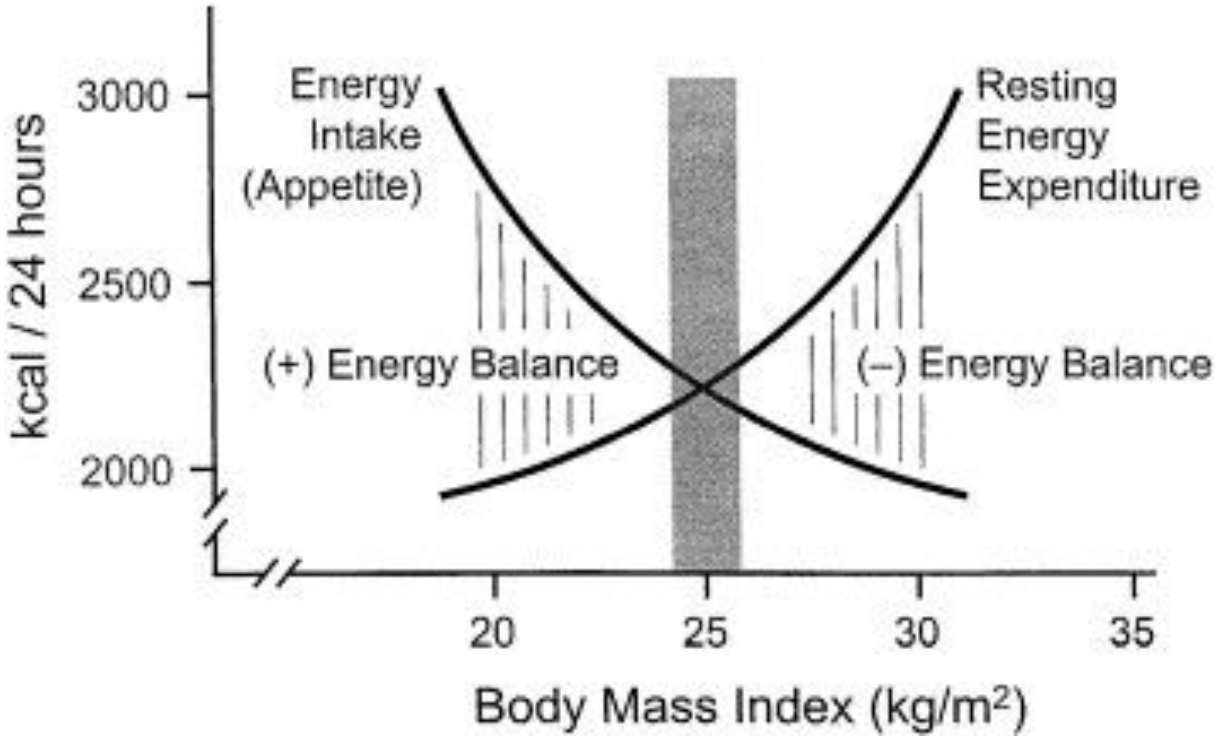


Obesity is defined as a chronic, progressive, relapsing, and treatable multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences.

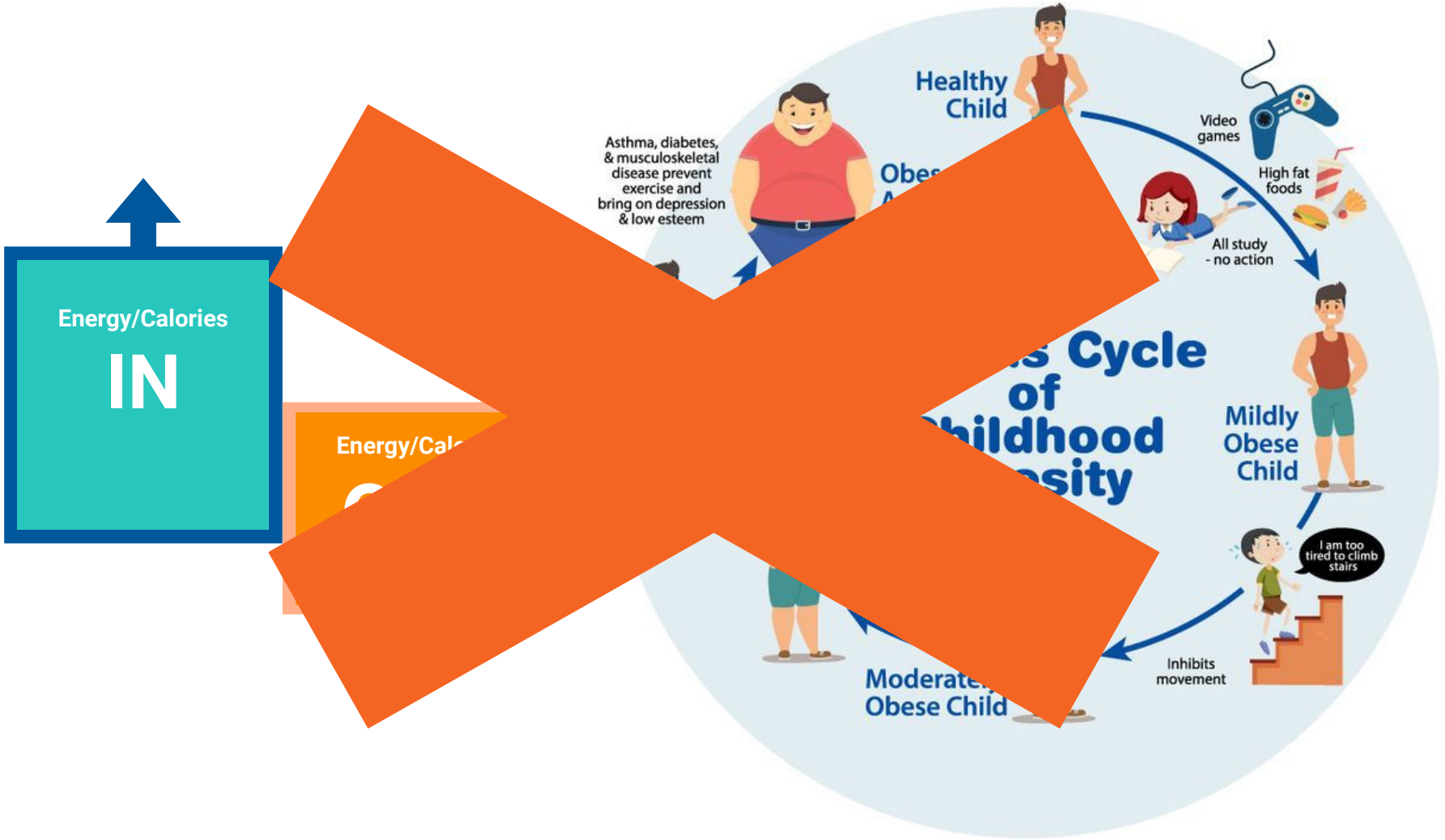
Bays and McCarthy et al., 2021

...so what's the cause?

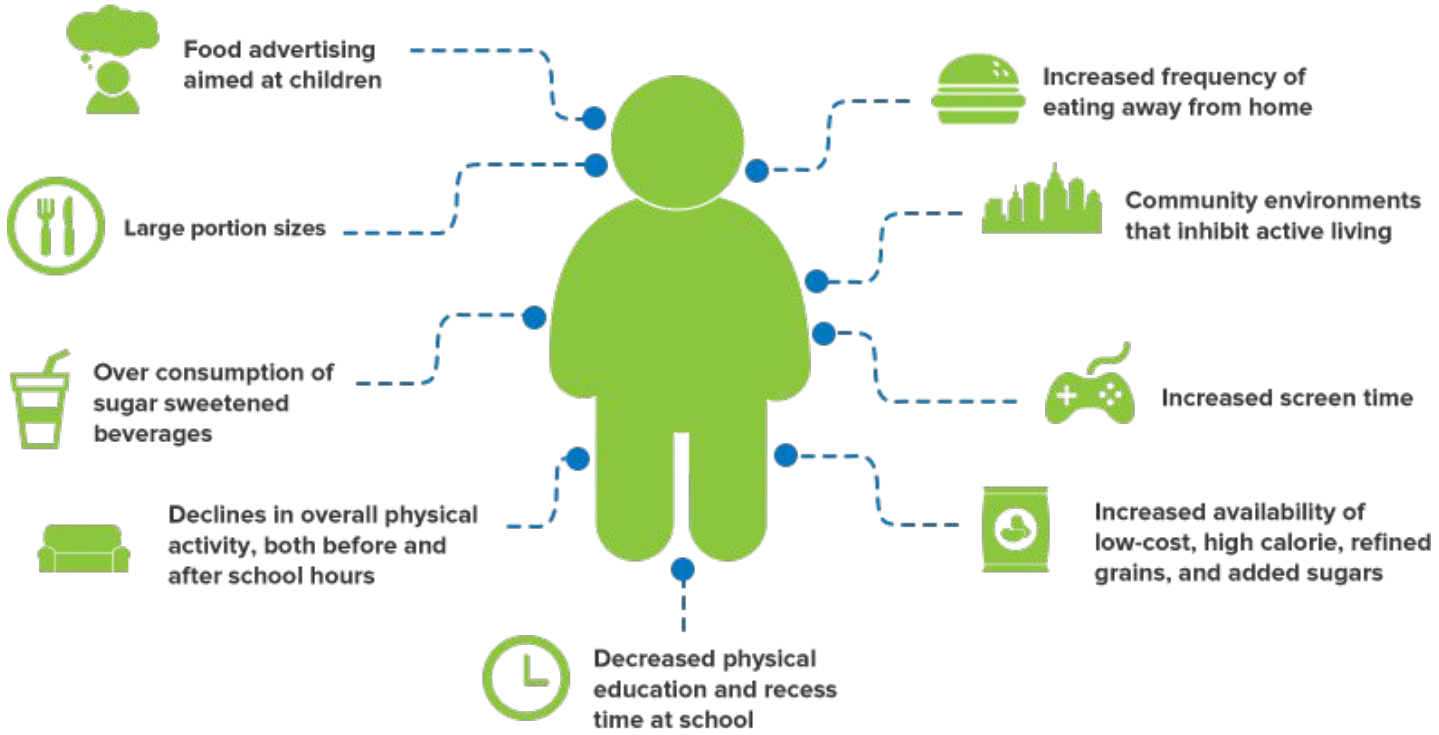
“Set point” theory

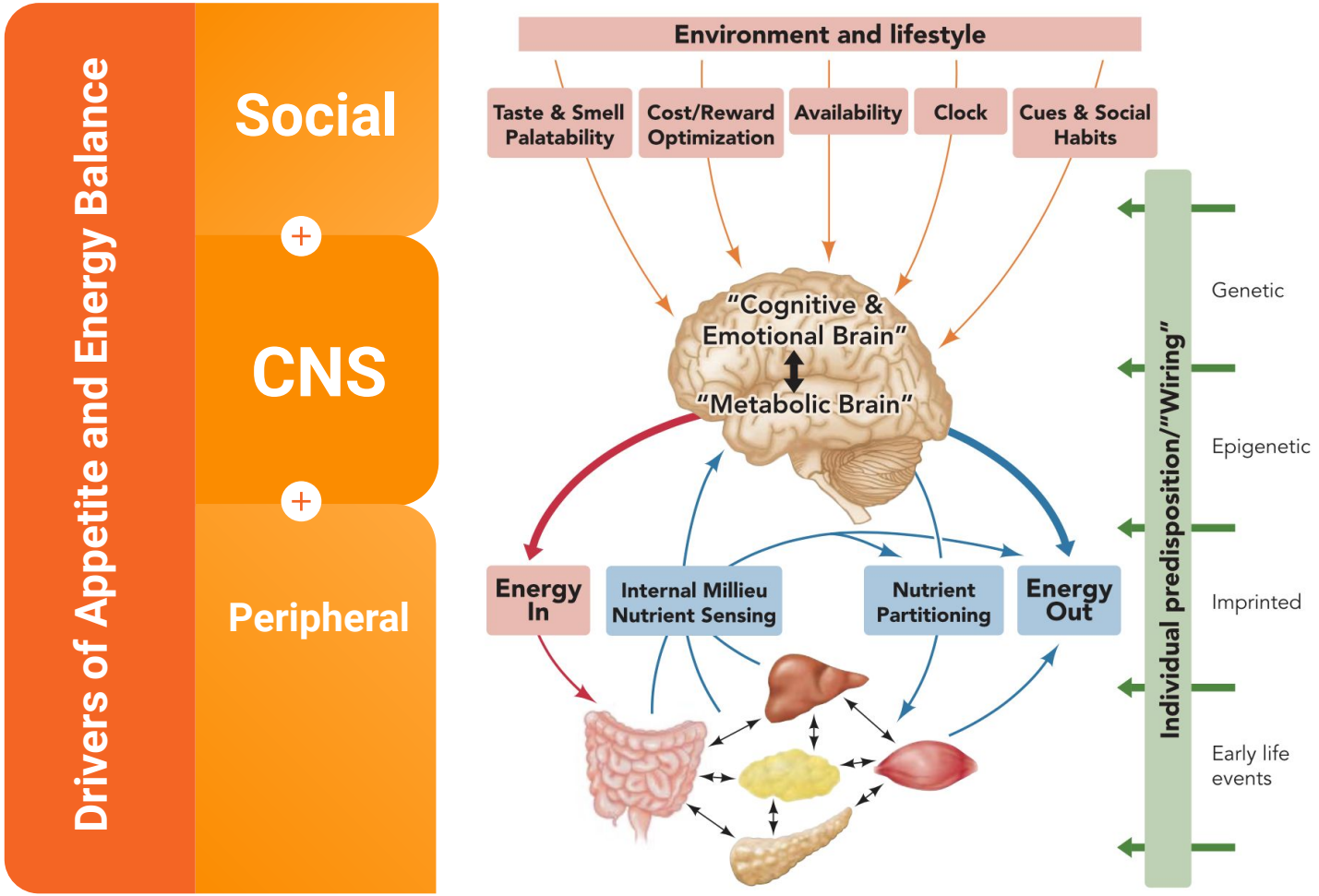


Kaplan, 2003.


Energy/Calories
IN
Energy/Cal
Healthy Child
Video games
High fat foods
All study - no action
Mildly Obese Child
I am too tired to climb stairs
Inhibits movement
Moderate Obese Child
Asthma, diabetes, & musculoskeletal disease prevent exercise and bring on depression & low esteem
Cycle of Childhood Obesity

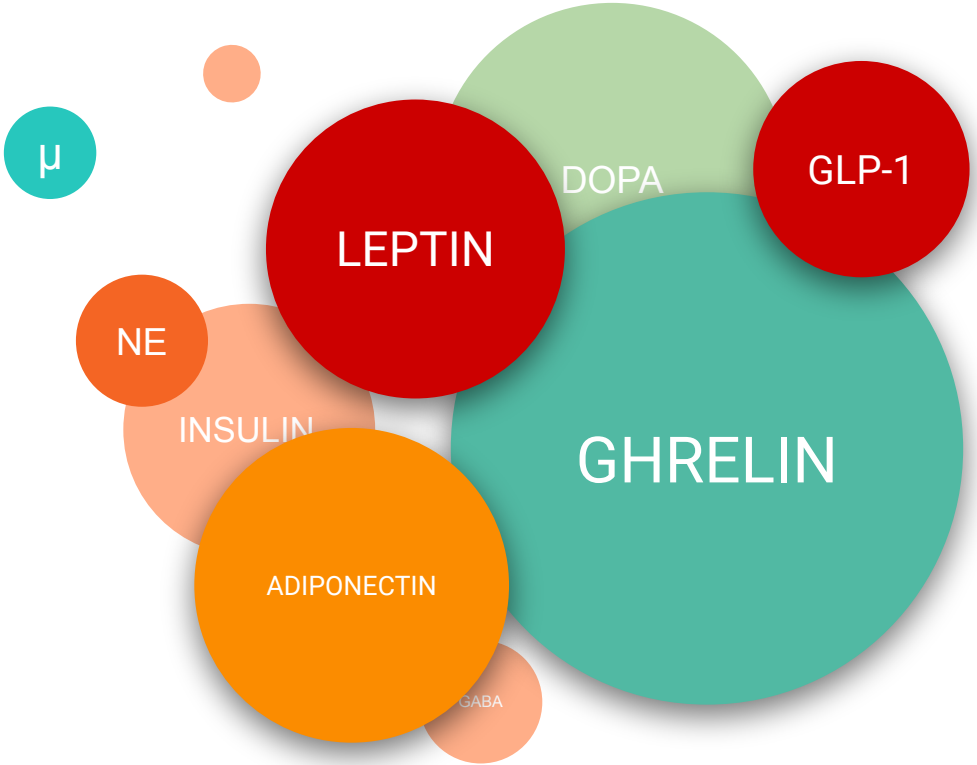
social drivers of obesity in childhood





Zheng and Berthoud, 2008

Biological drivers of appetite and energy balance



weight = 40kg, age 3yrs

weight = 29kg, age 6yrs

BEFORE LEPTIN

AFTER LEPTIN

FIG. 1. Effects of recombinant human leptin treatment in leptin deficiency.

Farooqi and O'Rahilly, 2006

Congenital leptin deficiency

- **Early-onset obesity** with hyperphagia
- Giving leptin normalizes energy intake
- No effect on metabolic rate

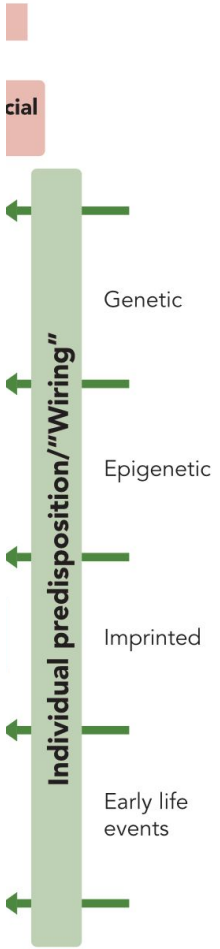
Genetic drivers

Monogenic obesity syndromes
- POMC/MC4R mutation
- Congenital leptin deficiency

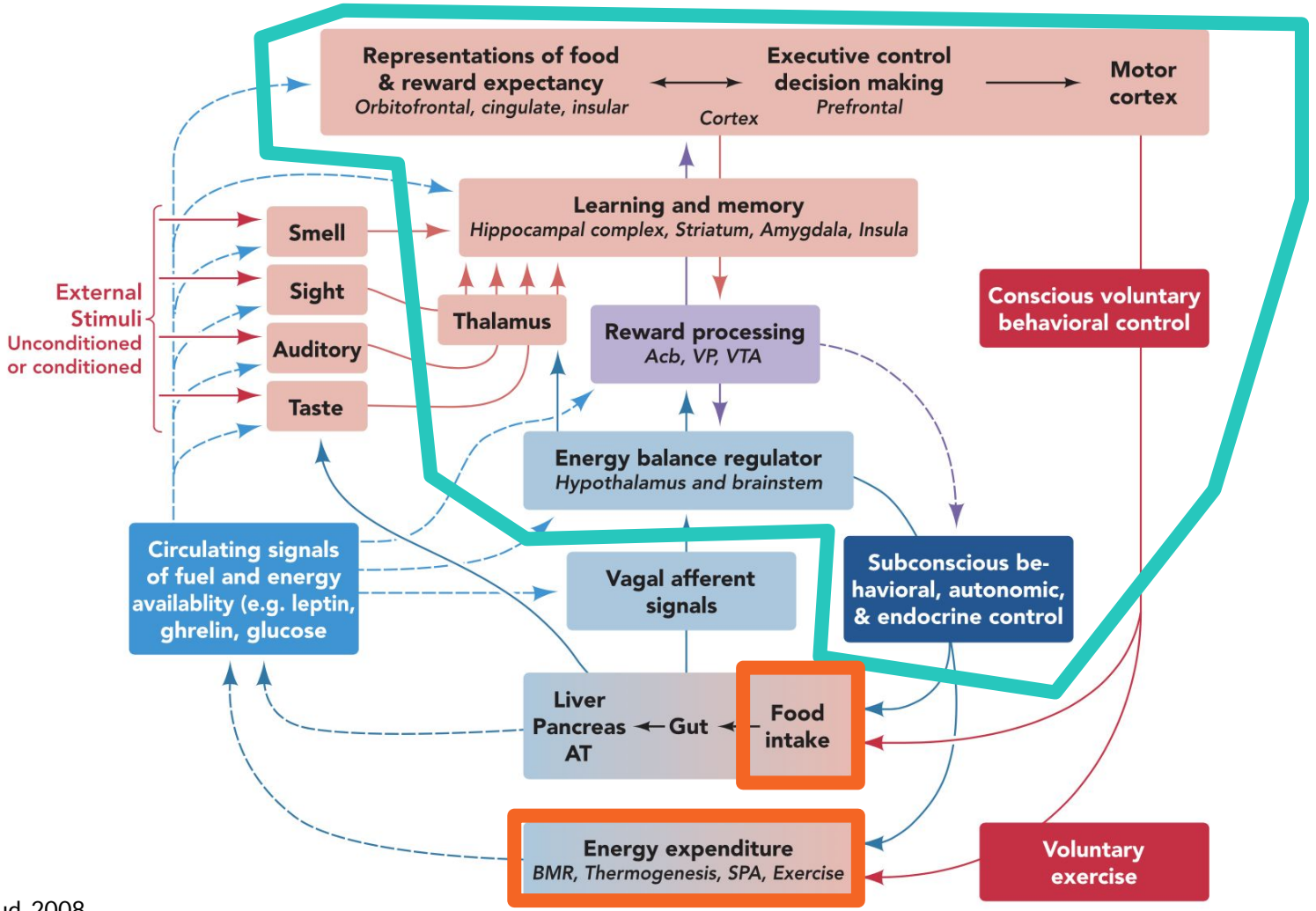
Metabolic stress in mothers gets passed down to fetuses

Prader-Willi Syndrome

Obesogen exposure

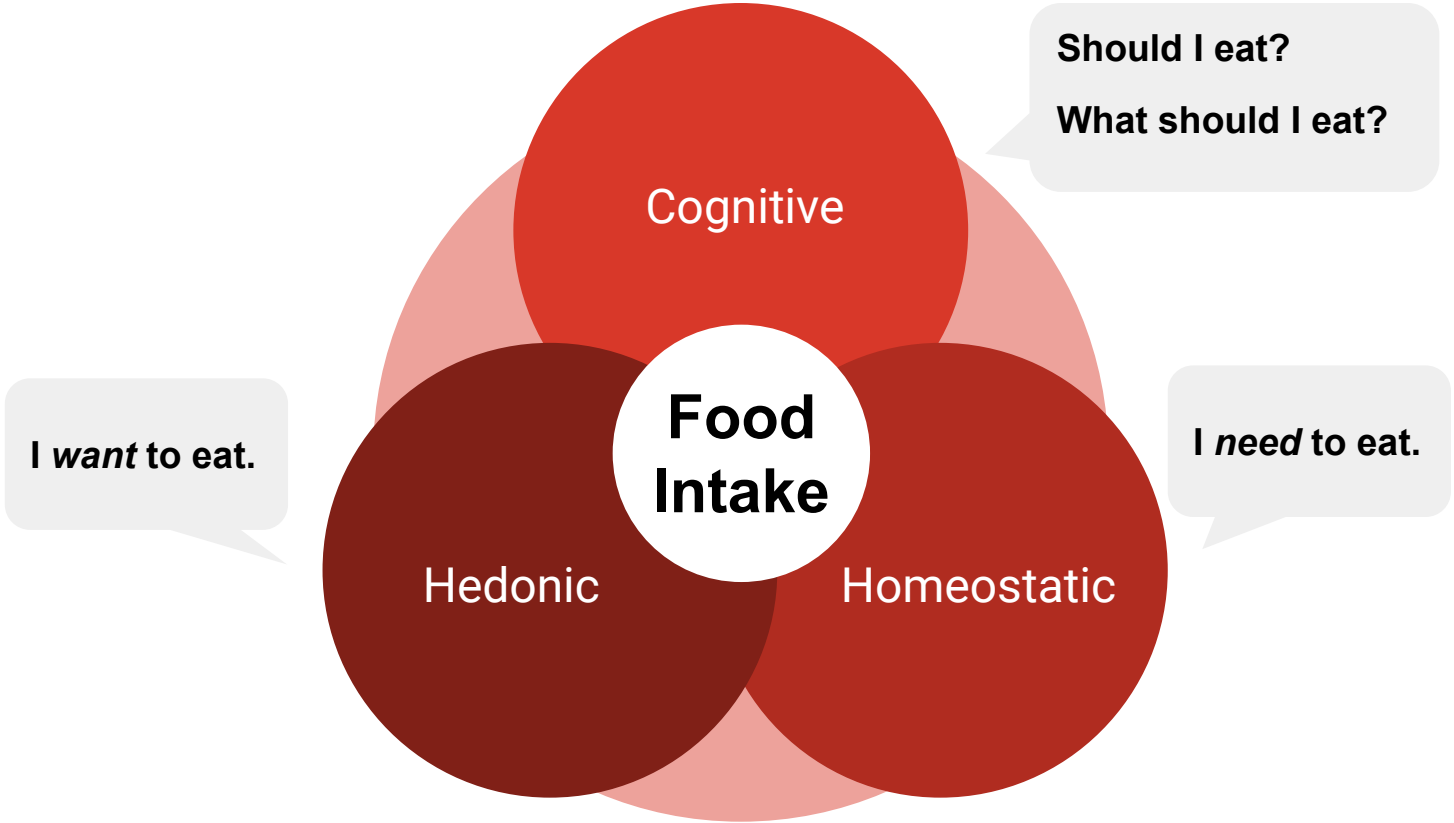


Zheng and Berthoud, 2008



Zheng and Berthoud, 2008

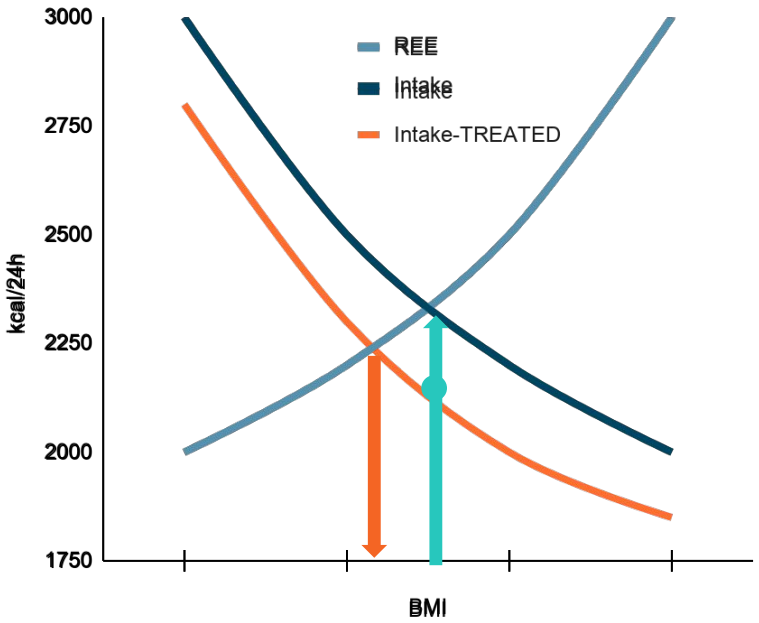
CNS drivers


Should I eat?
What should I eat?
Cognitive
I *want* to eat.
Food Intake
I *need* to eat.
Hedonic
Homeostatic

Drivers of Appetite and Energy Balance

Peripheral + **CNS** + **Social**

Lifestyle change
Pharmacotherapy
Bariatric/Metabolic Surgery



evaluating & treating

Tasks

1. Identify high-risk BMI and assess health
2. Assess readiness for treatment
3. Provide resources to support lifestyle change and family goals for physiological and psychological wellness
4. Prevent increasing BMI and health risk

BMI Calculator for Child and Teen

English

English Metric

Age: Years, Months Date of Birth, Date of Measurement

Age:

years (2 to 19) months (0 to 11)

or enter only the total number of months:

months (24 to 239)

Sex:

Boy Girl

Height: Inches Height: Ft, Inch, Fraction

Height, to nearest 0.1 inch:

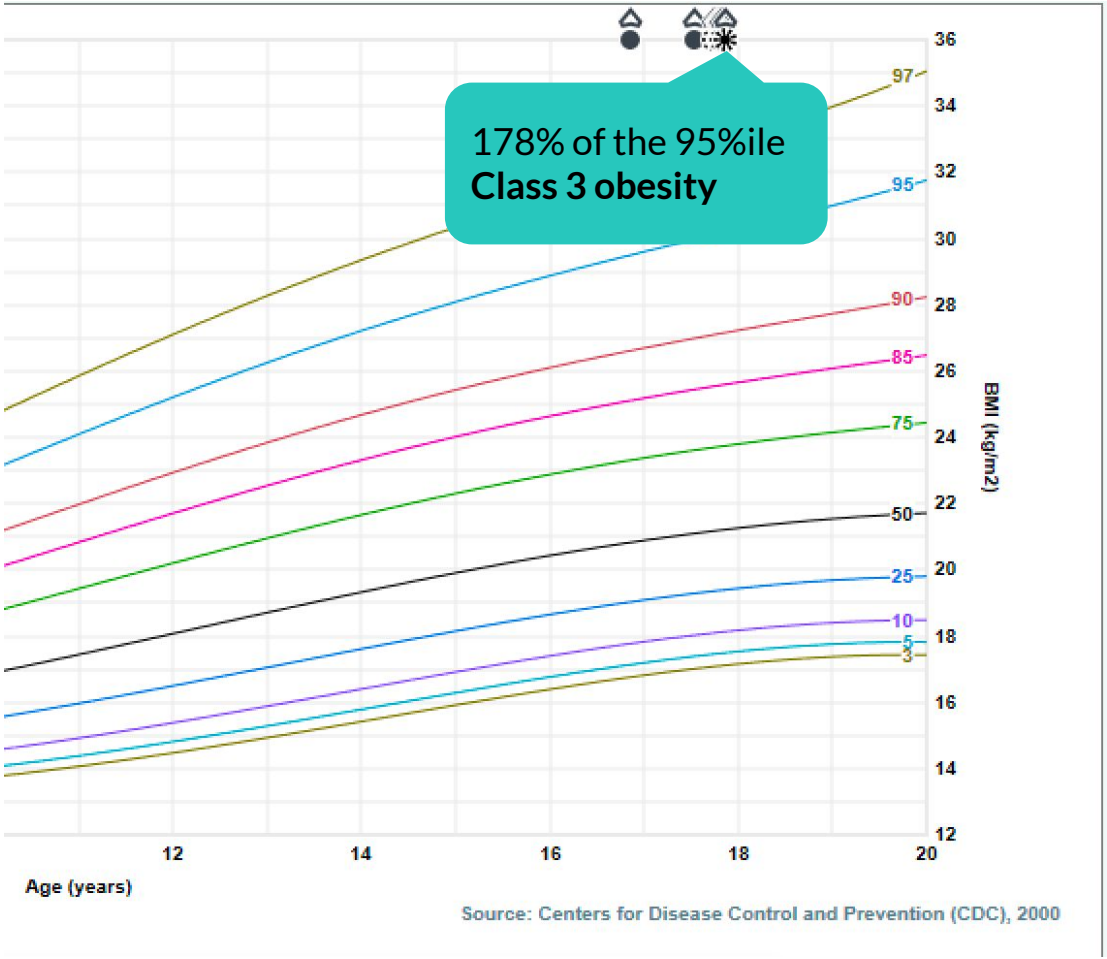
inches

Weight: Lbs Weight: Lbs, Fraction

Weight, Lbs to the nearest 0.1:

lbs

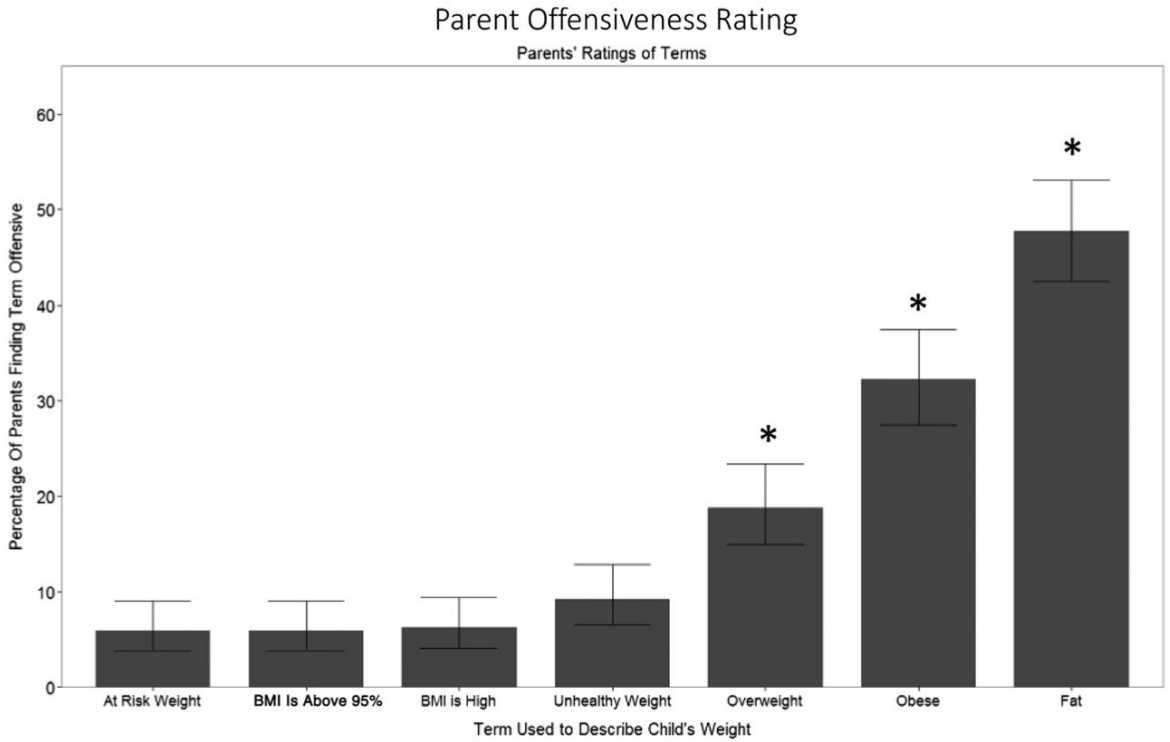
Calculate



CDC

Talking to families

1. Ask permission
2. Use preferred terms
3. Avoid blame
4. Focus on **health** (not weight or appearance)
5. Seek to understand



Faircloth et al., 2019

Red flags

- ❏ Abnormal linear growth
- ❏ Developmental delay

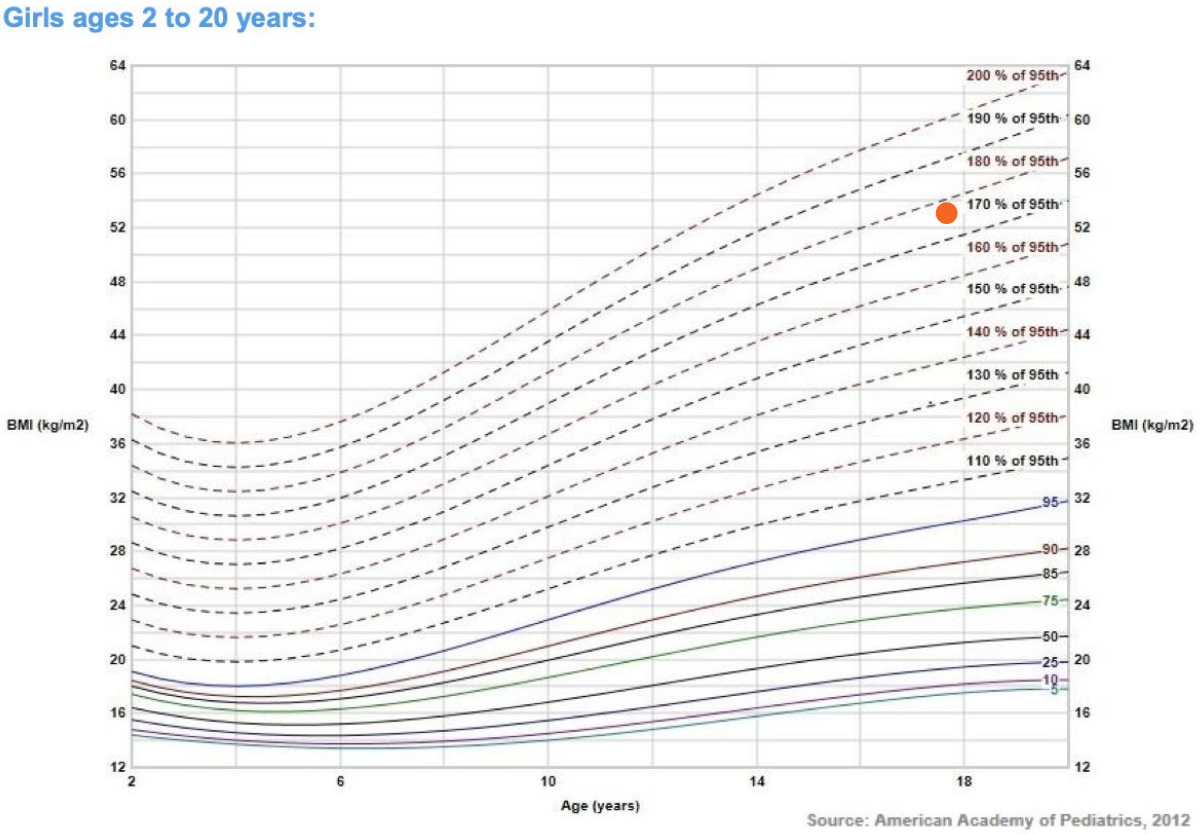
Endocrine evaluation

- ❏ Early-onset obesity (<5yo)

Genetic evaluation

- ❏ Signs/symptoms of eating disorder
  - ❏ Severe body image issues
  - ❏ Binge eating

Eating disorder referral



Styne et al., 2017; Cuda, 2020

Screen for comorbidities

- ❑ Weight, height, BMI
- ❑ Hypertension
- ❑ Insulin resistance/diabetes
  - ❑ Acanthosis nigricans
  - ❑ A1c/glucose tolerance
- ❑ Hormonal dysregulation/PCOS
  - ❑ Hirsutism/acne
  - ❑ Free/total TST, SHBG
- ❑ Increased ICP/IIH
  - ❑ Fundoscopic exam
- ❑ Musculoskeletal dysfunction
  - ❑ Scoliosis
  - ❑ Blount's
  - ❑ SCFE
  - ❑ Gross motor delay
- ❑ NAFLD
  - ❑ ALT
- ❑ Dyslipidemia
  - ❑ Fasting lipids
- ❑ OSA
- ❑ Mental health disorders

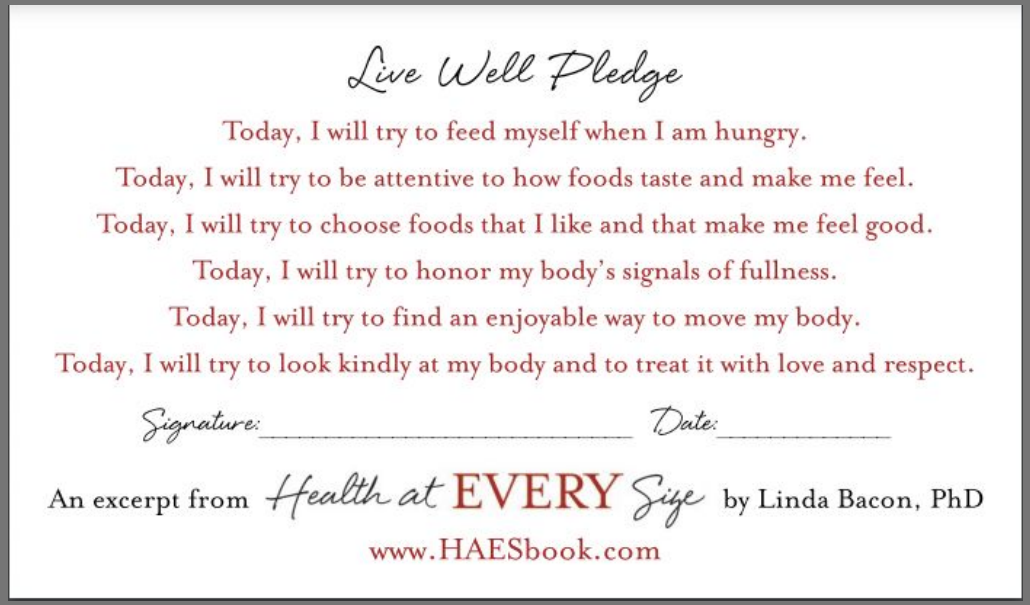
Styne et al., 2017

Current routines

- ❏ Activity/Active play
  - ❏ Difficult? Fun?
- ❏ Screen time
- ❏ Sleep
- ❏ Body image
- ❏ Family role modeling

- ❏ Feeding
  - ❏ What?
  - ❏ How much?
  - ❏ How often?
  - ❏ Where?
  - ❏ Why?
- ❏ Food insecurity

HEALTH at EVERY SIZE



Live Well Pledge

Today, I will try to feed myself when I am hungry.

Today, I will try to be attentive to how foods taste and make me feel.

Today, I will try to choose foods that I like and that make me feel good.

Today, I will try to honor my body's signals of fullness.

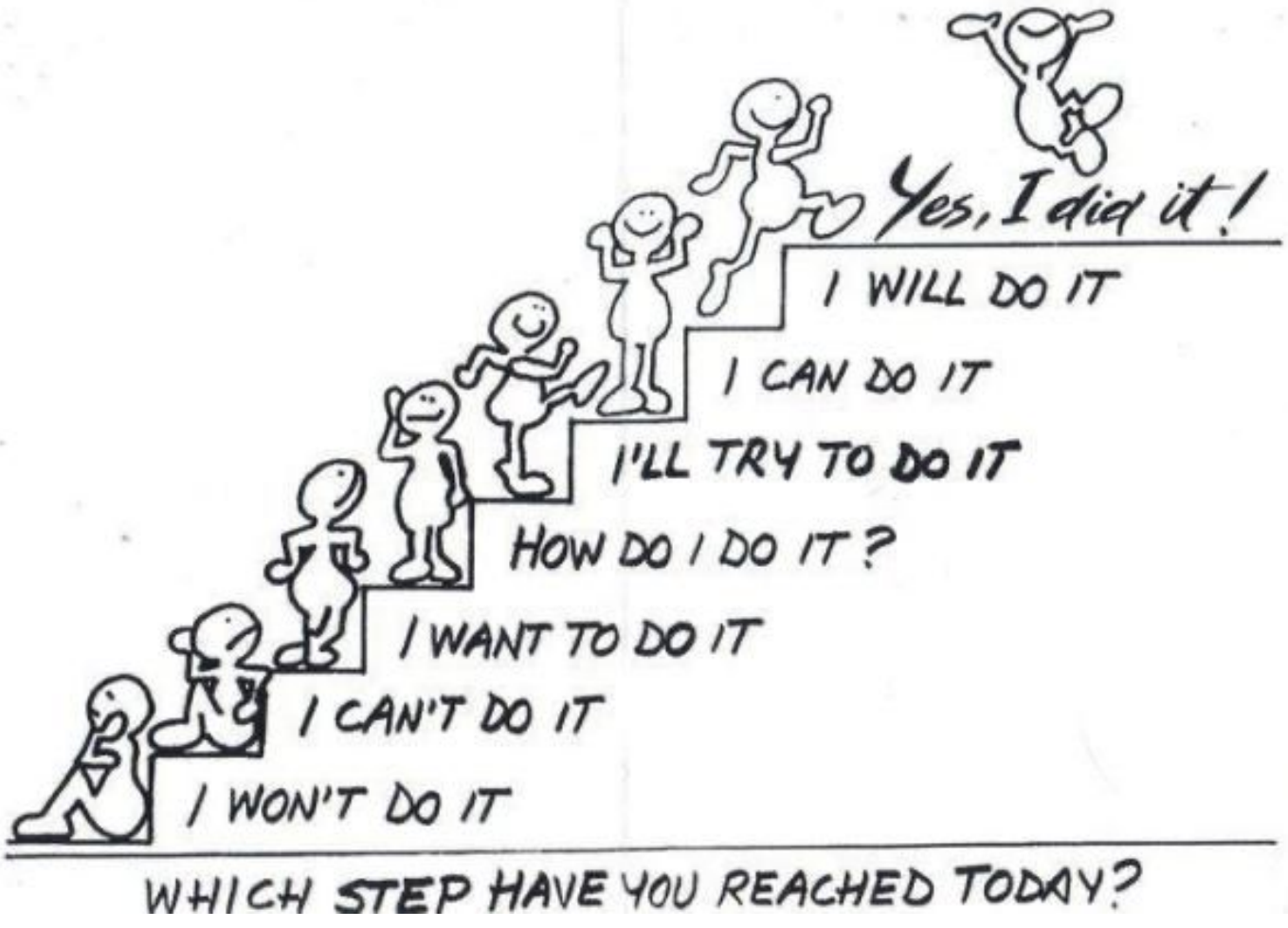
Today, I will try to find an enjoyable way to move my body.

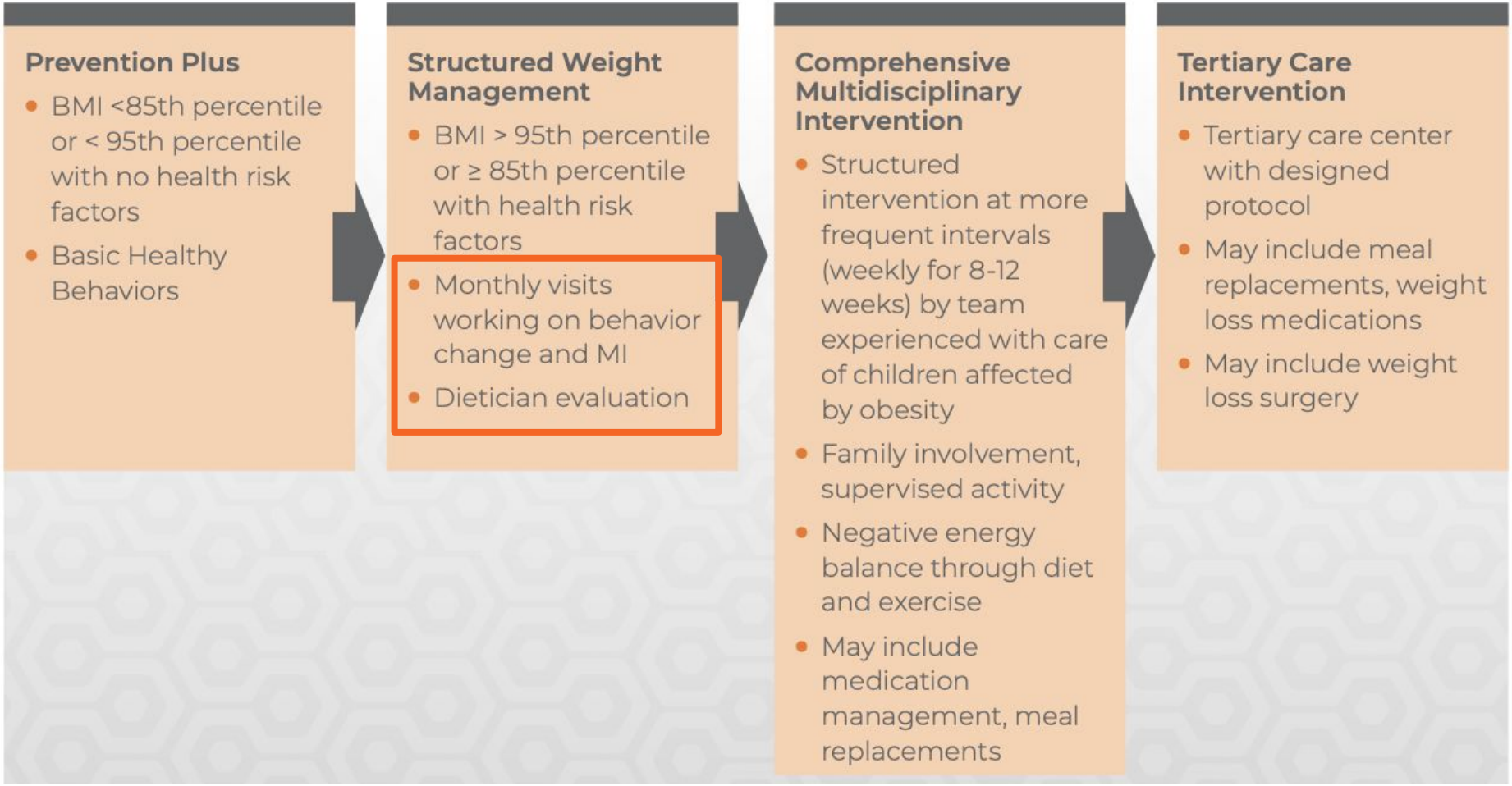
Today, I will try to look kindly at my body and to treat it with love and respect.

Signature: _____ *Date:* _____

An excerpt from *Health at* EVERY *Size* by Linda Bacon, PhD

www.HAESbook.com


Yes, I did it!
I WILL DO IT
I CAN DO IT
I'LL TRY TO DO IT
HOW DO I DO IT?
I WANT TO DO IT
I CAN'T DO IT
I WON'T DO IT
WHICH STEP HAVE YOU REACHED TODAY?

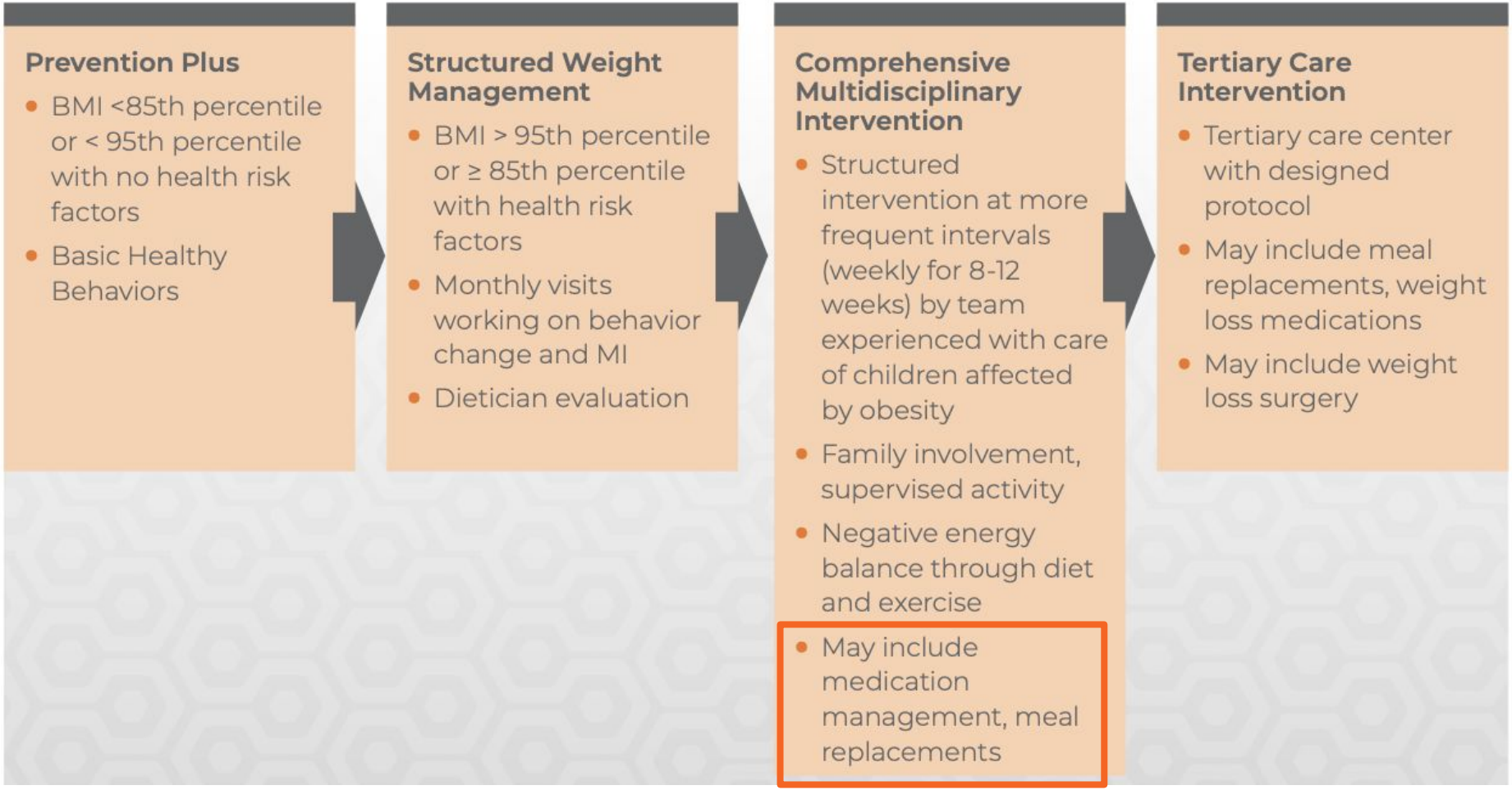


Cuda et al., 2021

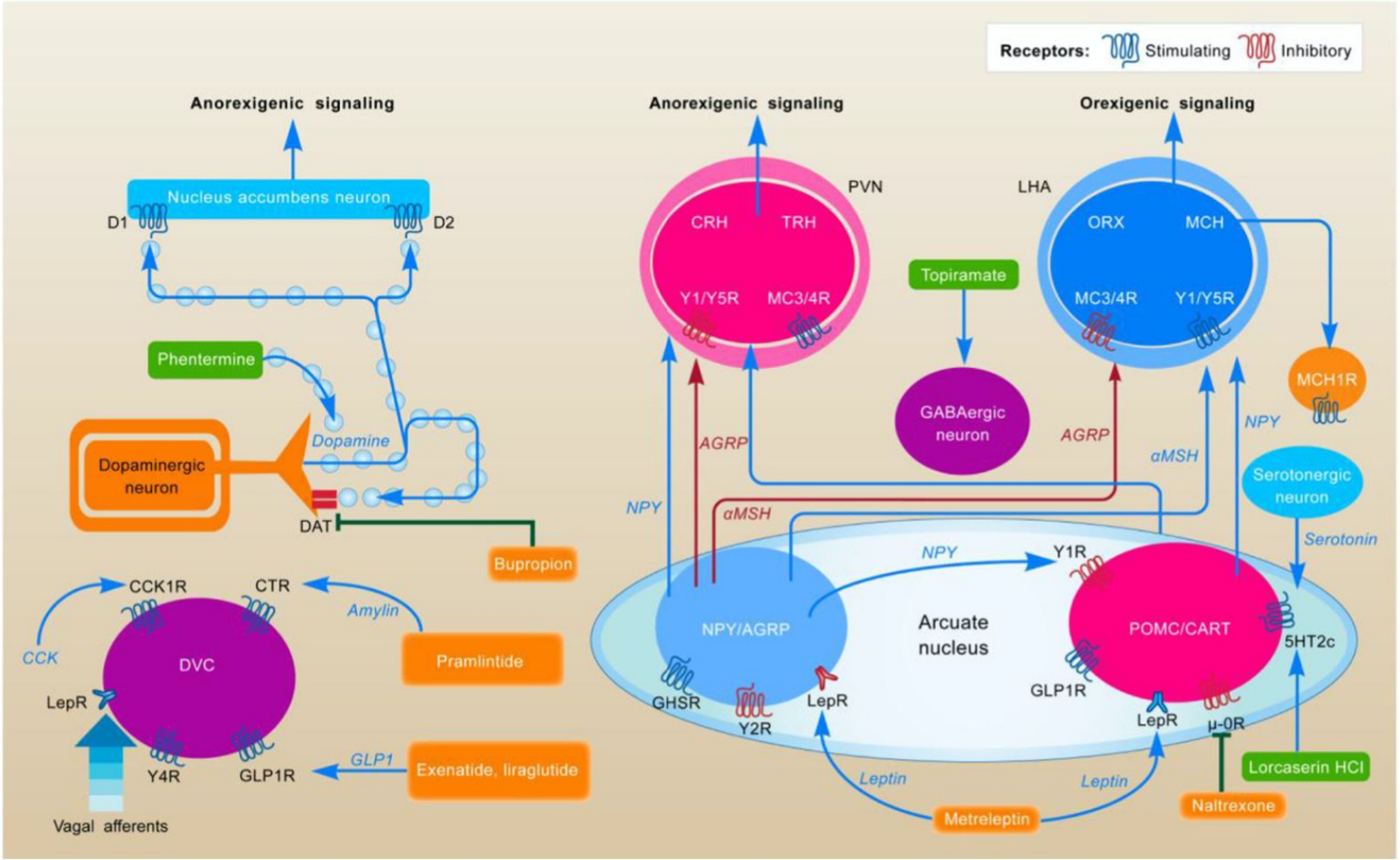
Endocrine Society guidelines

- ∅ Fast foods
- ∅ Added table sugar
- ∅ Sugar-sweetened beverages
- ∅ High-fructose corn syrup
- ∅ High-fat/sodium/processed foods
- ∅ Saturated fat intake
- ∅ Nonacademic screen time to 1-2h/day

- ❑ Family-centered changes
- ❑ Whole fruits (no juice)
- ❑ ≥ 20 min/day mod-vigorous activity
- ❑ Promote self-esteem
- ❑ Start medications if lifestyle changes unsuccessful
- ❑ Stop medications after 12-week therapeutic trial if ineffective



Cuda et al., 2021



Apovian et al., 2015

Assessment to guide advanced therapies in patients 10+ yo

GLP-1, **phentermine**

GLP-1, topiramate

topiramate, naltrexone

Hunger

- ❑ Food seeking/sneaking
- ❑ Timing in relation to food

Satiety

- ❑ Fullness
- ❑ Vomiting

Hedonic eating

- ❑ Emotional eating
- ❑ Cravings

lisdexamfetamine
topiramate

Binge eating

- ❑ Loss of control, guilt

Behavioral strategies

- ❑ Restriction
- ❑ Distraction
- ❑ Response

topiramate

Iatrogenic

- ❑ Medications

metformin, topiramate

Sweeney, 2021; Fox et al, 2019

FDA-approved for weight loss in pediatrics

phentermine

16+ for obesity "short-term"

15-37.5mg qAM OR
8mg bid-tid

- Limited data on BMI reduction
- Increased HR/BP, palpitations, ischemic events, valvular disease, restlessness, insomnia, potential abuse/dependence
- 340B price ~$20-$25

liraglutide

12+ for obesity
10+ for T2DM

0.6mg qD SQ, titrate weekly by 0.6mg to max 3mg/day

- 5% BMI reduction
- Increased HR, GI side effects
- 340B price ~$15/box

orlistat (Alli)

12+ for obesity

120mg tid ONLY AC
80mg tid ONLY AC Alli (80% effective)

- 2.5% BMI reduction
- Oily spotting; flatus with discharge
- GI symptoms resolve after 4 weeks
- Risk for malabsorption of ADEK
- 340B price ~$15

Fox and Kelly, 2021

Off-label use of medications

01	**Atypical antipsychotic-associated weight gain**	Metformin (10+ for prediabetes) Topiramate (2+ for seizures)
02	**Comorbid seizures, migraines, mood lability**	Topiramate
03	**Combination pills for adults that have no data in peds**	Phentermine/topiramate (Qsymia) Naltrexone/bupropion (Contrave)

Fox and Kelly, 2021

Medication follow-up

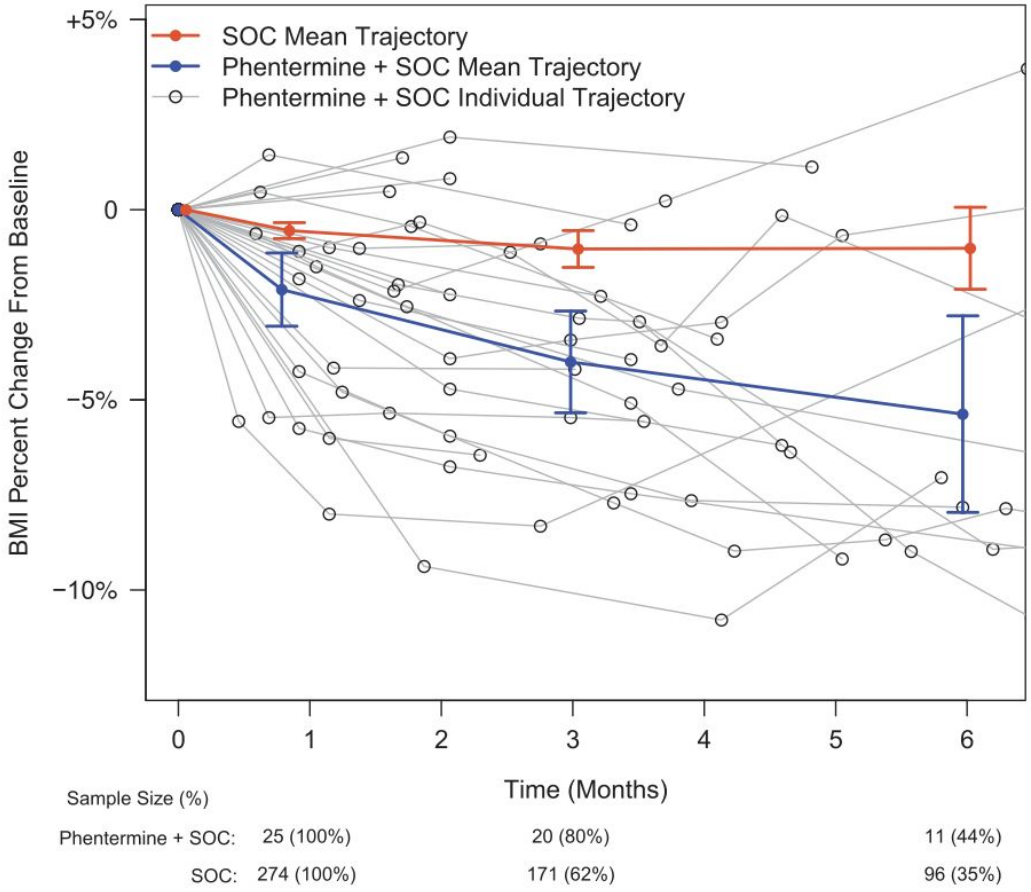
- ❏ Monthly visits for 3 months
  - ❏ Side effects (CV, BP, HR)
  - ❏ BMI effect
    - ❏ If increasing, discontinue
    - ❏ If not fully effective, consider dose titration or addition of other medications
- ❏ Always in conjunction with ongoing lifestyle changes, interdisciplinary team support

Fox and Kelly, 2021

Individual experience will vary

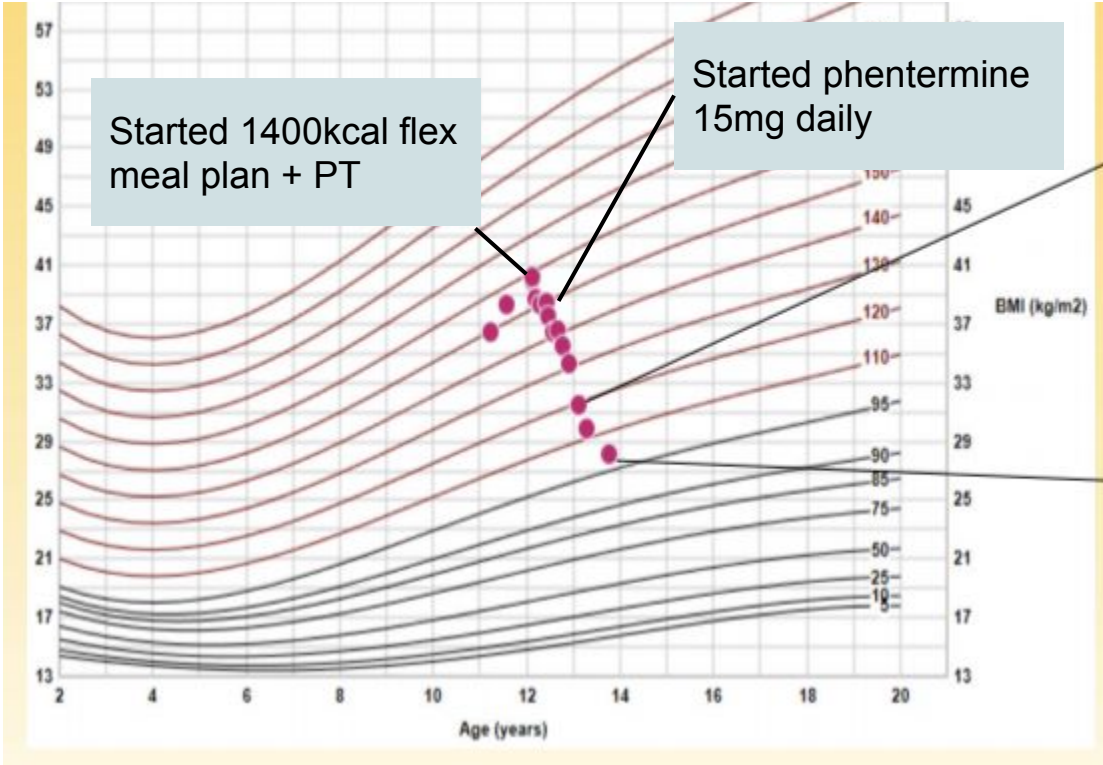
15mg/day produced 2-5% BMI reduction at 6 months

Retrospective chart review at the UMN Peds Weight Management Clinic



Ryder et al., 2017

12yo F with BMI 40 due to strong hunger, FHx, limited physical activity, some binge eating



Repeat cardiac echo: no change in LV mass

-20 mos:
Change in BMI – 29.6%
Change in weight – 40 lbs
-Phentermine decreased to 15 mg QOD

Fox and Kelly, 2021

Pediatric weight management in the Twin Cities

University of Minnesota (+ Surgery)

Allina Health

Hennepin Health

Children's St. Paul

weight management at CUHCC

Is CUHCC an inclusive environment?

- ❏ Appropriate furniture
- ❏ Accessible exam tables
- ❏ Assistive devices
- ❏ Split toilet seat - specimen collectors with handles
- ❏ Inclusive reading materials
- ❏ Scales in private areas
- ❏ Right-sized medical equipment
- ❏ Welcoming staff
- ❏ Non-stigmatizing language

How do we currently support kids with overweight and obesity?

What opportunities are there to provide more effective care?

Favorite resources?

Free fruits and vegetables!

- Waite House, Brian Coyle Center

UConn Rudd Center

APA - How to talk to kids about weight and health

Move and Thrive - videos for teens for movement and mindfulness

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