



Managing Obesity In Youth

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Hospital*

Faculty Disclosure

There are no commercial products or services being discussed

No financial disclosures

No unlabeled use of a product is being discussed

Goals

Define Obesity and Epidemiology

Understanding etiology of obesity differently

Medical management of Obesity using new tools





Definitions

ADULTS : ABSOLUTE BMI

Overweight (OW): 25-30

Obese

Class 1: 30-35

Class 2: 35-40

Class 3: ≥ 40

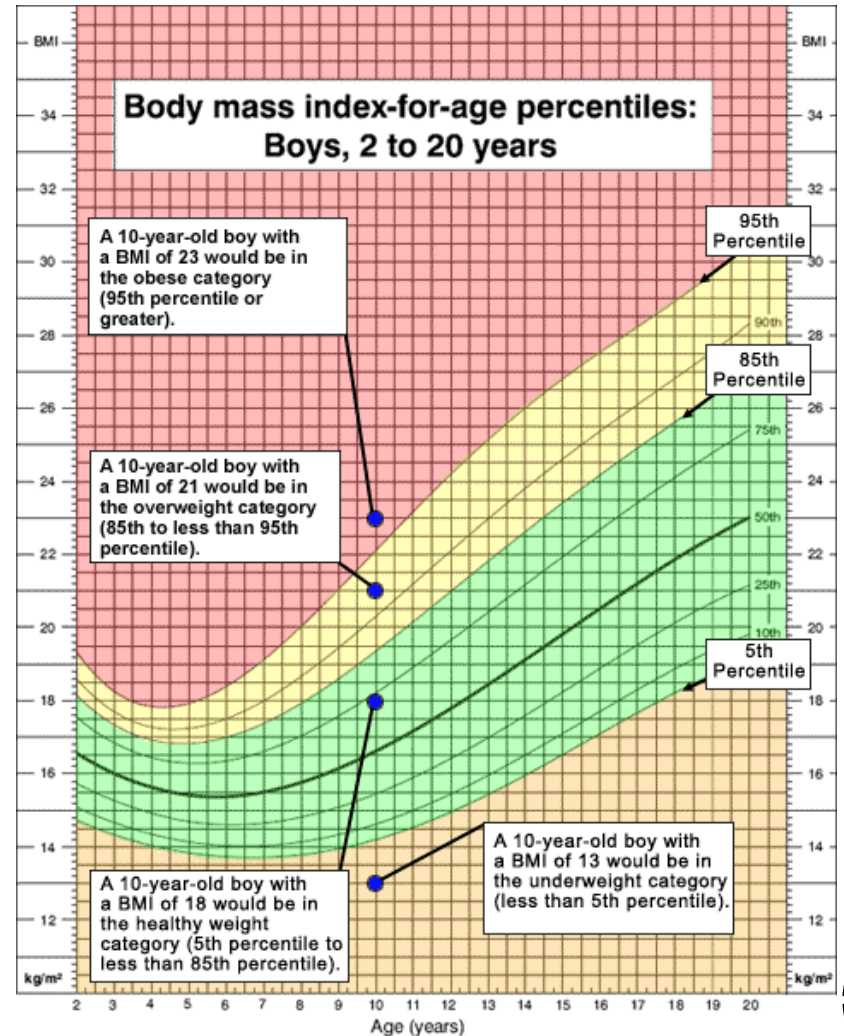
Pediatric : BMI%ile

OW: 85-95%

Obese $\geq 95\%$

Class 2 : 120% of 95%

Class 3: 140% of 95%



Children and adolescents aged 2-19 years in 2017-2020



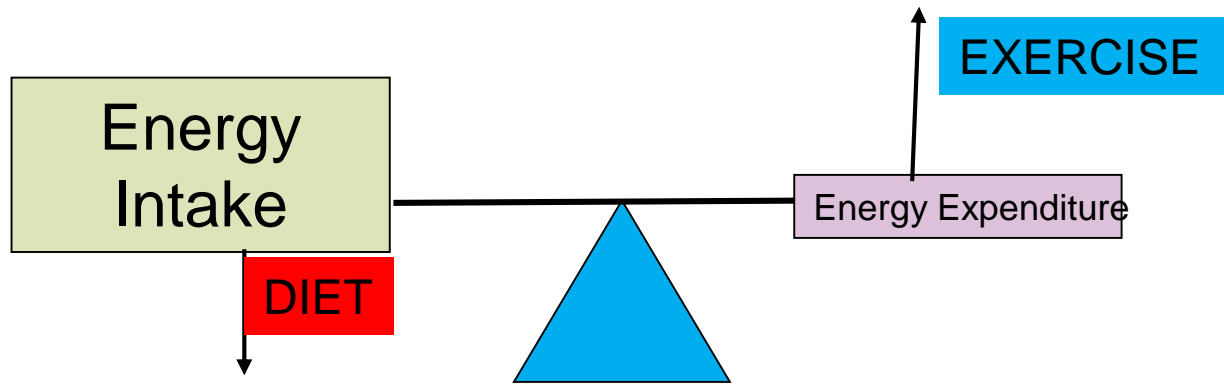
<https://stacks.cdc.gov/view/cdc/106273>

Obesity
Prevalence:
19.7% = 14.7
million

- 2- 5 years: 12.7%
- 6- 11 years: 20.7%
- 12- 19 years: 22.2%

Obesity
prevalence –
Varies with
Socio-Economic
Constructs

- Hispanic children:
26.2%
- Non-Hispanic Black
children: 24.8%
- Non-Hispanic White
children: 16.6%
- Non-Hispanic Asian
children: 9.0%



I have been told that it is just an imbalance of what I eat and how much I exercise

- trying “low carb” diet & “to eat lesser”
- trying to go back to gym post COVID lockdown
- **Its NOT WORKING, makes me hungry**
- I binge at night**



We are failing

**because we are focused on
only final effect= weight
loss!**



When Desired Results Not Achieved



Derogatory terms are used

-Non Compliant

-Lazy





From: **Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity**



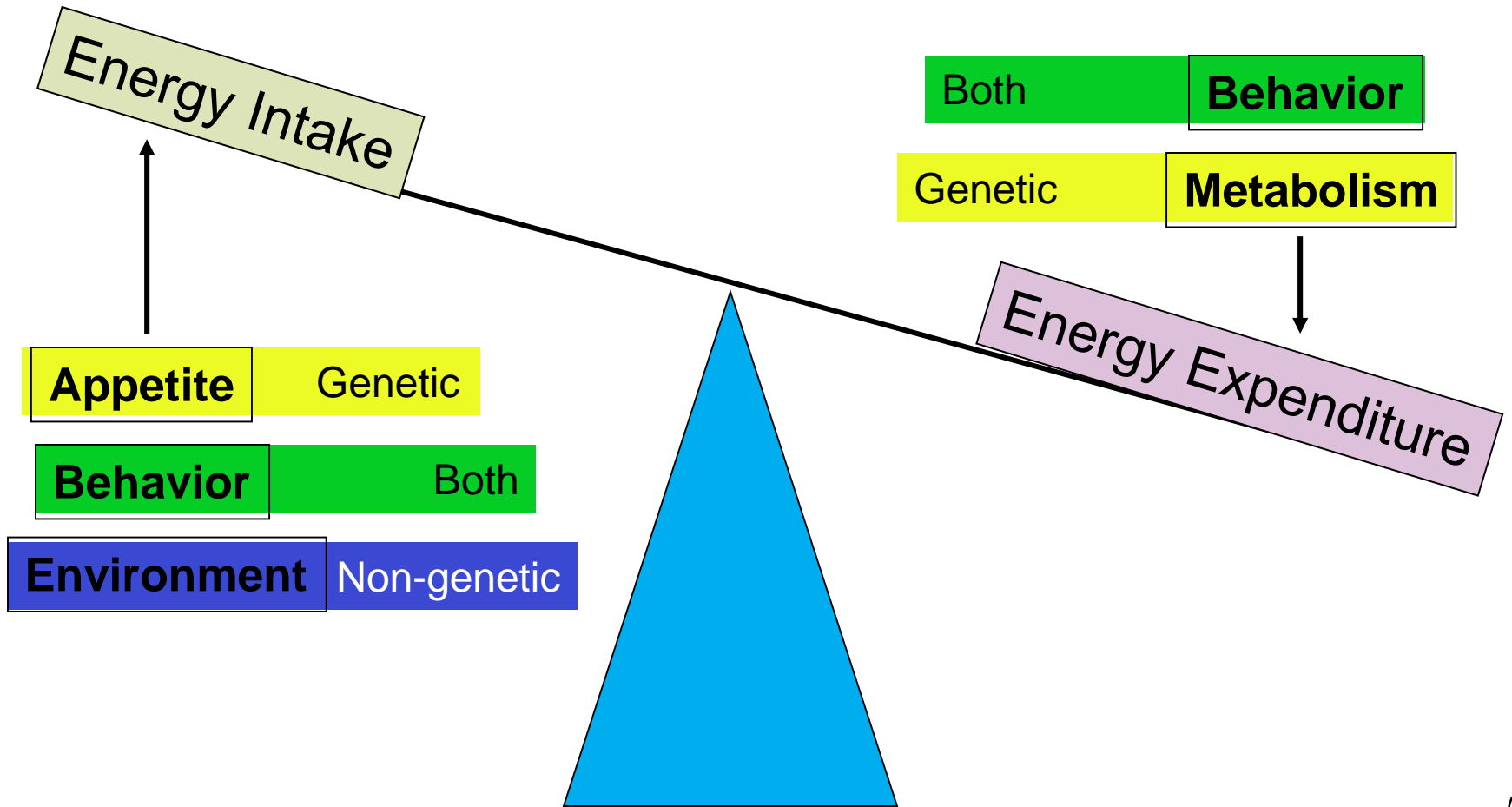
Weight Bias in Medicine

“Pediatricians and other PHCPs have been—and remain—a source of weight bias”



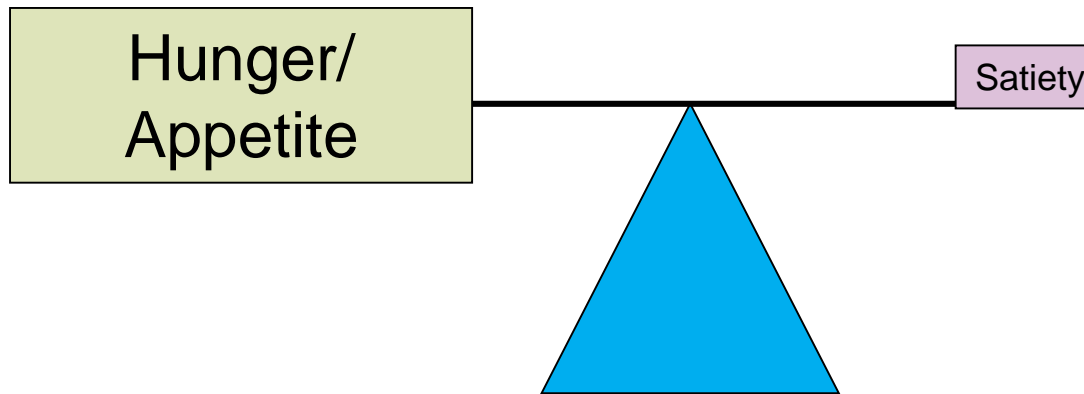
Communication between patient and provider breaks down

Etiology of Obesity





Main Symptom **LACK OF SATIETY**



Appetite Control- A Complex Neuro-Endocrine Pathway



Frontal Lobe-
Executive Control

Mesolimbic/Hedonic
Control

LEPTIN

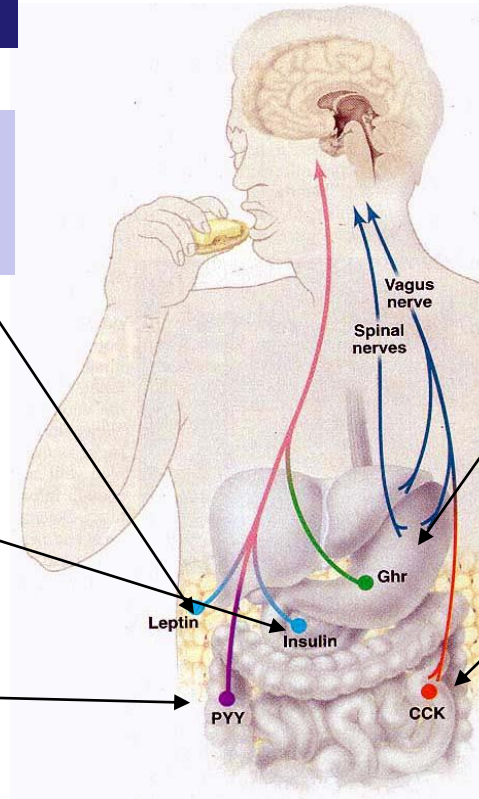
“anti-obesity
hormone”

INSULIN

appetite
suppressant

PYY³⁻³⁶

appetite
suppressant



GHRELIN

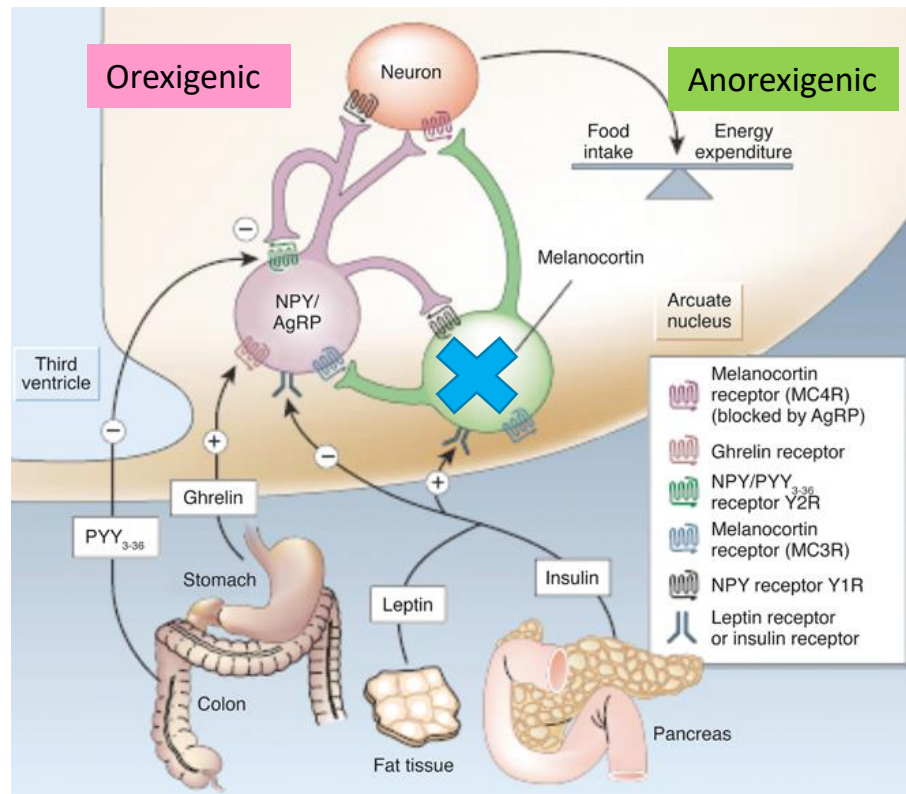
appetite stimulant

CHOLECYSTOKININ

“satiety hormone”



MC4R Pathway Defect



MC4R
LEP
LEPR
SH2B1
BBS1-BBS15
POMC
PCSK1
BDNF
NTRK2
SIM1

Genetic Testing – Commercially Available- Utility for General Population??

Lizarbe B, et al. Front Neuroenergetics. 2013 Jun 13;5:6. doi: 10.3389/fnene.2013.00006.





Longitudinal Trends in Body Mass Index Before and During the COVID-19 Pandemic Among Persons Aged 2–19 Years — United States, 2018–2020

Samantha J. Lange, MPH¹; Lyudmyla Kompaniyets, PhD¹; David S. Freedman, PhD¹; Emily M. Kraus, PhD²; Renee Porter, DNP³; Heidi M. Blanck, PhD¹; Alyson B. Goodman, MD¹

Changes over the COVID Lockdown – Highlighted Non-Genetic Factors Affecting Hunger

- Human Eating Behaviors
 - Sleep
 - Circadian Rhythm Disruption
-

Sleep loss / Circadian Rhythm Disturbances— Makes you Hungry



Hanlon EC, et al. Sleep. 2016 Mar 1;39(3):653-64

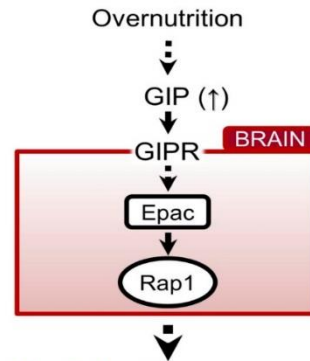
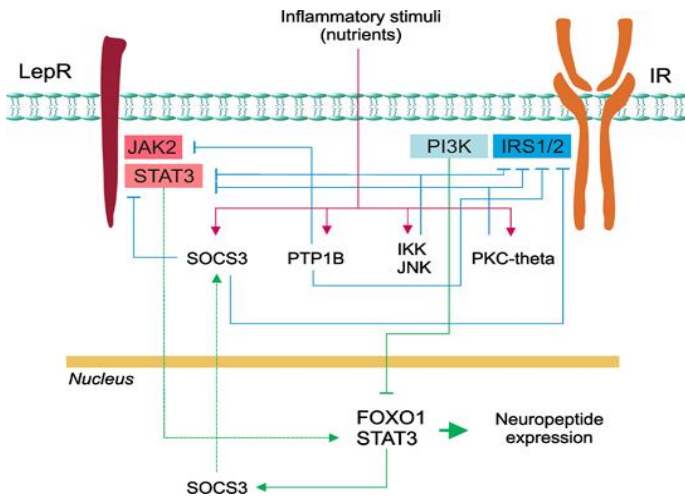


Increase at Night : Ultra- Processed /"FAKE" Foods





Sleep Loss and Night Eating = LEPTIN EXCESS and INSULIN RESISTANCE/Acanthosis

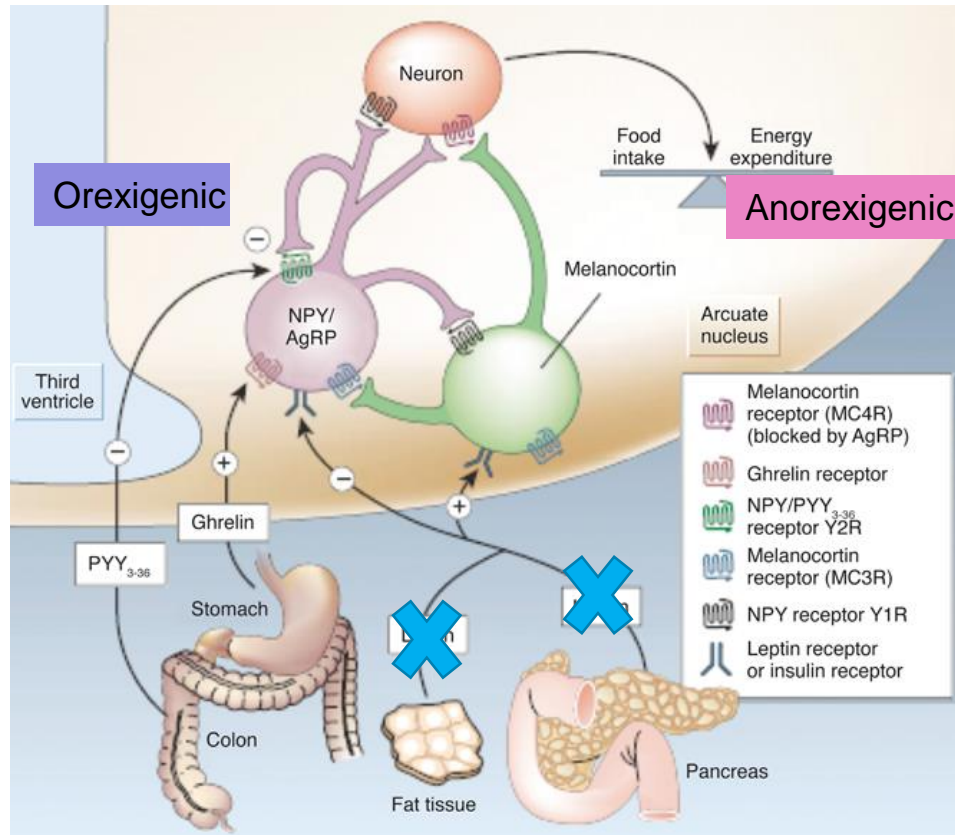


- Hypothalamus*
- SOCS3 induction
 - Reduced leptin actions
- Whole-body*
- Increased body weight and adiposity



Velossa LA. International Journal of Obesity.2011.35, 1455–1465e

Kaneko K, et al. J Clin Invest. 2019 Aug 12;129(9):3786-3791.



Lizarbe B, et al. Front Neuroenergetics. 2013 Jun 13;5:6. doi: 10.3389/fnene.2013.00006.





MANAGEMENT OF ADIPOSIITY & ADIPOSIITY-BASED CHRONIC DISEASES

PREVALENT OBESITY MANAGEMENT STRATEGY & INCORRECT FOCUS

BLAMING THE PATIENT AND PARENT


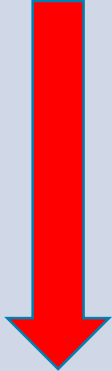
Focus on Weight loss – WRONG FOCUS

- **Increases Appetite**
- **Increases Irritability**
- **Increase Food Sneaking**



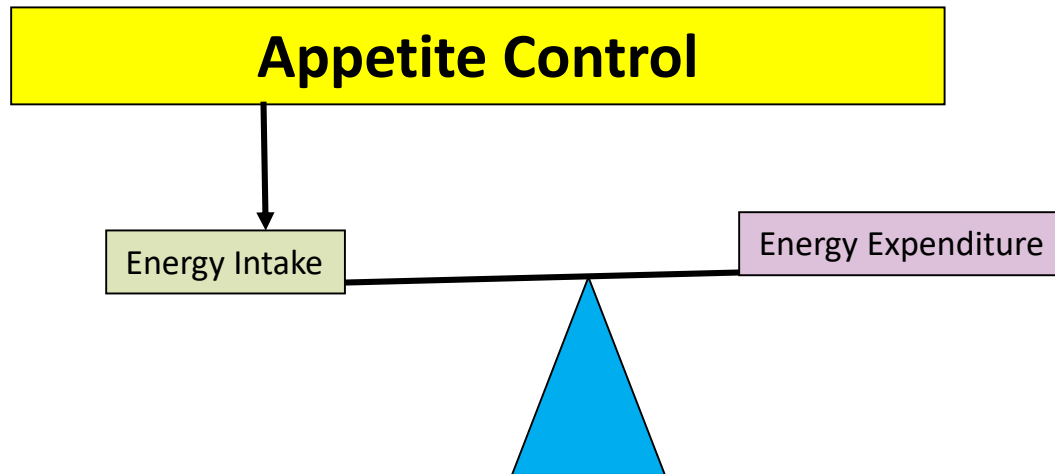
Changes in Hormones after Rapid Weight Loss



Hormone that make you hungry – GO UP	Hormones that Suppress Hunger – GO DOWN
Ghrelin 	<ul style="list-style-type: none">• Leptin – 65%• Peptide YY• CCK• Insulin• Amylin 



What should be the Focus of Treatment?



- **Develop tools to FEEL FULL/ HUNGER CONTROL**
- **Avoid dieting**

Holistic Care- Starting with Sleep Hygiene



Set Bed time : 9-10 pm, Stop Eating 2-3 hours Prior

- SMART eating rather than a diet
- Structured meal plan/Timed/ Time Restricted Eating

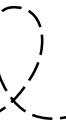
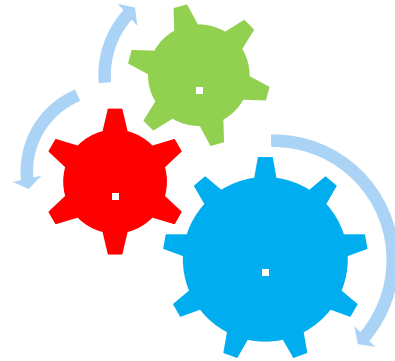




Rude truth about medical management

Modify behaviors= Very Challenging

- Too many moving Parts
- Weight loss of ~ 2-5%
- Psycho-social barriers





Weight Loss and Improvement in Comorbidity: Differences at 5%, 10%, 15%, and Over

Graded improvements with the extent of weight loss

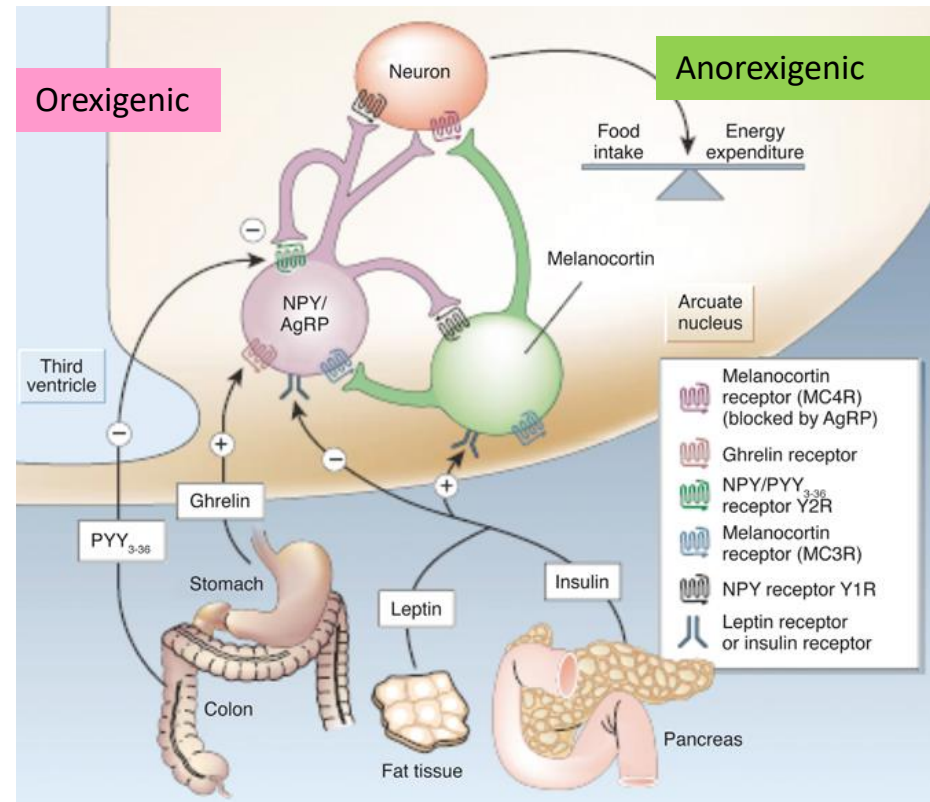
Percentage Weight Loss	Comorbidities Improved
2-5%	PCOS, infertility
5%	Diabetes Prevention
5-10%	-Systolic and Diastolic BP -HDL cholesterol -Reduction in health costs
10%	Improvement in mortality
10-15%	-Obstructive Sleep apnea -NAFLD



Medication Affecting Hunger



- Corticosteroids
- Anti-histamines
- Beta Blockers
- Neurological disorders :
 - Valproic acid, Gabapentin, Pregabalin (Lyrica), Vigabatrin (Sabril)
- Medications for MHD
 - TCA: Amitriptyline, Imipramine
 - Risperidone, Quetiapine (Seroquel)
 - SSRI : Paroxetine (Paxil)
 - Antipsychotics: Olanzapine (Zyprexa)



This is not an exhaustive list; it is included as an example of medications that may result in weight gain and possible alternatives.



Medications that affect hunger – Switch to Weight Neutral Alternative

Hypertension : Calcium Channel Blocker/ ACE- inhibitors

Anti-epilepsy Drugs:

- Weight loss :Topiramate (Topamax) , Zonisamide (Zonegram)
- Weight Neutral : Lamotrigine, Levetiracetam (Keppra), phenytoin

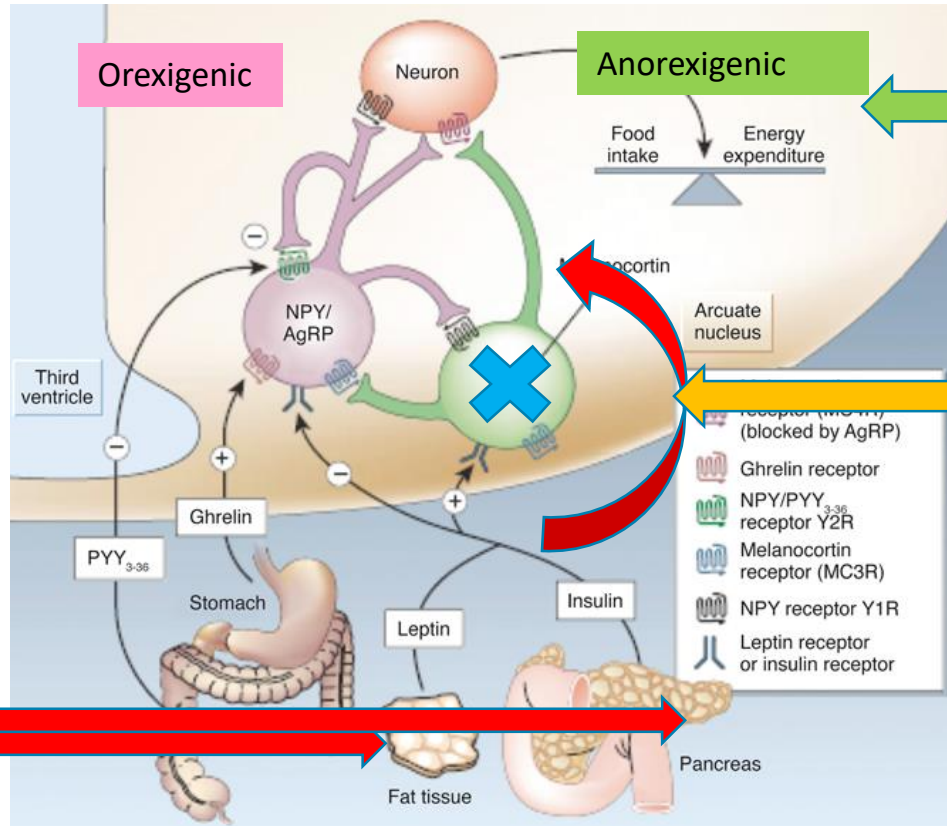
Medications for MH disorders

- Weight loss : Bupropion
- Weight neutral /Some gain: Fluoxetine, Citalopram (Celexa)
Escitalopram (Lexapro)

This is not an exhaustive list; it is included as an example of medications that may result in weight gain and possible alternatives.

HUNGER SUPPRESSION- GOAL

THE OBVIOUS CHOICE- IS MEDICATION TO CONTROL HUNGER!



Bupropion-
Naltrexone

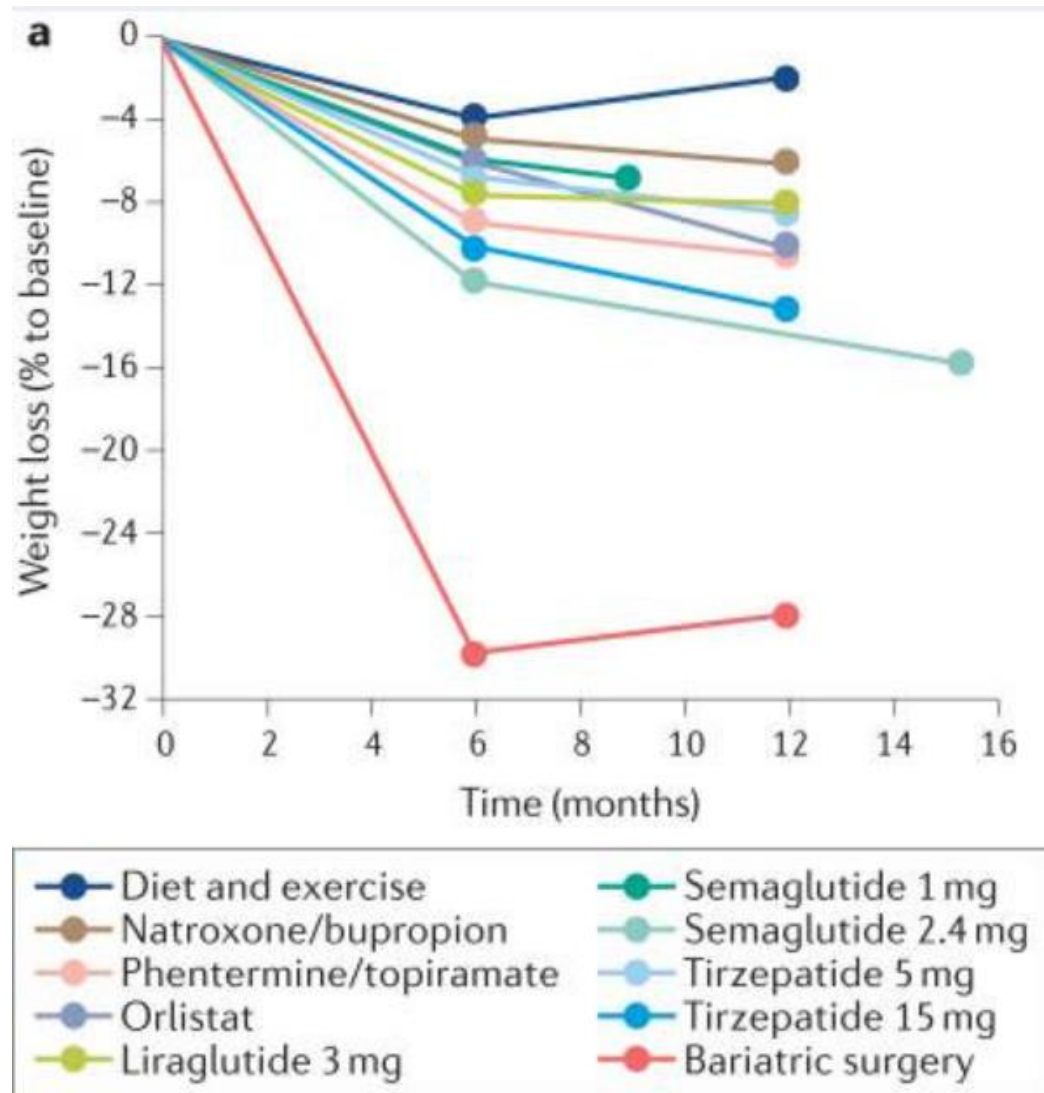
-Phentermine* +/-
Topiramate
(Qsymia)

Setmelanotide

GLP1-
Agonist

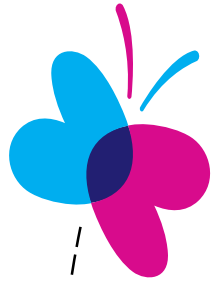
*Approved for
Short-term use only

EFFICACY – WEIGHT LOSS COMPARISON



Exciting Medications For Hunger Control

Qsymia	Saxenda/Victoza (Liraglutide)	Wegovy/Ozempic (Semaglutide)	Mounjaro (Tirzepatide)
<ul style="list-style-type: none"> • >12 years • 3-5% (8-10%) weight loss • Daily oral 	<ul style="list-style-type: none"> • >12 years (Saxenda) • >10 years (Victoza) • 5-10% weight loss • Daily 	<ul style="list-style-type: none"> • >12 years/18 years • 15% weight loss • Weekly 	<ul style="list-style-type: none"> • >18 years • GL-1P + GIP • 15-25% weight loss • Weekly



Medicines For Hunger Control

Effective **BUT mainly**
approved for Adults

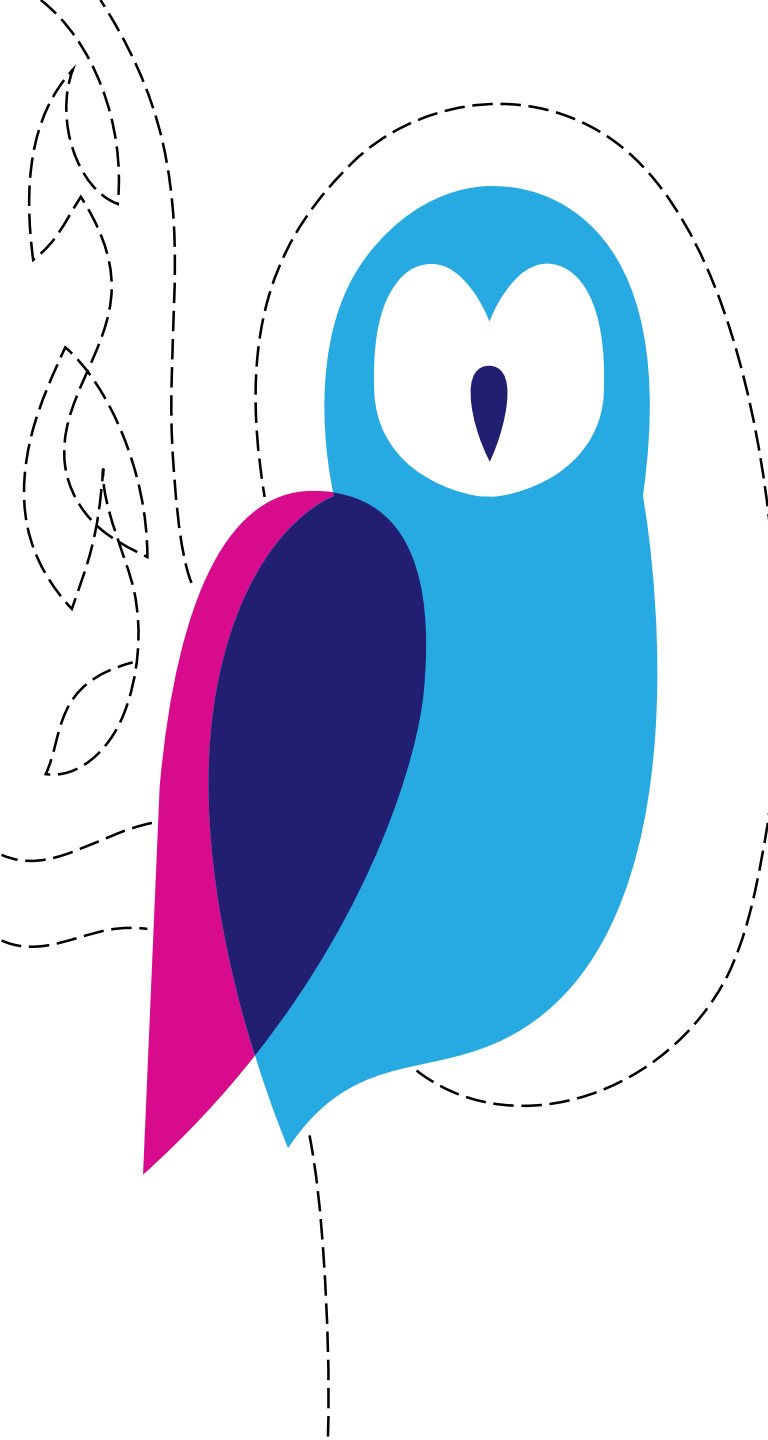
Pediatric Options- Limited

Insurance coverage????

**Metformin is NOT effective
for hunger control**

Bariatric Surgery





Thank you