Managing Obesity in Primary Care: Yes It Can Be Done

Angela Golden, DNP, FNP-C, FAANP, FOMA
Chief Clinical Officer NP Obesity Treatment Center, Flagstaff, AZ

Disclosures – Angela Golden

Company	Disease State/Topic	Role
Novo Nordisk	Obesity	Promotional speaker Advisory board
Acella	Thyroid	Advisory board Promotional speaker
Currax	Obesity	Advisory board Promotional speaker
Lilly	Obesity and Sleep apnea	Advisory Board Promotional speaker
BI	Obesity	Advisory Board
WW	Obesity	Advisory board

- All relevant financial relationships have been mitigated.

Outcomes

- Accurately screen and appropriately apply differential diagnosis for earlier diagnosis and timely intervention of obesity and comorbidities
- Effectively assess and manage obesity as a chronic, serious, and progressive disease with early intervention and long-term care
- Comprehensively manage obesity with full evidence-based treatment
- Implement person-centered methods for evidence-based obesity management in the primary care setting

Helping you create a roadmap to MEANINGFUL Obesity management!

image: Freepik.com

Meet Ellen

- Visit at WW
- PMH: depression, elevated liver enzymes, dyslipidemia, HTN
- Medications:
  - Metoprolol and hydrochlorothiazide 100 mg/25 mg oral tablet once daily
  - Omeprazole OTC once daily
  - Vortioxetine 20 mg q d
  - Multivitamin once daily
- Pregnancy prevention: IUD
- Allergies:
  - NKDA

Photo courtesy of Obesity Action Coalition

Photo courtesy of Obesity Action Coalition

- Social history: ETOH 1 x week, married with two teenagers at home, works outside the house as a nurse
- FH: father, mother, sister with HTN, diabetes, and all are “heavy”, no history of thyroid cancer
- Personal: no history of alcohol or drug abuse, no personal history of pancreatitis
- VS: 5’4” 203# 142/88 HR 78 RR 16 pOx 98
- BMI: 34.84 kg/m^2
- Waist Circumference 42”

Photo stock MacBook PPV16

What Is Weight Bias?

- Negative attitudes toward individuals with obesity
- Stereotypes leading to:
  - Stigma
  - Rejection
  - Prejudice
  - Discrimination
- Bias can be:
  - Verbal, physical, relational, cyber
  - Subtle and overt

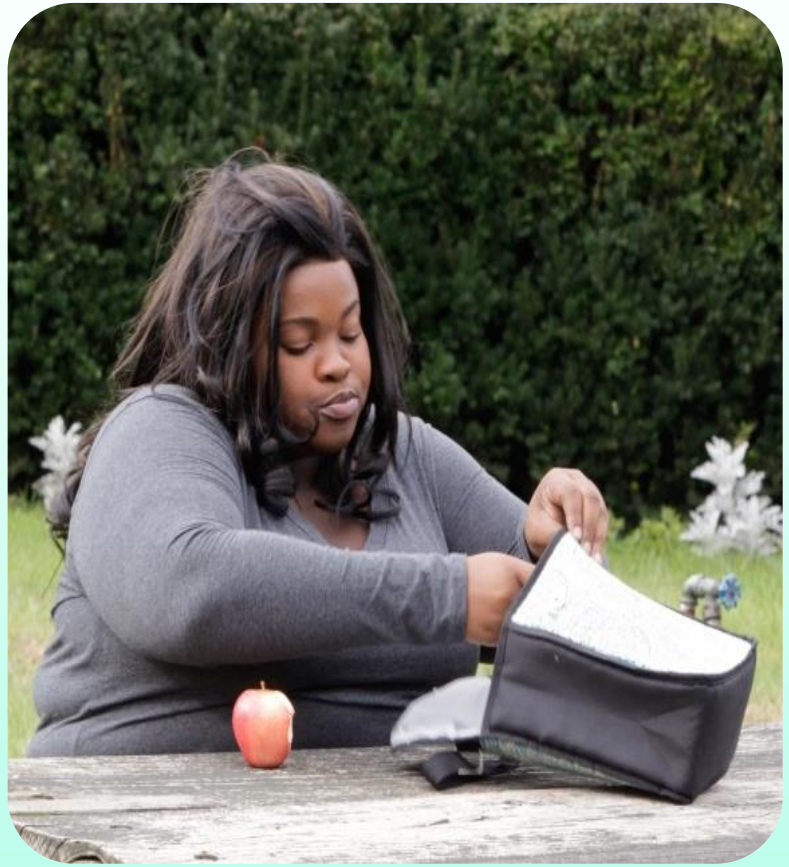


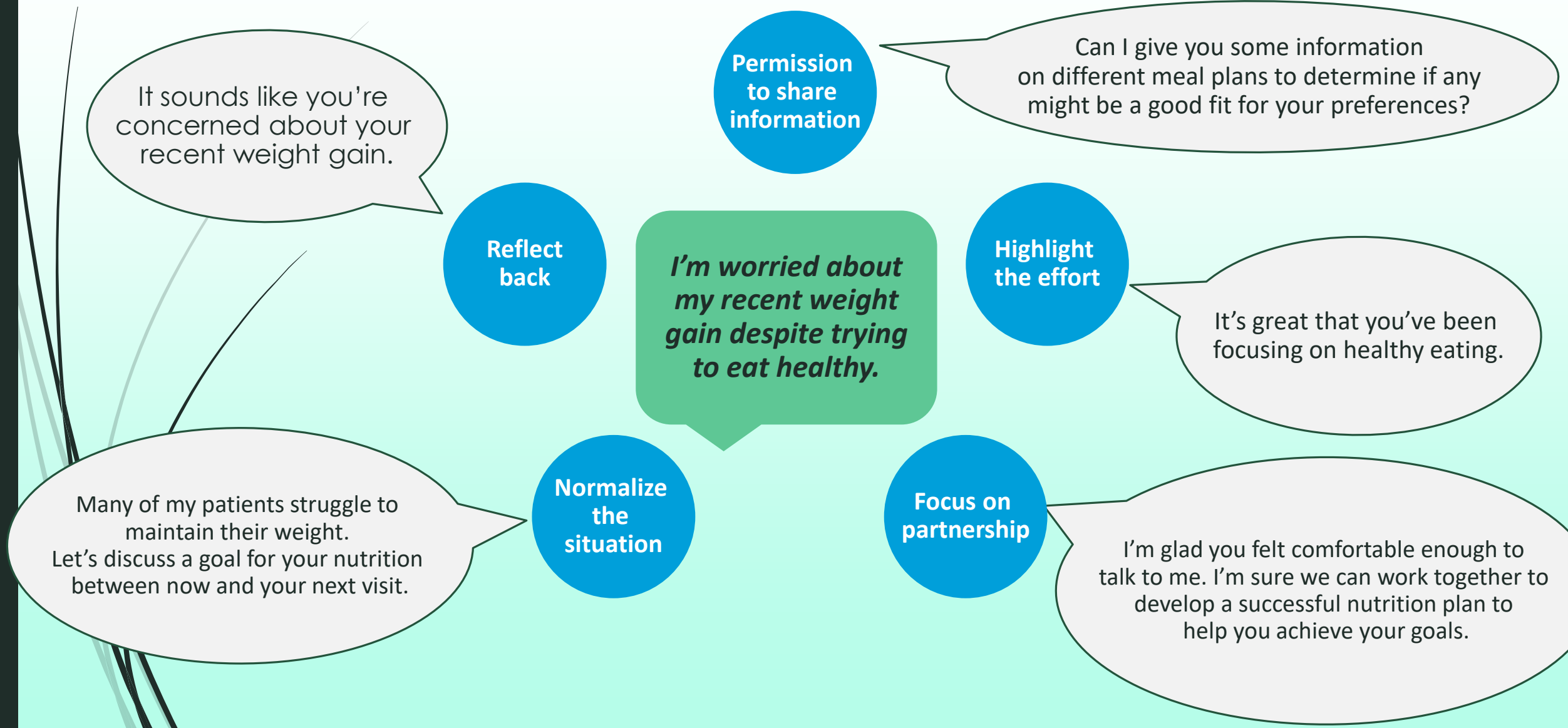
Photo courtesy of World Obesity Federation

Influence of Bias and Stigma on Patient Outcomes

- Obesity bias and stigma remain major obstacles to effective clinical care.[1]
- Weight bias in healthcare settings results in:[2]
  - Less time spent with the patient
  - Less patient-centered communication
  - Lower likelihood of appropriate diagnostic testing
- For patients, perceived weight bias by providers leads to lower reported quality of care, care avoidance, poor treatment adherence, and distrust.[1,2]

1. Grunvald E, et al. *J Med Educ Curric Dev*. 2023; 10: 23821205231207683.
2. 2. Abrams Z. The burden of weight stigma. 2022. Accessed February 16, 2024. https://www.apa.org/monitor/2022/03/news-weight-stigma

Strategies for Empathetic Communication



Strategies to Reduce Obesity Bias and Stigma: RESPECTFUL AND COMPASSIONATE COMMUNICATION

 Discouraged Terms	 Encouraged Terms
↓ Morbidly obese	✓ Weight
↓ Obese	✓ Unhealthy weight
↓ Fat	✓ Overweight
↓ Heaviness	✓ Excessive energy stores
↓ Large size	✓ Affected by obesity
↓ Diet	✓ Eating habits/nutrition
↓ Exercise	✓ Physical activity

Adapted from: Bays HE, et al. Obesity Algorithm 2020. Accessed May 22, 2024. https://obesitymedicine.org/obesity-algorithm/

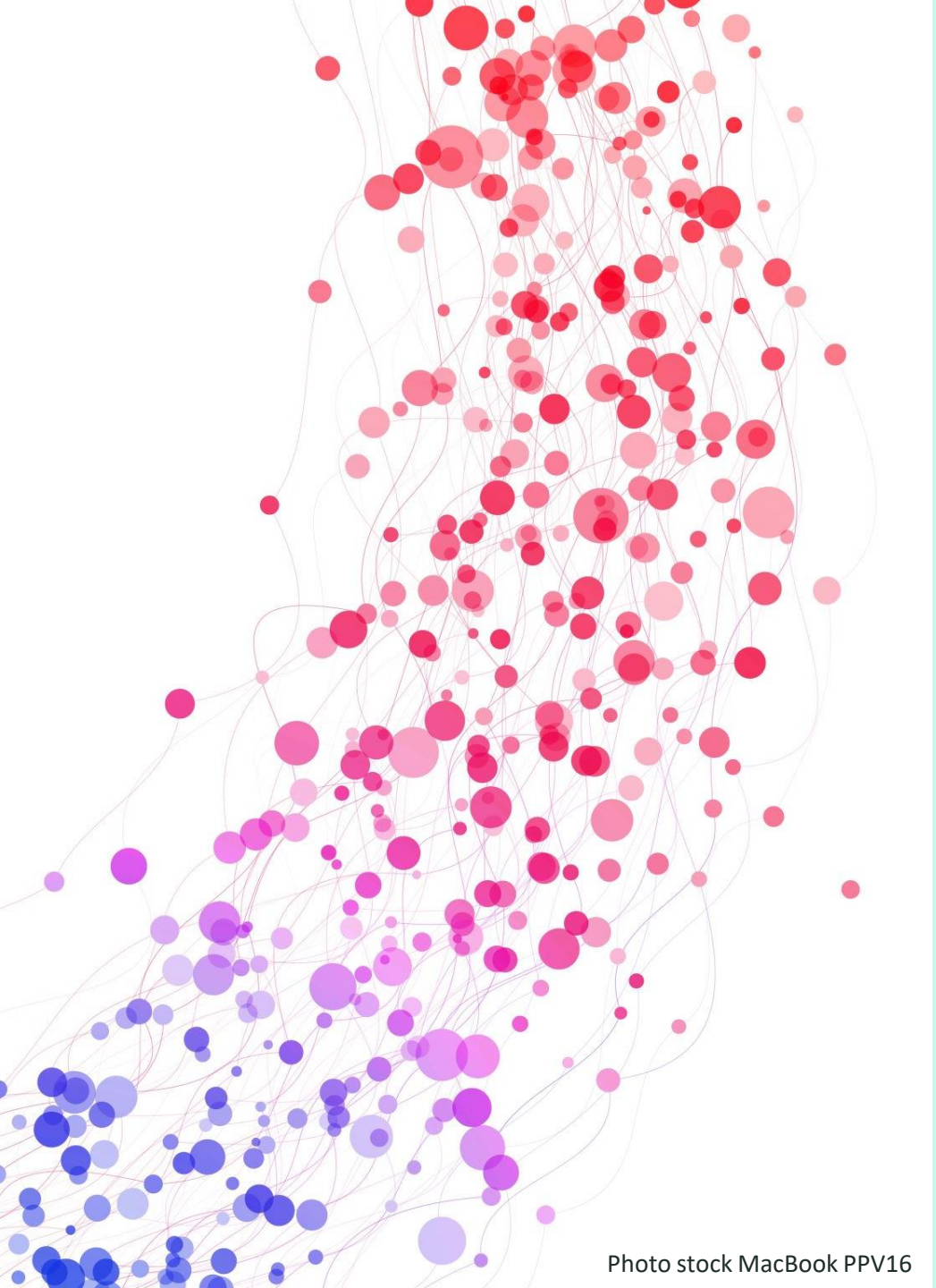


Photo stock MacBook PPV16

Completed WWV and ask permission to discuss weight

Appointment made for an obesity visit

Diagnose Obesity

Waist circumference		Waist to Height Ratio	Body Fat Percentage
Non-Asian			
Men	≥ 40 inches	> 0.50	> 30 % obesity 25-29% pre-obesity
Women	≥ 35 inches	> 0.50	> 35% obesity 30-24% pre-obesity
Asian			
Men	≥ 35 inches		
Women	≥ 31 inches		

Taking an Obesity History

Weight History Tools

Questionnaire

- Patient completes prior to visit and clinician reviews with patient
- Clinician asks questions during visit

OPQRST Mnemonic[1]

- More targeted than general questionnaire
- Patient completes prior to visit and clinician reviews with patient
- Clinician asks questions during visit

Weight Graph

- Illustrates timing of weight gain and loss and contributing factors
- Patient completes prior to visit or with clinician

OPQRST, onset, precipitating, quality of life, remedy, setting, temporal pattern.

Kushner RF, et al. *Obesity (Sliver Spring).* 2020;28(1):9-17.

Photos stock MacBook PPV16

Ellen

- **<u>Obesity history:</u>** has been "heavy" since teenager but 40-pound weight gain over the past 4 years
  - Has never seen a provider for weight/obesity treatment
  - Has tried lots of OTC remedies – ex raspberry ketones

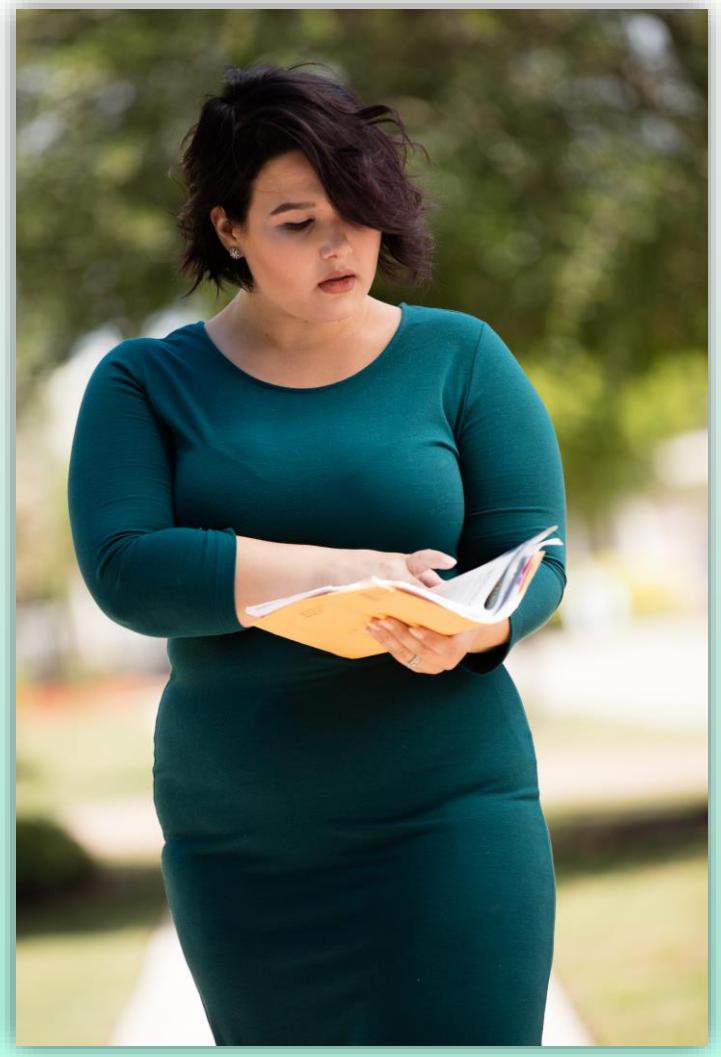


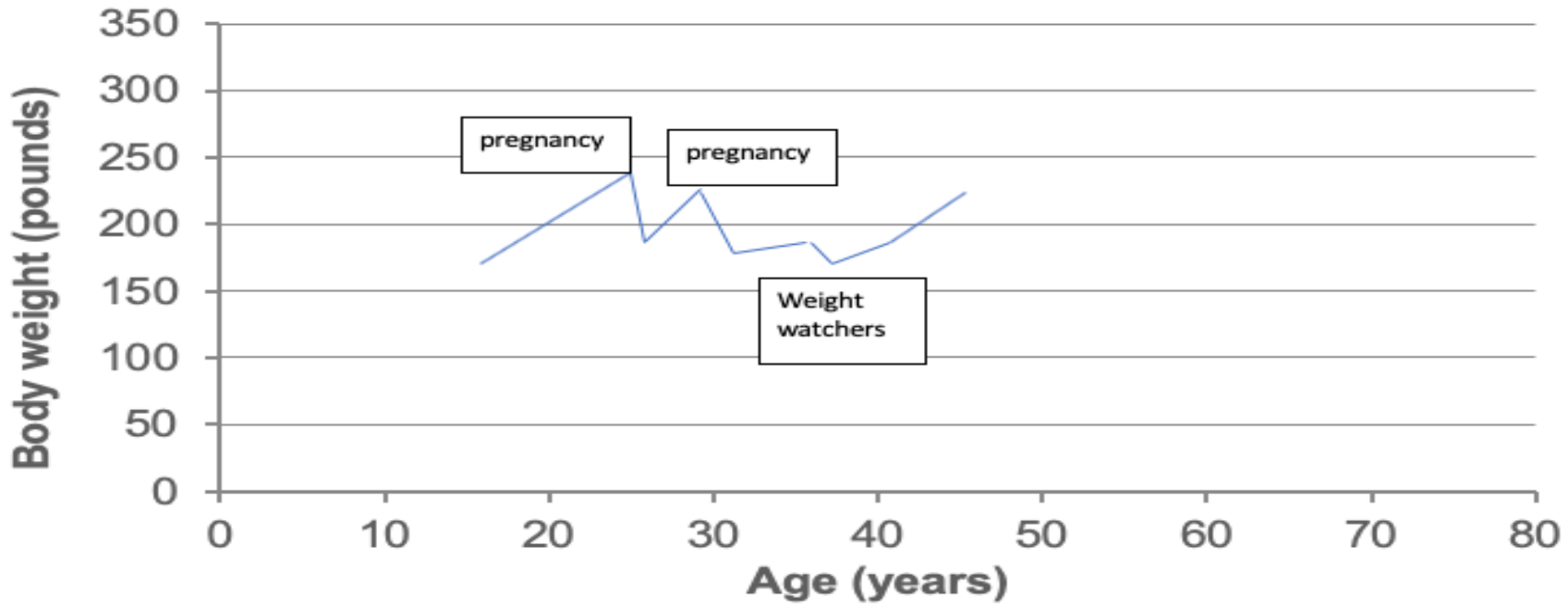
Photo courtesy of Obesity Action Coalition

Golden

Ellen

Body Weight Graph

Use this graph to chart life events, health conditions, times of stress, and other factors that influenced your weight



Golden

WHO staging system for obesity

Class	BMI
1	25 to 29.9 kg/m^2
2	30 to 39.9 kg/m^2
3	BMI $\geq$ 40 kg/m^2

Staging: Identifying High-risk Patients

AACE Staging System[1]		
Stage	**BMI (kg/m^2)**	**Complications**
0	≥30	No identified complications
1	≥25	≥ 1 mild-to-moderate complications that may be treated effectively by treating obesity
2	≥25	≥ 1 severe complication and may require more aggressive treatment

AACE, American Association of Clinical Endocrinologists; ADLs, activities of daily living; MI, myocardial infarction; OA, osteoarthritis; ORC, obesity-related complication; QoL, quality of life.
Garvey WT, et al. *Endocr Pract*. 2016;22 Suppl 3:1-203. 2. Sharma AM, et al. *Int J Obesity (Lond).* 2009;33(3):289-295.
https://obesitycanada.ca/guidelines/

Staging: Identifying High-risk Patients

Edmonton Obesity Staging System[2]				
Stage	**Obesity-related risk factors**	**Physical symptoms**	**Psychological symptoms**	**Functional limitations**
0	None	None	None	None
1	Subclinical	Mild – no medical treatment needed	Mild	QoL not impacted
2	Established ORC with medical intervention	Moderate	Moderate psychological symptoms (depression, anxiety, eating disorder)	Moderate – QoL is being impacted
3	Significant ORC with end organ damage (MI, heart failure, diabetes with complications)	Significant (incapacitating OA)	Significant (reduced mobility, unable to work, or complete ADLs)	Significant – QoL is significantly impacted
4	Severe	Severe	Severe	Severe

AACE, American Association of Clinical Endocrinologists; ADLs, activities of daily living; MI, myocardial infarction; OA, osteoarthritis; ORC, obesity-related complication; QoL, quality of life.

Garvey WT, et al. *Endocr Pract*. 2016;22 Suppl 3:1-203. 2. Sharma AM, et al. *Int J Obesity (Lond).* 2009;33(3):289-295.
https://obesitycanada.ca/guidelines/

- VS: 5’4” 203# 142/88 HR 78 RR 16 pOx 98
- BMI: 34.84 kg/m^2
- Waist circumference: 42”
- Waist to Height Ratio: 0.65
- Neck circumference: 15”
- Most recent labs: triglycerides 174, TC 236, LDL 134, HDL 48, AST 67, ALT 102, Vit D 34
- Additionally fasting insulin 18, glucose 94 – HOMA IR is 4.17 – QUICKI 0.31
- Screening tools: PHQ-9 (4), BED7 (neg), PAR-Q, STOP-BANG negative

	Yes	No
Has your NP or provider said that you have a heart condition OR high blood pressure	X	
Do you feel pain in your chest at rest, during your daily activities of living OR when you do physical activity		X
Do you lose balance because of dizziness OR have you lost consciousness in the last 12 months? (answer no if your dizziness was associated with over-breathing – including during vigorous exercise)		X
Have you ever been diagnosed with another chronic medical condition (other than heart disease or high blood pressure)? Please list condition(s) here _____		X
Are you currently taking prescribed medications for a chronic medical condition? Please list conditions and medications here: _____		X
Do you currently have (or have had within the past 12 months) a bone, joint, or soft tissue (muscle, ligament, or tendon) problem that could be made worse by becoming more physically active? Please answer NO if you had a problem in the past, but it **does not limit your current ability** to be physically active. **Please list conditions here:** _____		X
Has your NP or physician ever said that you should only do medically supervised physical activity?		X

Discussion

- How do we diagnose obesity for Ellen BMI and obesity related complications and comorbidity

  Depression, Elevated liver enzymes, Dyslipidemia, HTN
  Waist Circumference 42”. Waist to Height 0.65

- What is her class of obesity?

  BMI 34.84 Class 1

Class	BMI
1	25 to 29.9 kg/m²
2	30 to 39.9 kg/m²
3	BMI ≥ 40 kg/m²

- What is her stage?
  - AACE

    BMI >25 with hypertension, dyslipidemia Stage 2 Obesity

  - EOS

    Stage 2

AACE Staging System[1]

Stage	BMI (kg/m²)	Complications
0	≥30	No identified complications
1	≥25	≥ 1 mild-to-moderate complications that may be treated effectively by treating obesity
2	≥25	≥ 1 severe complication and may require more aggressive treatment
3		Significant CRC with end organ damage (MI, heart failure, diabetes with complications)
4		Severe

			Functional limitations
	Significant (incapacitating OA)	Significant (reduced mobility, unable to work, or complete ADLs)	Significant – QoL is significantly impacted
	Severe	Severe	Severe

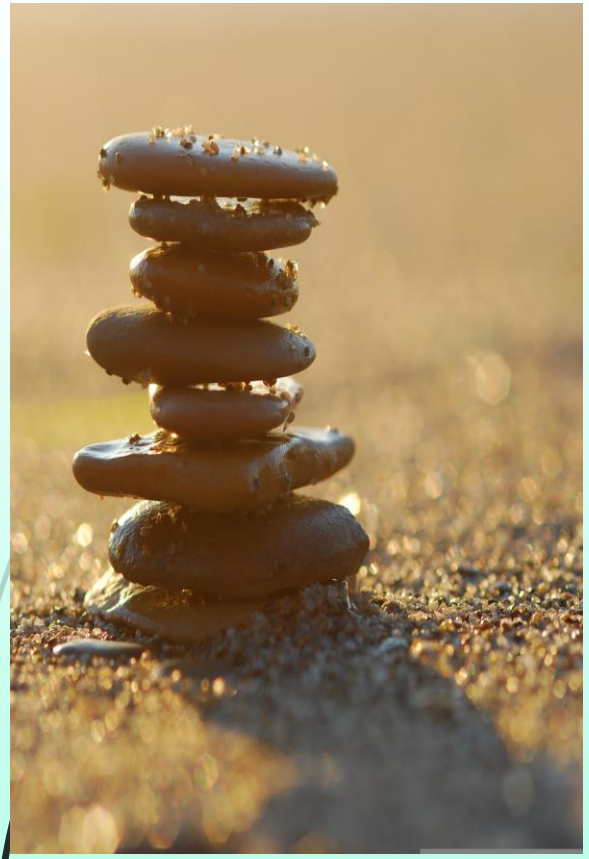
None

QoL not impacted

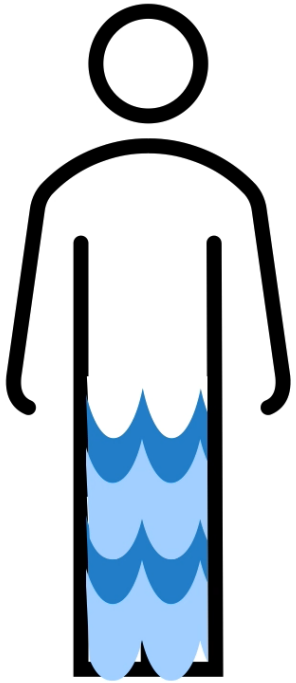
Moderate – QoL is being impacted

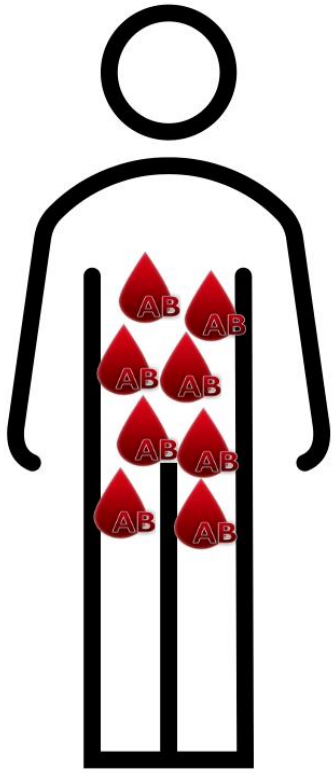
Explanation of Obesity

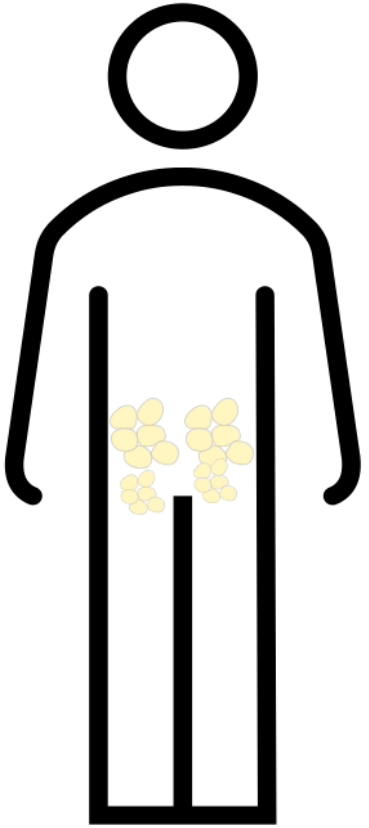
Tightly Regulated Systems



Remove one stone and the whole pile collapses.



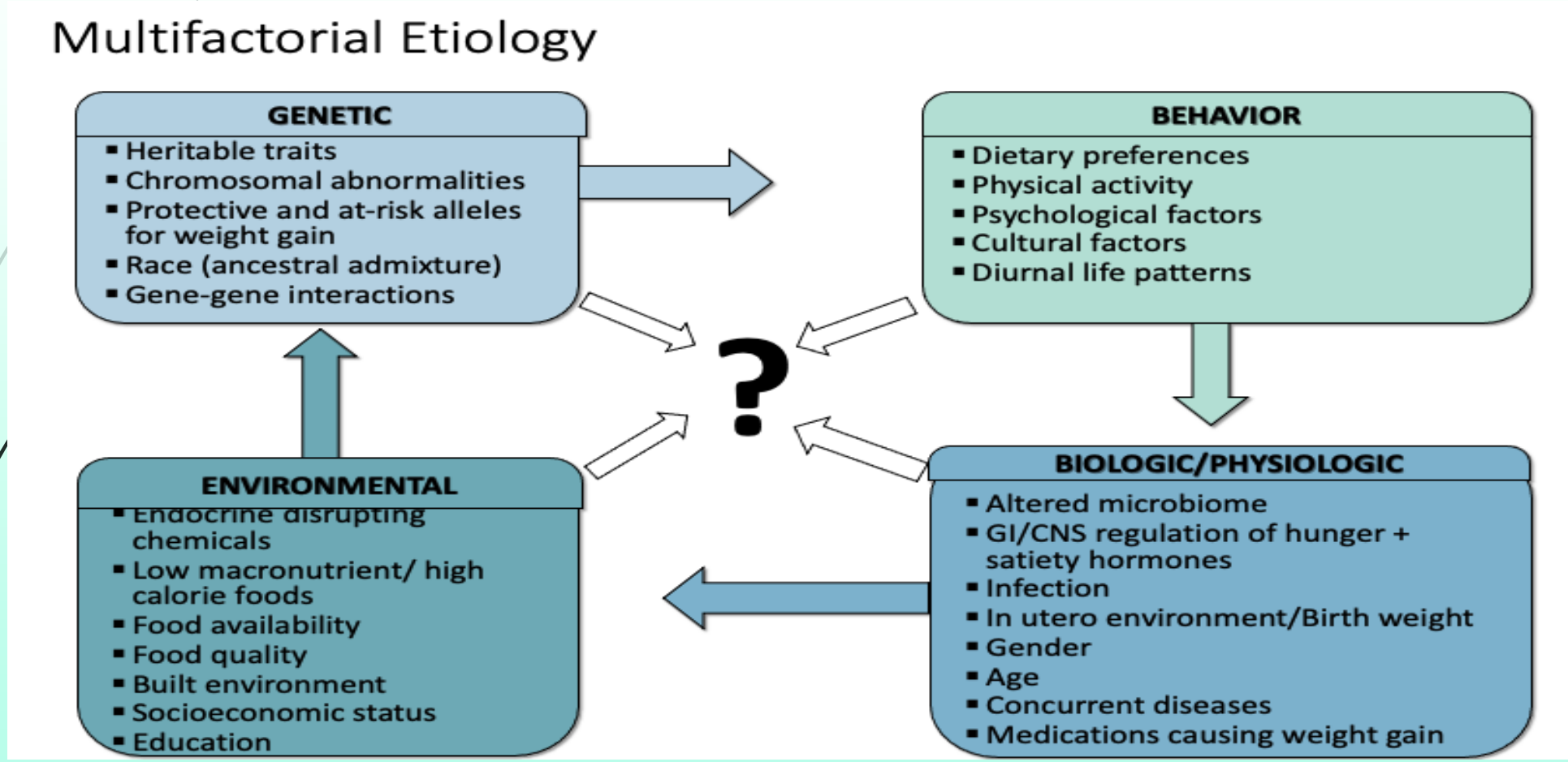




“Overeating Doesn’t Cause Obesity
Obesity Causes Overeating”

Quote from Dr. Lee Kaplan

https://www.medscape.com/viewarticle/896444



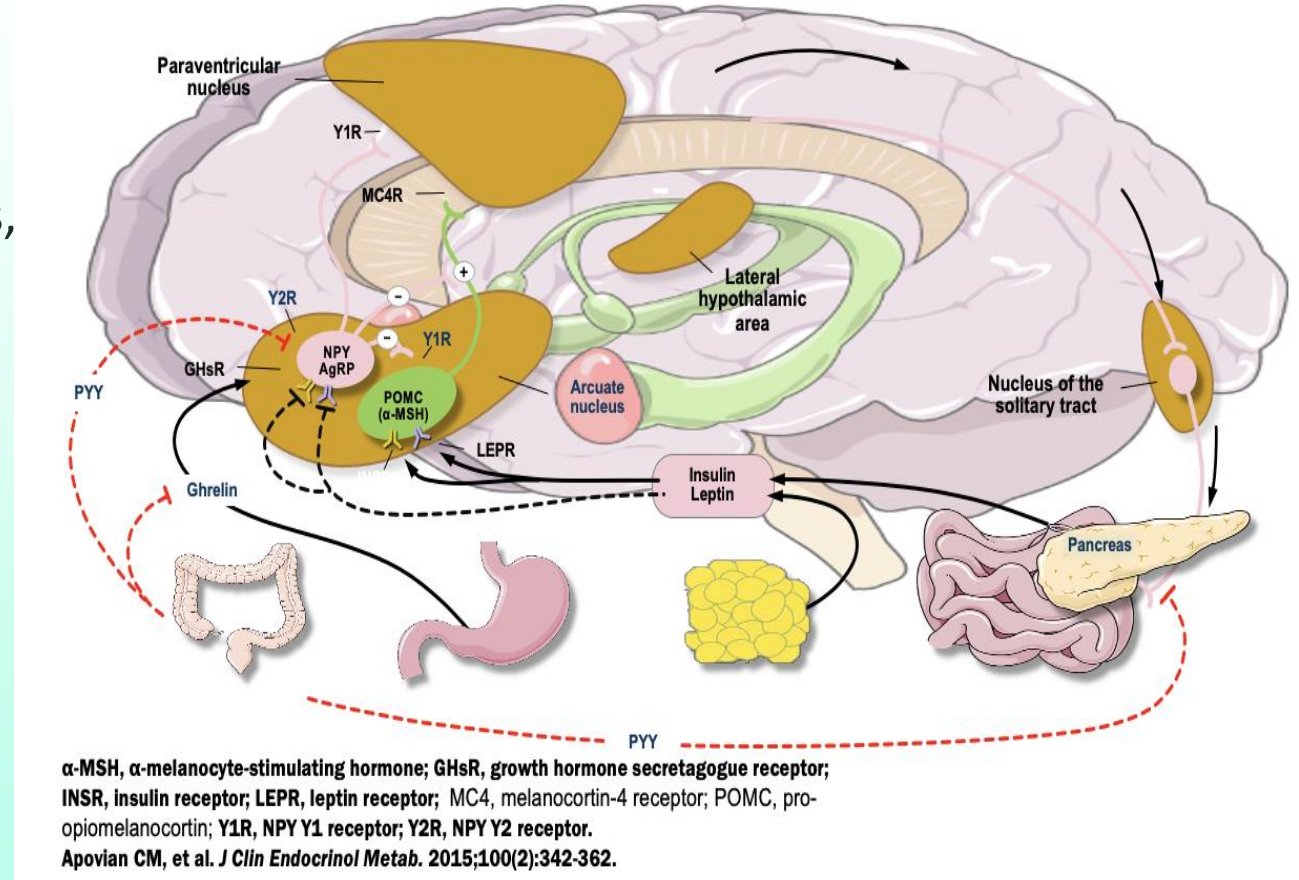
Dysregulation of Energy Regulation System

Over time increase amount of adiposity

- Intertwining of genetics, environment and biology

Biological defense of the increased adiposity

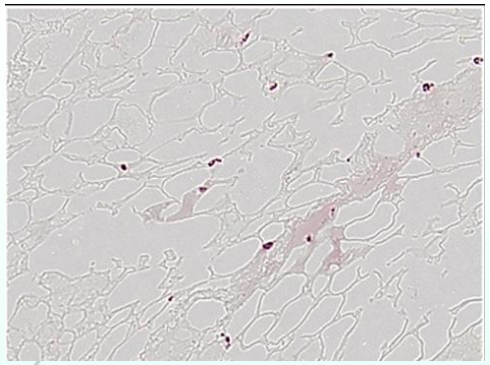
- Evolution: conserve body fat
- Physiologic defense of higher body weight



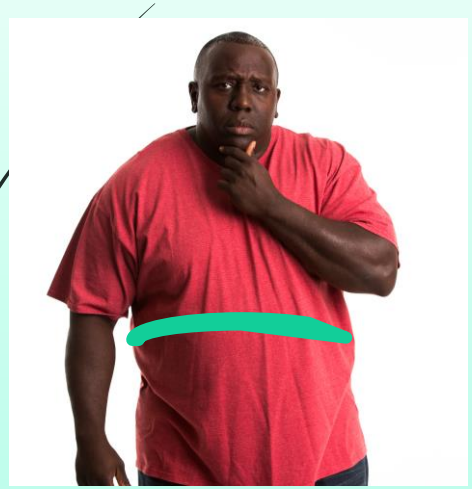
α-MSH, α-melanocyte-stimulating hormone; GHsR, growth hormone secretagogue receptor; INSR, insulin receptor; LEPR, leptin receptor; MC4, melanocortin-4 receptor; POMC, pro-opiomelanocortin; **Y1R, NPY Y1 receptor; Y2R, NPY Y2 receptor.**
Apovian CM, et al. *J Clin Endocrinol Metab.* 2015;100(2):342-362.

Michael W Schwartz, Randy J Seeley, Lori M Zeltser, Adam Drewnowski, Eric Ravussin, Leanne M Redman, Rudolph L Leibel, Obesity Pathogenesis: An Endocrine Society Scientific Statement, *Endocrine Reviews*, Volume 38, Issue 4, 1 August 2017, Pages 267–296, https://doi.org/10.1210/er.2017-00111.

Adiposopathy



Adipose Tissue Inflammation



Visceral Adiposity

Acylation stimulation protein
Cholesterol ester transfer protein
Phospholipid transfer protein

Dyslipidemia

- Increased large VLDL
- Increased small LDL
- Increased LDL particles
- Decreased large HDL

Free fatty acids
Leptin
Adiponectin
Resistin

Muscle and Liver

- Insulin resistance
- Glucose intolerance

TNF alpha
IL-1, IL-6, IL-8, IL-10
MCP
MIF
PAI-1
Platelet reactivity
Angiotensinogen

Blood Vessels

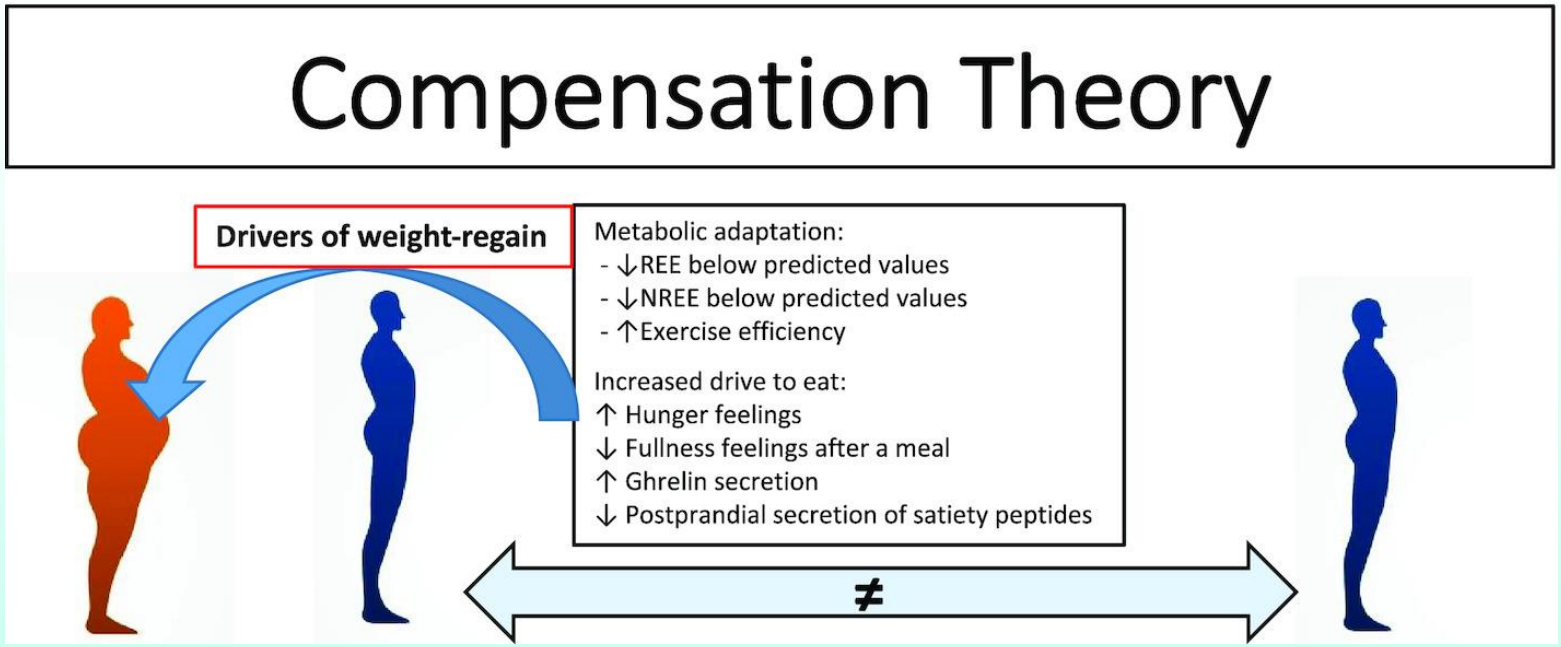
- Vascular reactivity
- Dysfibrinolysis
- Inflammation
- Foam cell production
- Hypertension

Spencer, M., Yang, L., Adu, A., Finlin, B. S., Zhu, B., Shipp, L. R., Rasouli, N., Peterson, C. A., & Kern, P. A. (2014). Pioglitazone treatment reduces adipose tissue inflammation through reduction of mast cell and macrophage number and by improving vascularity. *PloS one*, *9*(7), e102190. https://doi.org/10.1371/journal.pone.0102190. OPEN ACCESS Figure 4. Man courtesy of Obesity Action Coalition image bank

Pathology Of Weight Regain – Metabolic Adaptation

Adaptive responses to weigh loss promotes weight regain

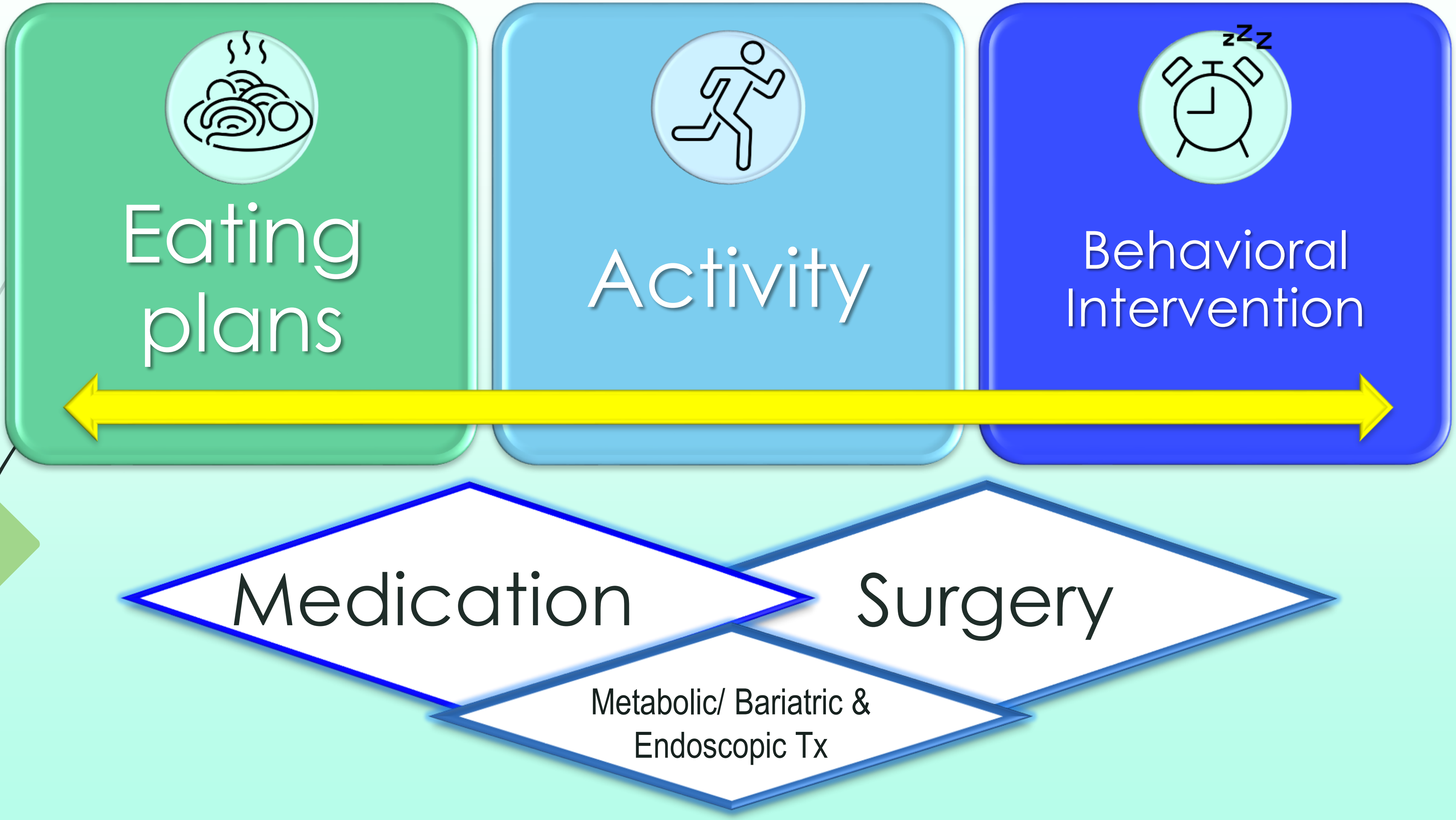
- Fall in energy expenditure
- Increase in appetite
- Dysfunctional hormonal system



Martins, C., Dutton, G. R., Hunter, G. R., & Gower, B. A. (2020). Revisiting the Compensatory Theory as an explanatory model for relapse in obesity management. *The American journal of clinical nutrition*, *112*(5), 1170–1179. https://doi.org/10.1093/ajcn/nqaa243 Figure 1. open access CC 4.0

Overview of Treatment

Treating obesity & overweight



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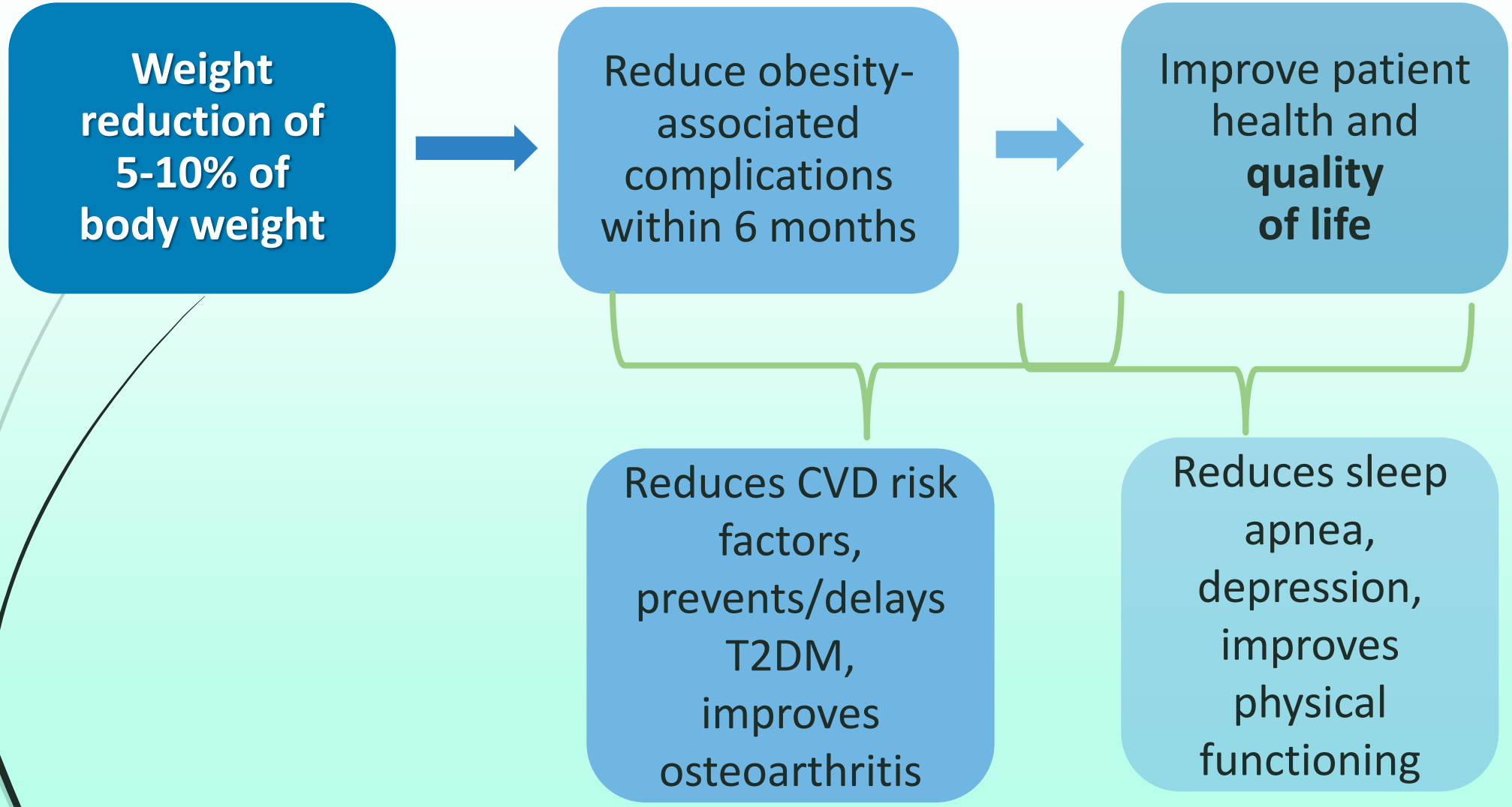
Therapeutic Goals: *Reduced Adiposity & morbidities*



CVD, cardiovascular disease; T2DM, type 2 diabetes mellitus.

Jensen MD, et al. *Circulation*. 2014;129:S102-S138. Garvey WT, et al. *Endocr Pract.* 2016;22 Suppl 3:1-203. Yanovski SZ, et al. *JAMA.* 2014;311:74-86. Apovian CM, et al. *J Clin Endocrinol Metab.* 2015;100(2):342-362.

Guideline Recommendations

Best Practice Strategies

Guideline Recommendations

Similarities[1-3]

- Individualized eating plans
- Counseling patients to increase physical activity
- Behavioral interventions
- Medication may be appropriate for some patients
- Referral to an obesity specialist or surgery may be appropriate

Additional Focus

Differences[1]

Endocrine Society paradigm shift toward **pharmacologic therapy over no therapy at all** for patients:

- With a history of unsuccessful weight lost and maintenance
- Who meet label indications

1. Apovian CM, et al. *J Clin Endocrinol Metab* 2015;100:342-62.
2. Garvey WT, et al. *Endocr Pract* 2016;22 Suppl 3:1-203.
3. Jensen MD, et al. *Circulation* 2014;129:S102-S138

Guidelines/Algorithms

ES

- Mention of nutrition, activity, behavioral intervention
- Details on available pharmacology for anti-obesity medications
- Obesogenic medications with options of other choices

AACE/ACE

- Complication-specific treatment guideline
- Prevention reviewed
- Staged recommendations for treatment
- ORC-centric obesity treatment based on pharmacology

OMA

- Annually updated clinician tool
- Review of bias and stigma implications
- Podcast companions
- Top 10 messages of each section
- Obesity myths section

OC

- Living document will be updated with emerging evidence
- Created with sections for primary care professions, persons living with obesity, and policy-holders
- Prevention and treatment
- Only 3 medications approved in Canada

Apovian CM, et al. *J Clin Endocrinol Metab*. 2015;100(2):342-362.
Garvey WT, et al. *Endocr Pract*. 2016;22(Suppl 3):1-203.
Wharton S, et al. *CMAJ*. 2020;192(31):E875-E891.
Tondt, J. et al. Obesity Algorightm eBook. 2024. www.obesityalgorithm.org, accessed 7/8/2024.

Types of Eating Plans

- Low carb (keto, paleo)
- Low fat (DASH)
- Mediterranean
- Whole Food/Plant Based

- Energy Focused
  - LCD
  - VLCD
- Fasting (intermittent or timed)
  - Varied times

So, which for who

- No one plan is the best eating plan – **adherence is the key**
- **VLCD**
  - Evidence to reverse early Type 2 DM; (time limited?)
- **Low CHO**
  - lower HgBA1C
- **Meal Replacement**
  - Short term removal of choices
- **Mediterranean**
  - Improvement in Chronic Diseases

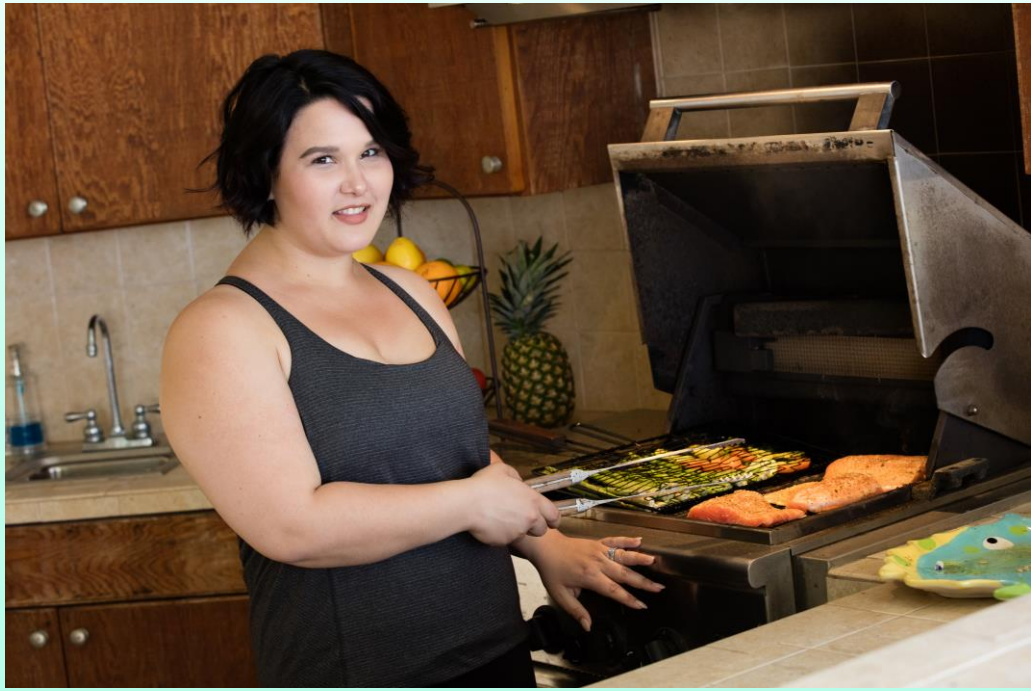
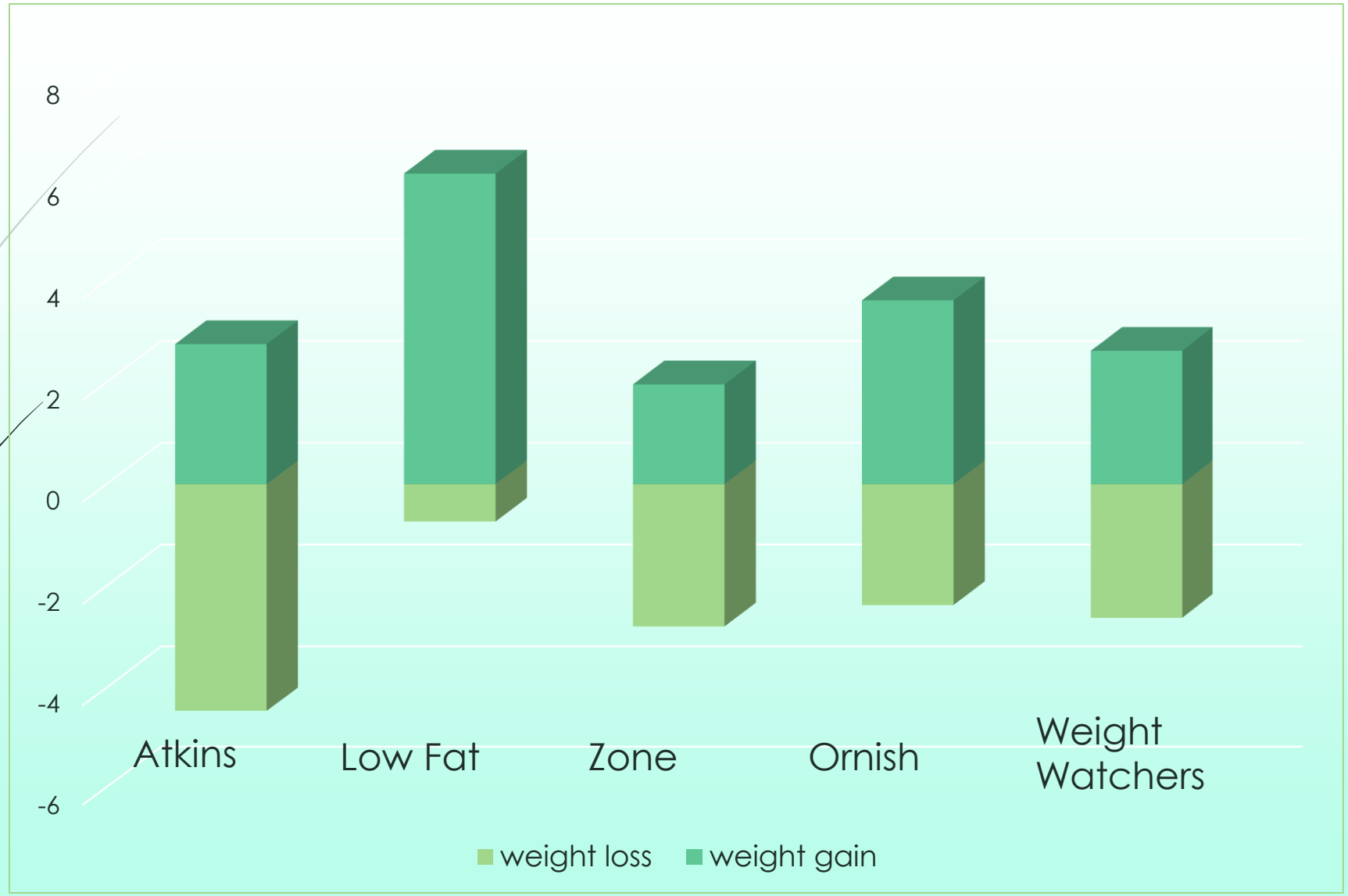


Photo courtesy of Obesity Action Coalition

DIETFITS Comparison of various diets over 12 months



Gardner, C. D., Trepanowski, J. F., Del Gobbo, L. C., Hauser, M. E., Rigdon, J., Ioannidis, J. P. A., Desai, M., & King, A. C. (2018). Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion: The DIETFITS Randomized Clinical Trial. *JAMA*, *319*(7), 667–679. https://doi.org/10.1001/jama.2018.0245

Guiding principles for starting nutrition as therapy in the management of obesity

- Minimize intake of highly processed foods
- Encourage consumption of whole foods
- Encourage consumption of high-fiber, complex carbohydrates & protein
- Protein during weight loss recommendation 1-1.2gm/kg/day (lean body mass)
- Emphasize reading labels AND beware marketing claims

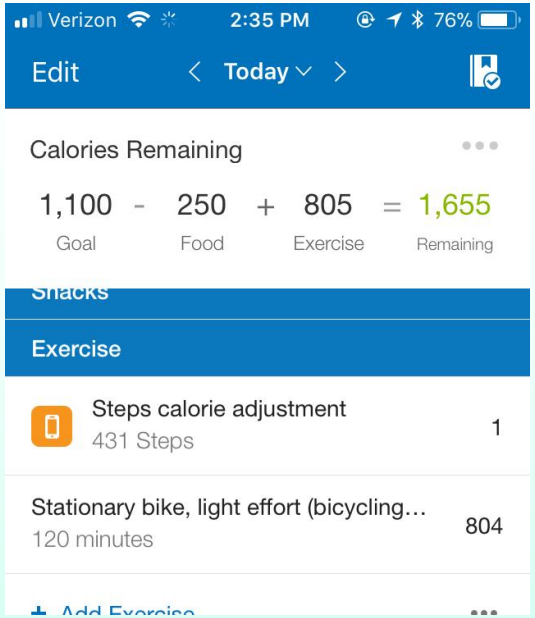
Physical Activity

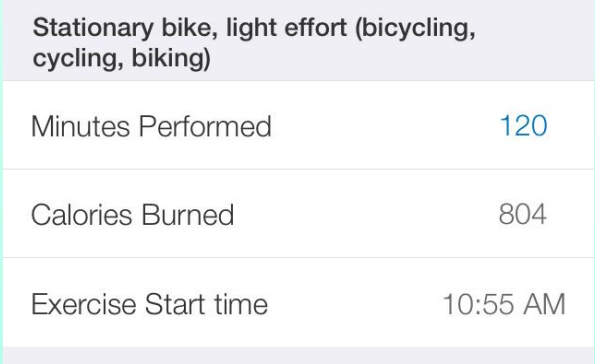
- Before prescribing an activity plan
  - Pre-exercise physical assessment!!!
    - **Physical Activity Readiness Questionnaire (PARQ)**
      - 7-question screening tool
      - Symptoms of heart disease and MS issues
      - Yes to any question – MAY need further evaluation
    - **Mobility Assessment**
      - Assess mobility, balance and gait
    - **Access Evaluation**
      - Ask about barrier to physical activity: ex: safe areas, financial ability for classes,
    - **Readiness to Change**

Pixabay.com

Study of lack of weight loss with exercise

- "Exercise" can only account for 10% of weight loss……*WHAT????????*
- In fact
  - Exercise can undermine weight loss efforts MAYBE
    - Exercise/Movement increases hunger hormones
    - And "we think" we can eat more if we exercise
    - Metabolic compensation – decreased expenditure rest of day OR basal metabolism slows
    - Expenditure Plateau – once you exercise certain amount your body decreases other expenditures
- ***BUT WAIT*** – activity IS good for many other diseases – CV, DM and prevention of obesity and Maintenance of weight loss -- ***& spares muscle mass***





Evidence: Thomas, D.M., et al., *Why do individuals not lose more weight from an exercise intervention at a defined dose? An energy balance analysis.* Obes Rev, 2012. Jakicic, J. M. (2009), The Effect of Physical Activity on Body Weight. Obesity, 17: S34–S38.

Activity during active treatment

Photo courtesy of Obesity Action Coalition

- **Guidelines:** All have activity at 150 minutes/week despite the lack of evidence for significant weight loss
  - 10-minute walks immediately after meals (vs 30 minutes a day)
    - Decrease in BG post-prandial esp after dinner
    - Increases insulin sensitivity
    - *Does time of day make a difference?*

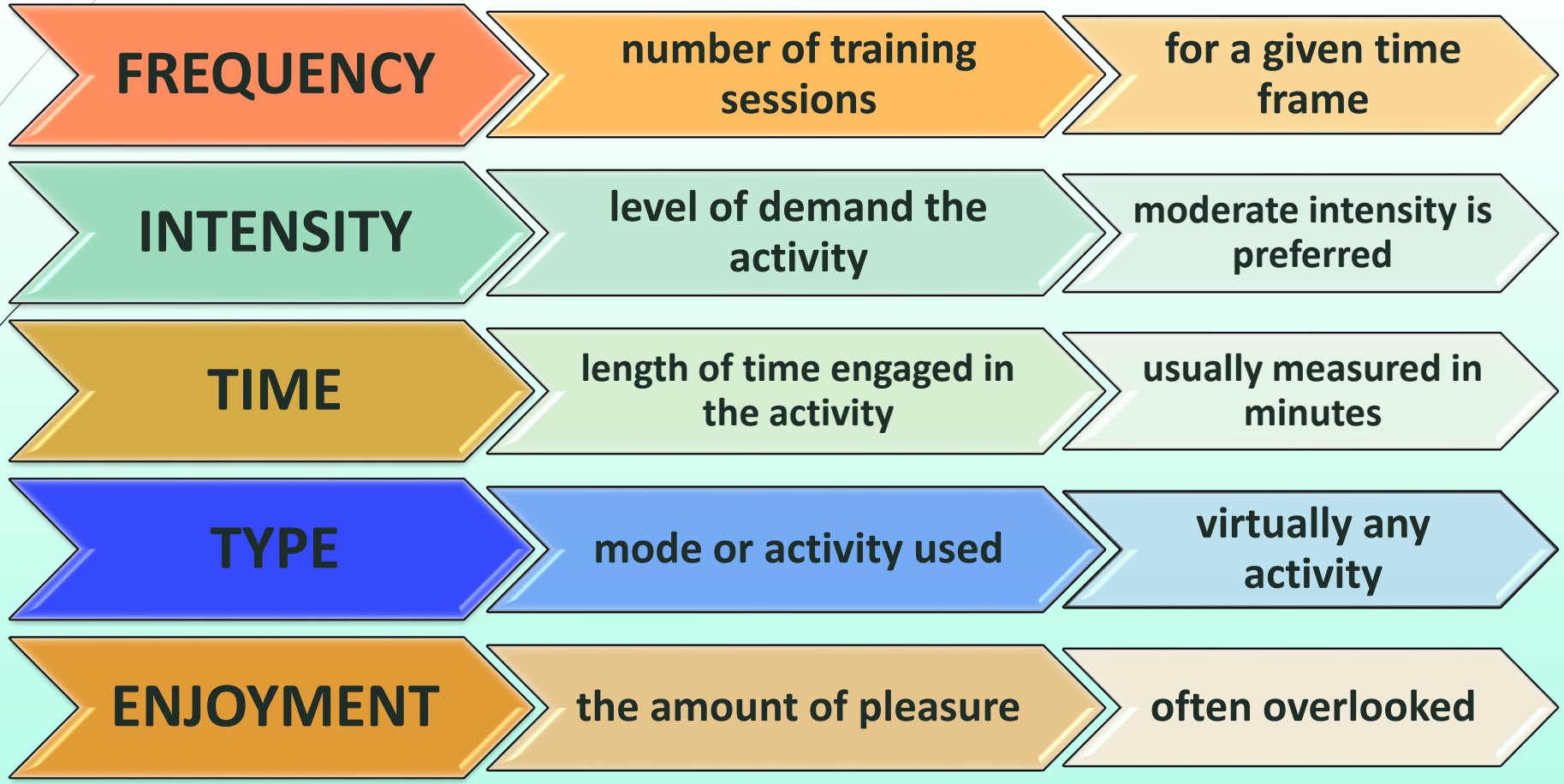
Activity for Maintenance

250-300 minutes a week may be needed above baseline

So important to start early to increase

Reynolds, A.N., Mann, J.I., Williams, S. et al. Diabetologia (2016) 59: 2572. https://doi.org/10.1007/s00125-016-4085-2

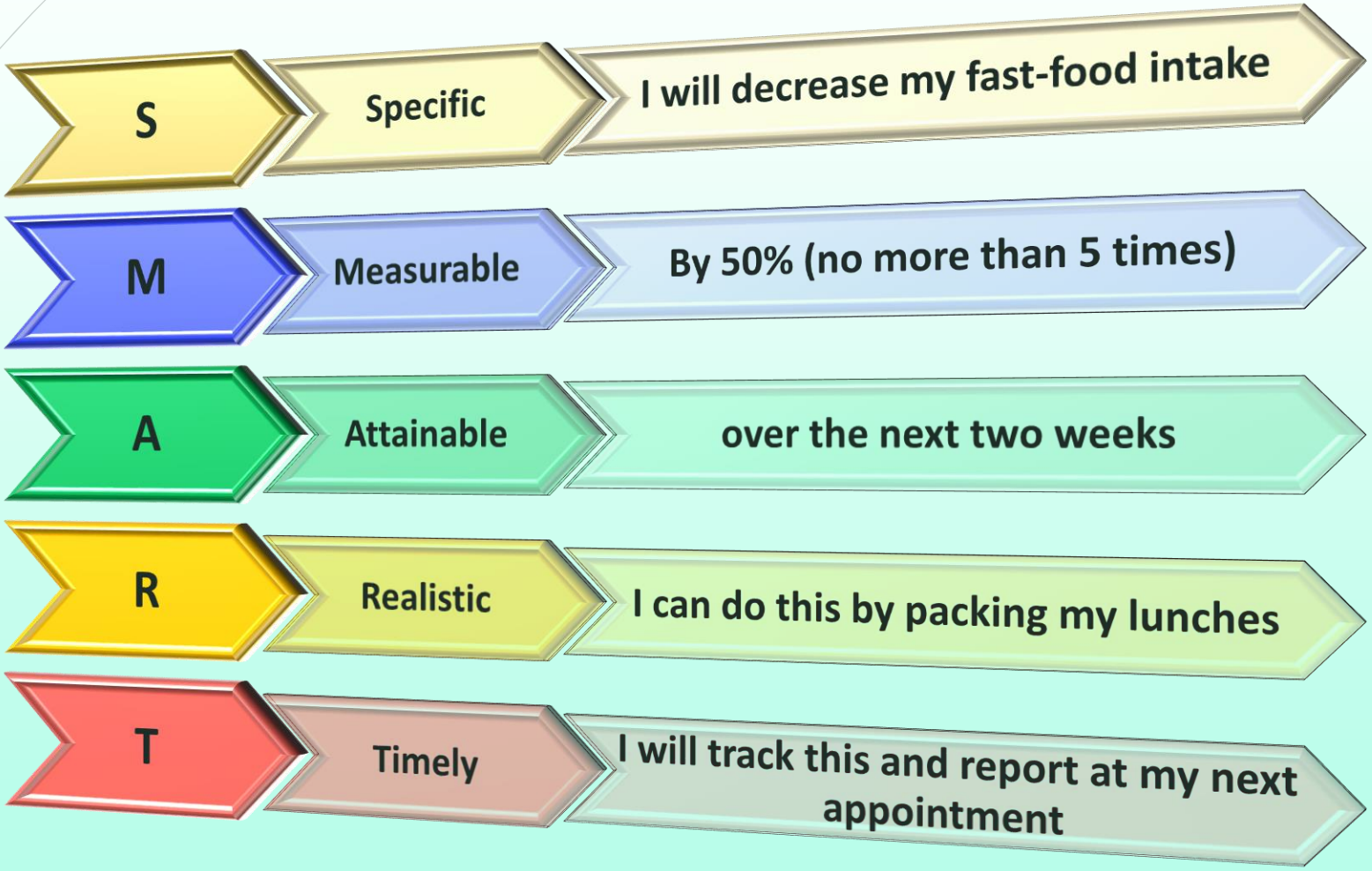
Physical Activity Prescription – F.I.T.T.E.



Behavioral Intervention

- Eating plan prescription
  - Evidence: All diets will produce weight loss, regardless of their macronutrient composition, if consistent (POUNDS Lost Study) https://www.nhlbi.nih.gov/research/resources/obesity/completed/pounds-lost.htm)
- Physical activity prescription
  - Gradually increase physical activity over 6 months for maintenance phase of high levels
- Self Monitoring
  - Identifies patterns, targets for changes, progress in meeting goals
  - Evidence: More frequent monitoring = greater weight loss (Wing RR, Tate DF, Gorin AA, et al. A self-regulation program for maintenance of weight loss. N Engl J Med 2006;355:1563–71.)
- Guided Goal Setting
  - Objective, measurable goals
- Problem solving
  - Analyze challenges – look for solutions and reset goal

Behavioral Interventions – Goal Setting



Behavioral Interventions

- Packaged programs for educational pieces
  - VA MOVE example and adapted example
    - https://www.move.va.gov/docs/NewHandouts/BehavioralHealth/B01_OldHabitsDieHard.pdf

B01

MOVE!

Old Habits Die Hard

You can change bad habits – new beginnings can start now. Replace old habits with new, healthy habits. Here are some tips:

- **Become mindful of your actions.** When you're aware of what you're doing, you can change it.
- **Make a plan and keep a record.** Decide what you want to change, make a plan, and write it down. If this does not work, tweak it. Refer to Handout S02, *Set Your Weight Loss Goals* for help.
- **Avoid situations that trigger unhealthy habits,** such as eating in front of the TV.
- **Post reminders about healthy habits** where you will notice them – on the refrigerator, on the table, in your car, on the mirror, wherever.
- **Practice makes permanent.** Build new, healthier habits with practice.

Getting Ready to Treat Obesity?

You are getting ready to make some changes to treat obesity including losing weight. Great! You are moving in the right direction.

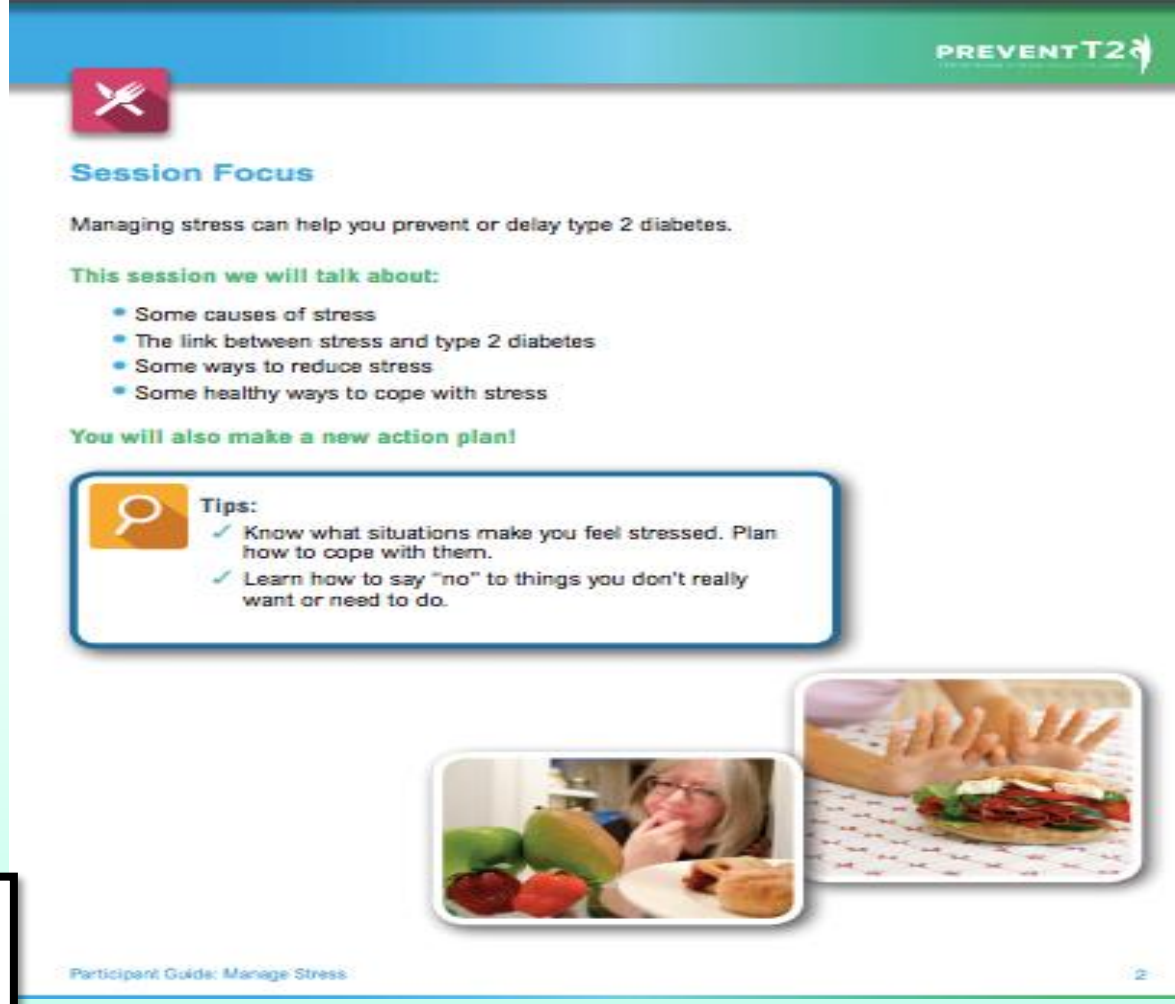
Here are some tips that may be important for your success:

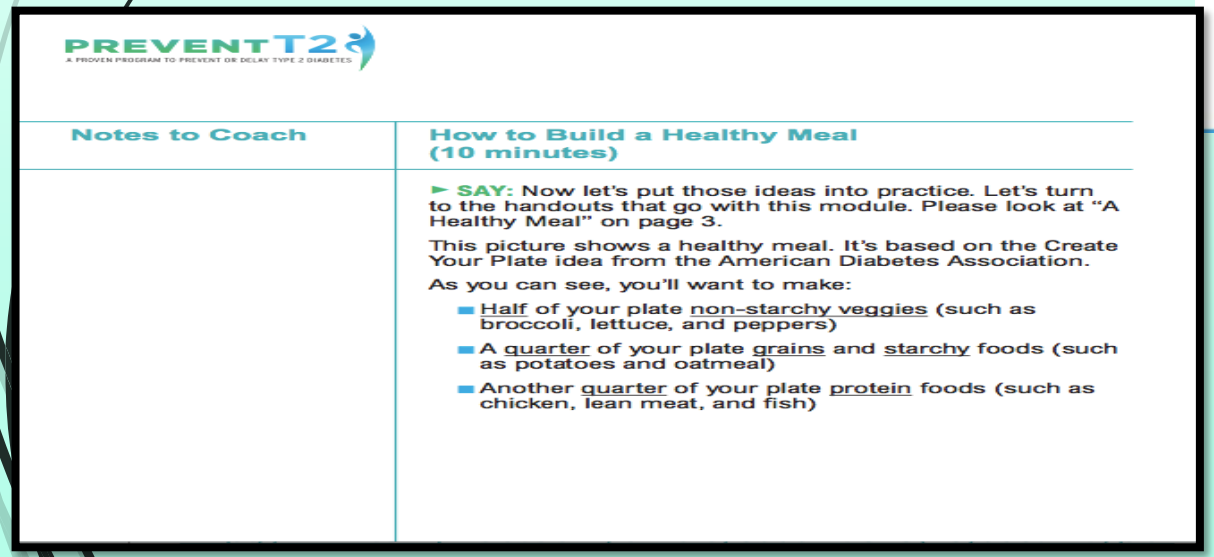
- Set a date to begin. Is this the time you are ready. This will include tracking what you eat and how much you move to participate in the program.
  - Obesity is a chronic disease and needs treatment but it does need you to participate in the program with changes in your eating and support that may include medication.
- Focus your attention on the positive benefits you will get from treating the diseas and losing weight.
- Make treating this disease and the changes a top priority in your life.
- Make a "SMART" plan to begin. **SMART stands for:**
  - **S**pecific: There are specific actions to take to reach the goal.
  - **M**easurable: You know how much to do and when the goal has been achieved.
  - **A**ction-oriented: Take action to achieve your goal(s).
  - **R**ealistic: The goal is practical given your resources and time.
  - **T**ime-based: There is a specific timeframe to achieve the goal.

  Example: "I will walk up the stairs *(Specific, Realistic, and Action-oriented)*, once daily *(Measurable)* for the next month *(Time-based)*."
- Plan how to deal with things that might get in your way.
- It is OK to make small changes!!!!!!
- Find others who will support you in a positive way, and tell them what you are about to do. Ask for their help and encouragement.

Behavioral Interventions

- Packaged programs for educational pieces [SEP]
  - DPP example
    - https://www.cdc.gov/diabetes/prevention/pdf/t2/Participant-Module-9_Manage_Stress.pdf





"Lifestyle supports obesity treatment, but it doesn't impact the pathophysiology of the disease." Dr. T. Garvey, presentation at Clinical Pathways in T2D Care

Assess Modifiable Lifestyle Factors: MESSA

M Review weight gain promoting **Medications** and use of **current medications**.

E Review **Eating**: food intake(*what*), eating behaviors(*how*)

S Review **Sleep***(duration)*, **Sleep behaviors** (*circadian rhythm*)

S Review **Stressors**, intrinsic (self), extrinsic (environment)

A Review **Activity,** intentional physical activity and daily movement

Adapted from MEDDS courtesy of S. Butsch from Cleveland Clinic

Return to Ellen

Ellen's assessment

M Review weight gain promoting **Medications** and adherence to current medication plan

E Review **eating**: food intake(*what*), eating behaviors(*how*): *tries to be careful most days (see three-day tracking) but finds she is very hungry in the evening and craves sweets and salty items*

S Review **Sleep***(duration)*, **Sleep behaviors** (*circadian rhythm*) *patient states is usually in bed by 11pm and asleep quickly, rarely feels rested*

S Review **Stressors**, intrinsic (self), extrinsic (environment): – this past year took on a new position as a case manager and finds this stressful. Has two teenagers with one daughter recently diagnosed with bipolar disorder

A Review **Activity:** *nothing specific right* now

Common Obesogenic Medications and Alternatives

Medication class	Obesogenic medications	Mechanism of weight gain	Alternatives
Anticonvulsants	Carbamazepine Gabapentin Pregabalin Valproic acid	Hypothalamic mediated increase in appetite and decrease in energy expenditure	Duloxetine, topiramate, zonisamide
Antidepressants/ antianxiety medications	Amitriptyline Fluoxetine Mirtazapine Nortriptyline Paroxetine	Appetite increase stimulated via serotonergic pathways	Sertraline, citalopram, escitalopram, bupropion
Antihistamines	Diphenhydramine Fexofenadine Hydroxyzine Cetirizine	Increase appetite, alter body weight regulation	Loratidine
Antipsychotics	Olanzapine Quetiapine Risperidone Ziprasidone	Increase orexigenic and decrease anorexigenic neuropeptide expression in hypothalamus	Cariprazine, aripiprazole
	Thiazolidinediones	Act as insulin sensitizers, cause water retention	

IUD = intrauterine device; MoA = mechanism of action; SGLT2 = sodium glucose cotransporter 2.

Modified from Desalermos A, et al. *Obesity (Silver Spring)*. 2019;27:716-723.

Common Obesogenic Medications and Alternatives

Medication class	Obesogenic medications	Mechanism of weight gain	Alternatives
Beta blockers	Atenolol Metoprolol propranolol	Inhibit sympathetic tone, decrease lipolysis, reduce exercise tolerance, increase fatigue, and reduce resting energy expenditure	Carvedilol; limited given MoA; assess risk vs benefit
Corticosteroids and hormones	Medroxyprogesterone Oral contraceptives Prednisone	Alters energy intake and expenditure of the human body	Progesterone IUD, copper IUD
Diabetes medications	Insulin	Anabolic and adipogenic hormone, decreases daily energy expenditure	GLP-1, SGLT2, metformin
	Sulfonylureas	Increase secretion of insulin and cause water retention	
	Thiazolidinediones	Act as insulin sensitizers, cause water retention	

IUD = intrauterine device; MoA = mechanism of action; SGLT2 = sodium glucose cotransporter 2.

Modified from Desalermos A, et al. *Obesity (Silver Spring)*. 2019;27:716-723.

May 3, 2018

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Mcdonalds Ice Coffe - Iced Coffee, 1 large coffee	240	41g	9g	2g	0mg	0mg	0g	0g
Mcdonald's - Hash Brown (Breakfast), 1 patty	150	16g	9g	1g	0mg	320mg	0g	1g
Mcdonald's - Breakfast Sausage Burrito, 1 Burrito	300	26g	16g	12g	115mg	790mg	2g	1g
Lunch								
Soda - Diet Coke 16oz, 16 oz	0	0g	0g	0g	0mg	40mg	0g	0g
ranch dressing - Dressing, 2 tbsp	140	2g	14g	1g	10mg	260mg	1g	0g
Caesar salad - Salad, 1 plate	200	10g	14g	5g	60mg	380mg	2g	2g
Lean Cuisine - Pepperoni Pizza, 1 Package (6 ounces)	380	55g	9g	20g	25mg	680mg	7g	3g
Dinner								
Stouffers - Lasagna, 304 grams	340	41g	11g	19g	30mg	910mg	10g	4g
Snacks								
Bryers - Snickers Ice Cream, 1.5 cup	450	75g	30g	9g	75mg	285mg	60g	0g
Pringles - Barbecue Potato Chips, 45 chips	450	48g	27g	3g	0mg	420mg	3g	3g
Coles - Medium Diet Coke, 1 cup	0	0g	0g	0g	0mg	20mg	0g	0g
Girl Scout Cookies - Thin Mints, 4 cookies	160	22g	8g	1g	0mg	125mg	10g	1g
TOTAL:	**2,810**	**336g**	**147g**	**73g**	**315mg**	**4,230mg**	**95g**	**15g**

Food Notes

cookies were at 2pm in work break room

evening was potato chips while watching TV
then ice cream just before bed

May 4, 2018

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Hash brown - Mcdonald S, 1 patty	150	15g	9g	1g	0mg	310mg	0g	2g
McDONALD'S, Bacon, Egg & Cheese McGRIDDLES, 1 item 5.8 oz	449	43g	22g	20g	243mg	1,110mg	16g	1g
Mcdonald's - Iced Coffee Medium, 22 oz.	190	31g	7g	1g	25mg	50mg	30g	0g
Lunch								
Red Vines - Original Red Twists, 12 twists	300	75g	0g	0g	0mg	45mg	36g	0g
Diet Coke - Coke, 375 ml	1	0g	0g	0g	0mg	56mg	0g	0g
Movie Theater Popcorn - Large Popcorn, 1 Bag	975	75g	31g	13g	0mg	443mg	0g	9g
Dinner								
Kraft - Classic Cesar Dressing, 2 tbs	110	2g	12g	0g	10mg	320mg	1g	0g
Generic - Side Caesar Salad, 1 cup	170	0g	9g	5g	20mg	300mg	0g	2g
Aladdin - Grilled Chicken Breast, 1 Each	171	0g	4g	32g	88mg	77mg	0g	0g
Snacks								
Snickers - Ice Cream Bars, 1 bar (50g)	180	18g	11g	3g	15mg	60mg	15g	1g
TOTAL:	**2,696**	**259g**	**105g**	**75g**	**401mg**	**2,771mg**	**98g**	**15g**

Food Notes

ice cream bar was while watching TV at night

May 5, 2018

FOODS	Calories	Carbs	Fat	Protein	Cholest	Sodium	Sugars	Fiber
Breakfast								
Orange - Juice, 8 oz	110	26g	1g	2g	0mg	15mg	22g	1g
Waffle House - Hash Browns, 147 grams	205	15g	27g	12g	0mg	0mg	0g	0g
Fast foods - Egg, scrambled, 2 eggs	199	2g	15g	13g	400mg	211mg	1g	0g
Waffle House pecan waffle - Waffle House, 1 One	450	40g	29g	11g	78mg	575mg	1g	1g
Lunch								
Diet Coke - 12oz Can, 12 oz can	0	0g	0g	0g	0mg	40mg	0g	0g
Thin mints - Thin Mints, 8 cookies	320	44g	16g	2g	0mg	220mg	20g	2g
Dinner								
Olive Garden - Tropical Sangria, 1 glass	220	32g	0g	0g	0mg	10mg	0g	0g
Olive Garden - Chicken Fettuccine, 1 entree	1,480	95g	94g	63g	395mg	1,480mg	9g	4g
Olive Garden - Breadstick, 4 Breadstick	560	100g	10g	16g	0mg	1,840mg	4g	0g
Olive Garden - Italian. Salad, 2 cups	150	11g	10g	2g	0mg	760mg	0g	2g
Snacks								
Bryers - Snickers Ice Cream, 1.5 cup	450	75g	30g	9g	75mg	285mg	60g	0g
TOTAL:	**4,144**	**440g**	**232g**	**130g**	**948mg**	**5,436mg**	**117g**	**10g**

Food Notes

I didn't pack my lunch and foraged at work and found the thin mints

This was my sisters bday celebration and we went to Olive Garden

Ice cream was at night watching TV

Shared Decision Making

Core Components of Shared Decision-Making

	Meaning	Objective
Justify	Recognize when best current evidence shows there is no clear best choice for a particular decision	Create a conversation and partnership
Share information (both ways)	Inform patient of available options and benefits and harms of each of them; listen to patient's concerns and opinions about options and evidence	2-way exchange of high-quality information
Elicit values and preferences (both ways)	Listen to and elicit patient's preferences about outcomes, goals, concerns, and priorities for treatment	Understand what patient values most, given his/her circumstances
Shared decision talk	Reach a decision after integrating all information (including possibilities of no treatment or deferral of the decision)	Reach a decision that fits unique patient's values, preferences, and context

Modified from Rodriguez-Gutierrez R, et al. *Lancet Diabetes Endocrinol*. 2016;4:706-716.

What are my options related to food plans?

- You can choose to **do nothing**.
- You can choose to make **choose an eating plan.**
- You can choose to **make individual changes** to your eating

This decision aid can help you and your healthcare professional decide together which is the best option for you. The table gives some information about each eating plan and the evidence for them for you to think about when choosing the best option for you.

Table: What are the options for an eating plan?

Do nothing	
What does this involve?	• Carrying on as I am.
Pros	• No changes to make.
Cons	• You are more likely to have no change in obesity and thereby stay at risk for the 200+ obesity related complications

Select an eating plan	
What does this involve?	• Selecting a pattern for eating
Pros	• Allows for a chance change eating as a part of the treatment plan and provide weight loss • Impact obesity related complications through weight loss
Cons	• Changing habits can be hard. • Requires time to plan, prepare and follow an eating plan • You'll have to remember to track your food each day

Select an eating plan				
	Low Fat	Low carb	Mediterranean	Whole Food/Plant Based
Structure	Fat intake from to 15-20% of total calories Example: DASH	20-60 grams of carbohydrates Example: Ketogenic	Nine dietary components **Do NOT have:** Sugar-sweetened beverages, added sugars, processed meat, refined grains, refined oils and other highly processed foods.	Foods are minimally processed Focuses on plants, including vegetables, fruits, whole grains, legumes, seeds and nut Avoid all animal based foods: meant, dairy, eggs and processed foods, example sugar, refined grains, protein isolates
Evidence	• shown to decrease total and LDL cholesterol by 10 to 20% • Improvement in blood pressure • +/- 5-10% weight loss	• Improves metabolic markers insulin levels • Hypothesis – decreased carbohydrates cause body to burn stored fat for energy • Improves cholesterol levels HDL triglycerides • Weight loss of >10% in many studies • Increase satiety	•Improves heart disease •Anti-inflammatory •Protect against dementia, Alzheimer's, Parkinson's •Reduction in all cause death – including cancer •50-70% reduction in second CV event Predimed Study: 7447 individuals CV risks reduced by 30% even w/o calorie reduction	•Improves metabolic markers •Improves BP •May reduce premature all-cause mortality •Decrease visceral adipose tissue
For more information	https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/dash-diet/art-20048456	https://www.virtahealth.com/categories/practical-tips https://www.dietdoctor.com/low-carb/keto	https://goldringcenter.tulane.edu/community-member-information/handouts/	https://www.forksoverknives.com/how-tos/plant-based-primer-beginners-guide-starting-plant-based-diet/ https://nutritionstudies.org/whole-food-plant-based-diet-guide/

Select an eating plan				
	Time restricted eating		Calorie Restricted	
	Alternate Day Fasting	Intermittent Fasting	Low Calorie Diet	Very Low-Calorie Diet
Structure	Varies from actual fasting to decreased caloric intake on alternate days Zero calories 25% of calorie needs 500-750 calories	16 hours fasting: 8 hours restricted feeding 12 hours fasting: 12 hours restricted feeding 18 hours fasting: 6 hours eating with early eating	800 – 1600kcal/day Structure can be increased with the use of a meal plan Can be a full meal replacement plan More traditional "dieting" can enhance dietary adherence via portion control, limiting dietary variety, and convenience decrease challenges with making decisions about what to consume	Very structured 70-100 g protein/day < 800 kcal/day VLCD likely to need pharmacology support Generally utilizes packaged program of food
Evidence	• Decreased inflammatory markers • Decreased visceral adipose tissue • Improve metabolic profile – reductions in glucose and insulin levels • Improve lipid profile • Decreased BP • Particularly effective for weight loss among middle-aged people	• Decreased blood pressure and improved Insulin sensitivity, • Inflammation improved • Improved gut microbiota • Weight loss • Limited data linking intermittent fasting regimens with clinical outcomes, such as diabetes, cardiovascular disease, cancer, or other chronic diseases, such as Alzheimer's disease	• Diabetes remission (DIRECT trial) • Greater short-term weight loss	• VLCD in people with T2D was associated with significant weight loss, reduction in blood glucose profile and improvement in cardiovascular risk profile (decrease in blood pressure and total cholesterol) • VLCDs produce significantly greater weight loss in the short-term initial weight, there was no difference in weight loss between the diets in long- term follow-up
For more information	https://www.livescience.com/alternate-day-fasting	https://www.hopkinsmedicine.org/health/wellness-and-prevention/intermittent-fasting-what-is-it-and-how-does-it-work#:~:text=Intermittent%20fasting%20is%20an%20eating,reverse%20%E2%80%94%20some%20forms%20of%20disease.	https://www.mskcc.org/experience/patient-support/nutrition-cancer/diet-plans-cancer/low-calorie-diet	https://www.nhs.uk/live-well/healthy-weight/managing-your-weight/very-low-calorie-diets/#:~:text=A%20very%20low%20calorie%20diet,or%20preparing%20for%20fertility%20treatment

Alternative to selecting an eating plan – selecting one of the following

- Minimize intake of highly processed foods
- Decrease amount of carbohydrates
- Increase amount of protein
- Increase consumption of whole foods
- Increase consumption of high-fiber, complex, carbohydrates
- Read labels and use serving sizes

Mindful Eating

What is Mindfulness?

Mindfulness means being fully aware of what is going on within and around you at each moment. Mindfulness can be applied to many aspects of life. Being mindful of your eating may help with weight management. Being mindful involves being aware of yourself and your surroundings physically, emotionally and mentally. It means paying attention to each changing moment.

What is Mindful Eating?

Mindful eating takes the concept of mindfulness and applies it to why, when, where, what, and how you eat. This means being aware of both the physical and emotional feelings connected to eating.

- **Observe your body.** Notice hunger and fullness signals that guide you to start and stop eating.
- **Do not judge yourself** or your reaction to food.
- **Notice your reaction to food.** What do you like, what don't you like?
- **Savor your food.** While eating, notice all of the colors, smells, flavors, and textures of the food.

Mindfulness may help you to avoid overeating. First bites may be the most satisfying, and additional bites may not be as pleasurable. This can help with portion control.

BE AWARE Ask yourself, "Am I....."

- Physically hungry? (on a scale from "1" to "10")
- Eating quickly or slowly?
- _Dining in-the-moment.–.Am I mindlessly munching or noticing each bite?

Adapted from VA MOVE! for NP dba NP Obesity Treatment Clinic

1016 W. University Ave, Ste 206
Flagstaff, AZ
928-814-8011
Fax 1-888-877-4669

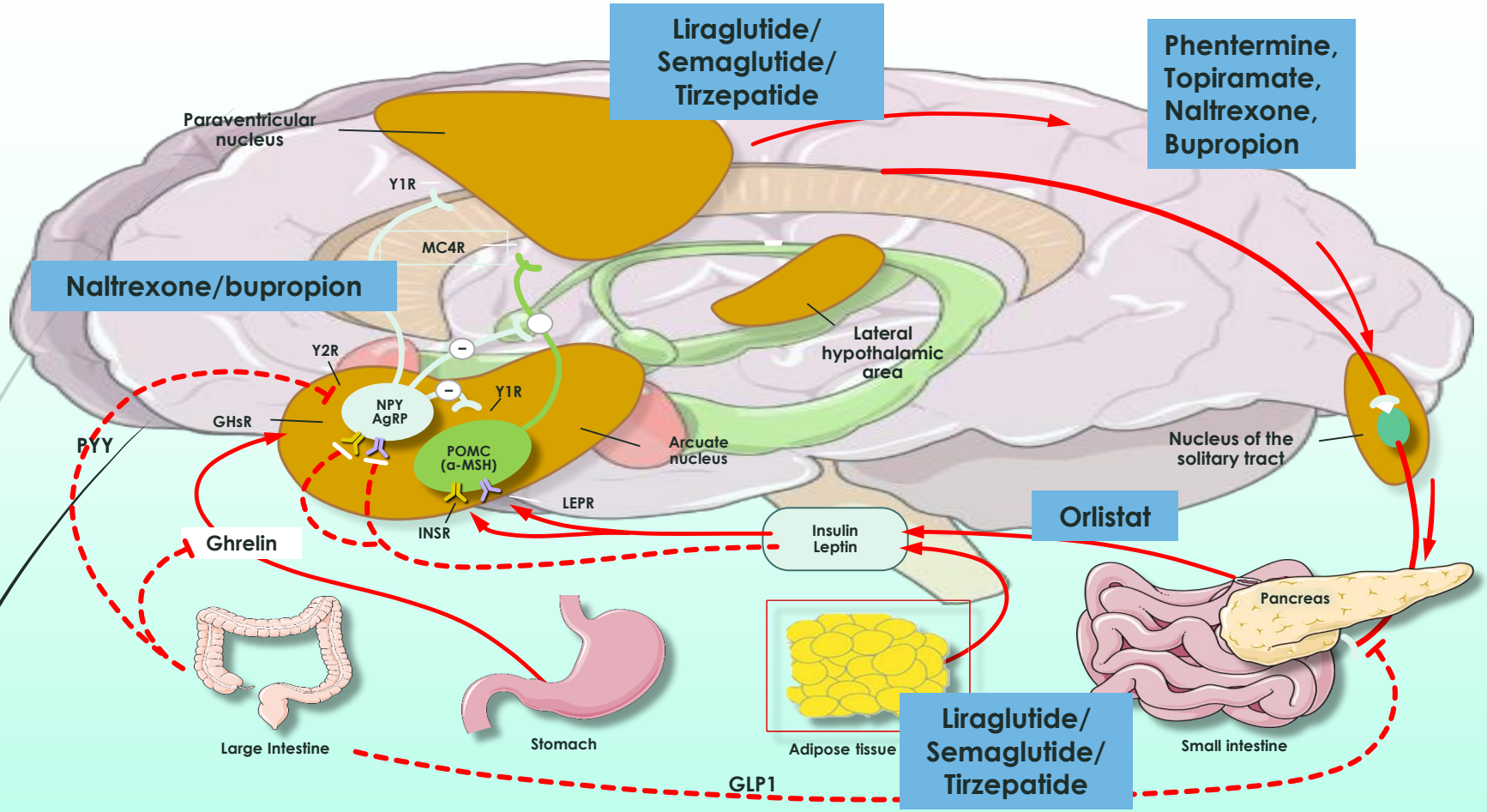
Ellen’s insurance

- Ellen has commercial insurance through her employer
- Have her determine if she has anti-obesity medication coverage by reviewing her formulary

Pharmacologic Therapy

Therapy Options, Factors to Consider When Selecting Therapy, and Efficacy/Safety Evidence

Medication Mechanisms



α-MSH, α-melanocyte-stimulating hormone; GHsR, growth hormone secretagogue receptor; INSR, insulin receptor; LEPR, leptin receptor; MC4, melanocortin-4 receptor; POMC, pro-opiomelanocortin; Y1R, NPY Y1 receptor; Y2R, NPY Y2 receptor.

Apovian CM, et al. *J Clin Endocrinol Metab.* 2015;100(2):342-362.

Why Use Medication With Obesity Treatment?

- Therapy aimed at the dysregulated weight regulated biology
- Metabolic adaptation difficult to treat with diet and behavior modification alone
- Anti-obesity medications can assist in managing the > 200 obesity induced complications/comorbidities

Greenway FL. *Int J Obes (Lond)*. 2015;39(8):1188–1196.

General Considerations in Pharmacologic Initiation

Pharmacologic interventions may be helpful as adjuvant therapy with lifestyle interventions for patients 18 years and older* with BMI ≥30 kg/m^2 or ≥27 kg/m^2 with comorbidities.

- Different patients respond to different medications
  - If one option does not work, consider others
- Discontinue medication in patients who do not respond with weight loss of at least 5% at 12 weeks after maximum dose†
- Avoid in pregnancy
  - Pregnancy tests at baseline
  - Consider a disclosure signature

*December 2020: liraglutide label change to include 12–17-year-olds with body weight of >60 kg and initial BMI corresponding to 30 kg/m^2 or greater for adults.
†Liraglutide label suggests only 4% weight loss at 12 weeks after maximum dose.
Apovian CM, et al. *J Clin Endocrinol Metab* 2015;100(2):342-362.

Medications to treat obesity

FDA approved

Orlistat
Phentermine**
Phentermine/Topiramate ER #
Bupropion/Naltrexone XL
Liraglutide 3mg #
Semaglutide 2.4mg. #
Setmelanotide *monogenic obesity**

approved for adults and adolescents

** Phentermine one of four medications

Additional Medications that may cause weight loss and used off label

- Topiramate
- Zonisamide
- Bupropion
- Naltrexone
- Metformin
- Dulaglutide
- Exenatide
- Liraglutide
- Lixisenatide
- Semaglutide

GLP-1 RA

Ozempic

- Tirzepatide

GIP/GLP-1 RA (Mounjaro)

- Pramlintide

Amylin analogue

- Canagliflozin
- Dapagliflozin
- Empagliflozin

SGLT2I

FDA-Approved Short-Term (Anti) Obesity Medications

Generic Drug*	Dose	Contraindications	Side Effects
Phentermine	8-37.5 mg	Anxiety disorder, CVD, hypertension, MAO inhibitors, glaucoma, hyperthyroidism, seizures, pregnancy/ breastfeeding, drug abuse history	Insomnia, palpitations, tachycardia, dry mouth, taste alterations, dizziness, tremors, headache, diarrhea, constipation, vomiting, gastrointestinal distress, anxiety, restlessness, increased blood pressure
Diethylpropion	25 mg or 75 mg, SR		
Phendimetrazine	17.5-70 mg or 105 mg, SR		
Benzphetamine	25-50 mg		

*Mechanism of action = sympathomimetic-noradrenergic causing appetite suppression.
MAO, monoamine oxidase; SR, sustained release.
DailyMed. https://dailymed.nlm.nih.gov/dailymed/index.cfm. Accessed February 23, 2021. Bray GA, et al. *Circulation*. 2012;125(13):1695-1703. Apovian CM, et al. *J Clin Endocrinol Metab*. 2015;100(2):342-362.

Phentermine

- US Drug Enforcement Agency scheduled IV drug
  - Risk for addiction
- Not indicated for long-term use
  - 13 weeks by label

Endocrine Society allows for possible long-term use:

- No CVD
- No psychiatric/substance abuse history
- Has been informed about therapies that are approved for long-term use
- Document off-label use in patient's medical record
- No clinically significant increase in pulse/BP when taking phentermine
- Demonstrates significant weight loss with phentermine
- Start at 7.5 or 15 mg/d—dose escalate if not achieving significant weight loss
- Monitor monthly during dose escalation

Apovian CM, et al. *J Clin Endocrinol Metab.* 2015;100(2):342-362.

FDA-Approved (Anti) Obesity Medication

Generic (listed alphabetically)	Mechanism of Action
Liraglutide (subcutaneous injection)	GLP-1 receptor agonist
Naltrexone/bupropion ER (oral)	Opioid receptor antagonist; dopamine and noradrenaline reuptake inhibitor
Orlistat (oral)	Pancreatic lipase inhibitor—impairs gastrointestinal energy absorption, causing excretion of approximately 30% of ingested triglycerides in stool
Phentermine/topiramate-ER (oral)	Noradrenergic + GABA-receptor activator, kainite/AMPA glutamate receptor inhibitor causing appetite suppression
Semaglutide (subcutaneous injection)	GLP-1 receptor agonist
Tirzepatide (subcutaneous injection)	GLP-1/GIP dual receptor agonist

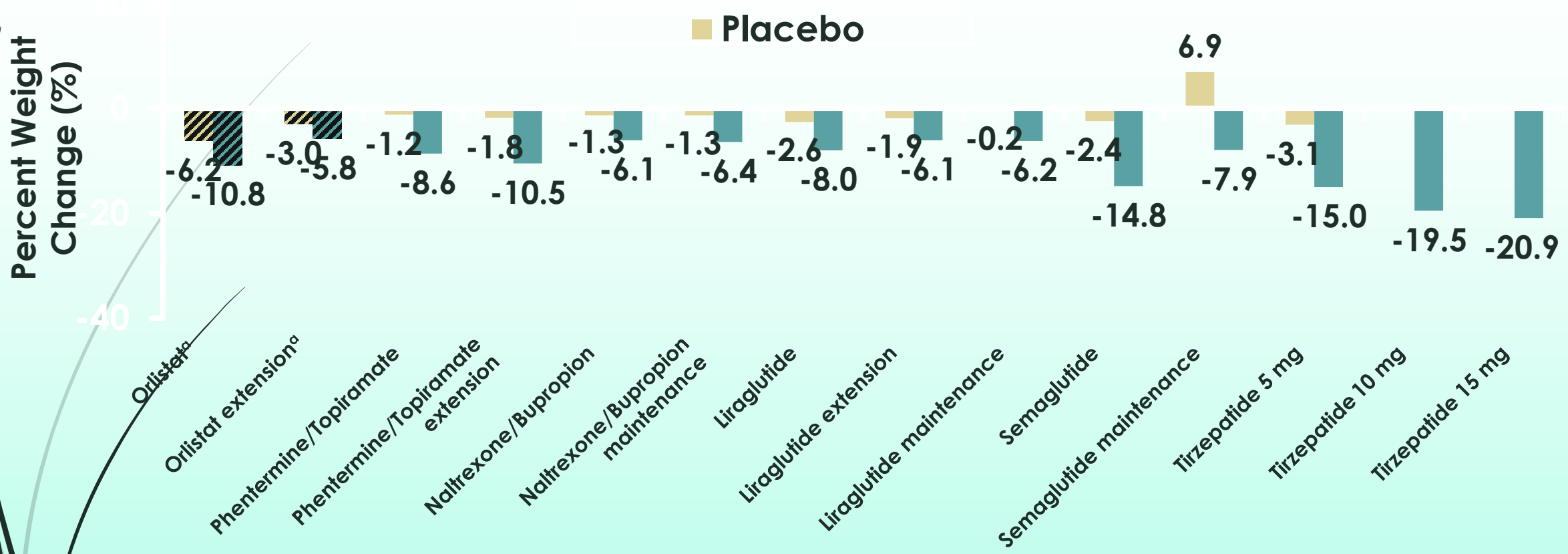
AMPA, α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid; ER, extended release; GABA, gamma-aminobutyric acid; GLP, glucagon-like peptide.
DailyMed. https://dailymed.nlm.nih.gov/dailymed/index.cfm. Accessed February 23, 2021.

Long-Term Efficacy for (Anti) Obesity Medications

Therapy (listed alphabetically)	Length of Trial	Mean Weight Loss
Liraglutide	≥1 year	-7.4% (full dose)
Naltrexone/bupropion	≥1 year	-5.4%
Orlistat	≥1 year	-6.1%
Phentermine/topiramate	≥1 year	- 9.8% (full dose)
Semaglutide	≥ 1 year	14.9% (full dose)
Tirzepatide	≥ 1 year	20.9% (full dose)

Bray GA, et al. *Lancet* 2016;387(10031):1947-1956.
Kushner, R et al. (2020). *Obesity (Silver Spring, Md.)*, *28*(6), 1050–1061.
Chakhtoura M, et al. *EClinicalMedicine*. 2023;58:101882.

Mean Percent (%) Weight Change Reported in the Main Phase 3 and Extension Trials of Antiobesity Medications



Orlistat: XENDOS trial (years 1 and 4). Phentermine/topiramate: CONQUER and SEQUEL trials. Naltrexone/bupropion: COR-I and COR-II trials. Liraglutide: SCALE Obesity, SCALE Obesity and Prediabetes Extension, and SCALE maintenance trials. Semaglutide: STEP 1 and STEP 4 trial.
All trials are listed in order as seen in the figure from left to right. The grey color represents placebo arms; the red color represents intervention arms.
[a]The mean weight change in the orlistat group is in kg not in percent (stripped bar charts).

Chakhtoura M, et al. *EClinicalMedicine*. 2023;58:101882.

Orlistat

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
60 mg OTC 120 mg TID within 1 h of fat-containing meal	• Mean weight loss ranged from 3.9-10.2% at Year 1 in 17 RCTs (120 mg TID) • ↓ BP, TC, LDL-C, fasting glucose at 1 year • Slows risk of progression to T2DM	Chronic malabsorption syndrome, pregnancy, breastfeeding, cholestasis, some medications (eg, warfarin, antiepileptic agents, levothyroxine, cyclosporine)	Oily spotting, cramps, flatus with discharge, fecal urgency, fatty oily stool, increased defecation, fecal incontinence

Practical Considerations	• Consider fat-soluble multivitamin • Limit fat intake to 30% of calories • Counsel on risk of GI adverse events

Bragg R, et al. *J Am Assoc Nurse Pract* 2016;28(2):107-115. Kahan S. *Am J Manag Care*. 2016;22(7 Suppl):S186-S196.

Phentermine/Topiramate ER

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
• Initiate treatment at 3.75 mg/23 mg for 2 weeks • Increase to 7.5 mg/ 46 mg • Escalate to 11.25 mg/ 69 mg for 2 weeks then to max 15 mg/92 mg	• 10% weight loss with treatment vs 2% with placebo • Improved cardiometabolic markers • Reduced progression to T2DM	Pregnancy and breastfeeding, hyperthyroidism, glaucoma, use of MAO inhibitors	Paresthesia, dizziness, taste alterations, insomnia, constipation, dry mouth, elevation in heart rate, memory or cognitive changes

Practical Considerations

- Titrate dose at initiation and discontinuation
- Drug Enforcement Agency Schedule IV drug
- Risk evaluation and mitigation strategy
- Counsel about risk for mood disorders, suicidal thoughts
- Taper highest dose every other day for 1 week if discontinuation is necessary
- Women of childbearing age: pregnancy prevention plan and monthly pregnancy testing
- 7/2022 approved for adolescents >12 years old with BMI of 95th percentile or greater

Bragg R, et al. *J Am Assoc Nurse Pract* 2016;28(2):107-115. Kahan S. *Am J Manag Care*. 2016;22(7 Suppl):S186-S196. https://www.fda.gov/drugs/news-events-human-drugs/fda-approves-treatment-chronic-weight-management-pediatric-patients-aged-12-years-and-older

Liraglutide

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
Weekly titration by 0.6 mg over 5 weeks to target dose of 3.0 mg	• Mean weight loss 9% at 1 year • Reduced progression to T2DM in patients with prediabetes • Reduced risk of weight regain at 1 year	Medullary thyroid cancer history, multiple endocrine neoplasia type 2 history, history of pancreatitis, pregnancy, breastfeeding	Nausea, vomiting, diarrhea, constipation, hypoglycemia in patients with T2DM, increased lipase, increased heart rate, pancreatitis

Practical Considerations	Injectable administration FDA approved for use in adults with BMI ≥30kg/m^2 or ≥27 kg/m^2 with at least one complication Approved 12/2020 label change:	treatment of obesity in adolescents aged 12 to 17 years with a body weight of at least 60 kg and an initial BMI corresponding to 30 kg/m^2 or greater for adults

Bragg R, et al. *J Am Assoc Nurse Pract* 2016;28(2):107-115. Kahan S. *Am J Manag Care*. 2016;22(7 Suppl):S186-S196.

Naltrexone/Bupropion ER

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
• Initiate 8 mg/90 mg x 1 week • Weekly escalation to target dose of 32 mg/360 mg (2 tablets BID)	• Weight loss of 8.2% vs 1.4% (placebo) • Improved cardiometabolic parameters • Fewer cravings • Lowered HbA1c in patients with T2DM	Uncontrolled hypertension, seizure disorder, anorexia or bulimia, drug or alcohol withdrawal, chronic opioid use, MAO inhibitors, caution with renal/ hepatic impairment	Nausea, constipation, headache, dizziness, vomiting, insomnia, dry mouth Transient increase in BP

Practical Considerations

- Titrate dose on initiation
- Monitor BP
- Monitor closely for depression

Bragg R, et al. *J Am Assoc Nurse Pract* 2016;28(2):107-115. Kahan S. *Am J Manag Care*. 2016;22(7 Suppl):S186-S196.

Semaglutide

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
Weekly injections with titration every four weeks, 0.25 mg, 0.5 mg, 1 mg, 1.7 mg or 2.4 mg dose of 2.4 mg	• Mean weight loss 14.9% at 68 weeks	Medullary thyroid cancer history, multiple endocrine neoplasia type 2 history, suicidal behavior and ideation, pregnancy, breastfeeding, acute gallbladder disease, diabetic retinopathy, acute kidney injury	Nausea, vomiting, diarrhea, constipation, hypoglycemia in patients with T2DM, increased lipase, increased heart rate, pancreatitis

Practical Considerations

- Injectable administration
- FDA approved for use in adults with BMI ≥30kg/m^2 or ≥27 kg/m^2 with at least one obesity related comorbid condition
- 12/2022 approved for 12–17-year-old with obesity
- 2024 label approval for reduction of MACE
- **Nausea most common issue – slow titration**

https://www.novo-pi.com/wegovy.pdf

Tirzepatide

Dose Frequency	Efficacy	Contraindications/ Precautions/Warnings	Side Effects
Weekly injections with titration every four weeks, 0.25 mg, 0.5 mg, 1 mg, 1.7 mg or 2.4 mg dose of mg	• Mean weight loss	Medullary thyroid cancer history, multiple endocrine neoplasia type 2 history, suicidal behavior and ideation, pregnancy, breastfeeding, acute gallbladder disease, diabetic retinopathy, acute kidney injury	Nausea, vomiting, diarrhea, constipation, hypoglycemia in patients with T2DM, increased lipase, increased heart rate, pancreatitis

Practical Considerations

- Injectable administration
- FDA approved for use in adults with BMI ≥30kg/m^2 or ≥27 kg/m^2 with at least one obesity related comorbid condition
- **Nausea most common issue – slow titration**

Shared decision making

Considerations for Selecting an Anti-Obesity Medication

Reimbursement/Cost

eXcluded for Contraindications or Side Effects

Additional benefit to use an AOM: Complications or patient history

Off label options

Medication selection with patient – shared decision making

How do I make a decision for an anti-obesity medication or prescribed device?
Options and choice for using medications to treat obesity

What are my options related to anti-obesity medications/prescribed device?

- You can choose to **do nothing and choose not to use an anti-obesity medication or the prescribed device**.
- Review this document with your prescriber to determine what on the list might be appropriate for you (any of the prescriptions that are contraindicated will be marked out).
- Decide which of the appropriate prescription you would prefer to start with.

This decision aid can help you and your healthcare professional decide together which is the best option for you.
The table gives some information about each prescription and the evidence for them for you to think about when choosing the best option for you.

Table: What are the options for prescriptions?

Decide to not use a prescription	
What does this involve?	• Carrying on as I am.
Pros	• No changes to make.
Cons	• Medications can support the treatment by impacting hunger and/or satiety or absorption of nutrients

Select a prescription	
What does this involve?	• Reviewing the document with your prescriber
Pros	• Provides an intensification of treatment • Impact obesity related complications through increased weight loss beyond intensive lifestyle intervention
Cons	• Each prescription has the risk of side effects • Some prescriptions may not be covered by insurance or have co-pays

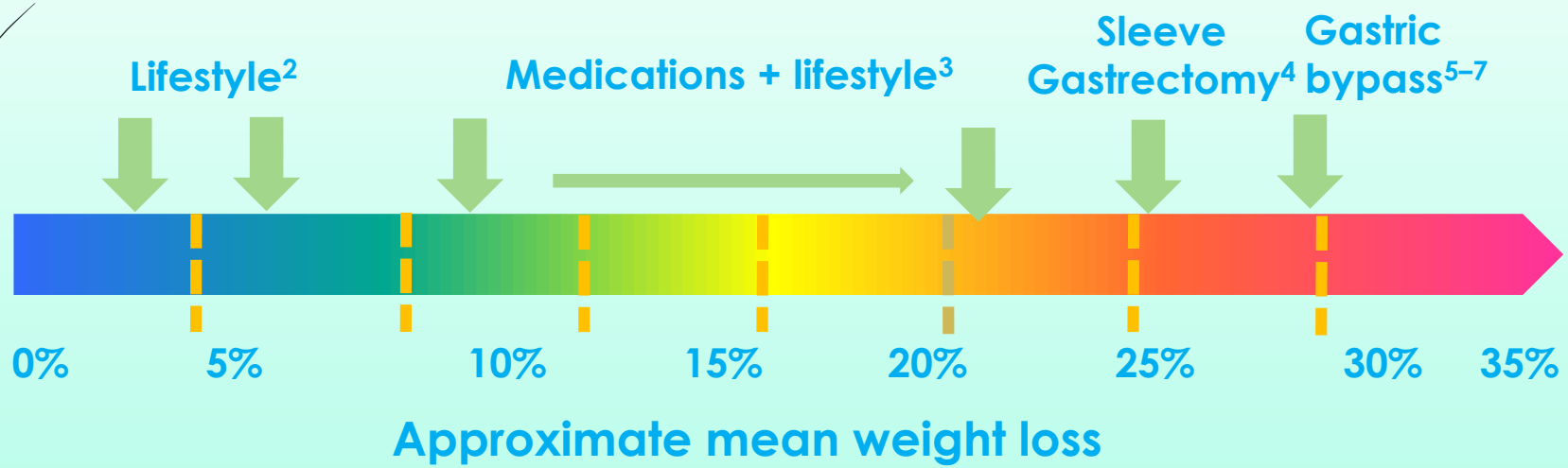
Shared Decision Making for Prescriptions (alphabetically)

Prescription	Dosing	Weight loss expectation	Contraindications	Common Side Effects	Further information
Liraglutide Saxenda	Starts at 0.6mg and escalates to 3.0mg	~ 8%	Medullary thyroid cancer history, MEN type 2 history, pregnancy and breastfeeding, history of pancreatitis (CAUTION only, not contraindication)	Nausea, vomiting, diarrhea, constipation, hypoglycemia in patients with T2DM, increased lipase, increased heart rate, pancreatitis	Injectable, GLP1 receptor agonist which helps with feeling full and may impact food cravings. Beneficial for diabetes, prediabetes, or insulin resistance. Approximately $1400 cash. https://www.saxenda.com/
Naltrexone-bupropion ER Contrave	Each tablet has 8mg naltrexone and 90 mg bupropion that escalates over time to two tablets twice a day	~ 6%	Uncontrolled HTN, seizure disorder, anorexia or bulimia, drug or alcohol withdrawal, chronic opioid use, MAO inhibitors use, pregnancy and breastfeeding,	Nausea, constipation, HA, dizziness	Opioid receptor antagonist combine with an antidepressant. Decreases hunger and helps with Food cravings. May benefit with treatment of depression. $98/month cash. https://contrave.com/
Orlistat	60 mg over the counter 120 mg 3 times a day within 1 hour of fat-containing meal	~ 6%	Chronic malabsorption syndrome, pregnancy and breastfeeding, cholestasis, some medications (ex. warfarin, antiepileptic, levothyroxine)	Decreased absorption of fat-soluble vitamins, steatorrhea, flatulence, fecal incontinence	Pancreatic lipase inhibitor, decreases the amount of fat absorbed from food https://reference.medscape.com/drug/alli-xenical-orlistat-342068
Phentermine	8 mg tablets that can be used two or three times a day	~ 5%	Anxiety disorder, CV disease, MAO inhibitors, pregnancy and breastfeeding, hyperthyroidism, hx of drug abuse, glaucoma	HA, increased BP and HR, insomnia, constipation, anxiety, palpitations, changes in libido	Sympathomimetic, decreases hunger https://lomaira.com/

Phentermine-topiramate ER Qsymia	Initiate treatment at 3.75 mg/23 mg table that can escalate up to 15 mg/92 mg	~ 10 %	hyperthyroidism, glaucoma, some medications (ex MAOI, sympathomimetic), pregnancy and breastfeeding,	Insomnia, constipation, dizziness, paresthesia, dysgeusia, dry mouth	Sympathomimetic combined with an antiseizure medication, decreases hunger. May benefit migraine headache prophylaxis. https://qsymia.com/
Semaglutide Wegovy	Starts at 0.25 mg and escalates to 2.4 mg	~ 15%	Medullary thyroid cancer history, multiple endocrine neoplasia type 2 history, suicidal behavior and ideation, pregnancy, breastfeeding, acute gallbladder disease, diabetic retinopathy, acute kidney injury	Nausea, vomiting, diarrhea, constipation, hypoglycemia in patients with T2DM, increased lipase, increased heart rate, pancreatitis	Injectable, GLP1 receptor agonist which helps with feeling full and may impact food cravings. Beneficial for diabetes, prediabetes, or insulin resistance. Approximately $1400 cash https://www.wegovy.com/
Tirzepatide Zepbound	Starts at 2.5mg and escalates to 15 mg	20%	Medullary thyroid cancer history, multiple endocrine neoplasia type 2 history, has not been studied in patients with a history of pancreatitis, pregnancy, breastfeeding. Precautions: Severe GI disease, Acute Kidney disease, acute gallbladder disease, acute pancreatitis, Suicidal behavior or ideation, and diabetic retinopathy	Nausea, diarrhea, vomiting, constipation, abdominal pain, hypoglycemia in patients with T2DM	Injectable, GLP1/GIP receptor agonist which helps with feeling full and may impact food cravings. Beneficial for diabetes, prediabetes, or insulin resistance. Approximately $1077 cash https://www.zepbound.lilly.com/

Comprehensive Lifestyle Management ± Pharmacotherapy and/or Surgery

Reduced caloric intake[1,2]	Increased activity[1,2]	Behavioral interventions[1,2]
• Set calorie limits **OR** cut calories **OR** restrict certain food types (eg, dietary fat) • Many dietary approaches work • Consider patient health status and preferences	• Moderate aerobic activity >150 minutes/week (min/wk) • Resistance training to preserve lean mass • 200–300 min/wk moderate aerobic activity for maintenance	<u>Weight reduction</u> • On-site, high-intensity intervention (eg, ≥14 sessions (group or individual) in 6 mo)*† • Provide strategies‡ <u>Weight maintenance</u> • Continued contact (≥1 per month) for ≥1 year*



*With trained interventionist; †Face-to-face preferred; telephone or electronic counseling are options but may produce less weight loss; ‡Includes goals, self-monitoring.

1. Obesity Medical Association. Obesity algorithm, 2023 (https:// https://obesitymedicine.org/resources/obesity-algorithm). 2. Jensen MD, et al. *Obesity (Silver Spring)*. 2014;22(suppl 2):S5-S39. 3. Colman E, et al. *N Engl J Med*. 2012;367:1577-1579. 4. Ames, AE, et al. *Bariatric Times*, 2016; 13(7):10-18. 5. Flum DR, et al; Longitudinal Assessment of Bariatric Surgery (LABS) Consortium. *N Engl J Med*. 2009;361:445-454. 6. Courcoulas AP, et al. *JAMA*. 2013;310:2416-2425. 7. Courcoulas AP, et al. *JAMA Surg*. 2018;153:427-434.

Visit in 2-3 weeks

M	Review weight gain promoting **Medications** and use of **current medications**.
E	Review **Eating**: food intake(*what*), eating behaviors(*how*)
S	Review **Sleep**(*duration*), **Sleep behaviors** (*circadian rhythm*)
S	Review **Stressors**, intrinsic (self), extrinsic (environment)
A	Review **Activity**, intentional physical activity and daily movement

Continue to see the patient every 2-4 weeks, until goals reached, then quarterly

- MESSA
- IBT
  - Can be done by other providers as well: dieticians, PT/exercise physiologist, health coaches
- Monitoring: BP, weight

Metabolic Adaptation – STEP 1 Extended

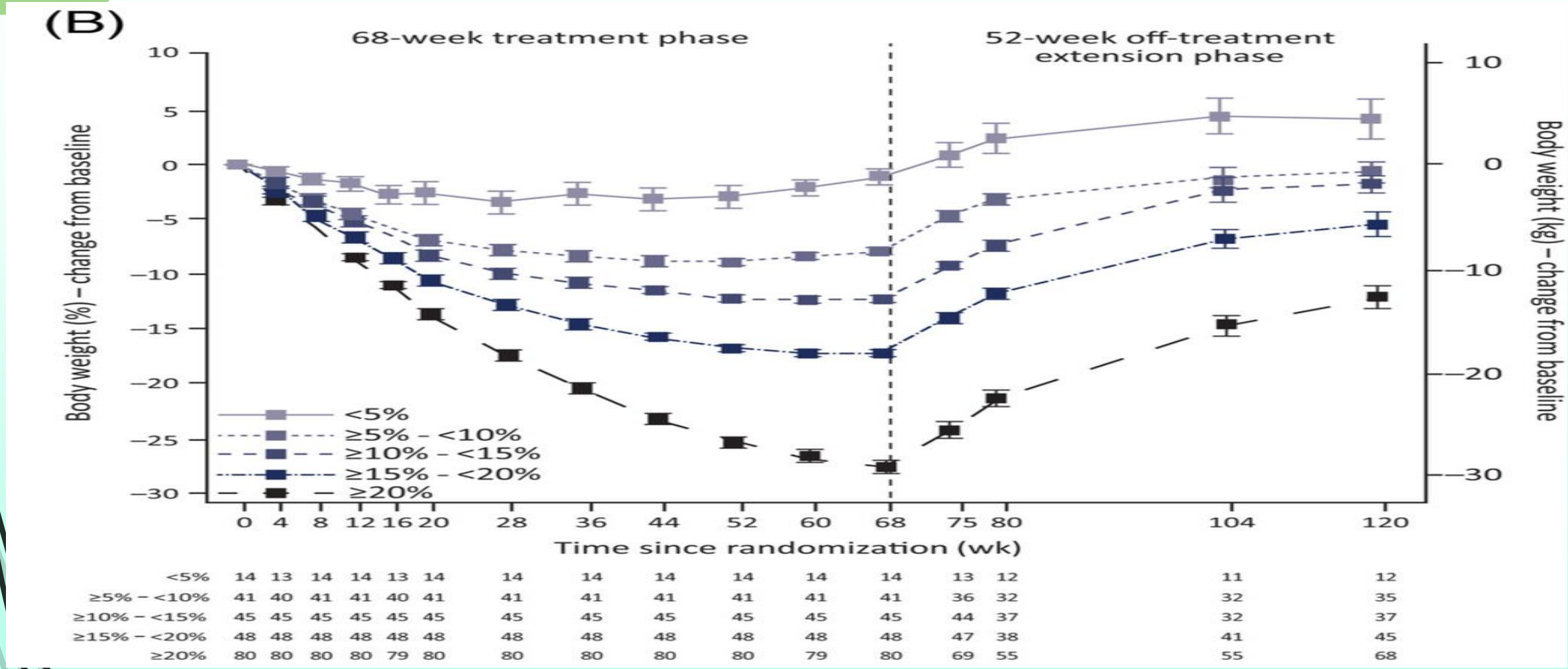
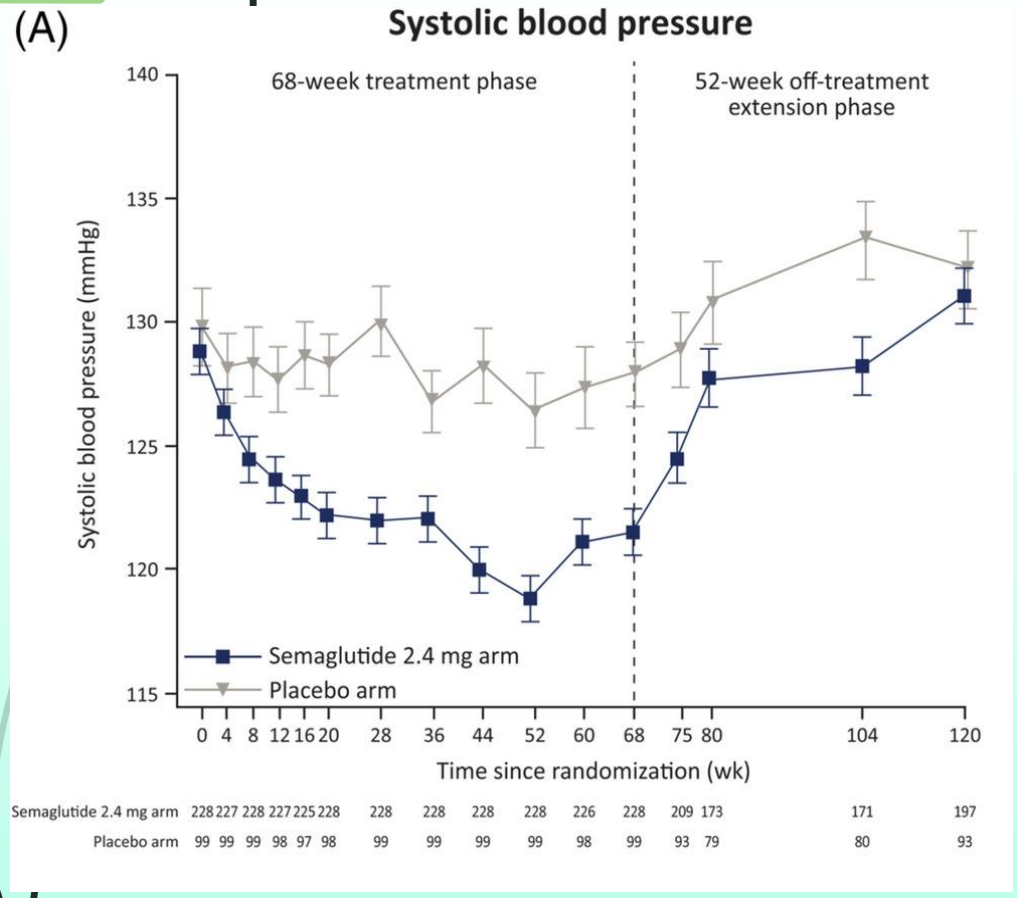


FIGURE 1

Wilding, J., Batterham, R. L., Davies, M., Van Gaal, L. F., Kandler, K., Konakli, K., Lingvay, I., McGowan, B. M., Oral, T. K., Rosenstock, J., Wadden, T. A., Wharton, S., Yokote, K., Kushner, R. F., & STEP 1 Study Group (2022). Weight regain and cardiometabolic effects after withdrawal of semaglutide: The STEP 1 trial extension. *Diabetes, obesity & metabolism*, 10.1111/dom.14725. Advance online publication. https://doi.org/10.1111/dom.14725 open access

Metabolic Adaptation – Step 1 Extended

BP response



HgBA1C Response

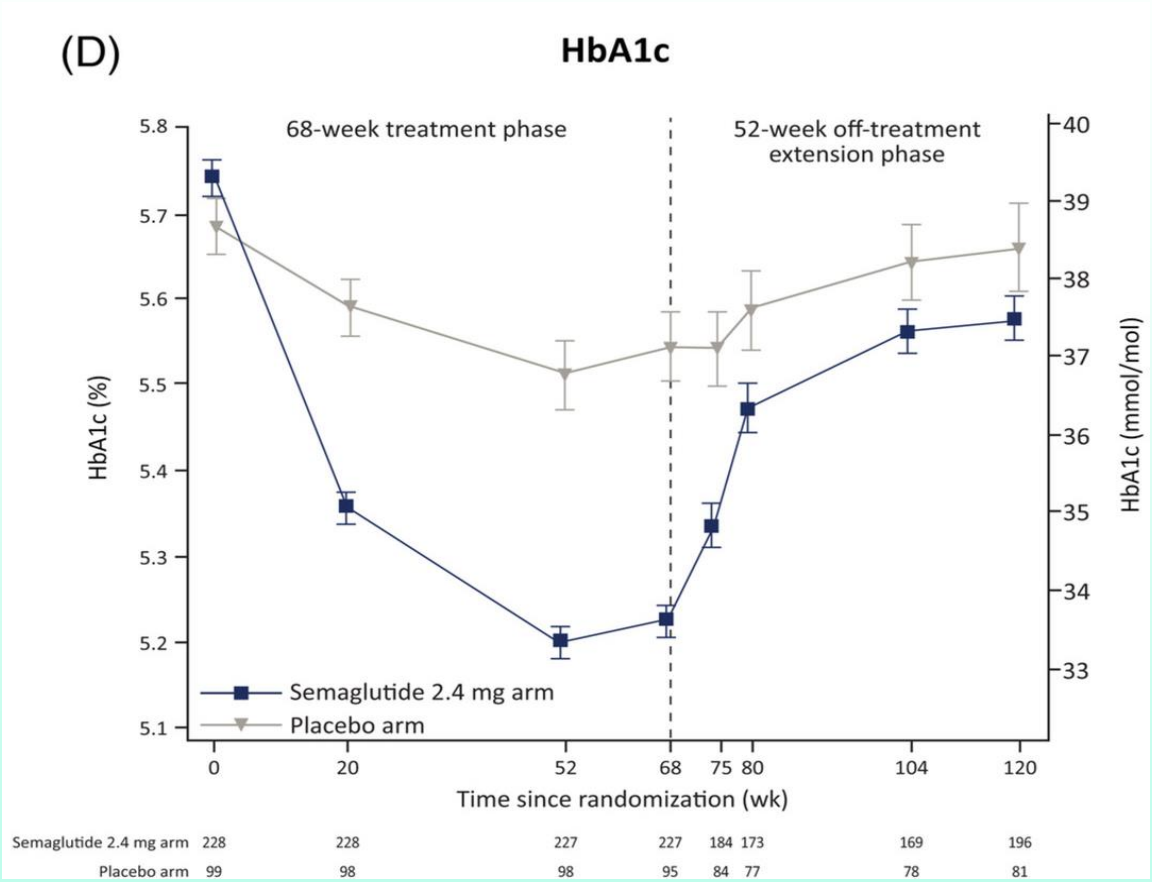


FIGURE 2

Wilding, J., Batterham, R. L., Davies, M., Van Gaal, L. F., Kandler, K., Konakli, K., Lingvay, I., McGowan, B. M., Oral, T. K., Rosenstock, J., Wadden, T. A., Wharton, S., Yokote, K., Kushner, R. F., & STEP 1 Study Group (2022). Weight regain and cardiometabolic effects after withdrawal of semaglutide: The STEP 1 trial extension. *Diabetes, obesity & metabolism*, 10.1111/dom.14725. Advance online publication. https://doi.org/10.1111/dom.14725 open acess

Maintaining Weight Loss

Weight regain typically occurs when medication is stopped[1]

Successful weight maintenance includes:[2]

- Self-monitoring
- Weight loss of >2kg in 4 weeks
- Frequent/regular attendance at weight loss program
- Self-belief that weight can be controlled

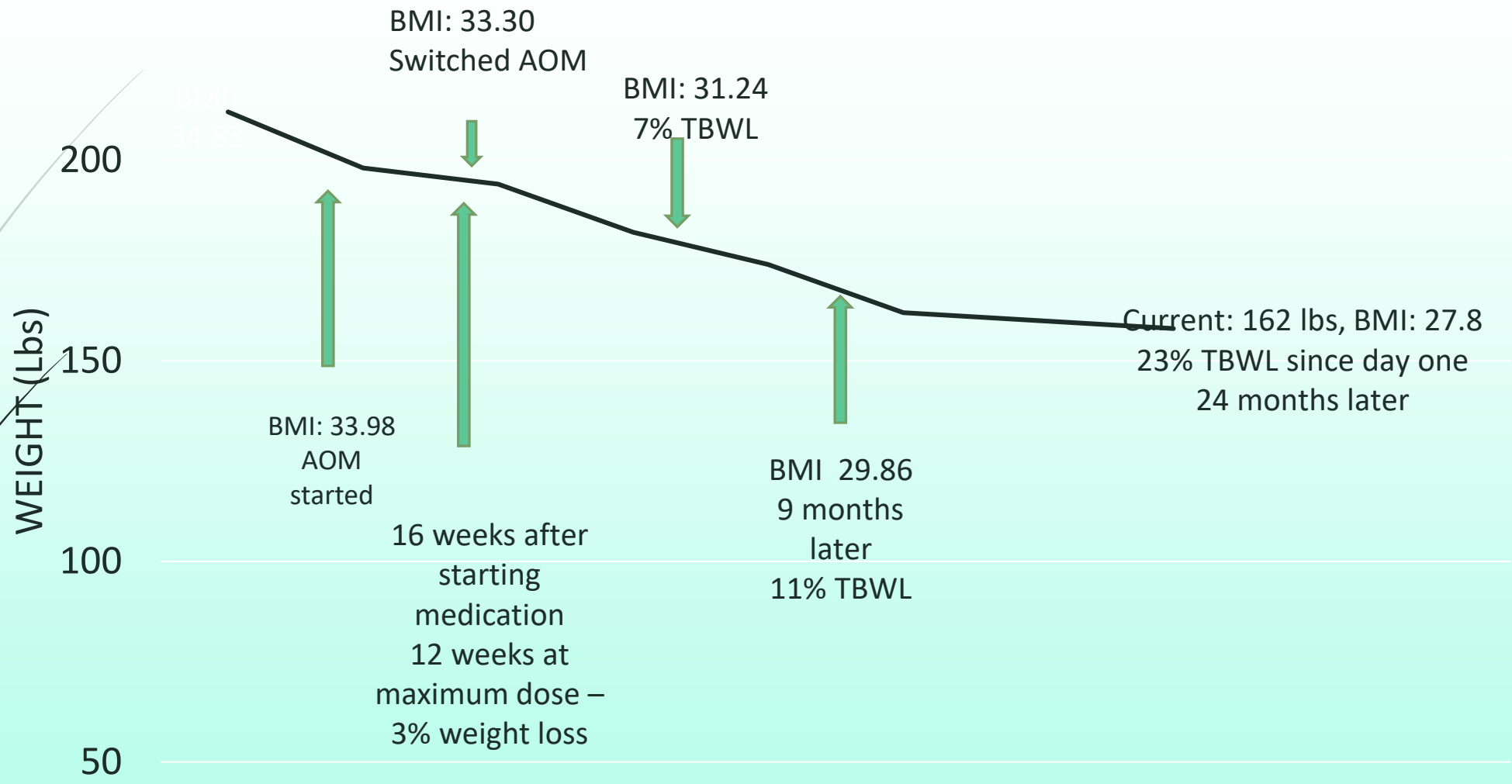
Maintaining weight loss is made difficult by the reduction in energy expenditure that weight loss induces

1. Apovian CM, et al. *J Clin Endocrinol Metab* 2015;100:342-62.2. 2. Thomas JG, et al. *Am J Prev Med*. 2014;46(1):17-23

Wrap up

Where is Ellen on her obesity treatment journey?

Ellen's Weight History – Medical Management



Improved Medical Conditions

- Class II , Stage 2→ improved but still has the disease of obesity, no longer Stage 2
- HTN → Resolved, off medications
- Dyslipidemia/ Dyslipidemia → Resolved, normal limits
- Elevated Liver Enzymes → Resolved, normal limits
- Depression → PHQ9 2

Here Are Key Take Aways

- Obesity is a chronic, progressive but TREATABLE disease
- Obesity management is not about simply reducing numbers on the scale
- Early intervention means addressing root causes and removing roadblocks
- Success is different for every individual
- A patient's 'best' weight may never be an 'ideal' weight
- NO SHAME, NO BLAME

Questions

Resources – Don't need to reinvent the wheel ☺

- http://eparmedx.com/wp-content/uploads/2013/03/PARQPlus2019ImageVersion2.pdf
- http://obesity.aace.com/obesity-resource-toolkit
- AANP Flipchart Obesity https://aanp.org/education/education-toolkits/obesity
- An Evidence-based Guide for Obesity Treatment in Primary Care http://www.amjmed.com/article/S0002-9343(15)00691-9/pdf
- Motivational Interviewing: Supporting Patients in Health Behavior Change https://prepareiowa.training-source.org/training/courses/Motivational%20Interviewing:%20Supporting%20Patients%20in%20Health%20Behavior%20Change/detail
- National Diabetes Prevention Program https://www.cdc.gov/diabetes/prevention/index.html
- Obesity Action Coalition www.obesityaction.org
- ReThink Obesity www.Rethinkobesity.com
- Strategies To Overcome and Prevent (STOP) Obesity Alliance www.Stopobesityalliance.org
- VAMove www.move.va.org

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Contact Information

Angela Golden
Angie.golden@npobesitytreatment.org
www.npobesitytreatment.org

Cindy Cooke
Ccookefnp@gmail.com