

Achieving a Normal Weight: The Strategies and Pharmacotherapy That Will Help

Presenter: Rodney E. Colón Vázquez, PharmD, BCPS

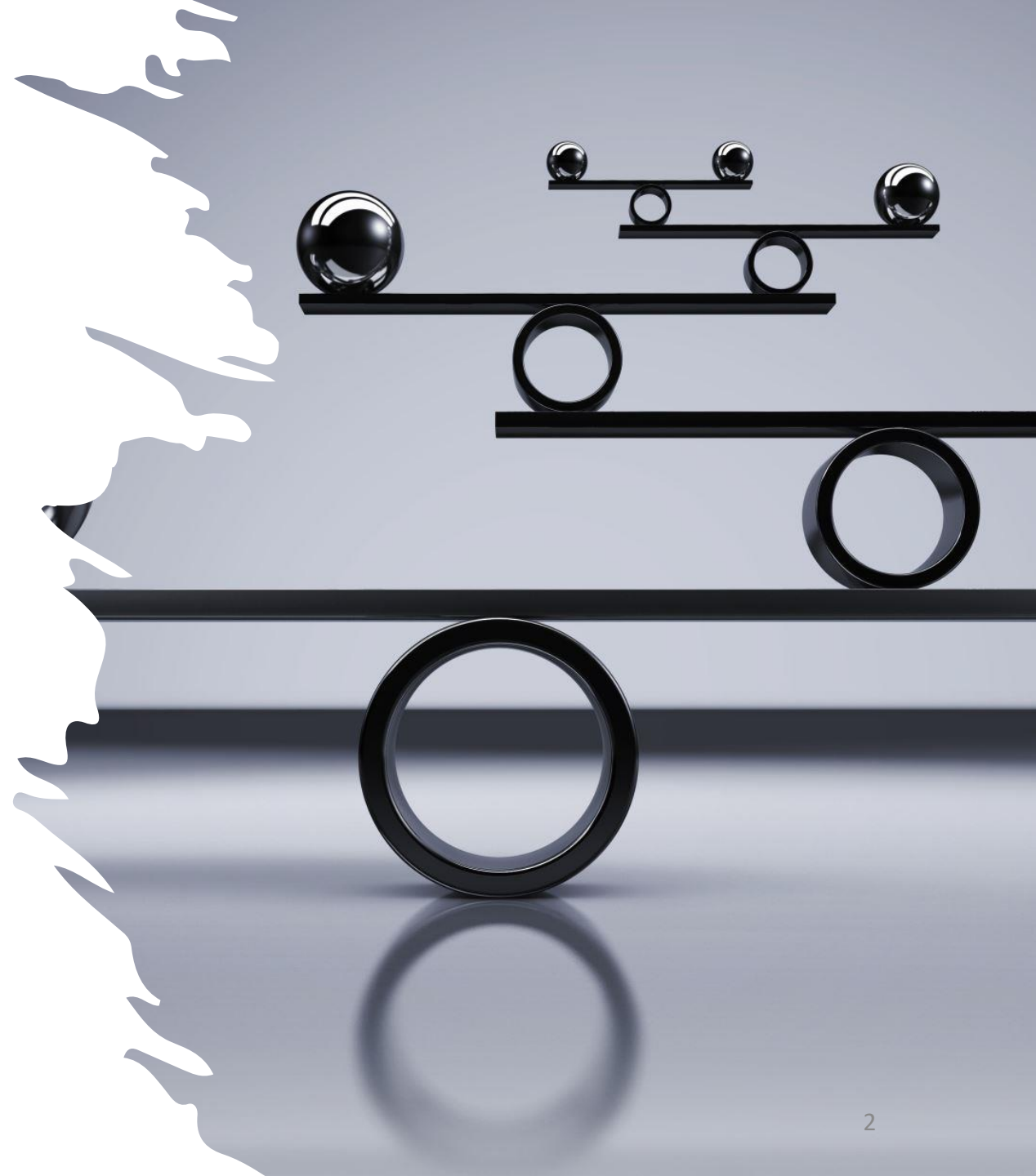
Locale: Sheraton Puerto Rico Hotel and Casino

Sponsor: Colegio de Farmacéutico de Puerto Rico



Objectives

- Identify the challenges and barriers associated with weight management
- Discuss the overweight and obesity epidemic, risk factors, and complications
- Compare and contrast pharmacotherapy for weight management based on mechanism of action, efficacy, and side effect profile
- Develop monitoring parameters for adverse effects that may constitute the discontinuation of therapy
- Describe non-pharmacological measures recommended for overweight and obese patients
- When presented with a patient case, select the most appropriate therapy based on patient-specific factors, side effect profiles, and patient goals





Financial Disclosure

- Dr. Rodney Colón Vázquez has no relevant financial relationship(s) with ineligible companies to disclose.



Assessment

1. How overweight and obesity are defined according to different bodies of scientific information (i.e., World Health Organization, Centers for Disease Control and Prevention)?
 - a) An excess accumulation of fat
 - b) Present a risk to health
 - c) Energy imbalance
 - d) Multifactorial (i.e., genetics, obesogens, obesogenic)

What is Obesity?

According to the World Health Organization (WHO)

- “Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health.”

According to the Center for Disease Control and Prevention (CDC)

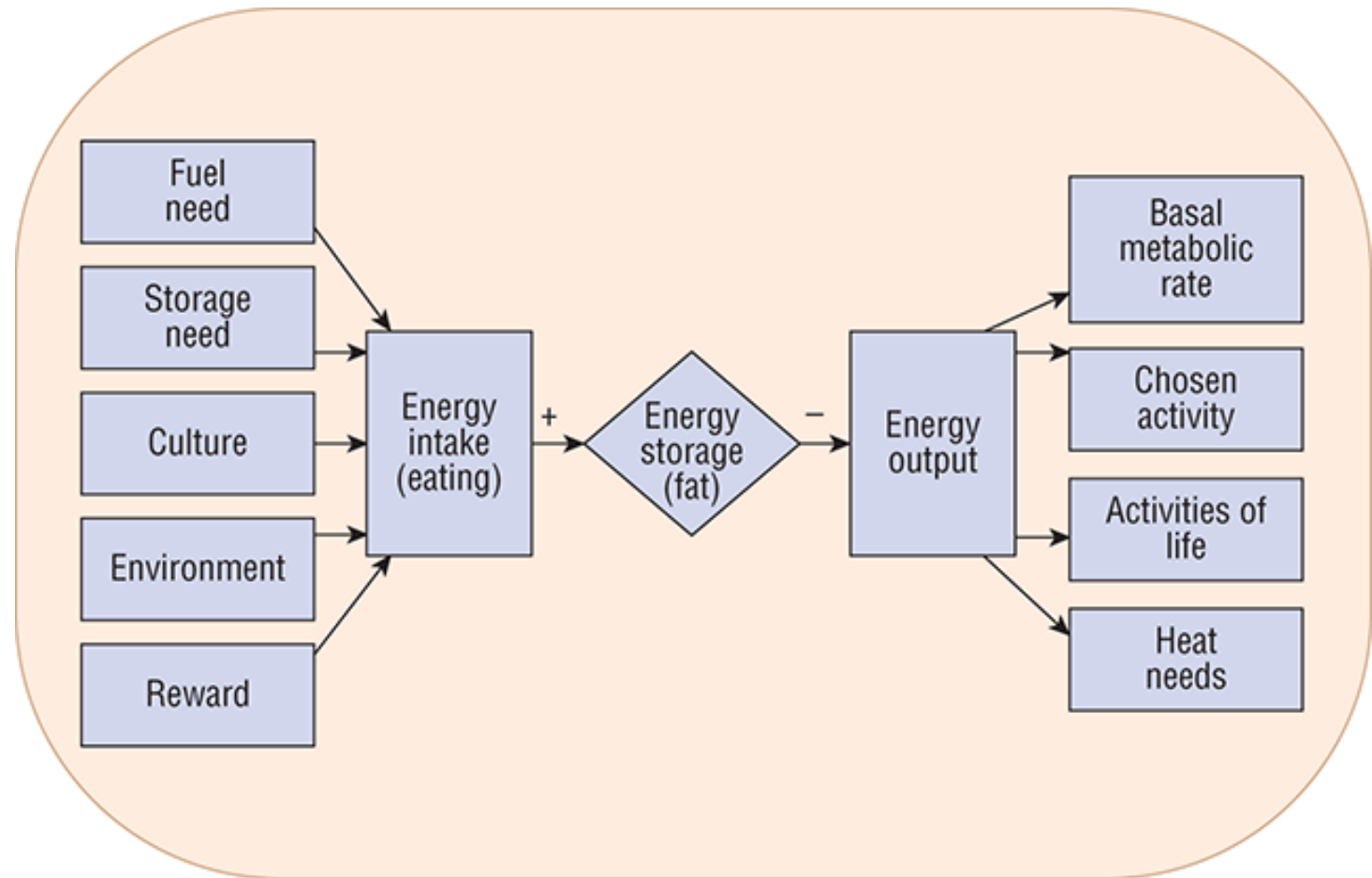
- “It is a weight that is higher than what is considered healthy for a given height is described as overweight or obesity.”

Pharmacotherapy: A Pathophysiologic Approach, 12 edition

- “Obesity occurs when there is increased energy storage resulting from an imbalance between **energy intake and energy expenditure** over time. The specific etiology for this imbalance, in the vast majority of individuals, **is multifactorial**, with genetic and environmental factors contributing to various degrees.”



The Process, The Homeostasis, The Life



Source: JT DiPiro, GC Yee, LM Posey, ST Haines, TD Nolin, VL Ellingrod.
Pharmacotherapy: A Pathophysiologic Approach. 11th Edition.
Copyright © McGraw-Hill Education. All rights reserved.

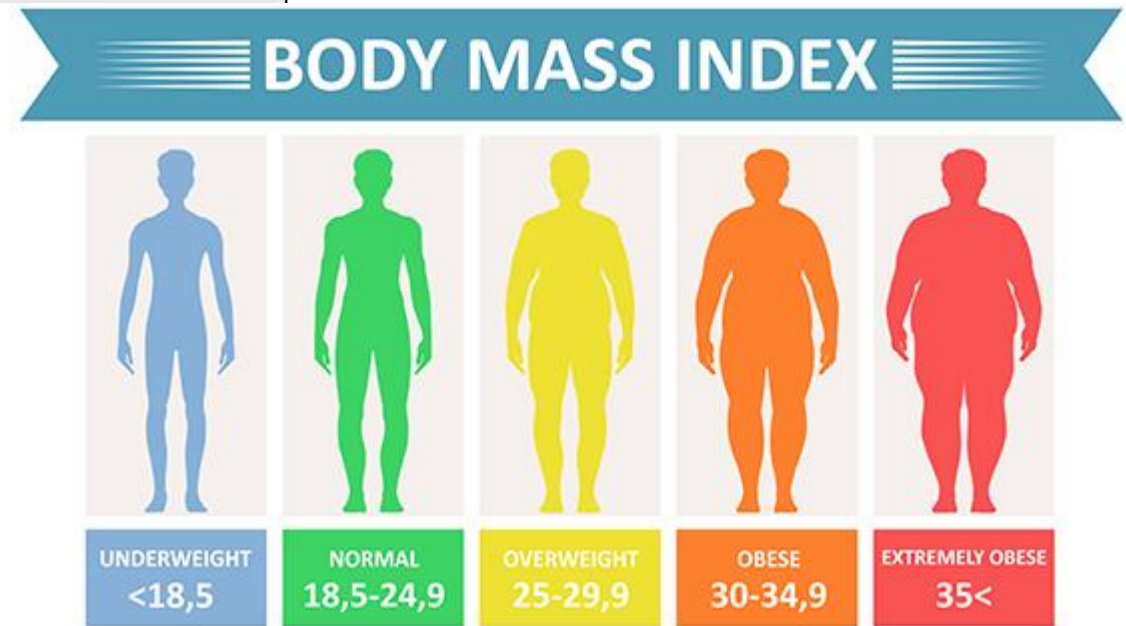
Overweight and Obese Classification

We use the “**Body Mass Index**” (BMI)

- $BMI = \text{weight (kg)} / (\text{height [cm]})^2$
- $BMI = 703 * \text{weight (lbs)} / \text{height (in)}^2$

Classifications (kg/m²)

- $BMI < 18.5 \rightarrow$ underweight
- $BMI \geq 18.5$ to $< 25 \rightarrow$ healthy weight
- $BMI \geq 25$ to $< 30 \rightarrow$ overweight
- $BMI \geq 30 \rightarrow$ Obesity range
 - Class1 \rightarrow BMI 30 to < 35
 - Class2 \rightarrow ≥ 35 to < 40
 - Class3 \rightarrow ≥ 40 (severe obesity)



To use the table, find the appropriate height in the left-hand column labeled Height. Move across to the appropriate weight (pounds). The number at the top of the column is the BMI at that height and weight. Pounds have been rounded off.

[Select the PDF version for better printing](#)

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Height (inches)	Body Weight (pounds)													
58	91	96	100	105	110	115	119	124	129	134	138	143	148	153
59	94	99	104	109	114	119	124	128	133	138	143	148	153	158
60	97	102	107	112	118	123	128	133	138	143	148	153	158	163
61	100	106	111	116	122	127	132	137	143	148	153	158	164	169
62	104	109	115	120	126	131	136	142	147	153	158	164	169	175
63	107	113	118	124	130	135	141	146	152	158	163	169	175	180
64	110	116	122	128	134	140	145	151	157	163	169	174	180	186
65	114	120	126	132	138	144	150	156	162	168	174	180	186	192
66	118	124	130	136	142	148	155	161	167	173	179	186	192	198
67	121	127	134	140	146	153	159	166	172	178	185	191	198	204
68	125	131	138	144	151	158	164	171	177	184	190	197	203	210
69	128	135	142	149	155	162	169	176	182	189	196	203	209	216
70	132	139	146	153	160	167	174	181	188	195	202	209	216	222
71	136	143	150	157	165	172	179	186	193	200	208	215	222	229
72	140	147	154	162	169	177	184	191	199	206	213	221	228	235
73	144	151	159	166	174	182	189	197	204	212	219	227	235	242
74	148	155	163	171	179	186	194	202	210	218	225	233	241	249
75	152	160	168	176	184	192	200	208	216	224	232	240	248	256
76	156	164	172	180	189	197	205	213	221	230	238	246	254	263

To use the table, find the appropriate height in the left-hand column labeled Height. Move across to the appropriate weight (pounds). The number at the top of the column is the BMI at that height and weight. Pounds have been rounded off.

[Select the PDF version for better printing](#)

BMI	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Height (inches)	Body Weight (pounds)														
58	172	177	181	186	191	196	201	205	210	215	220	224	229	234	239
59	178	183	188	193	198	203	208	212	217	222	227	232	237	242	247
60	184	189	194	199	204	209	215	220	225	230	235	240	245	250	255
61	190	195	201	206	211	217	222	227	232	238	243	248	254	259	264
62	196	202	207	213	218	224	229	235	240	246	251	256	262	267	273
63	203	208	214	220	225	231	237	242	248	254	259	265	270	278	282
64	209	215	221	227	232	238	244	250	256	262	267	273	279	285	291
65	216	222	228	234	240	246	252	258	264	270	276	282	288	294	300
66	223	229	235	241	247	253	260	266	272	278	284	291	297	303	309
67	230	236	242	249	255	261	268	274	280	287	293	299	306	312	319
68	236	243	249	256	262	269	276	282	289	295	302	308	315	322	328
69	243	250	257	263	270	277	284	291	297	304	311	318	324	331	338
70	250	257	264	271	278	285	292	299	306	313	320	327	334	341	348
71	257	265	272	279	286	293	301	308	315	322	329	338	343	351	358
72	265	272	279	287	294	302	309	316	324	331	338	346	353	361	368
73	272	280	288	295	302	310	318	325	333	340	348	355	363	371	378
74	280	287	295	303	311	319	326	334	342	350	358	365	373	381	389
75	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399
76	295	304	312	320	328	336	344	353	361	369	377	385	394	402	410

BMI TABLE FROM CDC WEBSITE (FYI)

Can We Use Another Tool?

Waist circumference (abdominal obesity and disease risk)

- Should be measured in all patients with an BMI $<35\text{kg/m}^2$
 - **“All populations”**
 - Men → $\geq 94\text{cm}$ (37 inches)
 - Women → $\geq 80\text{cm}$ (31.5 inches)
 - **US and Canada population**
 - Men → $\geq 102\text{cm}$ (40 inches)
 - Women → $\geq 88\text{cm}$ (35 inches)

Informed about the risk of the patient developing an obesity-related chronic condition (cardiometabolic)

Special Population

South Asian, Southeast Asian, and East Asian adults

- **BMI $\geq 23\text{kg/m}^2$** → confirm excess adiposity
- **Waist circumference** (abdominal adiposity and disease risk)
 - **Men** → $\geq 85\text{cm}$ (33.5 inches)
 - **Women** → $\geq 74\text{cm}$ (29 inches)

Informed about the risk of the patient developing an obesity-related chronic condition (cardiometabolic)

Special Population

South Asian, Southeast Asian, and East Asian adults

- **Asia-Pacific BMI**
 - **Underweight** → $<18.5\text{kg/m}^2$
 - **Normal** → $18.5\text{-}22.9\text{kg/m}^2$
 - **Overweight** → $23\text{-}24.5\text{kg/m}^2$
 - **Obese** → $\geq 25\text{kg/m}^2$



Table

Table 6. Classification of Overweight and Obesity by BMI and Waist Circumference (31 [EL 4; NE])

Classification	BMI		Waist	
	BMI (kg/m ²)	Comorbidity Risk	Waist Circumference and Comorbidity Risk	
			Men ≤40 in (102 cm) Women ≤35 in (88 cm)	Men >40 in (102 cm) Women >35 in (88 cm)
Underweight	<18.5	Low but other problems		
Normal weight	18.5–24.9	Average		
Overweight	25–29.9	Increased	Increased	High
Obese class I	30–34.9	Moderate	High	Very high
Obese class II	35–39.9	Severe	Very high	Very high
Obese class III	≥40	Very severe	Extremely high	Extremely high
Abbreviations: BMI = body mass index; in = inches.				

Other Tools?



Bioelectrical impedance (Z)

- Inexpensive, portable equipment, easy to use
- Current flow (i.e., fat, muscle)

Air displacement plethysmography

- Expensive (\$30,000 to \$40,000)
- Volume displacement (enclosed chamber)

Dual-energy x-ray absorptiometry

- Expensive
- X-rays

Dehghan M., Merchant AT. *Nutr, J.* 2008;7:26.
doi:10.1186/1475-2891-7-26

Fields, D.A. *The American Journal of Clinical Nutrition*
2002. 73(3), pp. 453–467. doi:10.1093/ajcn/75.3.453

Laskey, M.A. *Nutrition.* 1996. 12(1), pp. 45–51.
doi:10.1016/0899-9007(95)00017-8

Images (FYI)

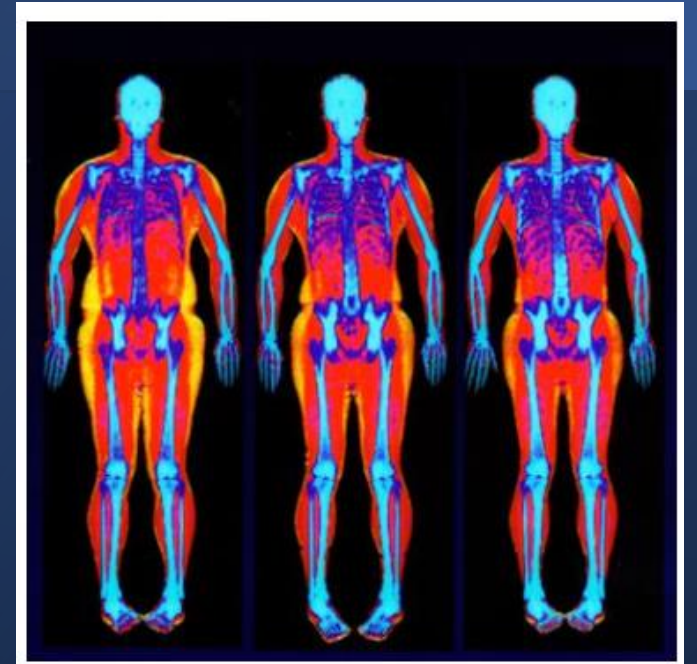
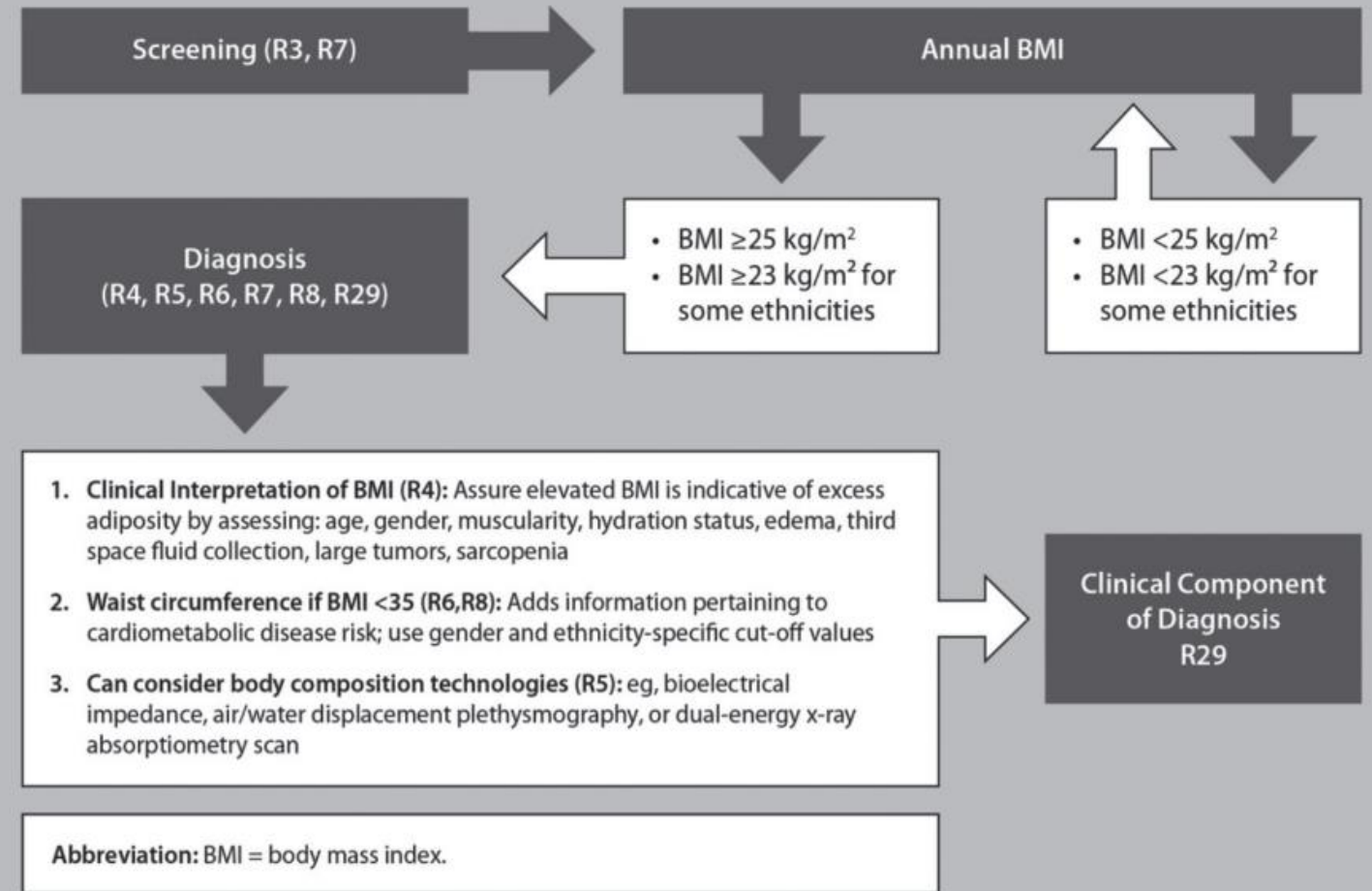


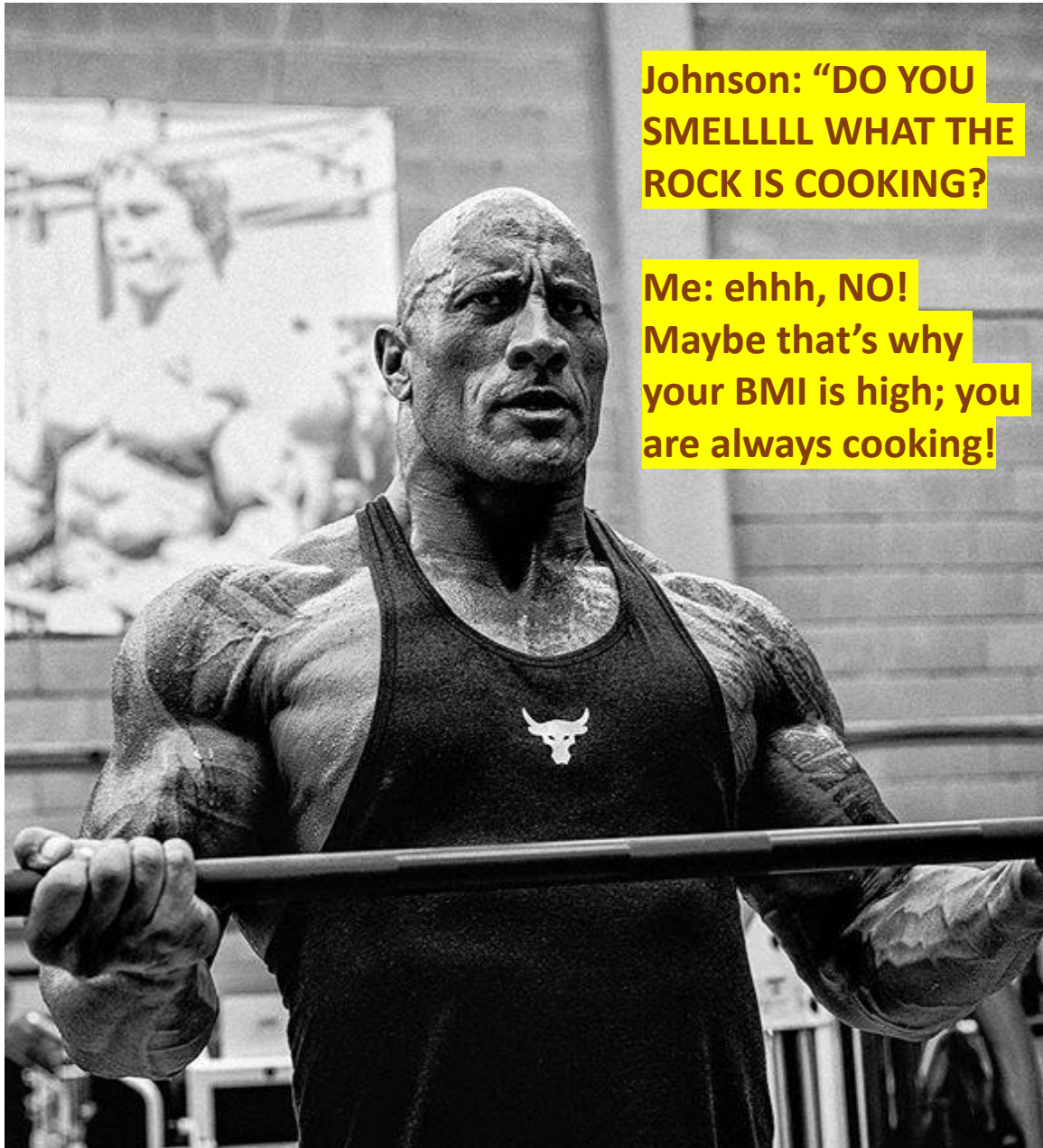


Figure 2. Anthropometric Component of the Medical Diagnosis of Obesity

Evidence-based screening and diagnosis for excess adiposity in clinical settings

Recommendations: Screening R3, R7; Diagnosis R4, R5, R6, R7, R8, R29

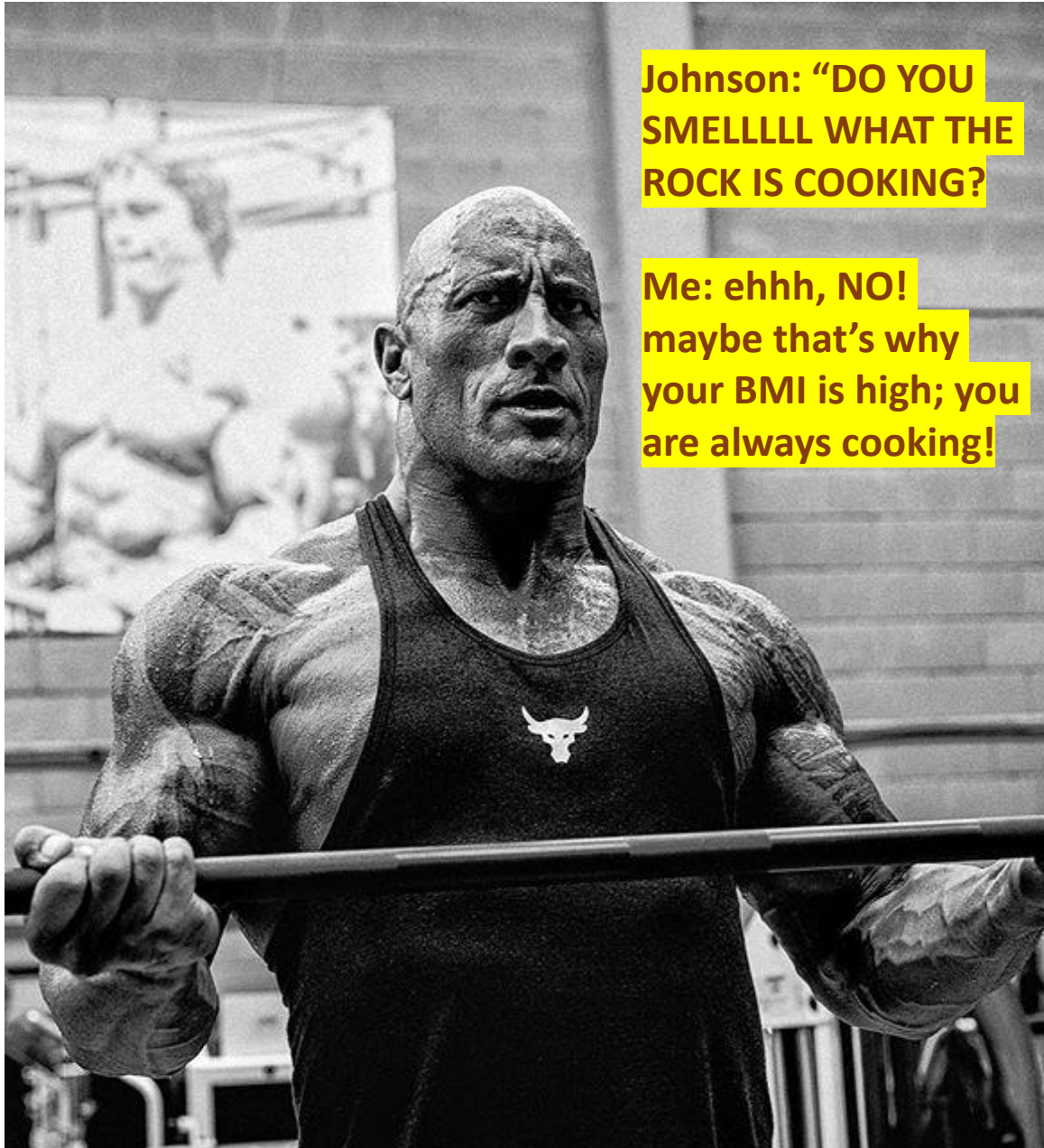




Assessment

2. Dwayne Johnson is a 51 years old man, weight 250lbs. His height is 77 inches. What is Johnson's BMI?

- a) 21.2kg/m²
- b) 29.6kg/m²
- c) 30.8kg/m²
- d) 34.1kg/m²



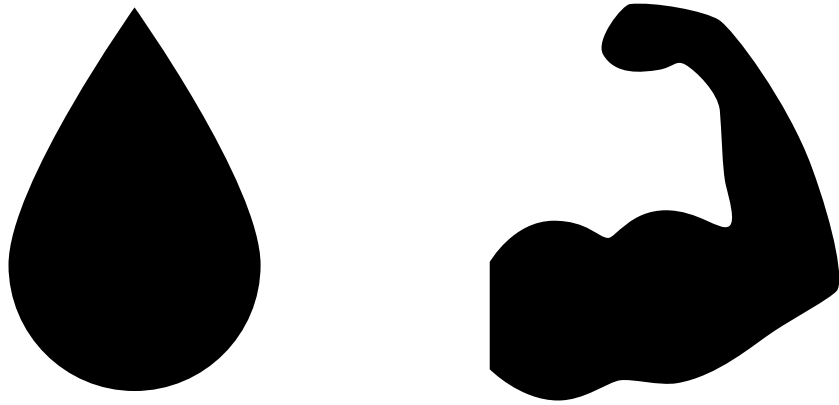
Assessment

3. According to Johnson's BMI, which classification is he on?

- a) Overweight
- b) Obesity class 1
- c) Obesity class 2
- d) Obesity class 3



BE CAREFUL WITH BMI RESULTS!

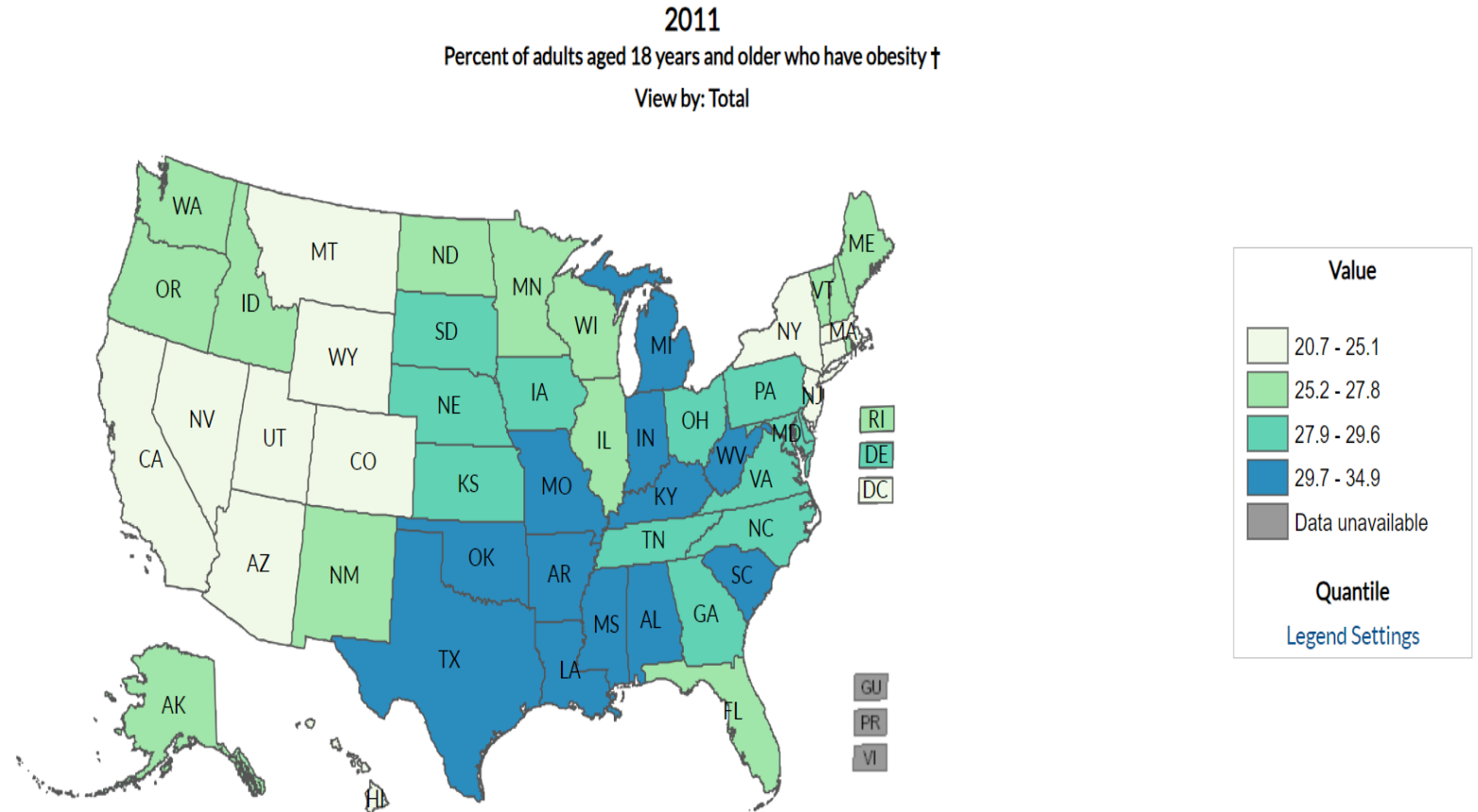


BMI

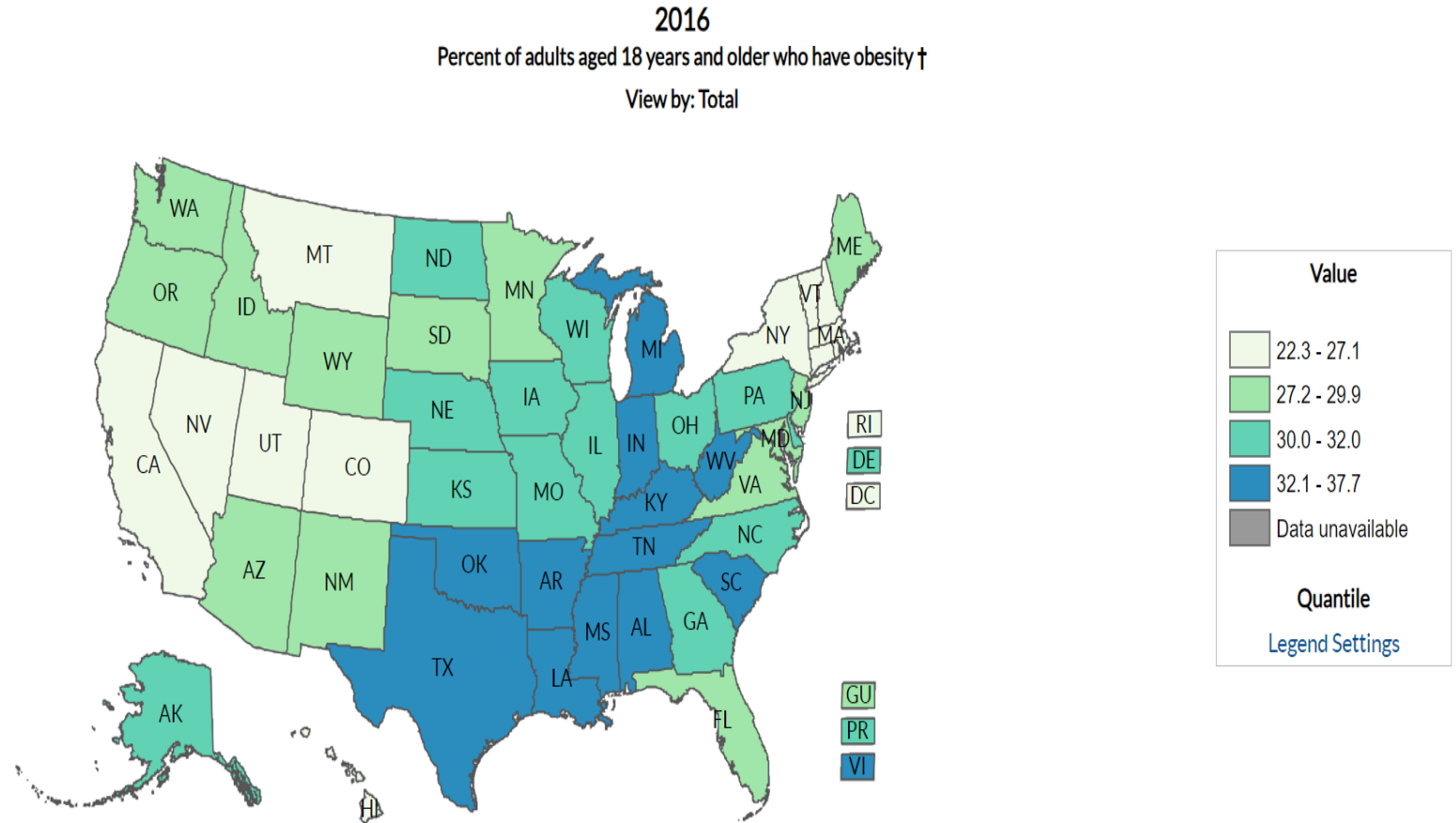
- Edema (**examples!**)
- Muscle wasting (elderly)
- Muscularity (like “The Rock”)
- Hydration (**scenarios!**)
- Tumors
- Short stature

Statistics

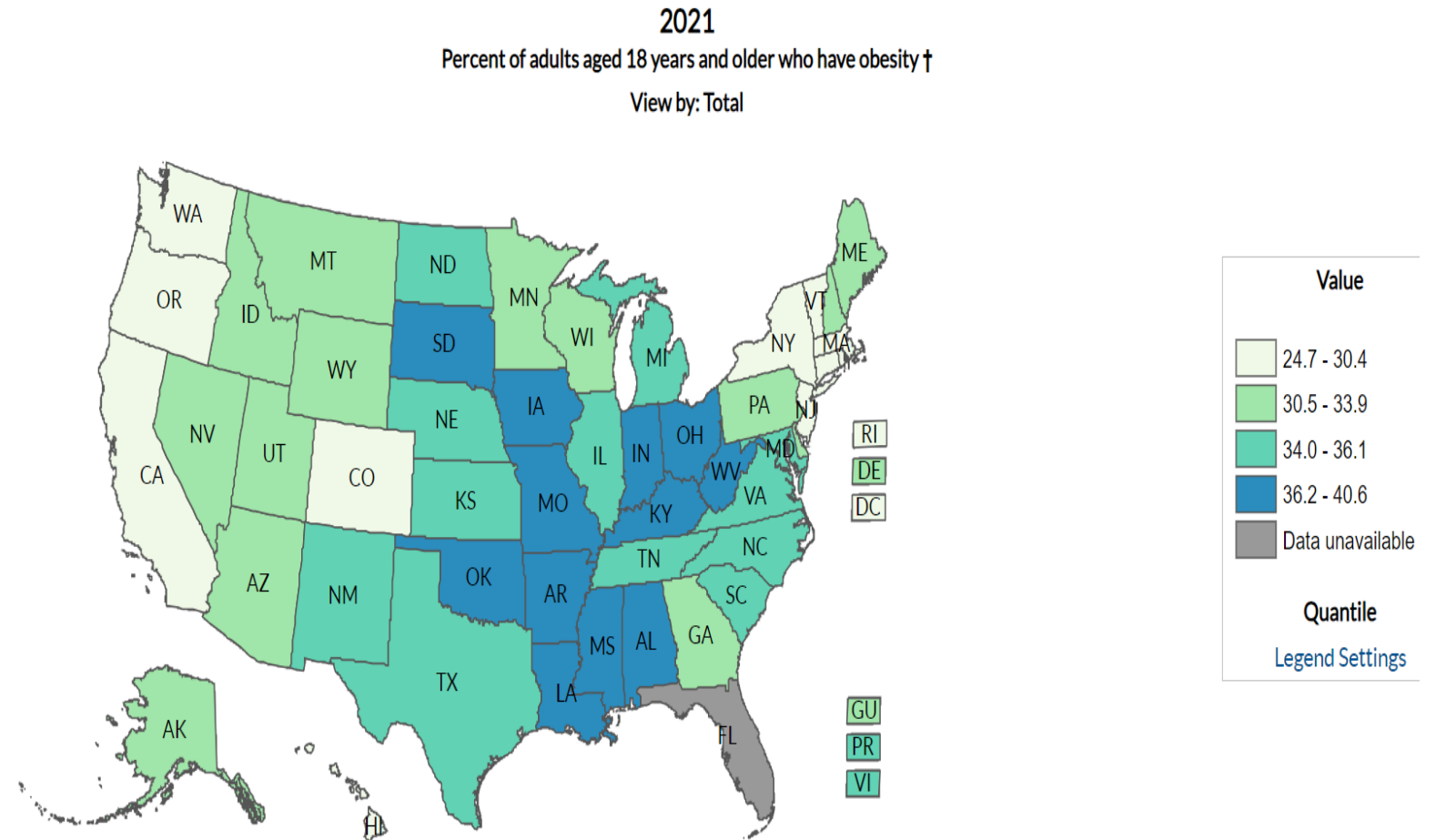
Map (Adults with Obesity)



Map (Adults with Obesity)



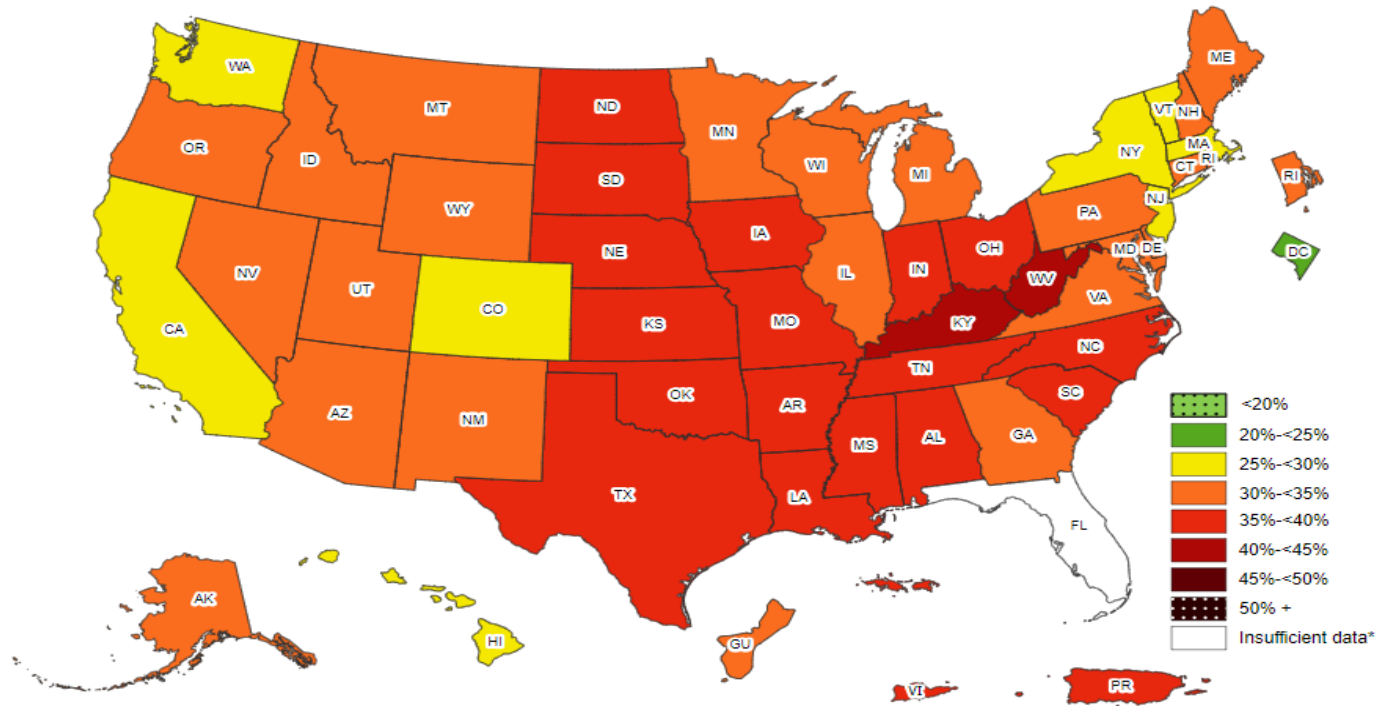
Map (Adults with Obesity)



Map

Prevalence[†] of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2021

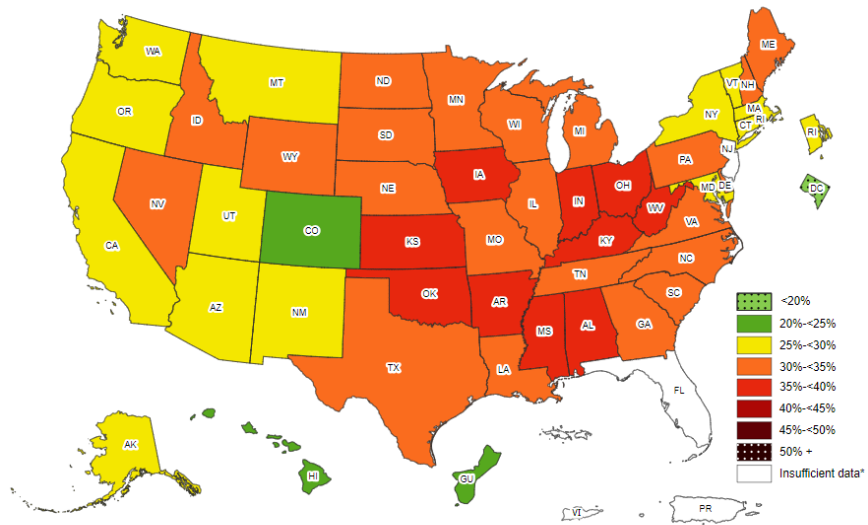
[†]Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.



Maps

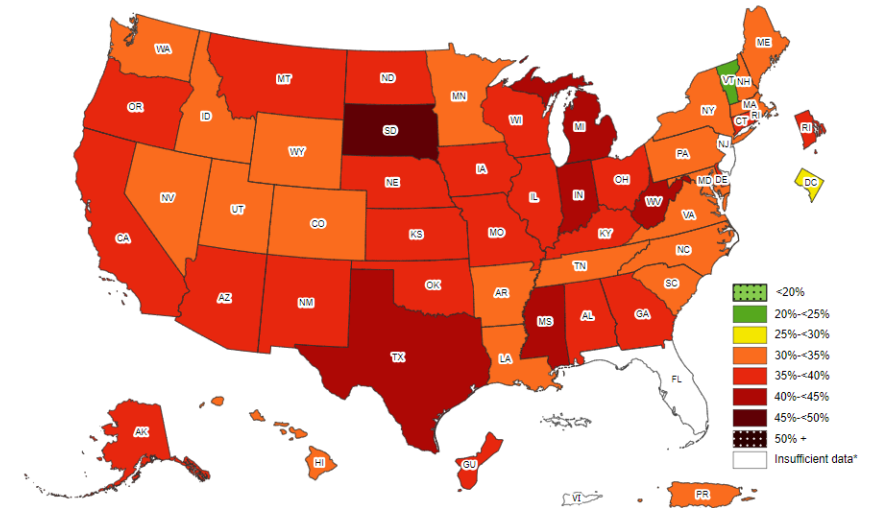
Non-Hispanic White Adults

Prevalence of Self-Reported Obesity Among Non-Hispanic White Adults by State and Territory, BRFSS, 2019–2021



Hispanic Adults

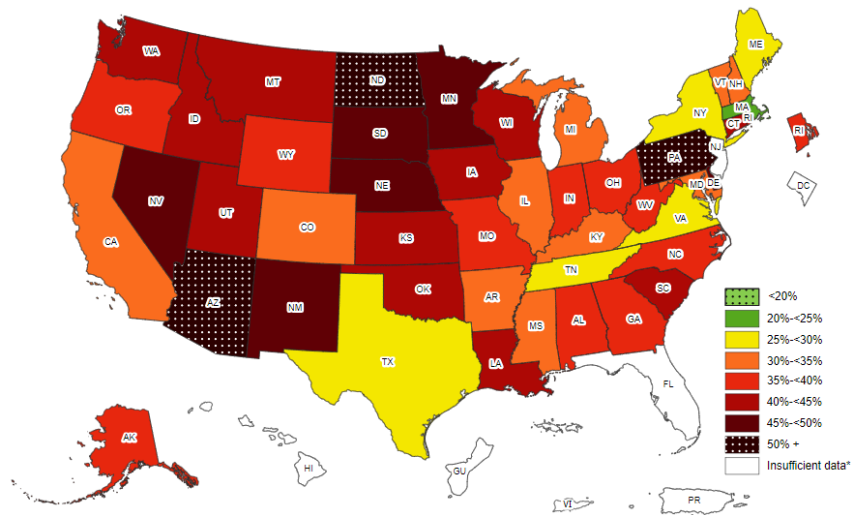
Prevalence of Self-Reported Obesity Among Hispanic Adults by State and Territory, BRFSS, 2019–2021



Maps

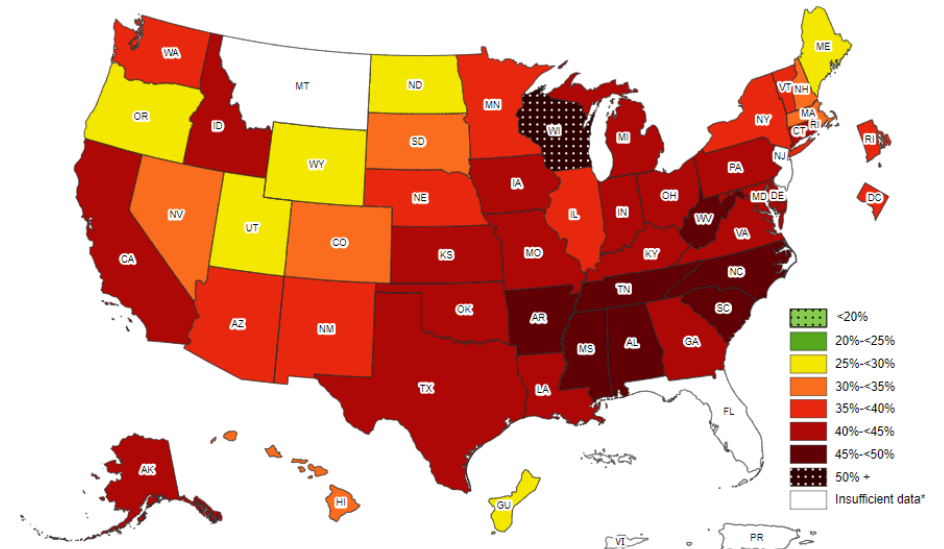
Non-Hispanic American Indian or Alaska Native Adults

Prevalence of Self-Reported Obesity Among Non-Hispanic American Indian or Alaska Native Adult by State and Territory, BRFSS, 2019–2021



Non-Hispanic Black Adults

Prevalence of Self-Reported Obesity Among Non-Hispanic Black Adults by State and Territory, BRFSS, 2019–2021



Facts

Obesity prevalence
decline with the level
of education

Young adults are **half
as likely** to have
obesity in comparison
to middle-aged adults

>20% of obesity(all
states and territories)

35%-40% of adults had
obesity (17 states,
Puerto Rico, and Virgin
Island)

South (36%) >
Midwest(35%) >
Northeast(29%) >
West(28%)

African American(49%)
> Hispanics(45%) >
Whites(41%) >
Asian(16%)

Overweight and Obesity Statistics (Facts)

World Health Organization

- Since 1975 obesity has tripled
- By 2016, 1.9 billion adults were overweight (650 million obese)
- 39% of adults were overweight, and 13% were obese

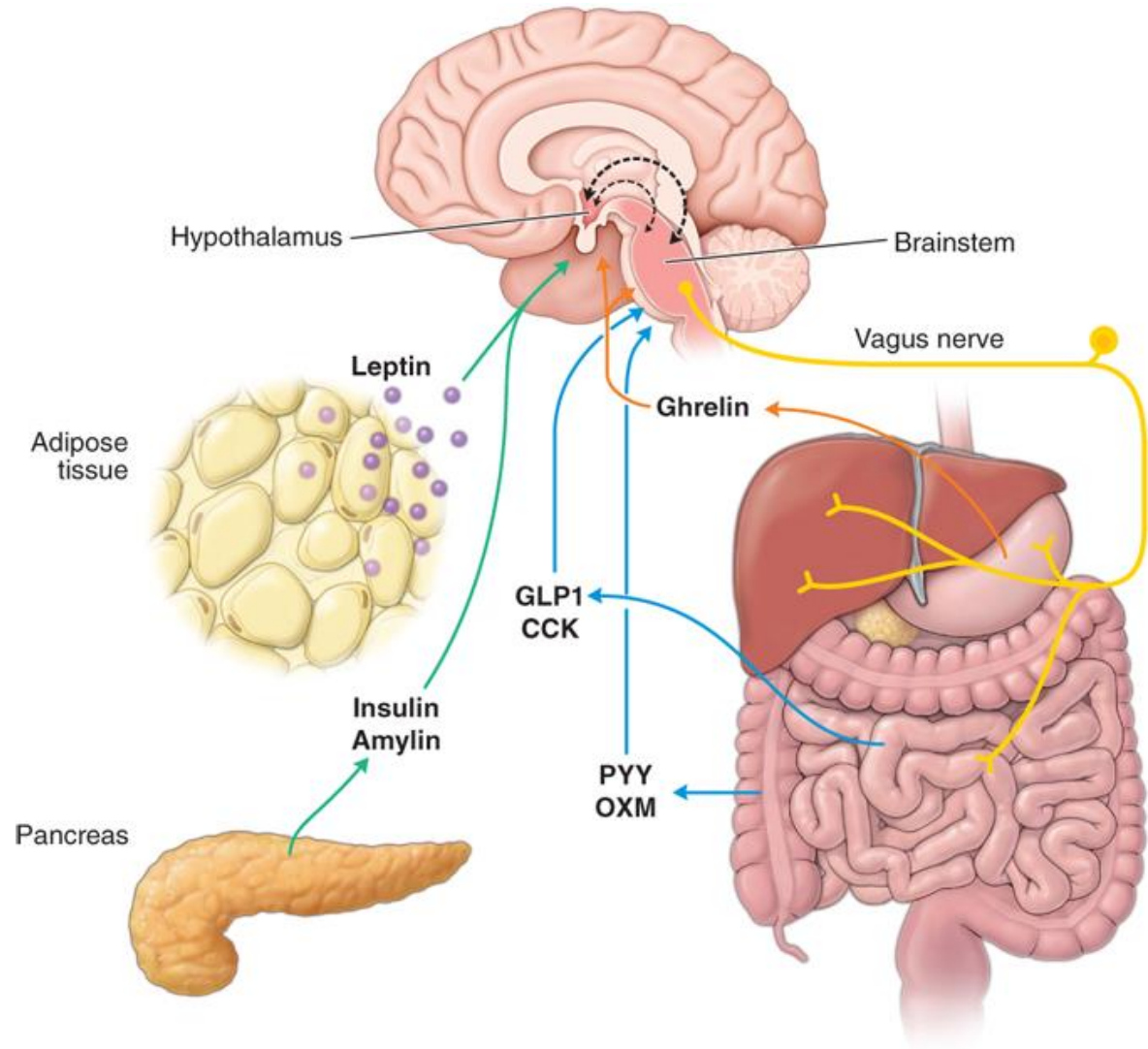
Center for Disease Control and Prevention

- Obesity prevalence was 41.9% in 2017 – March 2020
- From 1999-2000 through March 2020, there was an 11.4% increase in obesity prevalence; at the same time, morbidly obese increased from 4.7% - 9.2%
- Medical cost: **\$173 billion in 2019**; \$1,861 higher/per person without a healthy weight

An anatomical illustration showing the human digestive system on the left and a profile of a human head with the brain highlighted in pink and orange on the right. A large, curved orange arrow points from the digestive system towards the brain. The word "PATHOPHYSIOLOGY" is written in white capital letters across the center of the image.

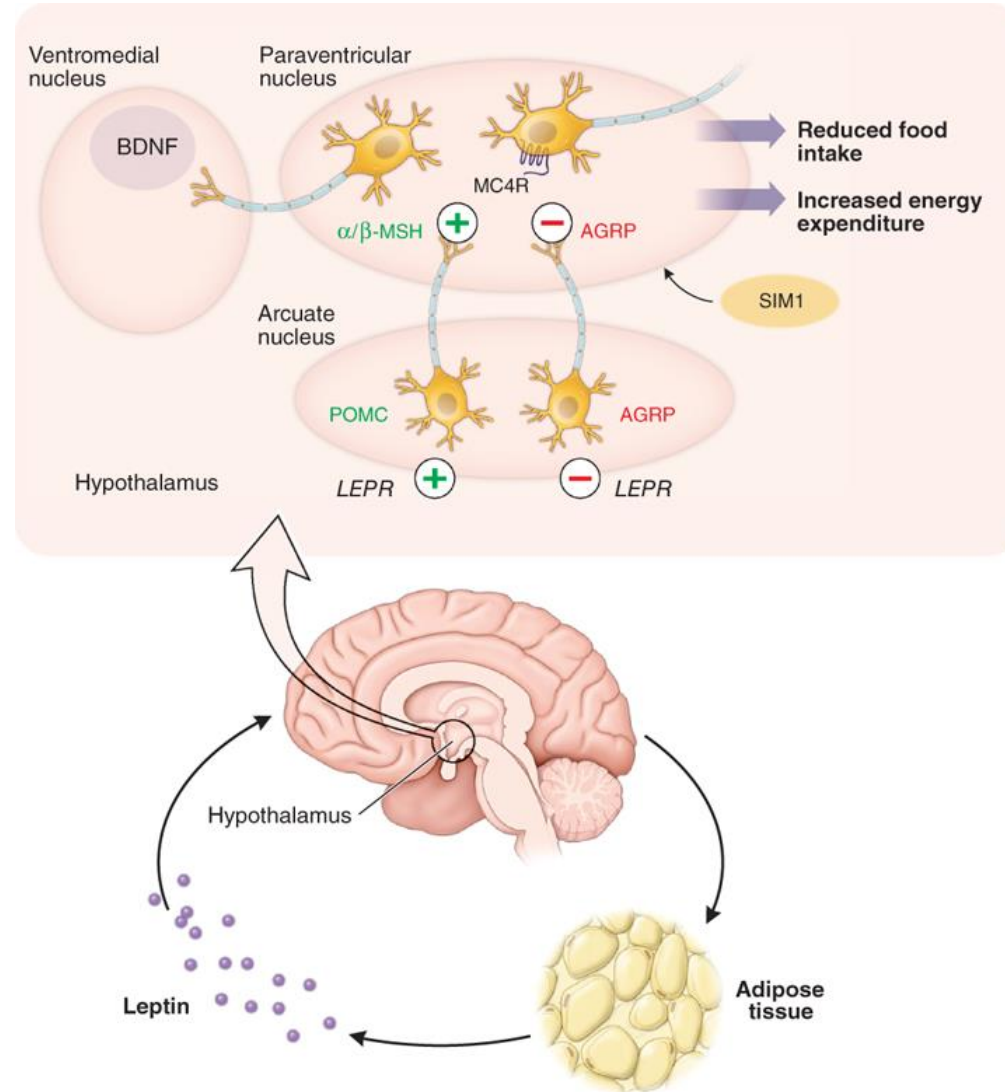
PATHOPHYSIOLOGY

Homeostasis: Body Weight Regulation



Source: Joseph Loscalzo, Anthony Fauci, Dennis Kasper, Stephen Hauser, Dan Longo, J. Larry Jameson: Harrison's Principles of Internal Medicine, 21e
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Homeostasis: Body Weight Regulation



Source: Joseph Loscalzo, Anthony Fauci, Dennis Kasper, Stephen Hauser, Dan Longo, J. Larry Jameson: Harrison's Principles of Internal Medicine, 21e Copyright © McGraw Hill. All rights reserved.

IDENTIFY THE RISK FACTORS THAT LEAD TO OVERWEIGHT, OBESITY, AND HEALTH- RELATED COMPLICATIONS



Risk Factors for Obesity



Unhealthy lifestyle

- Lack of physical activity
- Increase amount of stress
- Lack of sleep
- Poor eating habits

Risk Factors for Obesity (Lifestyle)

Lack of physical activity

- Sedentary lifestyle (TV, computer, video games)

Poor eating habits

- Increase in calories (depends on age, gender, and physical activity level), saturated and trans fats, and sugar

Poor sleep

- Sleep Vs. utilization of nutrients and hormone balance

Increase amounts of stress

- Cortisol level increase
- Acute stress (decrease hunger); Chronic stress (increase hunger)

Risk Factors for Obesity

Age

- Risk increases as you age; the critical point in young adulthood

Unhealthy environment

- **Social factors** → low socioeconomic status
- **Built environmental factors** → easy access to unhealthy food, decreased access to recreational facilities (**obesogenic**)
- **Chemicals** → **Obesogens** (disrupt hormone function and lead to obesity)

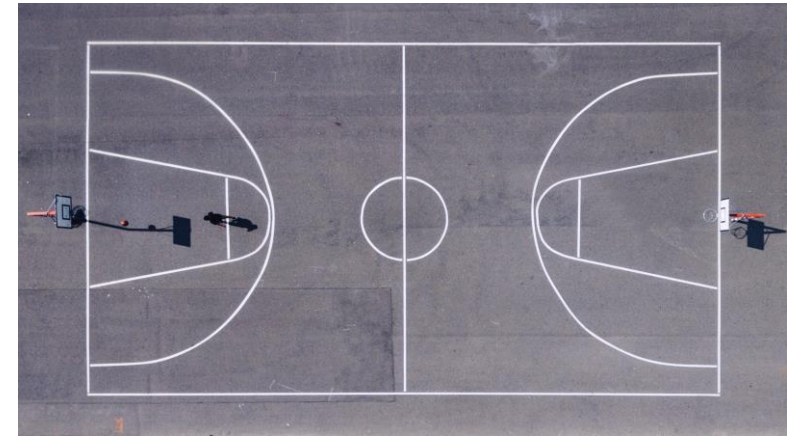
Family history and genetics

- Obesity can change your DNA 🤖

Race and ethnicity (Blacks > Hispanics > whites)

Gender (common in black or Hispanic women compared to men)

Obesogenic Environment

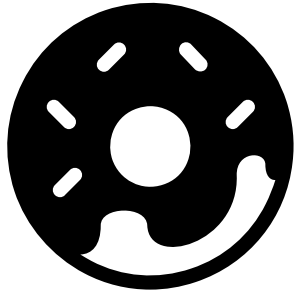


Causes of Obesity



Causes of Obesity

- Energy imbalance
- Medical conditions
- Medicines



Causes of Obesity Cont.

Energy imbalance → Fat storage

- In > Out (calories)
 - Hormonal process (glycogen and fat storage)
 - White fat, Brown fat, Beige fat

Medical conditions

- Genetic Syndromes → Cohen syndrome, Bardet-Biedl syndrome
- Endocrine → Hypothyroidism, Cushing's syndrome, tumors (insulinoma), leptin deficiency (satiety hormone)
- Conditions → depression, binge-eating disorder

Medications

- Antipsychotics, antidepressants, antiepileptics, antihyperglycemics



Medications that Cause Weight Gain

Antipsychotics (AIWG)

- **High** → clozapine and olanzapine
- **Moderate** → paliperidone, risperidone, quetiapine, chlorpromazine
- **Low** → lurasidone, ziprasidone, haloperidol, asenapine, amisulpride, aripiprazole

Dayabandara M et al. *Neuropsychiatr Treat.* 2017;13:2231-2241. doi:10.2147/NDT.S113099

Antidepressants

- **High** → amitriptyline, citalopram, mirtazapine, nortriptyline, trimipramine, paroxetine, phenelzine
- **Moderate** → duloxetine
- **Low** → bupropion, venlafaxine, imipramine, fluoxetine

Gill H et al. *Obesity (Silver Spring).* 2020;28(11):2064-2072. doi:10.1002/oby.22969

Antiepileptics

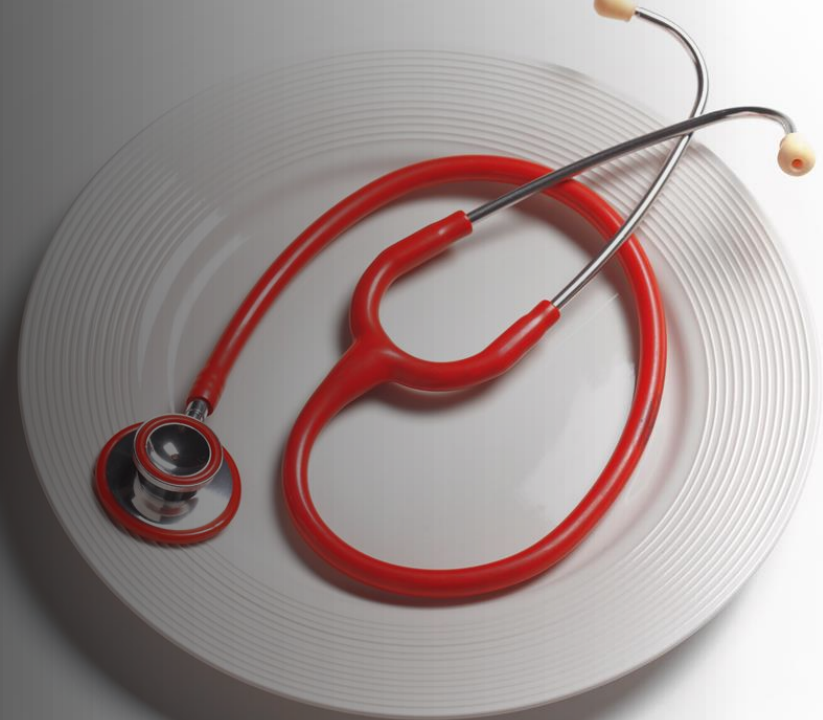
- valproate, gabapentin, perampanel, pregabalin, vigabatrin

Antel J, Hebebrand J. *Handb Exp Pharmacol.* 2012;(209):433-466. doi:10.1007/978-3-642-24716-3_20

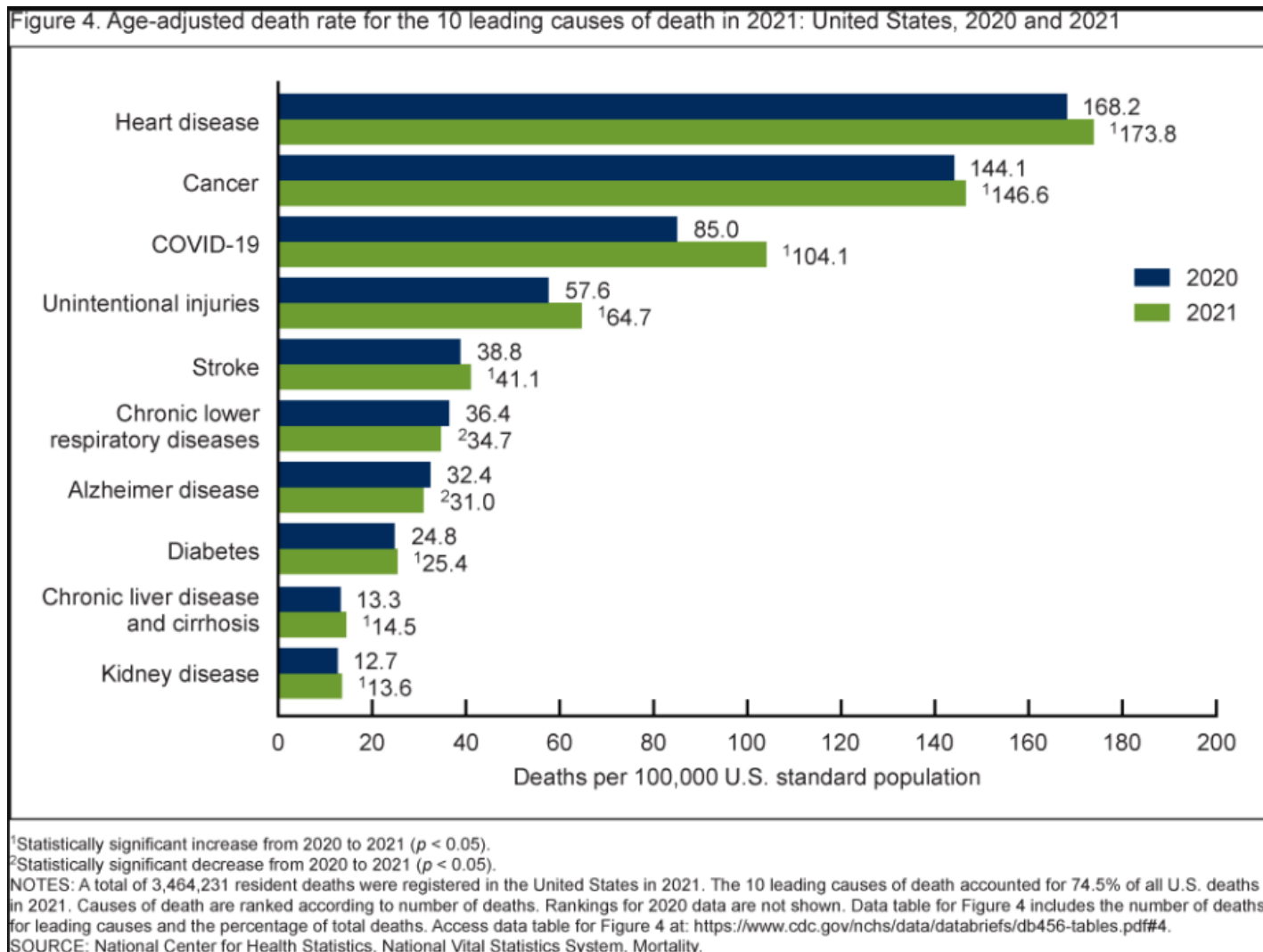
Antihyperglycemics

- Sulfonylureas, meglitinide, thiazolidinedione, insulin

HEALTH COMPLICATIONS ASSOCIATED WITH OVERWEIGHT/OBESITY



Mortality in the United States (2021)



Complications Related to Overweight and Obesity

Pre-diabetes/
Type 2 diabetes

High blood
pressure
(Hypertension)

Heart disease
(MI, angina, HF)

Stroke (**HTN is
the leading
cause of stroke**)

Sleep apnea

Metabolic
syndrome (3/5)

Fatty liver
disease

Osteoarthritis

Kidney disease

Cancer

Gallbladder
disease

Pregnancy
problems



Figure 3. Clinical Component of the Medical Diagnosis of Obesity

Candidates for weight-loss therapy can present with either excess adiposity (ie, the anthropometric component) or weight-related complications (ie, the clinical component)

Patients Present With Overweight or Obesity	Candidates for Weight-Loss Therapy	Patients Present With Weight-Related Disease or Complications
<p>Patients with BMI ≥ 25 kg/m² or ≥ 23 kg/m² in certain ethnicities and excess adiposity</p>	Evaluate for weight-related complications: R9–R29	<p>R9, R10 Prediabetes</p> <p>R9, R10 Metabolic syndrome</p> <p>R11 Type 2 diabetes</p> <p>R12 Dyslipidemia</p> <p>R13 Hypertension</p> <p>R14, R15 Cardiovascular disease</p> <p>R16 Nonalcoholic fatty liver disease</p> <p>R17 Polycystic ovary syndrome</p> <p>R18 Female infertility</p> <p>R19, R20 Male hypogonadism</p> <p>R21 Obstructive sleep apnea</p> <p>R22 Asthma/reactive airway disease</p> <p>R23 Osteoarthritis</p> <p>R24 Urinary stress incontinence</p> <p>R25, R26 Gastroesophageal reflux disease</p> <p>R28 Depression</p>
	Evaluate for overweight or obesity: R9–R29	

NON- PHARMACOLOGIC AND PHARMACOLOGIC TREATMENT

COMMON TREATMENTS FOR OBESITY

LIFESTYLE CHANGES

This typically includes weight-loss efforts designed to help people consume fewer calories and increase physical activity, sometimes directed by your doc.



PRESCRIBED NUTRITION

This is a step beyond lifestyle changes and entails a doctor-directed diet tailored to your body, including vegan eating, intermittent fasting, and others.



PHARMACOTHERAPY

When your BMI is 27 or more, you may qualify for an appetite-suppressing medication that can help you with your prescribed nutrition and exercise program.



SURGERY

Bariatric surgery is the most effective treatment for obesity, but it also carries the most risk. It's typically used in those whose BMI is 40 or higher.



First, What is The Goal With The Treatment for Obesity?



5-10% decrease from baseline weight over 6 months



The goal with the treatment of obesity is to **improve the health of patients by preventing or treating weight-related complications using weight loss and improved patients' quality of life**



Decrease morbidity, increase life expectancy, cosmetic purpose

THREE PHASE PARADIGM OF CHRONIC DISEASE PREVENTION AND TREATMENT

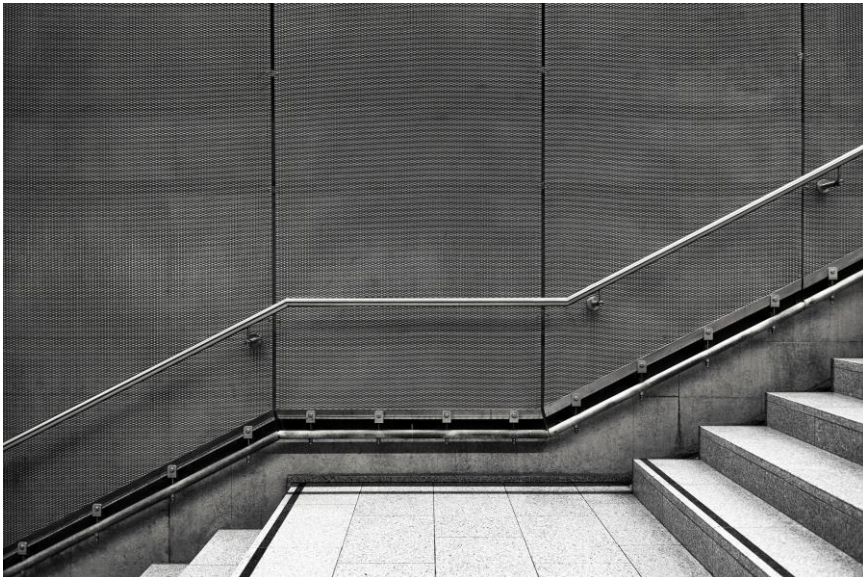


Table 5. Definitions, Goals, and Methods for Phases of Prevention in Chronic Disease: General Practices in Chronic Disease and Specific Practices in Obesity		
Phase of Intervention	Definition and Goals	Methods of Prevention
1	Primary Prevention GENERAL: <ul style="list-style-type: none"> Prevent a disease from occurring 	GENERAL: <ul style="list-style-type: none"> Eliminate risk factors, remove causes, or increase resistance to disease
	OBESITY: <ul style="list-style-type: none"> Prevent the development of overweight and obesity 	OBESITY: <ul style="list-style-type: none"> Educate the public Built environment Promote healthy eating and regular physical activity
2	Secondary Prevention GENERAL: <ul style="list-style-type: none"> Halt the progression of disease from its early stage prior to complications to a more severe stage Arrest the disease process to prevent complications or sequelae 	GENERAL: <ul style="list-style-type: none"> Use a screening test and follow-up diagnosis, followed by treatment
	OBESITY: <ul style="list-style-type: none"> Prevent future weight gain and the development of weight-related complications in patients with overweight or obesity 	OBESITY: <ul style="list-style-type: none"> Screen using BMI Diagnose using BMI and evaluation for complications Treat with lifestyle/behavioral intervention ± weight-loss medications
3	Tertiary Prevention GENERAL: <ul style="list-style-type: none"> Use clinical activities that reduce complications and prevent further deterioration 	GENERAL: <ul style="list-style-type: none"> Use treatment strategies that limit adverse consequences of a disease on health
	OBESITY: <ul style="list-style-type: none"> Treat with weight-loss therapy to eliminate or ameliorate weight-related complications and prevent disease progression 	OBESITY: <ul style="list-style-type: none"> Treat with lifestyle/behavioral intervention plus weight-loss medications Consider bariatric surgery
Abbreviation: BMI = body mass index.		

Weight Loss Goal

Initial weight loss for adults

- **5-10%** of the baseline weight over a 6-month period

Disease improvement (T2DM, HTN)

- **5-15%** of the baseline weight over a 6-month period

Steatohepatitis

- **10-40%** → reduce inflammation and fibrosis of the liver



Table

	DIAGNOSIS		TREATMENT GOALS			
	Anthropometric Component	Clinical Component	Intervention/ Weight-Loss Goal	Clinical Goals	Qs & Rs	
PRIMARY PREVENTION						
Primordial Prevention	BMI ≤ 25 (≤ 23 in certain ethnicities)	Obesogenic environment	<ul style="list-style-type: none">Public educationBuilt environmentAccess to healthy foods	Decreased incidence of overweight/ obesity in populations	Q1,R2	
Primary Prevention	BMI ≤ 25 (≤ 23 in certain ethnicities)	High-risk individuals or subgroups based on individual or cultural behaviors, ethnicity, family history, biomarkers, or genetics	<ul style="list-style-type: none">Annual BMI screeningHealthy meal planIncreased physical activity	Decreased incidence of overweight/ obesity in high-risk individuals or identifiable subgroups	Q1,R2 Q2,R3	
SECONDARY PREVENTION						
Overweight	BMI 25–29.9	No clinically significant or detectable weight-related complications	<ul style="list-style-type: none">Prevent progressive weight gain orWeight loss	<ul style="list-style-type: none">Prevent progression to obesityPrevent the development of weight-related complications	Q1,R2 Q4,R29	
Obesity	BMI ≥ 30 (≥ 23 in certain ethnicities)	No clinically significant or detectable weight-related complications	<ul style="list-style-type: none">Weight loss orPrevent progressive weight gain	Prevent the development of weight-related complications	Q1,R2 Q4,R29	
TERTIARY PREVENTION						
Overweight or Obesity	BMI ≥ 25 (≥ 23 in certain ethnicities)	Metabolic syndrome	10%	Prevention of T2DM	Q3.1,R9,R10 Q5.1,R30,R31	
		Prediabetes	10%	Prevention of T2DM	Q3.1,R9,R10 Q5.1,R30,R31	
		T2DM	5% to $\geq 15\%$	<ul style="list-style-type: none">Reduction in A1CReduction in number and/or doses of glucose lowering medications	Q3.2,R11 Q5.2,R33,R34	
		Dyslipidemia	5% to $\geq 15\%$	<ul style="list-style-type: none">Lower triglyceridesHigher HDL-cLower non-HDL-c	Q3.3,R12 Q5.3,R37,R38	
		Hypertension	5% to $\geq 15\%$	<ul style="list-style-type: none">Lower systolic and diastolic BPReductions in number and/or doses of antihypertensive medications	Q3.4,R13 Q5.4,R39,R40	
		Nonalcoholic fatty liver disease	Steatosis	5% or more	Reduction in intrahepatocellular lipid	Q3.6,R16 Q5.6,R45,R46
			Steatohepatitis	10% to 40%	Reduction in inflammation and fibrosis	Q3.6,R16 Q5.6,R45,R46
		Polycystic ovary syndrome	5% to 15% or more	<ul style="list-style-type: none">OvulationRegularization of mensesReduced hirsutismEnhanced insulin sensitivityReduced serum androgen levels	Q3.7,R17 Q5.7,R48,R49	
		Female infertility	10% or more	<ul style="list-style-type: none">OvulationPregnancy	Q3.8,R18 Q5.8,R51	
		Male hypogonadism	5% to 10% or more	Increase in serum testosterone	Q3.9,R19,R20 Q5.9,R52	
		Obstructive sleep apnea	7% to 11% or more	<ul style="list-style-type: none">Improved symptomatologyDecreased apnea-hypopnea index	Q3.10,R21 Q5.10,R55	
		Asthma/reactive airway disease	7% to 8% or more	<ul style="list-style-type: none">Improvement in forced expiratory volume at 1 secondImproved symptomatology	Q3.11,R22 Q5.11,R56	
		Osteoarthritis	<ul style="list-style-type: none">$\geq 10\%$5% to 10% or more when coupled with exercise	<ul style="list-style-type: none">Improvement in symptomatologyIncreased function	Q3.12,R23 Q5.12,R57, R58	
		Urinary stress incontinence	5% to 10% or more	Reduced frequency of incontinence episodes	Q3.13,R24 Q5.13,R59	
		Gastroesophageal reflux disease	10% or more	Reduced symptom frequency and severity	Q3.14,R25, Q15.5,R60	
		Depression	Uncertain	<ul style="list-style-type: none">Reduction in depression symptomatologyImprovement in depression scores	Q3.15,R28 Q5.15,R63	
Abbreviations: A1C = hemoglobin A1c; BMI = body mass index; BP = blood pressure; HDL-c = high-density lipoprotein cholesterol; T2DM = type 2 diabetes mellitus.						

**NON-PHARMACOLOGIC
APPROACH** (LIFESTYLE
AND/OR BEHAVIORAL
THERAPY FOR
OVERWEIGHT AND
OBESE PEOPLE)

WEIGHT LOSS & MANAGEMENT PROGRAMS

Importance of Weight Management

Beneficial for overall well-being

Lowers the risk of contracting
several diseases

Improves quality of life

Improves physical

appearance



Common Causes

- Poor Diet & Overeating
- Physical Inactivity
- Genetics
- Health Conditions



Lifestyle Tips

- Have a Positive Outlook
- Adopt a Healthier Diet
- Exercise Regularly



Weight Management Programs

Consists of*

- Exercising & Physical Activities
- Nutrition Counselling
- Behaviour Therapy



*These are standard activities. Participants will usually be assessed and a customized program will be created to cater to their needs.

Goal With Lifestyle and Behavioral Therapy

Goal

- Encourage a lifestyle therapy that consists of healthy foods, physical activity, and behavioral interventions should be the first step for weight loss



Non- Pharmacologic Approach

Reduced-
calorie meal
plan and
macronutrient
composition

Reduce total energy intake→ **main component of weight-loss**

- **500kcal/day deficiency**
 - Women→ 1200-1500kcal/day
 - Men→ 1500-1800kcal/day

Macronutrient composition→ increase adherence, improve eating patterns, weight loss, metabolic profile, and risk factor reductions

Physical
Activity
(should be
individualized)

First→ **aerobic exercise**

- Goal→ ≥150min/week of moderate exercise 3-5 times/week

Second→ **resistance training**

- For patients in a program for weight loss→ help with fat loss process (2-3 times/week)

TABLE

Figure 4. Lifestyle Therapy

Evidence-based lifestyle therapy for treatment of obesity should include 3 components
Recommendations: R64 through R75

Meal Plan (R64, R65, R66)	Physical Activity (R64, R67, R68, R69, R70, R71)	Behavior (R64, R72, R73, R74, R75)
<ul style="list-style-type: none"> Reduced-calorie healthy meal plan ~500–750 kcal daily deficit Individualize based on personal and cultural preferences Meal plans can include: Mediterranean, DASH, low-carb, low-fat, volumetric, high protein, vegetarian Meal replacements Very low-calorie diet is an option in selected patients and requires medical supervision <p>Team member or expertise: dietitian, health educator</p>	<ul style="list-style-type: none"> Voluntary aerobic physical activity progressing to >150 minutes/week performed on 3–5 separate days per week Resistance exercise: single-set repetitions involving major muscle groups, 2–3 times per week Reduce sedentary behavior Individualize program based on preferences and take into account physical limitations <p>Team member or expertise: exercise trainer, physical activity coach, physical/occupational therapist</p>	<p>An interventional package that includes any number of the following:</p> <ul style="list-style-type: none"> Self-monitoring (food intake, exercise, weight) Goal setting Education (face-to-face meetings, group sessions, remote technologies) Problem-solving strategies Stimulus control Behavioral contracting Stress reduction Psychological evaluation, counseling, and treatment when needed Cognitive restructuring Motivational interviewing Mobilization of social support structures <p>Team member or expertise: health educator, behaviorist, clinical psychologist, psychiatrist</p>

TABLE

Table 9. Association of Eating Patterns and Macronutrient Composition on Weight-Loss Efficacy		
Eating Pattern or Macronutrient Change	Effect	Reference [EL]
Low glycemic index/load	<ul style="list-style-type: none"> • ↑ Endothelial function • ↓ Glycemic variability • Effects on energy expenditure • Decreased adipocyte diameter • No incremental effect on weight loss¹ 	33 [EL 1; RCT], 34 [EL 1; RCT], 35 [EL 1; RCT, small N=13], 36 [EL 1; RCT]
Low carbohydrate	<ul style="list-style-type: none"> • Improved glycemic status and lipids • Improved other cardio-metabolic risk factors • Improved renal function • No incremental effect on weight loss (some studies show more short-term weight loss)² 	37 [EL 4; NE], 38 [EL 1; RCT], 39 [EL 1; RCT], 40 [EL 1; RCT], 41 [EL 1; RCT], 42 [EL 1; RCT], 43 [EL 2; NRCT], 44 [EL 1; RCT], 45 [EL 1; RCT], 46 [EL 1; RCT], 47 [EL 1; RCT]
High protein	<ul style="list-style-type: none"> • Longer benefit on WC, %fat • Improved cardio-metabolic risk factors • Decreased adipocyte diameter • Animal (not plant) proteins associated with markers of inflammation • Less relative loss of muscle mass • No incremental effect on weight loss 	33 [EL 1; RCT], 38 [EL 1; RCT], 45 [EL 1; RCT], 48 [EL 1; RCT], 49 [EL 1; RCT], 50 [EL 1; RCT], 51 [EL 1; RCT], 52 [EL 1; RCT], 53 [EL 1; RCT]
Moderate carbohydrate – moderate protein	<ul style="list-style-type: none"> • Improved body composition, lipid, pplNS • No incremental effect on weight loss 	37 [EL 4; NE], 54 [EL 1; RCT]
Low fat	<ul style="list-style-type: none"> • Beneficial effects on lipids • Benefits on lipids replacing with unsaturated fat • Improved renal function • No incremental effect on weight loss 	37 [EL 4; NE], 41 [EL 1; RCT], 47 [EL 1; RCT], 55 [EL 1; RCT], 56 [EL 1; RCT]
High fat	<ul style="list-style-type: none"> • With lactation: when hypocaloric, great weight loss compared with hypocaloric low-carbohydrate diet 	57 [EL 2; PCS]
Mediterranean-style	<ul style="list-style-type: none"> • Decreased risk certain cancers • EVOO supplementation – no effect on weight • Reduces cardio-metabolic risk factors and MetS • Reduces markers of inflammation • Improves hepatic steatosis and insulin sensitivity • Improves renal function • No incremental effect on weight loss 	40 [EL 1; RCT], 58 [EL 1; RCT, post-hoc analysis], 59 [EL 2; PCS, post-hoc analysis], 60 [EL 1; RCT, secondary analysis], 61 [EL 2; PCS], 62 [EL 1; RCT], 63 [EL 1; RCT], 64 [EL 2; PCS], 65 [EL 2; PCS], 66 [EL 1; RCT]
Abbreviations: EL = evidence level; EVOO = extra-virgin olive oil; MetS = metabolic syndrome; pplNS = postprandial insulin response; WC = waist circumference. ¹ Incremental effect in comparison to a isocaloric control diet does not occur or is inconsistent. ² Short-term is <1 year.		

Non-Pharmacology Approach Cont.

Behavioral interventions (at least 14 sessions in 6 months)

- Enhance adherence to (group or individual sessions)
 - Meal plan and physical activity

Multidisciplinary team

- Dietitians, nurses, educators, coaches/trainers, physicians, clinical psychologists, and clinical pharmacists





PHARMACOTHERAPY APPROACH

OTC/Dietary Supplements Products For Weight Loss

Ingredient	MOA	S.E Profile
Coffee (Caffeine)	↑ thermogenesis, ↑ lipid metabolism, ↓ appetite	↑BP, ↑HR, insomnia, anxiety
Green tea (EGCG, caffeine)	↑ calorie and fat metabolism	↑BP, ↑HR, insomnia, anxiety
Chitosan	Fat blocker (like orlistat)	Constipation, flatulence, D/N,
Chromium Picolinate	Reduce food cravings, hunger (affecting hunger receptor)	N/V, flatulence, hypoglycemia
Conjugated Linoleic Acid (CLA)	Promote lipolysis and apoptosis in adipose tissue	D/N, loose stools, HA, fatigue
Glucomannan	Promote satiety, slow carbs absorption (soluble fiber)	Abdominal pain, bloating, constipation, bronchial asthma
Ma huang (Ephedra)	Increase thermogenesis, decrease gastric emptying	↑BP, ↑HR, MI, QT prolongation
Bitter orange (synephrine and octopamine → adrenergic agonist)	Adrenergic agonist, thermogenic effect	↑BP, ↑HR, MI, QT prolongation, hyperglycemia, memory loss



Pharmacotherapy and Obesity

Important point

- Pharmacotherapy treatment **ALWAYS** will be used together with lifestyle modifications
- **lifestyle modifications + Pharmacotherapy = better results**
- Patients with weight-related complications will benefit the most from combination therapy
- Pharmacotherapy → patients with obesity and benefits outweigh the risk (chronic treatment); **short-term treatment (<3-6 months) does not produce longer-term health benefits (WHY?)**



What Should Be Taken
Into Consideration

Efficacy

Safety

Side effects

Warnings

Cautions

Weigh related complications

Medical Hx

Patients Eligible for Pharmacotherapy Treatment

Eligible patients (+ lifestyle modifications)

- **Overweight patients with a BMI of 27-29.9kg/m² with \geq one complication (T2DM, HTN, hyperlipidemia)**
- **An obese patient with BMI \geq 30kg/m² (no matter what chronic condition the patient has)**
- **Patients that meet BMI criteria and with a history of failed attempts to lose or maintain weight loss with lifestyle modification**



Short-Term Treatment (**Not recommended by current clinical guidelines, therefore have limited use**)

Medication	MOA	S.E Profile
Phentermine (Adipex-P) 15-30mg PO daily (C-IV) D/C MAOI at least 14 days before	Sympathomimetic amine with pharmacologic properties related to amphetamines (release of NE)	↑BP, ↑HR, MI, anxiety, insomnia, tremors, xerostomia
Diethylpropion 25mg PO TID before meals (C-IV) D/C MAOI at least 14 days before	Stimulates NE release from presynaptic storage granules	↑BP, ↑HR, anxiety, headache, alopecia, tremors
Amphetamines (II)	Activate central noradrenergic receptor system and dopaminergic pathways by stimulating the release of neurotransmitter	↑BP, ↑HR,

WHAT'S NEW?

RESEARCH SUMMARY

Tirzepatide Once Weekly for the Treatment of Obesity

Jastreboff AM et al. DOI: 10.1056/NEJMoa2206038

CLINICAL PROBLEM

Several clinical guidelines recommend pharmacotherapy for obesity. Tirzepatide — a dual glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 receptor agonist recently approved in the United States to treat type 2 diabetes — induced clinically relevant weight reduction in phase 2 studies of people with diabetes. However, its efficacy for weight reduction in those without diabetes is unknown.

CLINICAL TRIAL

Design: An international, phase 3, double-blind, randomized, placebo-controlled trial examined the efficacy and safety of tirzepatide in adults with obesity or overweight who did not have diabetes.

Intervention: 2539 adults with a body-mass index of 30 or higher, or 27 or higher with at least one weight-related complication, were assigned to once-weekly subcutaneous tirzepatide at one of three doses (5 mg, 10 mg, or 15 mg) or placebo, in addition to lifestyle intervention. Treatment included a dose-escalation phase and lasted for 72 weeks. The coprimary end points were the percentage change in weight from baseline to week 72 and weight reduction of at least 5% by week 72.

RESULTS

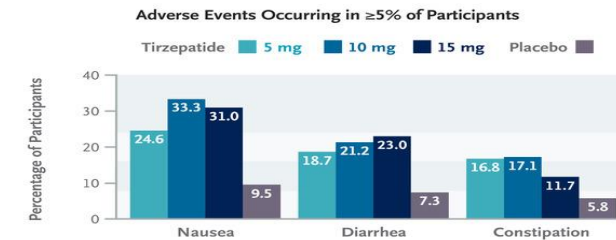
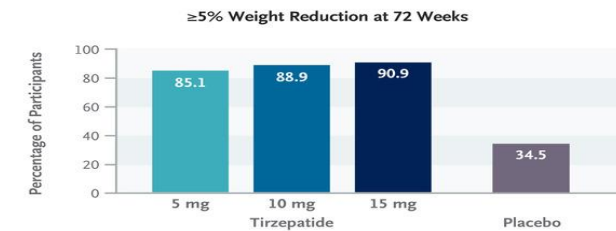
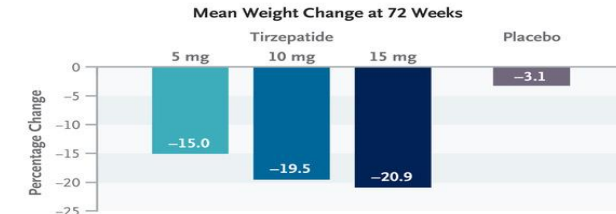
Efficacy: Both the percentage change in weight and the percentage of participants with at least 5% weight reduction were significantly greater with all three doses of tirzepatide than with placebo.

Safety: Gastrointestinal events, including nausea, diarrhea, and constipation, were the most common adverse events seen with tirzepatide; the majority of events were transient and mild to moderate in severity.

LIMITATIONS AND REMAINING QUESTIONS

- Enrolled participants may have been more committed to weight management than many people with obesity.
- Cardiometabolic variables (e.g., blood pressure and lipid levels) were relatively normal at baseline, so the ability to show a potential improvement within the time frame of this study was limited.
- The number of participants with overweight plus at least one weight-related complication was small (140 of the 2539 participants; 5.5%), which prevented definitive conclusions in this subgroup.

Links: [Full Article](#) | [NEJM Quick Take](#) | [Editorial](#)



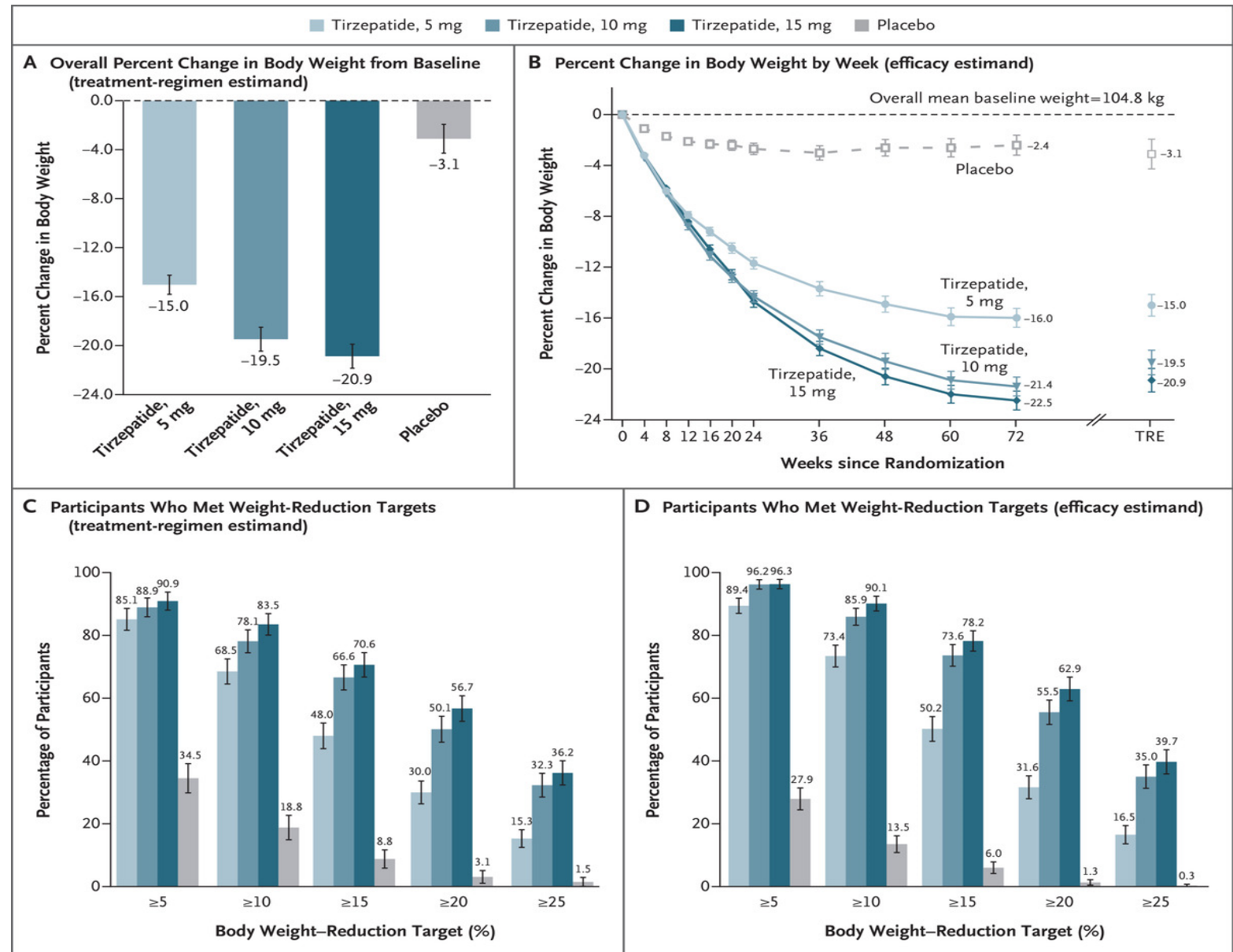
CONCLUSIONS

All three doses of once-weekly subcutaneous tirzepatide led to clinically meaningful and sustained weight reduction in obese adults who did not have diabetes.

Study

Title of Study & Publication Date	Tirzepatide Once Weekly for the Treatment of Obesity (SURMOUNT-1 2022)
Objective	Efficacy and safety of tirzepatide in adults with obesity or overweight who did not have diabetes
Methods	Phase 3, multicenter, double-blind, randomized (1 [5mg]:1[10mg]:1[15mg]:1[placebo]), placebo-controlled trial; 72 weeks + lifestyle intervention
Primary endpoints	% change in body weight from baseline to week 72 and a weight reduction of 5% or more at week 72
# of participants	Total: 2,539; 5mg: 630; 10mg:636; 15mg: 630; placebo: 643
Results	See next slide →
Conclusion	“In this 72-week trial in participants with obesity, 5mg, 10mg, or 15mg of tirzepatide once weekly provide substantial and sustained reduction in body weight.”

Graphics



WHAT'S NEW?

RESEARCH SUMMARY

Once-Weekly Semaglutide in Adults with Overweight or Obesity

Wilding JPH. et al. DOI: 10.1056/NEJMoa2032183

CLINICAL PROBLEM

Clinical guidelines suggest pharmacologic intervention in addition to diet and exercise to promote weight loss among adults with BMI ≥ 30 (or ≥ 27 in those with coexisting conditions). Barriers to medication use include limited efficacy, adverse effects, and cost. Subcutaneous semaglutide, a glucagon-like peptide-1 analogue FDA-approved to treat type 2 diabetes in adults, has been accompanied by weight loss in previous clinical trials.

CLINICAL TRIAL

A phase 3, double-blind, randomized, controlled trial comparing semaglutide with placebo, plus lifestyle changes, in overweight or obese adults without diabetes.

1961 participants were assigned to receive 2.4 mg of subcutaneous semaglutide (with gradual increase to the 2.4 mg dose) or placebo weekly for 68 weeks; both groups received a counseling intervention involving diet and exercise. Coprimary end points were percentage change in body weight and weight reduction $\geq 5\%$.

RESULTS

Efficacy:

By week 68, mean weight declined more with semaglutide than with placebo (14.9% vs. 2.4%; estimated difference, -12.4 percentage points; 95% CI, -13.4 to -11.5). In addition, more participants in the semaglutide group than in the placebo group had weight loss of $\geq 5\%$ (86.4% vs. 31.5%).

Safety:

Adverse events, mainly gastrointestinal, were most often mild to moderate but led to treatment discontinuation in 7.0% of the semaglutide group and 3.1% of the placebo group. Serious adverse events, primarily gastrointestinal and hepatobiliary events, were reported more often with semaglutide.

LIMITATIONS AND REMAINING QUESTIONS

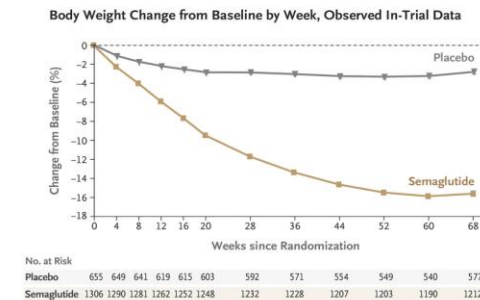
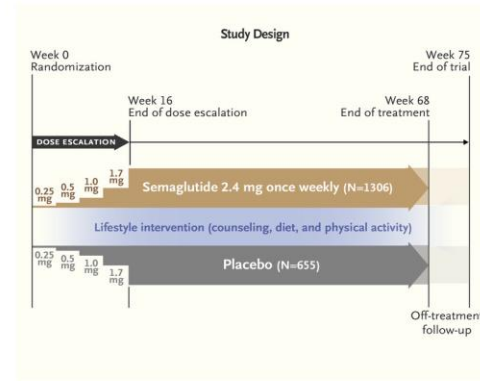
Limitations:

- 43.7% of participants had prediabetes and might have responded differentially to the effects of semaglutide on weight gain.

Further study is required to understand the following:

- Whether results would be similar in persons who differ from the study participants, who were mainly female, White, and potentially highly motivated to lose weight
- Longer-term outcomes
- The mechanism by which semaglutide affects weight-related measures of health (e.g., body composition and glycated hemoglobin) in patients without diabetes

Links: [Full article](#) | [NEJM Quick Take](#) | [Editorial](#)



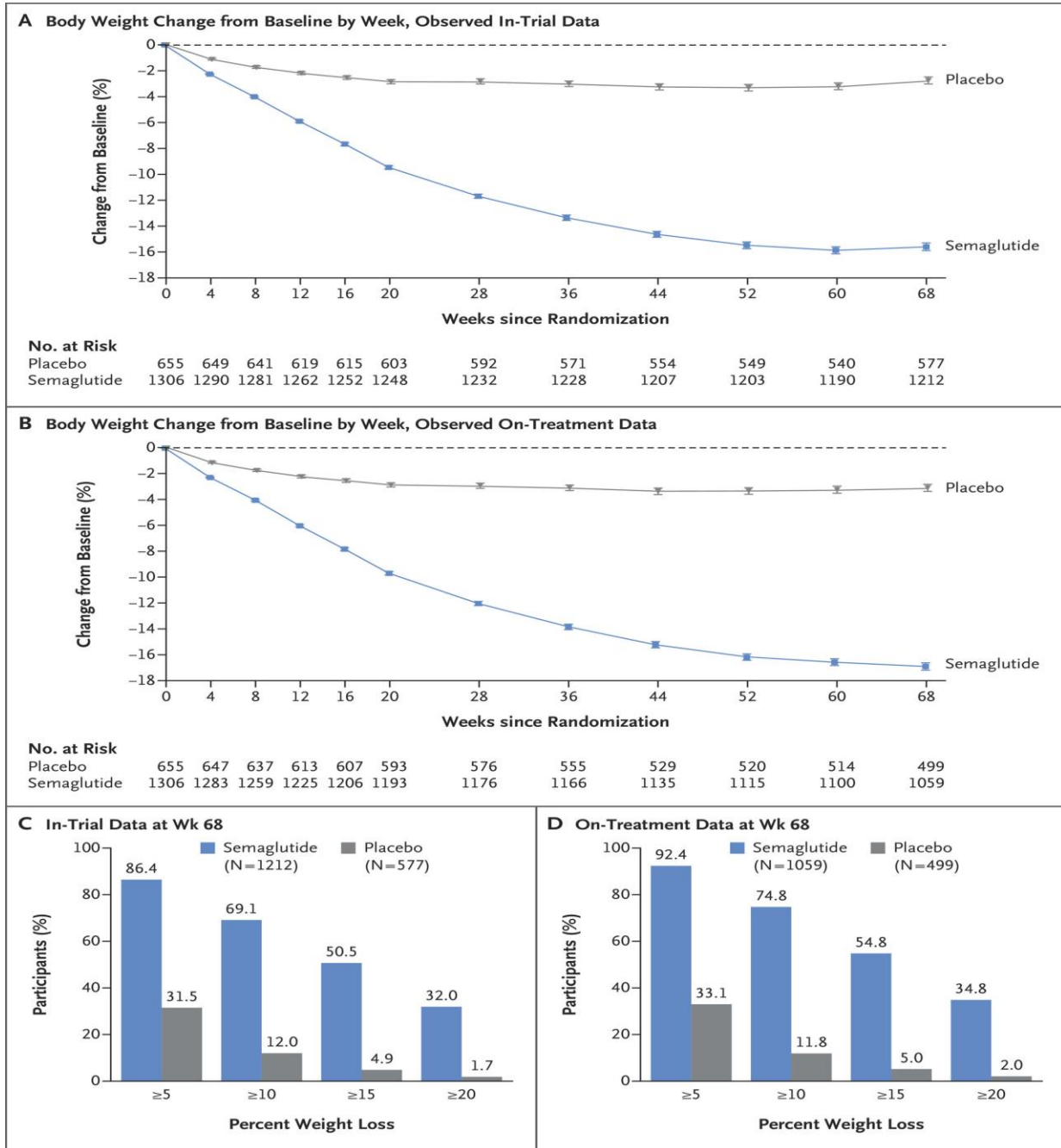
CONCLUSIONS

Adults without diabetes who were overweight or obese had clinically relevant weight loss with weekly injections of semaglutide (2.4 mg) added to lifestyle changes.

Study

Title of Study & Publication Date	Once-Weekly Semaglutide in Adults with Overweight or Obesity (STEP 1 2021)
Objective	Efficacy and safety of semaglutide as compared with placebo as an adjunct to lifestyle intervention in adults with overweight and obesity without diabetes
Methods	Randomized (2:1), double-blind, placebo-controlled trial, multicenter 68 weeks
Primary endpoints	% change in body weight from baseline to week 68
# of participants	Total: 1,962 semaglutide: 1,306 Placebo: 655
Results	See next slide →
Conclusion	“In participants with overweight or obesity, 2.4mg of semaglutide once weekly plus lifestyle intervention was associated with sustained, clinically relevant reduction in body weight.”

Graphics



Medications (Long-Term Use and FDA Approved)

Medication	MOA	S.E Profile	Contraindications/warnings	Interactions/miscellaneous
<p>Orlistat 120mg PO TID before meals (Xenical) or 60mg PO TID (OTC) (Alli)→ 1.6-6.6% weight loss</p> <p>Do not take the medication if the meal does not contain fat</p> <p>Approved for patients ≥ 12 years old</p>	<p>Inhibitor of gastric and pancreatic lipase</p> <p>30% decrease in fat absorption with 120mg PO TID</p>	<p>GI (oily spotting), flatus with discharge, fecal urgency</p> <p>First months, then decrease</p>	<p>Pregnancy, hypersensitivity, malabsorption syndrome, cholestasis</p> <p>Warning: oxalate nephrolithiasis and oxalate nephropathy; hepatotoxicity</p>	<p>Fat soluble vitamins, contraceptives, cyclosporine, thyroid hormone, antiepileptic drugs (lamotrigine, valproic acid)</p>
<p>Phentermine (sympathomimetic) /Topiramate (Qsymia) (C-IV), REMS (pregnancy)→ 10.5-12.1% weight loss</p> <p>Initial→3.75 mg/23 mg once daily for 14 days; then dose 7.5mg/46mg once daily; max dose 15mg/92mg once daily</p>	<p>Increase release of biogenic amines (NE and DA)→appetite suppression and ↓food intake</p> <p>Appetite suppression and satiety enhancement</p>	<p>Insomnia, dry mouth, paresthesia, dysgeusia, tachycardia, ↑BP</p>	<p>Glaucoma, hyperthyroidism, MAOI, Pregnancy (topiramate)</p> <p>Warning→ nephrolithiasis</p> <p>Need to taper down medication to avoid seizures</p>	<p>REMS→(-) pregnancy test before initiating and monthly thereafter; contraception</p> <p>Increase risk of oral cleft palate</p>

Medications (Long-Term Use and FDA Approved)

Cont.

Medication	MOA	S.E Profile/warnings	Contraindications	Miscellaneous
<p>Naltrexone ER/Bupropion ER (Contrave) → 5.0-6.4% weight loss</p> <p>DO NOT take this medication with high-fat meals (increase concentration of drug in blood)</p>	<p>Mu-opioid antagonist</p> <p>Weak inhibitor of neuronal reuptake of DA and NE</p> <p>Activate anorexigenic pathway, decrease reward system and reduce compulsive feeding</p>	<p>Nausea, HA, vomiting, dizziness, insomnia, xerostomia, ↑ BP and HR</p>	<p>Patients taking opioid or experiencing opiate withdrawal, epileptic patients (lower seizure threshold [dose dependent manner), uncontrolled HTN, bulimia, anorexia nervosa</p>	<p>Dosage</p> <p>Week 1: 1 tablet (8 mg naltrexone/90 mg bupropion) PO once daily in the morning; Week 2: 1 tablet PO twice daily in the morning and evening; Week 3: 2 tablets PO in the morning, 1 tablet PO in the evening; Week 4: 2 tablets PO twice daily in the morning and evening</p>
<p>Liraglutide (Saxenda)</p> <p>6.0-8.9% weight loss</p>	<p>GLP-1 receptor agonist</p> <p>Acts centrally → ↑ postprandial satiety and fullness and reduce hunger and food consumption</p>	<p>Nausea, ↑ HR (up to 20bpm +), cholelithiasis (new research), diarrhea, vomiting and constipation, pancreatitis, thyroid C-cell tumor</p>	<p>Family Hx of medullary thyroid carcinoma or multiple endocrine neoplasia type 2, pancreatitis</p>	<p>Dosage</p> <p>0.6mg SQ daily for the first week, then titrate every week by 0.6mg up to 3mg SQ daily</p>

Medications (Long-Term Use and FDA Approved) Cont.

Medication	MOA	S.E Profile/warnings	Contraindications	Dosage
Semaglutide (Wegovy)→ 14% weight loss	GLP-1 agonist Suppresses glucagon secretion, slow gastric emptying,	Hypoglycemia, nausea , vomiting, diarrhea, abdominal pain, cholelithiasis (new research)	Hypersensitivity, Family Hx of medullary thyroid carcinoma or multiple endocrine neoplasia type 2, pancreatitis	Dosage Week 1-4: 0.25 mg SQ weekly Week 5-8: 0.25 mg SQ weekly Week 9-12: 1 mg SQ weekly Week 13- 16: 1.7 mg SQ weekly. Week 17: 2.4 mg SQ weekly



Monitoring Parameters

Each encounter monitor

- Weight, waist circumference, BMI, BP, HR, motivation

Efficacy and tolerability of medication

- Monthly for 3 months, then every 3 months (adherence to medication, lifestyle changes)



Important

Therapy discontinuation

- D/C treatment if the patient does not lose sufficient weight within 3 months
 - **Xenical** → D/C if 5% weight loss is not achieved after 12 weeks
 - **Qsymia** → D/C if 5% weight loss is not achieved after 12 weeks
 - **Contrave** → D/C if 5% weight loss is not achieved after 12 weeks
 - **Saxenda** → → D/C if 4% weight loss is not achieved after 16 weeks
 - **Wegovy** → D/C if 5% weight loss is not achieved after 12 weeks
- D/C treatment if patient experience noteworthy adverse effects
- Start a new weight loss treatment and monitor patient

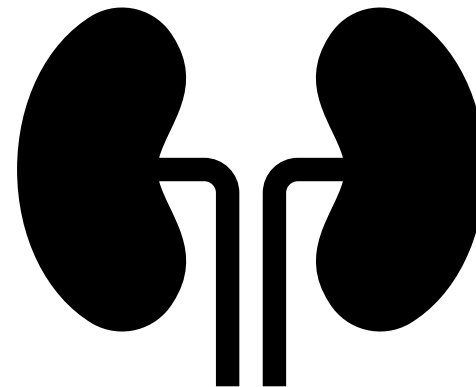


Medications' Pharmacokinetic Profile

Medication	Half-life	Metabolism	Dose adjustment
Orlistat (Alli, Xenical)	1-2 hours	Gastrointestinal wall (inactive metabolites)	No adjustment
Phentermine /Topiramate (Qsymia)	Phentermine → 20 hours	Phentermine → CYP3A4	CrCl <50ml/min → max dose of 7.5/46mg daily
	Topiramate → 19-56 hours	Topiramate → minor	CrCl <30ml/min → Avoid Hepatic (Class B) → max dose of 7.5/46mg daily
Naltrexone ER/Bupropion ER (Contrave)	Naltrexone → 6 hours (PO)	Naltrexone → extensive first pass metabolism (active metabolite)	Renal: moderate to severe impairment → 1 tablet twice daily
	Bupropion: 3-4 hours		Hepatic: moderate impairment → 1 tablet twice daily

Medications' Pharmacokinetic Profile

Medication	Half-life	Metabolism	Dose adjustment
Liraglutide (Saxenda)	13 hours	Dipeptidyl peptidase 4 (DPP-4) and endogenous endopeptidase	No dose adjustment
Semaglutide (Wegovy)	1 week	Hepatic (Beta- oxidation)	No dose adjustment



Medications and Disease State

Disease State	Can use	Can't use or precaution
Chronic Kidney Disease (CKD)	liraglutide, semaglutide, and orlistat	Qsymia, Contrave (Depending the stage of damage)
Nephrolithiasis	Contrave, semaglutide, and liraglutide	Qsymia, orlistat
Hepatic impairment	All can be used with caution	Contrave, Qsymia (adjustment)
Hypertension (HTN)	Orlistat, Qsymia and Contrave (controlled BP) , semaglutide	Contrave (avoid in patients with uncontrolled BP)
Atherosclerotic CV disease	Orlistat, liraglutide (monitor HR) , semaglutide	Qsymia, Contrave
Arrhythmia	Orlistat, liraglutide (monitor HR) , semaglutide	Qymia, Contrave
Anxiety	Liraglutide, orlistat, Contrave, semaglutide	Max dose of Qsymia 15mg/92mg

Medications and Disease State cont.

Disease State	Can use	Can't use or precaution
Glaucoma	Semaglutide, Liraglutide, orlistat	Qsyma, Contrave
Seizure disorder	Qsyma, liraglutide, semaglutide, orlistat	Contrave
Opioid use	Qsyma, semaglutide, liraglutide, orlistat	Contrave
Addiction/Alcoholism	Orlistat, semaglutide, liraglutide	Contrave



“LAST OPTION”

Surgery (**Last Option**)

Bariatric surgery (metabolic surgery) candidates

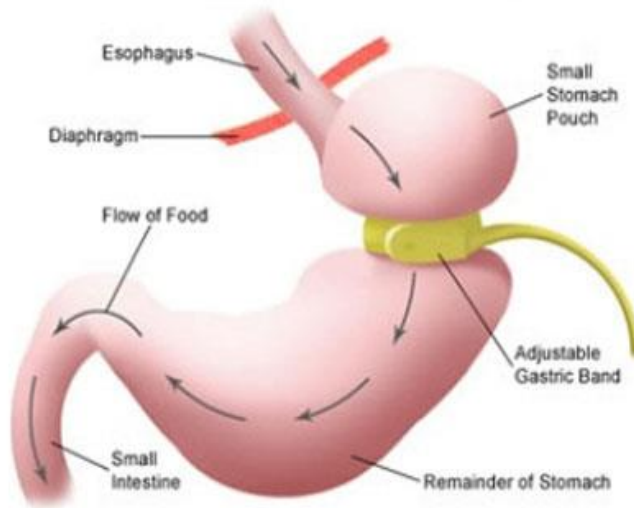
- BMI $\geq 40 \text{ kg/m}^2$ w/o coexisting medical conditions, and there is no excessive risk
- BMI $\geq 35 \text{ kg/m}^2$ and one or more severe obesity-related complications (T2DM, HTN, OSA, among others)
- BMI 30 to 34.5 kg/m^2 with DMT2 or metabolic syndrome (can be considered)

Types of Surgeries

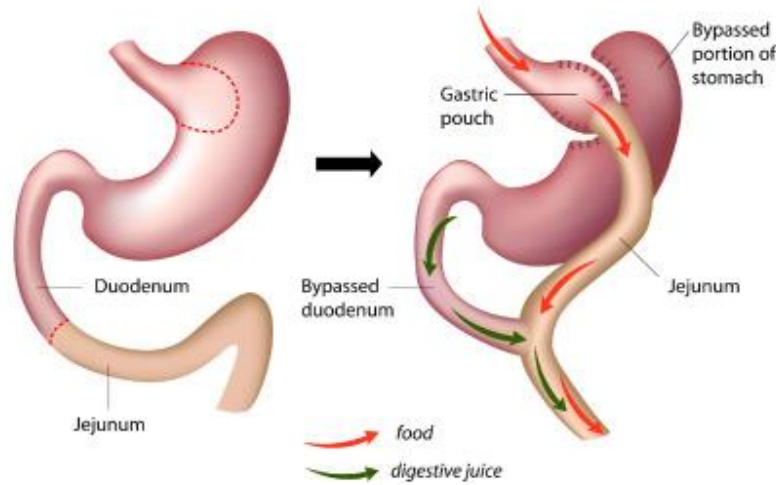
Type of surgery	Procedure	How it works	Advantages	Disadvantages
Sleeve gastrectomy (Laparoscopy) Most common one in the US	Removed around 80% of the stomach	Less food and liquid; decrease hunger hormones;	Less time, medical conditions, severe obesity, improved conditions	Non-reversible, heart burn (new or old), less impact to metabolism
Roux-en-Y gastric bypass (RYGB) → In the form of Y “Gastric Bypass”	Stomach size of an egg, intestine is divided and connected to the new stomach	Stomach hold less food, ↓ absorption, ↓ hunger, and ↑ fullness,	Consistent weight loss, improve chronic conditions	More complex, more vitamins and minerals deficiencies, “dumping syndrome”, obstruction, ulcers
Adjustable gastric band (AGB) Use declined over the years (less weight loss and improve with chronic conditions)	Placed around the top part of the stomach (creating a small pouch)	Opening between the pouch and stomach	↓ risk of complications, band can be removed, ↓ risk of vitamins and minerals deficiencies	Band will need several adjustments, less weight loss, damage to the stomach or slippage, re-operation, swallowing problems, and esophagus enlargement

TYPES OF SURGERY

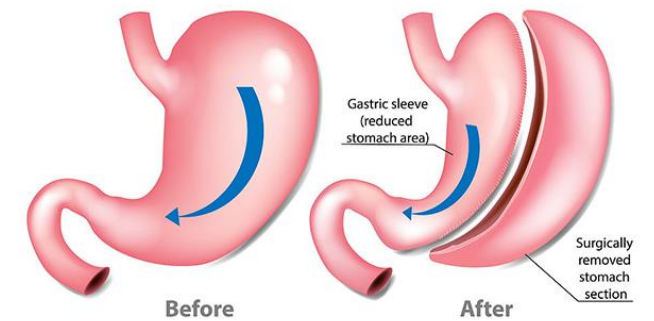
Adjustable Gastric Band Procedure



Roux-en-Y Gastric Bypass (RNY)



SLEEVE GASTRECTOMY





Assessment Questions



Thank You
for your
Attention



Achieving a Normal Weight: The Strategies and Pharmacotherapy That Will Help

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