

# Obesity

| Term            | BMI                | Obesity Class | Disease Risk<br>Waist Circumference<br>Men ≤ 102 cm (≤40 in)<br>Women ≤88cm (≤35 in) | Disease Risk<br>Waist Circumference<br>Men > 102 cm (>40 in)<br>Women > 88cm (>35 in) |
|-----------------|--------------------|---------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Underweight     | <18.5              |               |                                                                                      |                                                                                       |
| Normal          | 18.5-24.9          |               |                                                                                      |                                                                                       |
| Overweight      | 25-29.9            |               | Increased                                                                            | High                                                                                  |
| Obesity         | 30-34.9<br>35-39.9 | I<br>II       | high<br>Very High                                                                    | Very High<br>Very High                                                                |
| Extreme Obesity | >40                | III           | Extremely High                                                                       | Extremely High                                                                        |

## History

- Current Weight, Weight after high school, Goal weight
- Timeline for Weight loss
- Current Meds, prior meds tried
- How much weight loss in past efforts
- How long was the effort
- Failure reason
- Adverse events
- Prior formal programs
- Seeing a dietician/nutritionist?
- Current understanding of food (nutrition, calories)
- Diet recall, food diary, logs from apps
- Current exercise and activity level, frequency/intensity
- Dietary habits: Eating out, ETOH use, sodas/juices/sweet drinks, portions, meal times, snacks
- Comorbidities
- Why do they think they are obese?
- Commitment to change
- Depression
- QOL
- Stress factors
- Any Meds contributing to weight gain.
- Steps you are willing to take
- Sleep habits
- Barriers for success
- Support system

## Exam

- Vitals,
- BMI
- Waist Circumference
- Neck/arm/thigh/Hip circumference
- Heart
- Thyroid
- Lungs
- Gait/MSK
- Skin issues
- Psych exam

## Evaluation/Workup

- Cbc/cmp/tsh/a1c/lipids
- Calculate BMI, BMR, AMR
- Get dietary logs
- Net caloric intake and expenditure tracking

## Management - Dietary Changes

- Palm of hand for portions
- 3 servings of fruits/veggies/protein daily
- 8 glasses water daily
- 2-3 servings of low fat dairy daily.
- Reduce consumption by 25% at each meal/snack
- Eat real food, shop on outside of grocery store
- Don't drink your calories
- Don't be hungry/Don't skip meals – eat 3 meals, 1 snack in between
- Track calories – myfitnesspal
- Goal net deficit of 500 kcal/day
- Avoid eating after 8pm
- Provide sample 1500 kcal/day meal plan or 1800 kcal/day meal plan depending on individual's activity level and goals.

## Management - General Principles

- goal 2 pounds loss per week.
- Meet w/ nutritionist bimonthly or monthly.
- Check Weight monthly.
- Join comprehensive weight management program
- Support system
- Track Calories using app for 2-4 weeks
- Exercise program that can be consistent - schedule
- Portion Control

## Management - Exercise Goals

- Start with 10 min twice daily. Build up to 30-45 min of CV exercise daily or HIIT training 15-20 min daily
  - Do something they enjoy and that works for schedule
  - Schedule exercise into their calendar
  - Exercise prescription
- Yoga/pilates for strength/balance/stress management periodically
- Walk 10000 steps/day
- Resources
  - 7 minute workout app, Youtube videos, home workout regimens, pyramid workouts
- Once consistent with HIIT or CV exercise, add 2-3 days of resistance training weekly
  - whole body routine vs. 2 day split routines

## Management - Surgical Options

- Indication: pt w/ BMI>40 or BMI >35 and obesity related comorbidities.
- 30-50% of excess body weight loss possible.
- Restrictive Procedures
  - Limit volume of stomach and amount of food required to fill it
  - Promotes satiety/wt loss
  - Lap band, vertical banded gastroplasty, Sleeve gastrectomy
- Malabsorptive Procedures
  - Restrict size of stomach by creating small pouch, and bypass most of stomach and duodenum preventing fat absorption.
  - Roux-en-Y gastric bypass

## Management - Endoscopic Metabolic and Bariatric Therapy (EMBT)

- Indication: BMI 30-40 or BMI >27 with 1 or more comorbidities
- Expected weight loss of 10-20% of total body weight
- Safe, can be repeated or reversed easily compared to MBS options.
- Types
  - Restriction (reduce gastric capacity)
    - Intra gastric balloon (IGB) – gas filled or fluid filled. Several are FDA approved
      - has the most supportive evidence for EMBT.
  - Endoscopic sleeve gastroplasty (ESG) – 1 is FDA approved
    - recently approved for BMI 30-50
  - Biliopancreatic diversion – not FDA approved
    - sectionally separating duodenal and upper jejunal mucosa and prevention exposure of food to digestive juices
  - Percutaneous aspiration of already ingested gastric contents
    - FDA approved 2016, withdrawn 2021.

| <div> <div>Management - Postoperative Follow up</div> <ul style="list-style-type: none"> <li>5 servings of fruits/veggies, Avoid tob/etoh, Avoid NSAIDs, Avoid pregnancy for 2 yrs, Inc fluid/water, At least 60 g protein/day, max 1.5 g/kg/d</li> <li>Vitamins and Minerals: <ul style="list-style-type: none"> <li>Ca 1500-1800 mg day, Vit D 2000-3000 IU/day, Iron 20-65 mg/d, B12 daily, 2 MVI/day, B1 (Thiamine) only for higher risk groups.</li> </ul> </li> <li>Labs: <ul style="list-style-type: none"> <li>Quarterly CBC/B12/CMP/iron/A1c</li> <li>Annual CBC, CMP, Ceruloplasmin, Copper, iron studies, iPTH, Lipids, TSH, Thiamine, Vitamin A, Zinc, B12, Vitamin D</li> </ul> </li> <li>Imaging: Dexa in 2 yrs</li> <li>F/u 1 week, 2 weeks, 1 month, 3 months, 6 months, 12 months. Avoid pregnancy for 2 yrs.</li> </ul> </div> |                                                                                     |                                                                                                             |                                                                                                                                                                                              |                                                                                                                                                                                                            |                                                         |                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drug Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Drug Class                                                                          | Cost/month                                                                                                  | Mechanism                                                                                                                                                                                    | Indication                                                                                                                                                                                                 | Expected Weight loss                                    | Side effects                                                                                                                                                                                                                                                                                                                                                                        |
| <div>Semaglutide (Wegovy)*</div> <div>Liraglutide (Saxenda)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | GLP1 agonists                                                                       | <div>Wegovy Pill (\$25 copay vs \$149-299)</div> <div>Wegovy Injection (\$25 copay vs \$349-499-1300)</div> | stimulate insulin secretion after oral glucose load, delayed gastric emptying, inhibit glucagon production, appetite suppression                                                             | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD). Also indicated for reduction of CV issues (death, MI, CVA). | 7-9 kg loss; 15% weight loss over 68 weeks              | <ul style="list-style-type: none"> <li>nausea, diarrhea, vomiting, constipation, abdominal pain, headache, fatigue, dyspepsia, dizziness, abdominal distension, eructation, hypoglycemia, flatulence, gastroenteritis, GERD.</li> <li>Risks can include rare thyroid C cell cancer, pancreatitis, cholecystitis, gastroparesis, bone/muscle loss, ? transient blindness</li> </ul>  |
| Tirzepatide (Zepbound)*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | GLP1/GIP agonist                                                                    | \$25 copay vs \$299-499                                                                                     | stimulate insulin secretion after oral glucose load, delayed gastric emptying, inhibit glucagon production, appetite suppression, increase satiety.                                          | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD).                                                             | 15-21% at 72 weeks; 9-13 kg loss                        | <ul style="list-style-type: none"> <li>nausea, diarrhea, vomiting, constipation, abdominal pain, headache, fatigue, dyspepsia, dizziness, abdominal distension, eructation, hypoglycemia, flatulence, gastroenteritis, GERD.</li> <li>Risks can include rare thyroid C cell cancer, pancreatitis, cholecystitis, gastroparesis, bone/muscle loss, ? transient blindness.</li> </ul> |
| Orforglipron (Foundayo)*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Oral, non-peptide small molecule GLP-1 receptor agonist                             | \$25 (commercial) ; \$149-349 via GoodRx/Lily Direct, Cash \$1000                                           | Binds to and activates GLP1 receptors in brain regions that regulate appetite. Reduces body weight with greater fat mass than lean mass loss. Decreases appetite and delays gastric emptying | Adjunct to diet/exercise for weight loss                                                                                                                                                                   | 9.6-12.4% weight loss                                   | <ul style="list-style-type: none"> <li>Nausea, vomiting, constipation, diarrhea, indigestion, headache, fatigue, abdominal pain, hair loss</li> <li>Rare risk of thyroid C-cell tumors</li> <li>Pancreatitis, AKI, cholecystitis</li> </ul>                                                                                                                                         |
| Phentermine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | sympathomimetic/ anorectic (scheduled drug) Short term only                         | \$10-25                                                                                                     | stimulates release of Norepi and epi, Decreased appetite, increase metabolism                                                                                                                | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD).                                                             | 5-10% over 1 yr                                         | <ul style="list-style-type: none"> <li>dry mouth, taste changes, constipation, paresthesias, anxiety, tachycardia, elevated BP, insomnia, anorexia.</li> </ul>                                                                                                                                                                                                                      |
| Phentermine + Topiramate (Qsymia and Qsiva)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Combination sympathomimetic amine anorectic/anti-epilepticanalogue (scheduled drug) | \$10-45                                                                                                     | <div>stimulates release of Norepi and epi, Decreased appetite, increase metabolism.</div> <div>Topiramate suppresses appetite (weakly) and enhances satiety (weakly)</div>                   | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD).                                                             | 5-10% (when combined with TLC)                          | <ul style="list-style-type: none"> <li>paresthesias, dizziness, dysgeusia, insomnia, constipation, dry mouth, primary pulmonary HTN, cardiac valvular disease, palpitations, tachycardia, elevated BP, overstimulation, restlessness, dizziness, insomnia, euphoria, tremor, headache, psychosis, dryness.</li> </ul>                                                               |
| Naltrexone + Bupropion (Contrave)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Combination opioid antagonist/aminok etone antidepressant                           | \$199 \$560                                                                                                 | stimulate hypothalamic pro-opiomlanocortin neurons while simultaneously blocking opioid mediated POMC autoinhibition with naltrexone. Affects midbrain dopamine areas to reduce food intake. | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD).                                                             | 5-8% weight loss (when combined with lifestyle changes) | <ul style="list-style-type: none"> <li>nausea, constipation, headache, vomiting, dizziness, insomnia, dry mouth, diarrhea</li> </ul>                                                                                                                                                                                                                                                |
| <div>Orlistat (Xenical or Alli)</div> <div>Alli is ½ strength of Xenical and available OTC</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | lipase inhibitor                                                                    | Xenical - \$450<br>Alli - \$79 (90 tabs)                                                                    | Inactivates gastric and pancreatic lipases by binding to these enzymes Prevents hydrolyzing TG into FFA and thus pass thru GI tract. Fat calories not absorbed à wt loss                     | Adjunct to diet/exercise for weight loss with BMI 30 or higher or 27 or higher in presence of 1 weight related complications (HTN, DMII, HLD).                                                             | 5% weight loss (when combined w/ lifestyle changes)     | <ul style="list-style-type: none"> <li>flatus w/ discharge, fecal urgency, fatty/oily stool spotting, fecal incontinence, bloating.</li> <li>33% attrition rate due to side effects.</li> </ul>                                                                                                                                                                                     |

\*Medicare Briidge Program Eligible = \$50 copag for Foundayo, Wegovy, or Zepbound if BMI≥35, or BMI ≥30 with either CHF/HTN/CKD3a or higher, or BMI ≥27 with prediabetes, prior MI or Prior CVA, or PAD

References

- Sharaiha RZ, et al. Summarizing Consensus Guidelines on Obesity Management: A Joint, Multidisciplinary Venture of the International Federation for the Surgery of Obesity & Metabolic Disorders (IFSO) and World Gastroenterology Organisation (WGO). J Clin Gastroenterol. 2023 Nov-Dec 01;57(10):967-976. doi: 10.1097/MCG.0000000000001916. Epub 2023 Sep 27. PMID: 37831466; PMCID: PMC10566600.
- Yurista, S, Eder, R, Feeley, M. et al. A Closer Look at ACC/AHA and ESC Guidelines for Managing Obesity and Overweight in Adults. JACC Adv. 2023 Sep, 2 (7) .<https://doi.org/10.1016/j.jacadv.2023.100570>
- NICE Guideline. Obesity: identification, assessment and management. July 2023.
- Banerjee, ES, et al. Metabolic surgery for adult obesity: Common Questions and Answers. Am Fam Physician. 2022;105(6): 593-601.
- Grunvald, E, et al. AGA Clinical Practice Guidelines on Pharmacological Interventions for Adults with Obesity. Gastroenterology. November 2022; 163(5): 1198-122