Obesity Management

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Disclosures

- Institutionally directed funding from Novo Nordisk (no salary support)

Overview

- Obesity, briefly
- Anti obesity medications (AOMs)
  - Candidates
  - Options
  - Side effects
  - Side effect mitigation

In the clinic

- A 55 year old man with type 2 diabetes mellitus, hypertension, obesity, and hypothyroidism presents to clinic for follow up. Medications include insulin glargine 80 units per day, glipizide ER 10mg per day, metformin ER 2000mg per day, lisinopril 20mg per day, metoprolol XL 100mg per day, and levothyroxine 175mcg per day.
- W 251 lbs (114 kg), BMI 41 kg/m^2, BP is 142/92, HR 65
- Hgb A1C is 7.7%, eGFR is 79 ml/min, TSH is 2.9 mIU/mL. remaining lab evaluation is unremarkable.
- What next?

Obesity is a disease

- American Medical Association (AMA) designated obesity as a disease in 2013
  - "Our AMA recognizes obesity as a disease state with multiple pathophysiological aspects requiring a range of interventions to advance obesity treat ment and prevention."

Other institutions that designate obesity as a disease include:

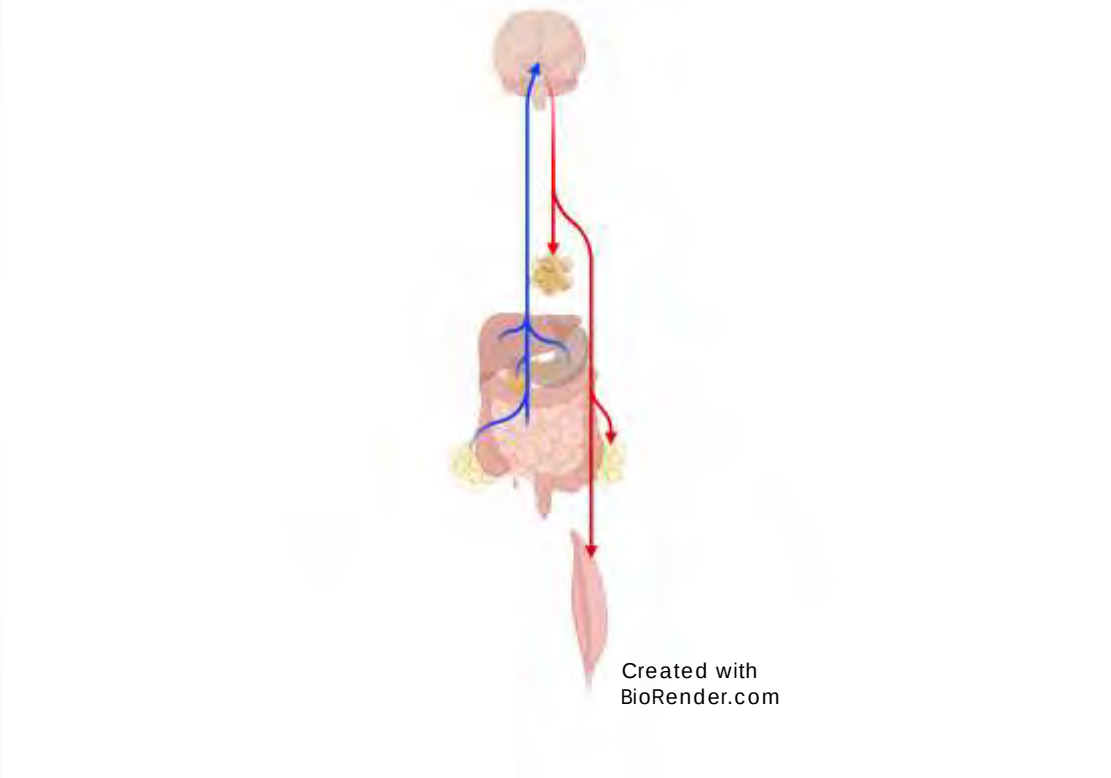
- National Institutes of Health
- Institute of Medicine
- American college of Physicians
- US Food and Drug Administration
- Federal Trade Commission
- World Health Organization
- American Association of Clinical Endocrinologists
- Veterans Health Administration
- American Diabetes Association
- The Endocrine Society

https://policysearch.ama-assn.org/policyfinder/detail/obesity?uri=%2FAMADoc%2FHOD.xml-0-3858.xml

Upadhyay, J., Farr, O., Perakakis, N., Ghaly, W., & Mantzoros, C. (2018). Obesity as a Disease. *The Medical clinics of North America*, *102*(1), 13–33. https://doi.org/10.1016/j.mcna.2017.08.004

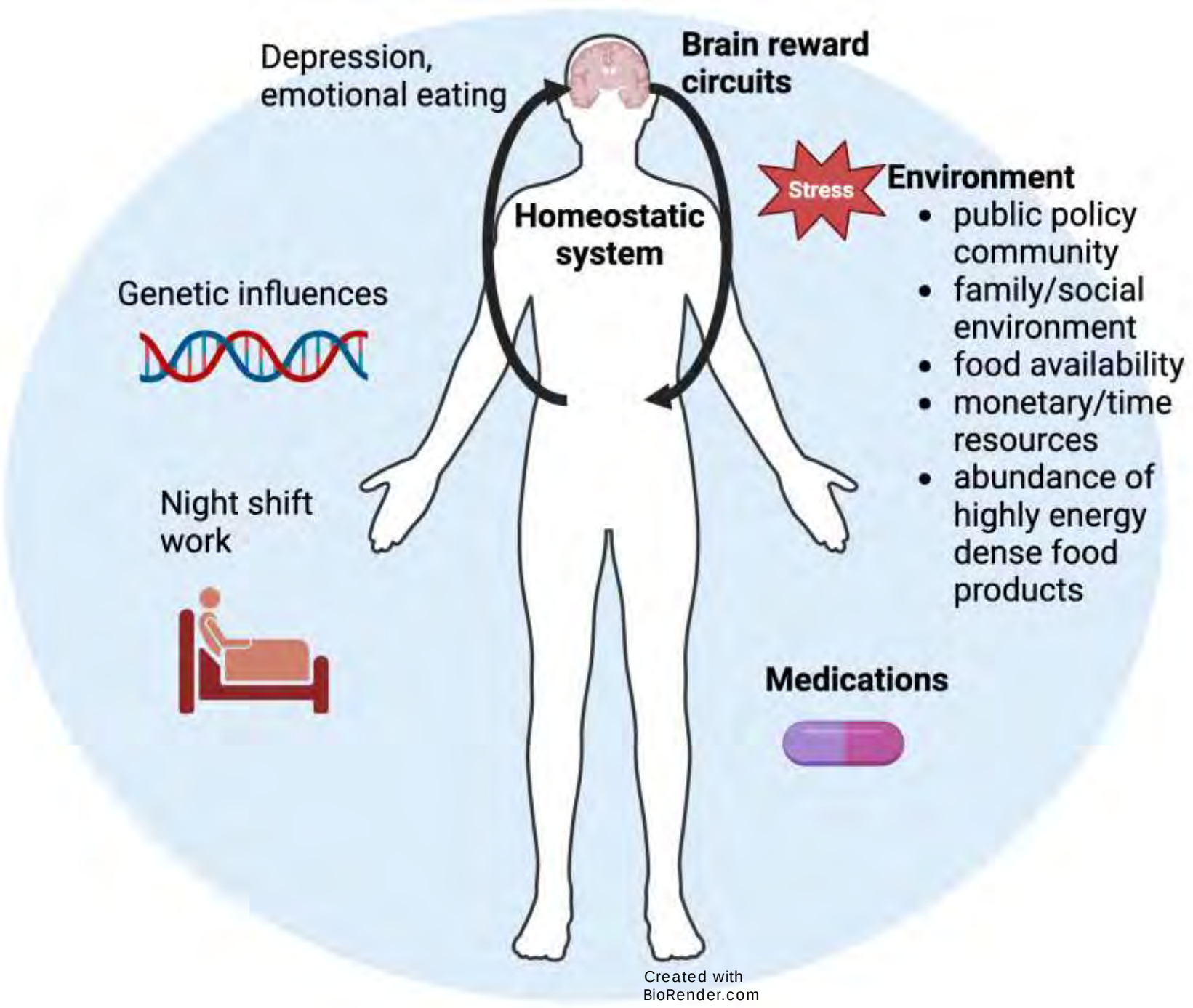
Defining obesity

- Per the Obesity Medicine Association
  - " A chronic, progressive, relapsing, and treatable multi-factorial, neurobehavioral disease, wherein an increase in body fat promotes adipose tissue dysfunction and abnormal fat mass physical forces, resulting in adverse metabolic, biomechanical, and psychosocial health consequences."



Fitch, A. K., & Bays, H. E. (2022). Obesity definition, diagnosis, bias, standard operating procedures (SOPs), and telehealth: an Obesity Medicine Association (OMA) Clinical Practice Statement (CPS) 2022. *Obesity Pillars*, *1*, 100004.

Potential contributors to obesity



Weight loss and diabetes

- How much weight loss is needed to decrease risk of developing diabetes?
  - 2.5% total body weight loss, most significant impact at 10% loss
  - For every 1kg of weight loss, 16% reduction in risk of developing diabetes
- How much weight loss is needed to improve glycemic control when diabetes is present?
  - ~2.5-15% total body weight loss

Hamman, R. F., Wing, R. R., Edelstein, S. L., Lachin, J. M., Bray, G. A., Delahanty, L., Hoskin, M., Kriska, A. M., Mayer-Davis, E. J., Pi-Sunyer, X., Regensteiner, J., Venditti, B., & Wylie-Rosett, J. (2006). Effect of weight loss with lifestyle intervention on risk of diabetes. *Diabetes care*, *29*(9), 2102–2107. https://doi.org/10.2337/dc06-0560
Ryan, D. H., & Yockey, S. R. (2017). Weight Loss and Improvement in Comorbidity: Differences at 5%, 10%, 15%, and Over. *Current obesity reports*, *6*(2), 187–194. https://doi.org/10.1007/s13679-017-0262-y

Evaluation

- Weight history
  - Age of onset
  - Family history
  - Life/medical events
  - Motivations for weight loss
  - Cravings vs hunger predominan
    - Significant hyperphagia at y
  - Binge eating/other eating disor
  - Prior weight loss attempts
    - Prior medication trials?
  - Dietary patterns
  - Physical activity patterns

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Evaluation

- Co-morbidities/symptom and signs
  - Weight related co-morbidities
  - Provide contraindications to certain anti-obesity medications
  - Could potentially secondarily benefit from the mechanism of medication for weight loss
  - Evidence of rare primary or of secondary causes of obesity
    - Syndromic or monogenic obesity
    - Cushing's syndrome

Evaluation

- Medications
  - Weight promoting
    - Potential alternatives?
  - Provide contraindications/cautions regarding use of certain medications for weight loss

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Evaluation

- Patient preferences/goals
- Medication coverage/affordability/availability
- Labs
  - Evaluation for evidence of contraindications to specific medications/identification of additional comorbidities

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Medication therapy for obesity

- Adjunct to other interventions when non medication interventions insufficient
- Use improves the likelihood of meaningful weight loss
- Indications:
  - BMI of 30 or greater
  - BMI of 27 or greater with weight related comorbidity

Placebo subtracted intention to treat average % weight loss
(non placebo subtracted)

orlistat
-3%
(-9%)

bupropion/ naltrexone ER
~4.1%
(~ -5-8%)

phentermine 15mg
~-4%
(-6.1%)

liraglutide 3mg
-4.5%
(-7.4%)

phentermine/ topiramate ER
~ -9%
(~11 %)

semaglutide 2.4mg
~ -10-12%
(~ -15%)

tirzepatide
~18%
(-21%)

setmelanotide
(-7.9% BBS
-9.65% LEPR
-23.12% POMC or PCSK1)

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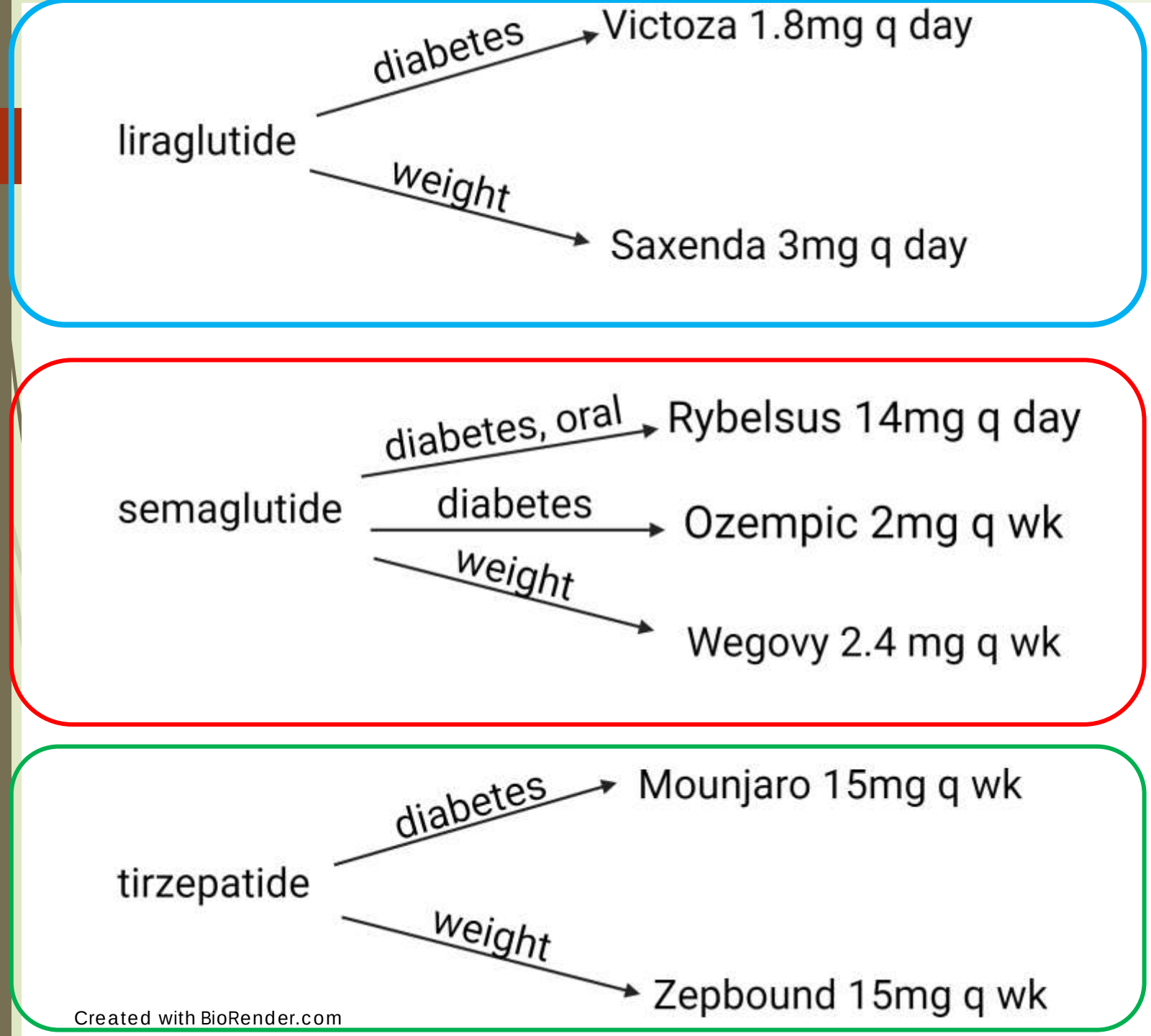
BBS =Bardet Biedel Syndrome
LEPR =leptin receptor (deficiency)
POMC =proopiomelanocortin
PCSK1 = proprotein convertase subtilisin/ kexin type 1

Jastreboff AM, Aronne LJ, Ahmad NN, Wharton S, Connery L, Alves B, Kiyosue A, Zhang S, Liu B, Bunck MC, Stefanski A; SURMOUNT-1 Investigators. Tirzepatide Once Weekly for the Treatment of Obesity. N Engl J Med. 2022 Jul 21;387(3):205-216. doi: 10.1056/NEJMoa2206038. Epub 2022 Jun 4. PMID: 35658024.
https://qsymia.com/patient/include/media/pdf/prescribing-information.pdf?v=0422
https://contravehcp.com/wp-content/uploads/Contrave_PI.pdf
https://xenical.com/pdf/PI_Xenical-brand_FINAL.PDF
https://www.novo-pi.com/saxenda.pdf
https://www.novo-pi.com/wegovy.pdf
https://rhythm-vault-digital-publishing-production.s3.amazonaws.com/IMCIVREEPrescribingInformation.pdf

Variability in response to AOMs

- Average weight loss cited, reality is that there is significant variability in individual response to weight loss



"What's in a name?"

Shakespeare, William. *Romeo and Juliet*

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class/ mechanism of action**	Dosing/ administration	Weight loss per clinical trials	Contraindications/ Cautions include	Monitoring includes
orlistat (Xenical rx, Alli OTC)	Gastrointestinal lipase inhibitor	120mg capsule three times per day with meals (or 60mg capsule three times per day with meals if OTC dose) *need to take a multivitamin including fat soluble vitamin daily Diet recommended =30% calories from fat	• -3% placebo subtracted ITT	**Contraindications include:** • Chronic malabsorption • Cholestasis **Warnings/precautions/adverse effects include:** • Oily rectal discharge • Flatus • Fecal urgency • Fecal incontinence • Gallstones • Renal stones • May interfere with absorption of fat soluble vitamins, hormones or other medications (example, thyroid hormone, warfarin, cyclosporine) • Hepatotoxicity	• Monitor clinically for noted adverse effects • LFTs if signs of hepatic impairment • Renal function in patients at risk for renal impairment

XENICAL® (orlistat) Capsules prescribing information.https://xenical.com/pdf/PI_Xenical-brand_FINAL.PDF

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class /mechanism of action**	Dosing/ administration	Weight loss per clinical trials	Contraindications/ Cautions/adverse effects include	Monitoring includes
bupropion/ naltrexone extended release (Contrave)	Norepinephrine-dopamine reuptake inhibitor and opioid receptor antagonist	• Oral tablets • Week one: 1 tablet (naltrexone 8mg/bupropion 90mg) daily AM • Week two: 1 tablet AM and 1 tablet PM (usually suppertime) • Week three: 2 tablets AM and 1 tablet PM • Week four: 2 tablets AM and 2 tablets PM • *avoid taking with high fat meals	-5.4 to -8.1% ITT (-4.1 to -3.2% placebo subtracted	• Not for use in those with ESRD, dose reduce for moderate-severe renal impairment and hepatic impairment **Potential contraindications/adverse effects include:** • Use of other bupropion containing meds • **Use of opioids** • MAOI use • Seizure disorder • Uncontrolled HTN • History of bulimia or anorexia • Activation of mania • Acute angle closure glaucoma • Nausea • Constipation • Headache • Insomnia • Dry mouth • Depression or suicidal thoughts • Abrupt discontinuation of alcohol,benzodiazepines • Hepatotoxicity	• If less than 5% baseline body weight loss at 12 weeks of full dose, discontinue • Monitor clinically for noted adverse effects • Heart rate and blood pressure • Baseline and periodic renal and liver function

Naltrexone HCL/bupropion HCL extended release prescribing information (CONTRAVE). https://contravehcp.com/wp-content/uploads/Contrave_PI.pdf

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class /mechanism of action**	Dosing	Weight loss per clinical trials	Contraindications/ Cautions/adverse effects include	Monitoring includes
phentermine/ topiramate extended release (Qsymia)	Sympathomimetic amine/anti epileptic	Capsule daily AM • 3.75/23mg dose 14 days for initiation • 7.5/46mg dose = maintenance • If needed, titrate to 11.25/69mg for 14 days, then-> • Increase to max dose 15/92mg dose	• -9.8 to 10.9% ITT (-8.6-9.4% placebo subtracted) for 15/92mg dosage	• Avoid use in ESRD and severe hepatic impairment • Dose reduce for severe or moderate renal or moderate hepatic impairment **Contraindications include:** • Pregnancy • Glaucoma • Hyperthyroidism • MAO use within 14 days **Warnings/precautions/adverse effects:** • Risk of birth defects • Increased heart rate • Angle closure glaucoma • Renal stones • Cognitive impairment • Metabolic acidosis, hypokalemia * • Paresthesias, taste changes, insomnia, constipation, dry mouth • (OCP-altered exposure to hormones, not thought to increase risk of pregnancy directly. Regardless recommend add 2nd form contraception	• Resting heart rate and blood pressure • Baseline and periodic bicarbonate, potassium, creatinine • Pregnancy testing (baseline and monthly recommended • Monitor clinically for noted adverse effects

Phentermine HCL/topiramate extended release prescribing information (QSYMIA).https://qsymia.com/patient/include/media/pdf/prescribing-information.pdf?v=0422

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class /mechanism of action**	Dosing	Weight loss per clinical trials	Contraindications/ Cautions include	Monitoring includes
liraglutide (Saxenda)	GLP-1RA	Subcutaneous daily injection (multidose pen) • 0.6mg daily for 7 days • 1.2mg daily for 7 days • 1.8mg daily for 7 da • 2.4mg daily for 7 days • 3mg daily and continue	• -7.4 % ITT (-4.5 % placebo subtracted) in patients without dia betes • -5.4% in patients with diabetes (-3.7% placebo subtracted)	**Contraindications** • Personal or family history of medullary thyroid cancer (MTC) • History of multiple endocrine neoplasia type 2 (MEN2) **Warnings/precautions/adverse effects include:** • Possible risk of MTC • Acute pancreatitis • Acute gallbladder disease • Acute kidney injury • Diabetic retinopathy complications • Increases in heart rate • Changes in mood • Delayed gastric emptying • **Most common: gastrointestinal side effects** including nausea, emesis, diarrhea, constipation, abdominal pain, gastroesophageal reflux	• Blood glucose if diabetes on agents such as insulin or sulfonylurea • Need for change in other medication management with weight loss (i.e. HTN, hypothyroidism) • Monitor clinically for noted adverse effects

Liraglutide prescribing information for treatment of obesity (SAXENDA). https://www.novo-pi.com/saxenda.pdf

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class/ mechanism of action**	Dosing/ administration	Weight loss per clinical trials	Contraindications/ Cautions include	Monitoring includes
semaglutide (Wegovy)	GLP-1RA	Subcutaneous weekly injection (autoinjector) • Weeks 1-4: 0.25mg • Weeks 5-8: 0.5mg • Weeks 9-12: 1mg • Weeks 13-16: 1.7mg • Weeks 17 and continued: 2.4mg per week (or continue 1.7mg per week)	• -14.9 to 16 % ITT (-10.3-12.4 % placebo subtracted) in patients without diabetes • -9.6% in patients with diabetes (-6.2% placebo subtracted)	**Contraindications** • Personal or family history of medullary thyroid cancer (MTC) • History of multiple endocrine neoplasia type 2 (MEN2) **Warnings/precautions/adverse effects include:** • Possible risk of MTC • Acute pancreatitis • Acute gallbladder disease • Acute kidney injury • Diabetic retinopathy complications • Increases in heart rate • Changes in mood • Delayed gastric emptying • **Most common: gastrointestinal side effects** including nausea, emesis, diarrhea, constipation, abdominal pain, gastroesophageal reflux	• Blood glucose if diabetes on agents such as insulin or sulfonylurea • Need for change in other medication management with weight loss (i.e. HTN, hypothyroidism) • Monitor clinically for noted adverse effects

Semaglutide injection (WEGOVY) prescribing information. https://www.novo-pi.com/wegovy.pdf

Available anti-obesity medications (AOMs) for chronic use

Medication	**Medication class/ mechanism of action**	Dosing/administration	Weight loss per clinical trials	Contraindications/ Cautions include	Monitoring includes
tirzepatide (Zepbound)	GLP-1RA/GIPRA	Subcutaneous weekly injection (autoinjector) • Weeks 1-4: 2.5mg • After 4 weeks, increase to 5mg per week • Increase dosage in 2.5mg increments after at least 4 weeks on each dose • Maintenance doses are 5mg, 10mg, 15mg (titration doses 2.5mg, 7.5mg, 12.5mg)	• -20.9% ITT at 15mg • (-17.8 % placebo subtracted) in patients without diabetes • -14.7% ITT at 15mg in patients with diabetes (-11.6% placebo subtracted)	**Contraindications** • Personal or family history of medullary thyroid cancer (MTC) • History of multiple endocrine neoplasia type 2 (MEN2) **Warnings/precautions/adverse effects include:** • Possible risk of MTC • Acute pancreatitis* • Acute gallbladder disease** • Acute kidney injury*** • Potential for diabetic retinopathy complications • Monitor mood • Delayed gastric emptying • **Most common: gastrointestinal side effects** including nausea, diarrhea, emesis, constipation, abdominal pain, gastroesophageal reflux **Counseling:** • **May decrease efficacy of OCPs. Add barrier or switch methods for 4 weeks post initiation and 4 weeks after each dose titration**	• Blood glucose if diabetes on agents such as insulin or sulfonylurea • Need for change in other medication management with weight loss (i.e. HTN, hypothyroidism) • Monitor clinically for noted adverse effects

Tirzepatide (Zepbound) prescribing information. zepbound-uspi.pdf (lilly.com)

AOMs and Diabetes

Medication	Diabetes risk reduction	A1C change in those with DM2
Orlistat	• In a 4 year trial (3,205 subjects randomized), those on med had a reduced risk (37.3% lower) of developing diabetes as compared to placebo (6.2% vs 9.0%) • (Overall weight loss at 4 years 5.8 kg med for 3.0kg placebo)	• Meta-analysis of 7 studies identified that those with DM2 on medication had -0.5% A1C reduction (24-57 wk follow up, -2.0kg weight loss)
bupropion/ naltrexone extended release	• N/A	• 56 week study (505 subjects randomized 2:1 to med vs placebo) people with DM2 identified -0.6% A1C on med vs -0.1% on placebo (-5.0% weight loss on med vs -1.8% placebo)
phentermine/ topiramate extended release	• In a 2 yr extension trial (676 subjects total), annualized incidence rates for progression to DM of 3.7% placebo, 1.7% 7.5/46mg dose, 0.9% 15/92mg dose treatment groups (54% and 76% reduction) • (Overall weight loss of -1.8% placebo, -9.3% 7.5/4mng dose, -10.7% 15/92mg dose)	• In same 2 yr extension trial, A1C in placebo group remained stable (with net increases in other DM medications), while the med 7.5/46mg and 15/92mg groups decreased A1C (-0.4% and -0.2%) without net increase in DM medications

Norris SL, Zhang X, Avenell A, Gregg E, Schmid CH, Lau J. Pharmacotherapy for weight loss in adults with type 2 diabetes mellitus. Cochrane Database Syst Rev. 2005 Jan 25;2005(1):CD004096. doi: 10.1002/14651858.CD004096.pub2. PMID: 15674929; PMCID: PMC6718205.

Torgerson, J. S., Hauptman, J., Boldrin, M. N., & Sjöström, L. (2004). XENical in the prevention of diabetes in obese subjects (XENDOS) study: a randomized study of orlistat as an adjunct to lifestyle changes for the prevention of type 2 diabetes in obese patients. *Diabetes care*, *27*(1), 155–161. https://doi.org/10.2337/diacare.27.1.155

Hollander, P., Gupta, A. K., Plodkowski, R., Greenway, F., Bays, H., Burns, C., Klassen, P., Fujioka, K., & COR-Diabetes Study Group (2013). Effects of naltrexone sustained-release/bupropion sustained-release combination therapy on body weight and glycemic parameters in overweight and obese patients with type 2 diabetes. *Diabetes care*, *36*(12), 4022–4029. https://doi.org/10.2337/dc13-0234

Garvey, W. T., Ryan, D. H., Look, M., Gadde, K. M., Allison, D. B., Peterson, C. A., Schwiers, M., Day, W. W., & Bowden, C. H. (2012). Two-year sustained weight loss and metabolic benefits with controlled-release phentermine/topiramate in obese and overweight adults (SEQUEL): a randomized, placebo-controlled, phase 3 extension study. *The American journal of clinical nutrition*, *95*(2), 297–308. https://doi.org/10.3945/ajcn.111.024927)

GLP-1RA side effect mitigation

- Dietary changes that can potentially help mitigate side effects:
  - Remember to listen to your body and stop eating when you are not hungry anymore (this may be sooner than you are used to).
    - A good rule of thumb is to decrease portions in half when taking this medication.
  - Avoid/at least try to minimize:
    - Heavy carbohydrates/simple carbohydrates/sweets
    - High fat food
      - including red meats such as steak, ribs, sausage, bacon, etc.
      - caution with any kind of restaurant food, even if it seems healthy (may have hidden butter/oils)
    - Spicy food

Gorgojo-Martínez, J. J., Mezquita-Raya, P., Carretero-Gómez, J., Castro, A., Cebrián-Cuenca, A., de Torres-Sánchez, A., García-de-Lucas, M. D., Núñez, J., Obaya, J. C., Soler, M. J., Górriz, J. L., & Rubio-Herrera, M. Á. (2022). Clinical Recommendations to Manage Gastrointestinal Adverse Events in Patients Treated with Glp-1 Receptor Agonists: A Multidisciplinary Expert Consensus. *Journal of clinical medicine*, *12*(1), 145. https://doi.org/10.3390/jcm12010145

Wharton, S., Davies, M., Dicker, D., Lingvay, I., Mosenzon, O., Rubino, D. M., & Pedersen, S. D. (2022). Managing the gastrointestinal side effects of GLP-1 receptor agonists in obesity: recommendations for clinical practice. *Postgraduate medicine*, *134*(1), 14–19. https://doi.org/10.1080/00325481.2021.2002616

GLP-1RA side effect mitigation

- Institutional protocols
  - Nausea/dyspepsia
    - Ginger candies/gum
    - Bismuth subsalicylate tablets prior to largest meal
    - Persistent/unresponsive to other interventions
      - Prescription antiemetics
  - Constipation
    - Optimization of hydration and fiber intake
    - Stool softeners/osmotic agents
    - Limited duration stimulant laxatives

Davis C, Golder W, Johnson-Rabbett B. Beneficial and adverse effects of glucagon-like peptide-1 receptor agonists. World Journal of Pharmaceutical Research. 2023. 12(12) 140-160. DOI: 10.20959/wjpr202312-28979. https://www.wjpr.net/abstract_file/22659

Compounding?

- Patients reporting getting compounded semaglutide and tirzepatide (or even retatrutide) from med spas or other sources
- FDA loophole for medication shortages cited to justify
  - "...when a drug is in shortage, compounders may be able to prepare a compounded version..."
  - The active ingredient should be produced by a facility registered with the FDA to make that active ingredient
  - As of the most recent available data, there are no outsourcing facilities registered with the FDA to produce tirzepatide

FD&C Act Provisions that Apply to Human Drug Compounding | FDA [fda.gov]
Medications Containing Semaglutide Marketed for Type 2 Diabetes or Weight Loss | FDA [fda.gov]
Compounding and the FDA: Questions and Answers | FDA [fda.gov]
Guidance for Industry: Providing Regulatory Submissions in Electronic Format Drug Establishment Registration and Drug Listing. (fda.gov) [fda.gov]
About BeSafeRx | FDA [fda.gov]
News details (novonordisk-us.com) [novonordisk-us.com]
FDA Drug Shortages [accessdata.fda.gov]
FDA Drug Shortages [accessdata.fda.gov]
Outsourcing Facility Product Report semaglutide | FDA [dps.fda.gov]

Compounding?

- When using compounded products:
  - Potential for contamination,
  - Incorrect amount of active ingredient
  - Addition of other ingredients that may change medication properties
- Adverse events
  - Many that have been reported to the FDA adverse event reporting system associated with substances reported to be compounded semaglutide, including 7 deaths, per a Novo Nordisk report.
- Of note, an authorized generic form of liraglutide, a GLP-1RA administered daily that has been on the market for longer than semaglutide or tirzepatide, was recently released. At this time, the cost of the authorized generic liraglutide is still at a minimum in the hundreds of dollars per month range.

FD&C Act Provisions that Apply to Human Drug Compounding | FDA [fda.gov]
Medications Containing Semaglutide Marketed for Type 2 Diabetes or Weight Loss | FDA [fda.gov]
Compounding and the FDA: Questions and Answers | FDA [fda.gov]
Guidance for Industry Providing Regulatory Submissions in Electronic Format Drug Establishment Registration and Drug Listing. (fda.gov) [fda.gov]
About BeSafeRx | FDA [fda.gov]
News details (novonordisk-us.com) [novonordisk-us.com]
FDA Drug Shortages [accessdata.fda.gov]
FDA Drug Shortages [accessdata.fda.gov]
Outsourcing Facility Product Report semaglutide | FDA [dps.fda.gov]

Monitoring other medical therapies with weight loss

- Diabetes
  - Insulin or sulfonylurea adjustments initially and/or over time
- Hypertension
  - Potential need for adjustments in therapies to avoid hypotension
- Hypothyroidism
  - Levothyroxine needs based on weight->expect needs to decrease with weight loss

Antiobesity medication therapy duration?

- Chronic disease -> chronic treatment
  - Parallels to treatment of hypertension

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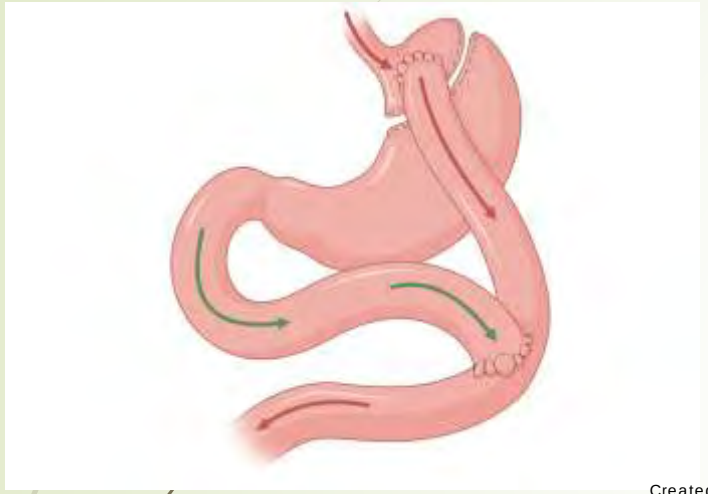
Metabolic and bariatric surgery



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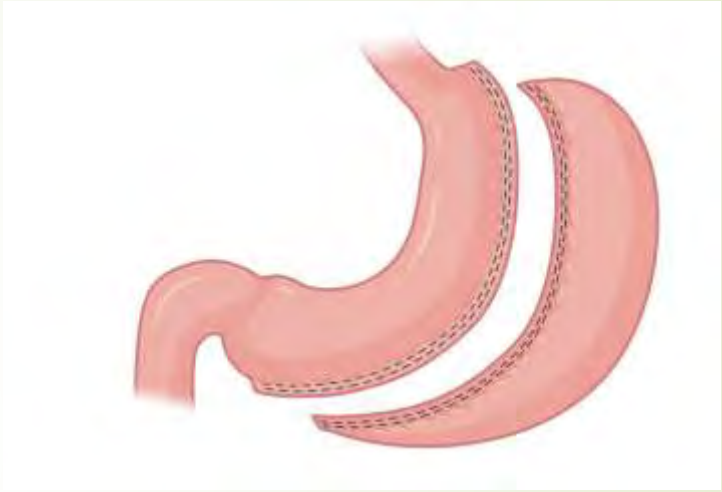
Roux en Y gastric bypass

- Restrictive and malabsorptive
- Target total body weight loss 30-35% (excess body weight loss 60-75%)



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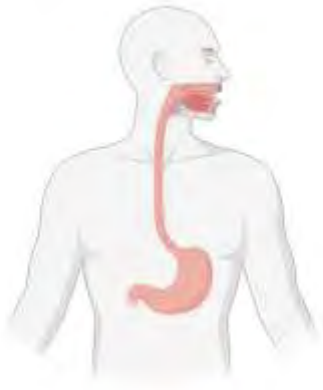
Sleeve gastrectomy

- Restrictive
- Target total body weight loss 25-30% (excess body weight loss 50-70%)

- Published DM2 remission rates post bariatric surgery are widely variable (~20-90%)
- Those not on insulin, shorter duration of diabetes, lower A1C more likely to have remission
- Relapse is common

Eisenberg, D., Shikora, S. A., Aarts, E., Aminian, A., Angrisani, L., Cohen, R. V., De Luca, M., Faria, S. L., Goodpaster, K. P. S., Haddad, A., Himpens, J. M., Kow, L., Kurian, M., Loi, K., Mahawar, K., Nimeri, A., O'Kane, M., Papasavas, P. K., Ponce, J., Pratt, J. S. A., … Kothari, S. N. (2022). 2022 American Society for Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO): Indications for Metabolic and Bariatric Surgery. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*, *18*(12), 1345–1356. https://doi.org/10.1016/j.soard.2022.08.013

Endoscopic procedures



Endoscopic sleeve gastroplasty (ESG)/endoscopic gastric remodeling

- Endoscope used to suture stomach-creating tube like structure
- BMI 30-50kg/m^2 to qualify
- Restrictive
- 16% total body weight loss (60% excess weight loss) at 1-2 years

Yoon JY, Arau RT; Study Group for Endoscopic Bariatric and Metabolic Therapies of the Korean Society of Gastrointestinal Endoscopy. The Efficacy and Safety of Endoscopic Sleeve Gastroplasty as an Alternative to Laparoscopic Sleeve Gastrectomy. Clin Endosc. 2021 Jan;54(1):17-24. doi: 10.5946/ce.2021.019. Epub 2021 Jan 22. PMID: 33478194; PMCID: PMC7939770.

Tondt J, Freshwater M, Benson-Davies S, Dawkins C, Magee J, Karjoo S, Ortiz Page SO, Pile H, Khan N, Hurtado Andrade M, Rajpal A, Petcu A, Antoun J, Haq H, Fryoux E, Gugnani K, Manek M, Aranas MP, Afreen S. Obesity Algorithm eBook, presented by the Obesity Medicine Association. www.obesityalgorithm.org. 2024.

Weight Stigma

Weight stigma: refers to social devaluation and denigration of individuals because of their excess body weight, and can lead to negative attitudes, stereotypes, prejudice and discrimination

Explicit weight bias: refers to overt, consciously held negative attributes that can be measured by self report

Implicit weight bias: consists of automatic, negative attributions and stereotypes existing outside of conscious awareness

Internalized weight bias: self blame and self directed weight stigma in relation to weight

Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JI, Nadglowski J, Ramos Salas X, Schauer PR, Twenefour D, Apovian CM, Aronne LJ, Batterham RL, Berthoud HR, Boza C, Busetto L, Dicker D, De Groot M, Eisenberg D, Flint SW, Huang TT, Kaplan LM, Kirwan JP, Korner J, Kyle TK, Laferrère B, le Roux CW, McIver L, Mingrone G, Nece P, Reid TJ, Rogers AM, Rosenbaum M, Seeley RJ, Torres AJ, Dixon JB. Joint international consensus statement for ending stigma of obesity. Nat Med. 2020

Prevalence

19-42% or more of those with obesity experience weight stigma/discrimination

Approximately 40-50% of those with overweight or obesity experience internalized weight bias

- Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JI, Nadglowski J, Ramos Salas X, Schauer PR, Twenefour D, Apovian CM, Aronne LJ, Batterham RL, Berthoud HR, Boza C, Busetto L, Dicker D, De Groot M, Eisenberg D, Flint SW, Huang TT, Kaplan LM, Kirwan JP, Korner J, Kyle TK, Laferrère B, le Roux CW, McIver L, Mingrone G, Nece P, Reid TJ, Rogers AM, Rosenbaum M, Seeley RJ, Torres AJ, Dixon JB. Joint international consensus statement for ending stigma of obesity. Nat Med. 2020
- Prunty A, Clark MK, Hahn A, Edmonds S, O'Shea A. Enacted weight stigma and weight self stigma prevalence among 3821 adults. Obes Res Clin Pract. 2020 Sep-Oct

Weight stigma in healthcare providers

- Systematic review and meta-analysis demonstrate explicit and or implict weight bias in:
  - Physicians
  - Nurses
  - Dieticians
  - Physical therapists
  - Psychologists

- Lawrence BJ, Kerr D, Pollard CM, Theophilus M, Alexander E, Haywood D, O'Connor M. Weight bias among health care professionals: A systematic review and meta-analysis. Obesity (Silver Spring). 2021

Harms of weight stigma

- Those who experience weight based stigma are potentially more likely:
  - To avoid exercise/physical activity
  - Have increased caloric intake
  - Experience depressive symptoms and anxiety
  - Have increased stress hormones
  - Avoid future health care
  - To have higher risk of substance use and suicidality
- Those who experience weight based stigma are potentially less likely:
  - To be up to date on age appropriate cancer screening

- Halpern B, Mancini MC, van de Sande-Lee S, Miranda PAC. "Anti-obesity medications" or "medications to treat obesity" instead of "weight loss drugs" - why language matters - an official statement of the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO) and the Brazilian Society of Endocrinology and Metabolism (SBEM). Arch Endocrinol Metab. 2023
- Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JI, Nadglowski J, Ramos Salas X, Schauer PR, Twenefour D, Apovian CM, Aronne LJ, Batterham RL, Berthoud HR, Boza C, Busetto L, Dicker D, De Groot M, Eisenberg D, Flint SW, Huang TT, Kaplan LM, Kirwan JP, Korner J, Kyle TK, Laferrère B, le Roux CW, McIver L, Mingrone G, Nece P, Reid TJ, Rogers AM, Rosenbaum M, Seeley RJ, Torres AJ, Dixon JB. Joint international consensus statement for ending stigma of obesity. Nat Med. 2020

Harms of weight stigma

- Employment and individuals with obesity
  - Lower starting salaries
  - Ranked as less qualified
  - Work longer hours
  - Less likely to be offered interviews

- Halpern B, Mancini MC, van de Sande-Lee S, Miranda PAC. "Anti-obesity medications" or "medications to treat obesity" instead of "weight loss drugs" - why language matters - an official statement of the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO) and the Brazilian Society of Endocrinology and Metabolism (SBEM). Arch Endocrinol Metab. 2023
- Rubino F, Puhl RM, Cummings DE, Eckel RH, Ryan DH, Mechanick JI, Nadglowski J, Ramos Salas X, Schauer PR, Twenefour D, Apovian CM, Aronne LJ, Batterham RL, Berthoud HR, Boza C, Busetto L, Dicker D, De Groot M, Eisenberg D, Flint SW, Huang TT, Kaplan LM, Kirwan JP, Korner J, Kyle TK, Laferrère B, le Roux CW, McIver L, Mingrone G, Nece P, Reid TJ, Rogers AM, Rosenbaum M, Seeley RJ, Torres AJ, Dixon JB. Joint international consensus statement for ending stigma of obesity. Nat Med. 2020

What you can do

- Respectful language
  - Person first verbiage
  - Terminology

Non preferred	Preferred
Morbid obesity	Class 3 obesity
Weight loss drugs	Anti-obesity medications (AOMs)
Excess fat	Excess/extra weight or weight

- Puhl RM. What words should we use to talk about weight? A systematic review of quantitative and qualitative studies examining preferences for weight-related terminology. Obes Rev. 2020
- Brown A, Flint SW. Preferences and emotional response to weight-related terminology used by healthcare professionals to describe body weight in people living with overweight and obesity. Clin Obes. 2021
- Halpern B, Mancini MC, van de Sande-Lee S, Miranda PAC. "Anti-obesity medications" or "medications to treat obesity" instead of "weight loss drugs" - why language matters - an official statement of the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO) and the Brazilian Society of Endocrinology and Metabolism (SBEM). Arch Endocrinol Metab. 2023 Aug

What you can do

- Recognize and educate regarding the complex nature of obesity
- Challenge assumptions, call out bias when seen
- Self reflection

Behavioral/lifestyle methods

- Self monitoring
  - Food intake
  - Exercise
  - Weighing
- Stimulus control
  - Decreasing exposure to problem foods
- Goal setting
  - Working with patient to set specific dietary, exercise, or monitoring goals
  - SMART goals-specific, measurable, achievable, relevant, time-bound

Bray GA, et al. The Science of Obesity Management: An Endocrine Society Scientific Statement. Endocr Rev. 2018

Dietary recommendations

- Calorie deficit (usually aim for ~500-1,000 calorie deficit per day)
- General targets:
  - Women 1200-1500 kcal per day
  - Men 1500-1800 kcal per day
- Basic advice can include:
  - Focusing on intake of lean protein and vegetables
  - Minimizing snacking (can consider most episodes of eating as a meal)
  - May consider non structured use of meal replacements such as protein shakes if food preparation/availability is a barrier

Physical activity recommendations

- General recommendations
  - 150-300 minutes of moderate or 75 min of vigorous aerobic physical activity weekly (ideally spread throughout week)
    - Some better than none for health, even if not reaching goals
    - Further health benefits with over 300 minutes of moderate intensity physical activity
  - Muscle strengthening activities of moderate or more intensity
    - Involving all major muscle groups
    - 2 or more days per week

Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., George, S. M., & Olson, R. D. (2018). The Physical Activity Guidelines for Americans. *JAMA*, *320*(19), 2020–2028. https://doi.org/10.1001/jama.2018.14854

Physical activity discussion

- Exercise is important- but inability to exercise doesn't mean you cannot lose weight
- Everything counts
- Exercise can help maintain muscle mass as we lose weight "make more of what we lose what we want to lose"
  - Particularly resistance exercise

Patient resources dietary

Harvard Healthy Eating Plate

https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/

ADA Diabetes Food Hub

- Recipe library with multiple filters (example, "Kidney-friendly", "Quick and Easy")
- Free live monthly virtual cooking classes (and library of past classes)
- Can create a free account to use Meal Planner and Grocery List features

Diabetes-Friendly Recipes | American Diabetes Association (diabetesfoodhub.org)

Recetas aptas para diabéticos | American Diabetes Association (diabetesfoodhub.org)

MyPlate Kitchen

- Recipe library with multiple filters (example, "By Cooking Equipment" and "No Cooking Required"
- USDA MyPlate Kitchen
- USDA MyPlate in Spanish -- MiPlato en español

The Diabetes Prescription

- Website focused on diabetes with great weight related resources including weight loss calculator, recipes and meal plans, created by an endocrinologist:
- http://thediabetesprescription.com/

Patient resources dietary-budget friendly

- **Eat Right When Money's Tight**

  Tips to save money on food, recipes, links to food assistance resources:

  https://snaped.fns.usda.gov/nutrition-education/nutrition-education-materials/eat-right-when-moneys-tight

- Shop Simple with MyPlate

  Phone app- can enter zip to find rewards/stores that accept SNAP EBT, includes tips for budget friendly foods

  www.whatscooking.fns.usda.gov

- ADA Diabetes Food Hub- Economic Eats section

  More specifically budget friendly websites

  Budget Friendly | American Diabetes Association (diabetesfoodhub.org)

- Eat Well on $4 a day-free pdf on internet (free availability endorsed by author)

https://cookbooks.leannebrown.com/good-and-cheap.pdf

CME courses

- Harvard Blackburn Course in Obesity Medicine
- Columbia/Weill Cornell Obesity Course
- Obesity Week (The Obesity Society and ASMBS)
- Obesity Medicine Association

Medical Resources

- AACE/ACE 2016 Obesity guidelines
  - https://www.endocrinepractice.org/action/showPdf?pii=S1530-891X%2820%2944630-0
- Endocrine Society 2015 Pharmacologic management of obesity guidelines
  - https://academic.oup.com/jcem/article/100/2/342/2813109?login=true
- The Science of Obesity Management: An Endocrine Society Scientific Statement
  - https://academic.oup.com/edrv/article/39/2/79/4922247?login=false
- Obesity Medicine Association Obesity Algorithm
  - Powerpoint slide version https://obesitymedicine.org/obesity-algorithm/download-now/
- AACE/TOS/ASMBS/OMA/ASA 2019 clinical practice guidelines
  - https://asmbs.org/resources/aace-tos-asmbs-oma-asa-clinical-practice-guidelines-for-the-perioperative-nutritional-metabolic-and-nonsurgical-support-of-the-bariatric-surgery-patient-2020
- AGA Clinical Practice Guideline on Pharmacological Interventions for Adults with Obesity
  - AGA Clinical Practice Guideline on Pharmacological Interventions for Adults With Obesity - Gastroenterology (gastrojournal.org)
- Canadian Adult Obesity Clinical Practice Guidelines
  - Canadian Adult Clinical Practice Guideline Chapters - Obesity Canada

Key Takeaways

- Obesity is a chronic disease
- There are multiple effective treatments for obesity
- Even relatively small amounts of weight loss can reduce risk of developing diabetes or improve glycemic control if diabetes is present

Questions?