Obesity Is a Chronic Disease; Let’s Treat it That Way

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Disclosures

• Seena L. Haines: “declare(s) no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.”

• Michael P. Kane: “declare(s) no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.”

Learning Objectives

At the completion of this application based activity, participants will be able to

1. Describe why obesity is considered a chronic disease and how this classification affects the management of obesity.
2. Recall guideline recommendations regarding lifestyle and pharmacologic interventions for the management of obesity.
3. Summarize existing pharmacologic options for patients who do not reach target weight following the implementation of lifestyle modifications.
4. Develop a plan to educate patients about the risks, benefits, and appropriate use of pharmacological treatments to manage obesity.
5. Describe strategies that can be used to support adherence to weight management strategies, including diet, physical activity, and pharmacologic interventions.

Self-Assessment Question 1

When developing discrepancy and motivating patients in lifestyle changes, the counseling strategy should involve which three elements?

a. Affirmation, listening, questioning
b. Commitment, action, taking steps
c. Empathy, commitment, self-efficacy
d. Listening, action, commitment
Self-Assessment Question 2
What are the three components that comprise energy output?

a. Activity energy, resting metabolic, thermic effect,
b. Daily expenditure, non-exercise activity, thermic effect
c. Non-exercise activity, daily expenditure, resting metabolic
d. Daily expenditure, thermic effect, activity energy

Self-Assessment Question 3
Clinical guidelines for obesity recommend medical management safety and efficacy been assessed how frequently?

a. Monthly for the first 3 months and then at least every 3 months in all patients receiving obesity pharmacotherapy
b. Every 3 months in all patients receiving pharmacotherapy up to 1 year of treatment
c. Bi-monthly for the first 6 months and then at least monthly in all patients receiving obesity pharmacotherapy
d. Every 6 months in all patients receiving pharmacotherapy up to 1 year of treatment

Self-Assessment Question 4
Which of the following statements is accurate?

a. All obesity medications are pregnancy category X.
b. All obesity medications are indicated for chronic use.
c. All obesity medications are approved for individuals with a BMI ≥26 kg/m² and at least 1 weight-related comorbidity.
d. All obesity medications are DEA schedule IV drugs.

Self-Assessment Question 5
Which of the following drugs inhibits dopamine and noradrenaline reuptake?

a. Liraglutide  
b. Orlistat  
c. Bupropion  
d. Loracaserin

Declaration by AMA: Obesity is A Disease
Designation reclassifies 78 million US adults & 12 million children
Physician professional obligation to manage
National cancer institute estimated obesity will contribute an additional 500,000 new cancer cases by 2030

Prevalence in Adults and Children
• More than two thirds of adults (≥20 years) are overweight or obese
• Specifically:
  – 69.2% of adults are overweight or obese
  – 36.5% are obese
  – 8.3% are extremely obese
  – Disparity between men and women of African American (highest rate), Hispanic, and Mexican descent
• By 2030:
  – 42% will be obese
  – 11% will be extremely obese

• 31.8% of children and teens are overweight or obese (ages 2-19)
  – 1 in 3 boys are overweight or obese
  – Higher number in Hispanic and black youth
• 16.9% are obese
  – BMI ≥95th percentile on BMI-for-age growth charts

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**Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2013**

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

**Clinical Guidelines**

**USPSTF Recommendation**

- BMI ≥30
- Offer or refer patients to intensive, multicomponent behavioral interventions
- Average expected weight loss 8.8–15.4 lb


**NHLBI Guideline**

Who should lose weight?
- BMI ≥30
- BMI 25–29.9 + ≥2 risk factors
- High-risk waist circumference + ≥2 risk factors
  - Men >40 in
  - Women >35 in

**Risk Factors**

- Cigarette smoking
- Hypertension
- LDL ≥160 mg/dL*
- HDL <35 mg/dL
- Impaired fasting glucose (FPG 100–125 mg/dL)
- Family history of premature CHD
  - MI, sudden death in male relative ≤55 years
  - female relative ≤55 years
- Age
  - ≥45 years (men)
  - ≥55 years (women)**

*Or 130–159 mg/dL + ≥2 other risk factors
**Or postmenopausal

**American Heart Assoc./American Colleges of Cardiology/Obesity Society Guideline**

Determine CVD in all patients (BMI ≥25 kg/m²)

Assess weight annually in all patients

Candidates for weight loss therapy = patients with at least 1 RF for obesity related complications

Aim for weight loss goal of 5-10% in first 6 months (clinical benefit seen at 3-5%)

Stress regular follow up and monitoring for weight loss

Individual or group visits (1-2x/month-moderate OR >14 sessions-high for at least 6 months) perform best

Weight maintenance

Individual or group (face to face, telephone) 1-2x/month for up to 2.5 years

http://content.onlinejacc.org/article.aspx?articleid=1770219
American Heart Assoc./American Colleges of Cardiology/Obesity Society Guideline

Dietary approaches to weight loss (option 1)
1,200-1,500 kcal for women
1,500-1,800 kcal for men

Dietary approaches to weight loss (option 2)
Reduce caloric requirements 500-750 kcal/day or 30% of total
Or rather than calorie goals → limit high fat or high CHO foods

Endocrine Society Clinical Practice Guideline

Recommendations for medications that cause weight gain and alternative therapy recommendations
Supports national screening recommendations
Medical management of obesity: assess efficacy and safety monthly for 1st 3 months and then at least every 3 months in all patients

ASBP Obesity Algorithm

- Obesity Classification
- Risk Stratification
  - Sick fat disease (adiposopathy)
  - Fat mass disease
  - Metabolically healthy but obese
- Routine preventive care recommendations
- Pharmacotherapy
- Nutrition therapy

Percent Body Fat & Waist Circumference

![Body Fat & Waist Circumference Table]

Self-Management

Tasks patients must undertake to live well with one or more chronic Conditions (skills and confidence):
- Medical management
- Role management
- Emotional management

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Ten Mistakes in Behavior Change

1. Relying on willpower for long-term change
2. Attempting big leaps instead of baby steps
3. Ignoring how environment shapes behaviors
4. Trying to stop old behaviors instead of creating new ones
5. Blaming failures on lack of motivation
6. Underestimating the power of triggers
7. Believing that information leads to action
8. Focusing on abstract goals rather more than concrete behaviors
9. Seeking to change behavior forever, not for a short time
10. Assuming that behavior change is difficult

Evidence of Application to Health Behaviors

- Research to assess effectiveness in dietary behavior changes, weight loss, increased physical activity/fitness, increased intake of fruit and vegetables, and lower saturated fat intake
- Can be used with brief appointments

Motivational Interviewing

“A Collaborative conversation technique for strengthening a person’s own motivation and commitment to change”

Miller and Rollnick 2012

Motivational Interviewing

- Enhances Intrinsic Motivation To Change by Exploring and Resolving Ambivalence
- Goal-directed approach
- Discrepancies between Personal health goals and current health behaviors
- Patient-Centered
- Directive
- Honors Patient Autonomy
- Goal Oriented

Four MI Principles (READS)

1. Roll with resistance
2. Express Empathy
3. Avoid Arguing
4. Develop Discrepancy
5. Support self-efficacy

MI Communication Skills

- Open-ended Questions
- Affirmation
- Reflective listening
- Summarize
Example Questions

- How ready do you feel to changing your eating patterns?
- How is your current weight affecting your life?
- What kind of changes have you made in the past to improve your eating (activity)?
- What strategies have worked for you in the past?
- What was your life like before you gained weight?
- What do you think will happen if your health behaviors do not change?
- What are your hopes for the future if you become healthier?
- What do you think will happen if your health behaviors do not change?
- On a scale from 1-10, how ready are you to make changes in your eating patterns?

Reflective Listening

- "It sounds like you are thinking about losing weight but you’re not sure if now is the time to take action. Would you be willing to talk again about this at our next visit?"
- "You sound concerned about your weight and you would like to start making changes in your lifestyle."
- "It can be hard to initiate changes in your life. Thank you for talking with me about this."
- "It’s great that you feel good about your decision to make lifestyle changes; you are taking important steps to improve your health."

Roll with Resistance

What can Increase Resistance

- Arguing
- Ignore
- Raise voices
- Warn

What can Lower Resistance

- Listen
- Choices
- Confirm
- Empathy
- Be present

Common Patient Emotions: Anger, Sadness, Powerlessness, Frustration, Misunderstood

Self-Assessment Question 1

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Components of Energy Intake

<table>
<thead>
<tr>
<th>Macronutrient</th>
<th>Energy (kcal/g)</th>
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<tr>
<td>Carbohydrates (starches, sugar)</td>
<td>4</td>
</tr>
<tr>
<td>Protein</td>
<td>4</td>
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<tr>
<td>Fat</td>
<td>9</td>
</tr>
<tr>
<td>Alcohol</td>
<td>7</td>
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</tbody>
</table>
Components of Energy Output

- Resting metabolic rate
  - Amount of energy expended under restful conditions
  - Includes calories needed to support vital functions
- Thermic effect of food
  - Food digestion, absorption, storage
- Activity energy expenditure
  - Exercise
  - Nonexercise activity thermogenesis (NEAT)

Thermic Effect: Processed foods require fewer calories to be digested compared to whole foods

Energy Storage

- Dependent on body size, body composition, physical fitness level and diet
- Measured in kcal/gram
- Lipids yield more kcal/gram and deplete slower than CHO and PRO
- The quantity of energy stored by the human body
  - Lean individuals (store 2-3 months of energy needs in adipose)
  - Obese individuals (store 1 year's worth)

NEAT Expenditures

Can Vary by 2,000 calories a day (15% in sedentary, >50% in highly active folks)

"Chair-living has proven so enticing that we have forsaken our legs. It is now time to find ways to get us back onto our legs." - James Levine, MD, PhD

NEAT = TDEE − (BMR + TEF).

Calculating BMR, Daily Expenditure & Kcal

Women: BMR = 655 + (4.35 x weight (lbs)) + (4.7 x height (in)) − (4.7 x age (yrs))

Men: BMR = 66 + (6.23 x weight (lbs)) + (12.7 x height (in)) − (6.8 x age (yrs))

Daily Energy Expenditure

Little to no exercise (sedentary) = BMR x 1.2
Light Exercise/sports 1-3 days (light active) = BMR x 1.375
Moderate Exercise/sports 3-5 days (moderate active) = BMR x 1.55
Hard Exercise/sports 6-7 days (very active) = BMR x 1.725
Very hard exercise/sports & physical job (extremely active) = BMR x 1.9

Energy Intake

Consider patient preferences, available food, finances

Physical Adaptation

Caloric Restriction → Resting Energy Expenditure

Dietary Approach

"Success of long-term weight loss programs/diet plans: no compelling evidence for any specific dietary mixture other than energy restriction with respect to long-term weight maintenance.

While there are several published studies that provide evidence for the short-term efficacy of their program, there are few "stars" of long-term success in terms of a specific diet plan."

Proven benefits seen with TLC, DASH, Mediterranean

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How Many Calories Do We Need?

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Sedentary</th>
<th>Moderate</th>
<th>Active</th>
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<td>2,200</td>
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<tr>
<td>51+</td>
<td>1,600</td>
<td>1,800</td>
<td>2,000–2,200</td>
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<td>2,000</td>
<td>2,200–2,400</td>
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</table>

Dietary Guidelines for Americans, 2010

Modifiable Behaviors

- Consumption of sugar sweetened beverages (SSBs)
  - Adults aged 20-44 yrs had the highest burden of mortality from SSBs (14% of all diabetes and obesity related deaths)
  - About 1 in 20 diabetes related disability-adjusted life years in adults <44 yrs are due to SSBs
- Trans fat consumption
  - Higher levels of trans fat linked to difficulty with word recall (oxidative stress?)
- Online inhibition training
  - Decrease high calorie food consumption

NIH-NIDDK Weight Loss Simulator


Self Monitoring Behaviors

- Food Log ("If you bite it, write it")
  - MyFoodDiary.com
  - My-calorie-counter.com
  - MyFitnessPal.com
  - Fitday.com
  - Sparkpeople.com
  - Supertracker.usda.gov
- Food diaries (stress level, mood, activity, location, other environmental or emotional triggers for eating)
- Nutritional info search engines (calorieking.com)
- Self-weighing (same time of day and day of the week)
- Exercise logs (minutes, type, and level of exertion)
- Equipment- pedometer, metabolic devices**, accelerometers* (10,000 steps daily) (* measure frequency, duration, and intensity of activity BUT not resistance) (BioTracker, Nike**) (use accelerometer tech. and measure level of physical exertion and emotional stimuli/skin temp.- determines when we sit, sleep, jog, walk, lift weight, driving)
Physical Activity - CDC Guidelines Recommendation

For Even Greater Health Benefits

Older adults should increase their activity to:
- 150 minutes (100 minutes) of moderate-intensity activity each week (e.g., walking, swimming, dancing)
- 75 minutes (50 minutes) of vigorous-intensity activity each week (e.g., running, biking, tennis)
- Or an equivalent combination of moderate- and vigorous-intensity activity each week

Add the following activities:
- Brisk walking
- Stairclimbing
- Jumping rope
- Bulgarian splits
- Rowing
- Push-ups
- Jumping jacks
- High-knee walking
- Wall sits
- Skipping

According to the Physical Activity Readiness Questionnaire (PAR-Q), physical activity is considered safe if the following statements are true:
- Your general health is good;
- You have no acute or chronic illnesses;
- You are not currently undergoing any vigorous or strenuous physical training program;
- You are not receiving medical care for any acute or chronic illness.

http://www.cdc.gov/physicalactivity/basics/adults/index.htm

Physical Activity - CDC Guidelines Recommendation

For Improved Health Benefits

1. Aerobic activity: At least 150 minutes (100 minutes) of moderate-intensity activity each week (e.g., walking, swimming, dancing)
2. Muscle-strengthening activities: At least 2 days per week of muscle-strengthening activities involving major muscle groups
3. Flexibility: At least 2 days per week of stretching exercises
4. Balance: At least 2 days per week of balance exercises

Initial Approach to Weight Loss

Calories Restriction

Physical Activity

Behavior Therapy

Energy Deficit 500-1000 kcal/day
Or 300-500 kcal/day at lower starting weights

Rate of 1-2 lb/week
But 0.5-1 lb/week may be more realistic at lower starting weights

Providers may tell patients more of what to do and not how to do it

Health Benefits of Exercise

USDH Physical Activity Guide 2008

USDH Physical Activity Guide 2008

Self-Assessment Question 3

Clinical guidelines for obesity recommend medical management safety and efficacy been assessed how frequently?

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Learning Objectives
At the completion of this application based activity, participants will be able to:
1. Describe why obesity is considered a chronic disease and how this classification affects the management of obesity.
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4. Develop a plan to educate patients about the risks, benefits, and appropriate use of pharmacological treatments to manage obesity.
5. Describe strategies that can be used to support adherence to weight management strategies, including diet, physical activity, and pharmacologic interventions.

Case #1
- Pam is a 47 yo, obese Caucasian woman; grade school teacher with a history of HTN, HoTR, and depression who presents for her annual physical.
- CC: ”I'm tired sometimes” and “I'm gaining weight”; “I think my Synthroid dose should be increased”
- Hx: weighed 125# when graduated HS; 135# when graduated College; gained 20# when stopped smoking 20 years ago. Gained 35-40# with each of 3 pregnancies and never returned to pre-pregnancy weight x 3. Her mother and grandmother “were always heavy”.
- Hx: diagnosed with depression 2 years ago and treated with paroxetine 40 mg daily (has gained an additional 12#).
- She reports 10-15 # weight loss in past using Weight Watchers and Jenny Craig, but weight eventually returns.
- She exercises at Planet Fitness for 30 minutes 3x/wk (primarily using the elliptical and stationary bike as more weight-bearing hurts her knees).
- She knows she needs to diet but “I have a hard time with my appetite”.

Case #1
- PE: 5'4” 190# BMI 32.6 kg/m2 Waist Circ 43”
- VS's: 142/92 68 15 99
- The remainder of the physical exam is normal.
- Medications:
  - Propranolol 40 mg twice daily
  - HCTZ 25 mg daily
  - Synthroid 0.15 mg daily
  - Depo-Provera 150 mg IM q 13 weeks
  - Tylenol PM HS
- Labs:
  - TSH 1.5 mIU/mL (0.4 - 4)
  - FPG 120 mg/dL
  - TC 210 mg/dL
  - TG 220 mg/dL
  - HDL-C 38 mg/dL
  - LDL-C 128 mg/dL

Energy Balance
Energy Intake vs Energy Expenditure

Case #1
- Hx: weighed 125# when graduated HS; 135# when graduated College; gained 20# when stopped smoking 20 years ago. Gained 35-40# with each of 3 pregnancies and never returned to pre-pregnancy weight x 3. Her mother and grandmother “were always heavy”.
- Case #1
- Case #1
Case #1

• Which of the following should be done next?
  A. Ask Pam to lose 10# to demonstrate commitment to weight loss, prior to getting a weight loss medication.
  B. Try diet and exercise for six months; if don’t reach goal then will consider a weight-loss drug.
  C. Add an ACEI for BP and metformin for pre-diabetes.
  D. Adjust current medications which may be contributing to weight gain, get BP under goal, and meet again in one month.

In the patient’s own words:
Identifiable Benefits of Weight Loss

• Being less SOB.
• Being able to climb a flight of stairs.
• Getting on the floor to play with grandchildren.
• No longer in the handicap section if going on a tour.
• Fitting into clothes you feel good about.

2015 Endocrine Society Guidelines

• Provide rationale and recommendations for care of the patient who is overweight or obese
• Lists drugs associated with weight gain/alternatives
• Addresses off-label use of drugs for chronic obesity management

Pharmacologic Treatment of Obesity

• Tenant 1
  – Diet and exercise are the cornerstone of all obesity treatments (begin new habits).
• Tenant 2
  – Pharmacotherapy is in addition to, not replacement of, lifestyle modifications.
• Tenant 3
  – Pharmacotherapy will increase the chance of meaningful weight loss.

Pharmacologic Treatment of Obesity

• Tenant 4
  – All medications have the same indication
    • Patients with a BMI ≥30 kg/m²
    • Patients with a BMI ≥27 kg/m² with at least one weight-related comorbidity
    • Indicated for chronic use
  – All medications are adjuncts to diet and exercise
  – If any medication is not effective, D/C it (and seek alternative)

Case #1

• Issues
  – Meds contributing to Obesity
  – Uncontrolled HTN
  – Metabolic Syndrome/Pre-Diabetes
• Insure a euthyroid state
• Propranolol and Tylenol PM stopped; ObGyn stopped D-P and initiated IUD; ACEI initiated
• Increasing work-outs from 30 to 45 minutes
• Checking out recipes on-line
• Discuss weight loss medications
Medication Mechanism of Action Dose Time to Evaluate Response

**Orlistat (Xenical)**
- Pancreatic lipase inhibitor
- 120 mg po thrice daily c meals
- 12 weeks

**Lorcaserin (Belviq)**
- Selective serotonin 2c receptor agonist
- 10 mg po twice daily
- 12 weeks

**Phentermine/Topiramate (Qsymia)**
- Sympathomimetic amine/GABA modulator and Carbonic anhydrase inhibitor
- 7.5 mg/46 mg
- 14 weeks from initiation; then escalate dose or discontinue

**Naltrexone/ Buproprion (Contrave)**
- Opioid receptor antagonist/Dopamine and norepinephrine reuptake inhibitor
- 2 tablets twice daily
- 16 weeks from initiation

**Liraglutide (Saxenda)**
- GLP-1 agonist
- 3 mg SQ daily
- 16 weeks from initiation

### Medication Response definition

- **Other Site of Action**
- **Route of Admin**

**Medication**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Response definition</th>
<th>Other</th>
<th>Site of Action</th>
<th>Route of Admin</th>
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</thead>
<tbody>
<tr>
<td>Orlistat</td>
<td>Take daily MVI; high recidivism</td>
<td>Peripheral</td>
<td>Oral with food</td>
<td></td>
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<tr>
<td>Lorcaserin</td>
<td>At least 5% weight loss</td>
<td>Central</td>
<td>Oral</td>
<td></td>
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<tr>
<td>Phentermine/Topiramate</td>
<td>At least 3% weight loss</td>
<td>REMS program due to potential teratogenicity</td>
<td>Central</td>
<td>Oral</td>
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<tr>
<td>Naltrexone/ Buproprion</td>
<td>At least 5% weight loss</td>
<td>Central</td>
<td>Oral with food</td>
<td></td>
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<tr>
<td>Liraglutide</td>
<td>At least 4% weight loss</td>
<td>Central and Peripheral</td>
<td>Daily Injection</td>
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### % of Patients achieving 5% weight loss at 1 year

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<thead>
<tr>
<th>Medication</th>
<th>Percentage</th>
<th>Percentage</th>
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<td>45.1</td>
<td>72.9</td>
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<tr>
<td>Lorcaserin</td>
<td>20.3</td>
<td>47.5</td>
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<tr>
<td>Naltrexone/ Buproprion</td>
<td>43</td>
<td>21</td>
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<td>Phentermine/Topiramate</td>
<td>28</td>
<td>67</td>
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<tr>
<td>Liraglutide</td>
<td>73</td>
<td>62</td>
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All data derived from drug Package Inserts.

### Average Weight Loss of Completers

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<th>Medication</th>
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<td>Liraglutide</td>
<td></td>
</tr>
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</table>

All data derived from drug Package Inserts.

### Orlistat

- **ADR Rate vs Placebo (%)**
  - Oily spotting 26.6 vs 1.3
  - Flatus with discharge 23.9 vs 1.4
  - Fecal urgency 22.1 vs 6.7
  - Fatty/Oily stool 20.0 vs 2.9
  - Oily evacuation 11.9 vs 0.8
  - Increased defecation 10.8 vs 4.1
  - Fecal incontinence 7.7 vs 0.9
  - DC due to ADE 8.8 vs 5.0

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### Lorcaserin

- **ADR Rate vs Placebo (%)**
  - Headache: 16.8 vs 10.1
  - Dizziness: 8.5 vs 3.8
  - Nausea: 8.3 vs 5.3
  - Fatigue: 7.2 vs 3.6
  - Diarrhea: 6.5 vs 5.4
  - Constipation: 5.8 vs 3.9
  - Dry mouth: 5.3 vs 2.3
  - DC due to ADE: 8.6 vs 6.7

**Belviq (R) package insert. Zofingen, Switzerland: Arena Pharmaceuticals; 2012.**

### Naltrexone-Bupropion ER

- **ADR Rate vs Placebo (%)**
  - Nausea: 32.5 vs 6.7
  - Constipation: 19.2 vs 6.7
  - Headache: 17.6 vs 10.4
  - Vomiting: 10.7 vs 2.9
  - Dizziness: 9.9 vs 3.4
  - Insomnia: 9.2 vs 5.9
  - Dry mouth: 8.1 vs 2.3
  - Diarrhea: 7.1 vs 5.2
  - Anxiety: 4.2 vs 2.8
  - DC due to ADE: 24.0 vs 12.0

**Contrave (R) package insert. Orexigen Therapeutics, Inc. La Jolla, CA; 2014.**

### Phentermine-Topiramate ER

- **7.5/46 mg dose ADR Rate vs Placebo (%)**
  - Constipation: 15.1 vs 6.1
  - Paresthesia: 13.7 vs 1.9
  - Dry mouth: 13.5 vs 2.8
  - Dysgeusia: 7.4 vs 1.1
  - Dizziness: 7.2 vs 3.4
  - Diarrhea: 6.4 vs 4.9
  - DC due to ADE: 11.6 vs 8.4

**Qsymia (R) package insert. VIVUS, Inc. Mountain View, CA; 2012.**

### Liraglutide 3 mg

- **ADR Rate vs Placebo (%)**
  - Nausea: 39.3 vs 13.8
  - Diarrhea: 20.9 vs 13.8
  - Constipation: 19.4 vs 8.5
  - Vomiting: 15.7 vs 3.9
  - Headache: 13.6 vs 12.6
  - Dyspepsia: 9.6 vs 2.7
  - Fatigue: 7.5 vs 4.6
  - Dizziness: 6.9 vs 5.0
  - DC due to ADE: 9.8 vs 4.3

**Saxenda(R) package insert. NovoNordisk, Bagsvaerd, Denmark; 2015.**

### Drug Comparison: Contraindications and Warnings

<table>
<thead>
<tr>
<th></th>
<th>Orlistat</th>
<th>Lorcaserin</th>
<th>Naltr/Bup</th>
<th>Phen/Topir</th>
<th>Liraglutide</th>
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<tbody>
<tr>
<td>Pregnancy</td>
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<td>Glaucoma</td>
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<td>MAOI's</td>
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<td>Uncontrolled HTN</td>
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<td>Seizures</td>
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<td>MTC</td>
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<td>Suicidal behavior/idea</td>
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<td>Pancreatitis</td>
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### Case 1

- Which of the following is an appropriate medication treatment for Pam?
  A. Orlistat
  B. Lorcaserin
  C. Phentermine/Topiramate ER
  D. Naltrexone/Bupropion
  E. Liraglutide

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Case 2
- Alex is a 38 yo AA male with a history of T2DM, HTN, dyslipidemia, osteoarthritis of the R knee, anxiety and depression.
- He would like to discuss pharmacotherapy options as he is determined to lose weight to better control his CV risk factors.
- PE: 5’11” 254# BMI 35.4 kg/m2 Waist Circ 54” VS’s: 144/94 74 12 98.6
  The remainder of the physical exam is normal.

Case 2
- Medications:
  - Glipizide 10 mg twice daily
  - Pioglitazone 45 mg daily
  - Atorvastatin 40 mg daily
  - Lisinopril 40 mg daily
  - Naproxen Sodium 220 mg twice daily
- Labs: A1C 7.4%, SCr 1.0 mg/dL,
  TC 149 mg/dL, TG 140 mg/dL, HDL-C 40 mg/dL, LDL-C 81 mg/dL.

Case #2
- Issues
  - Meds contributing to Obesity
  - Uncontrolled HTN
  - How does he handle his depression?
- Consider change of diabetes regimen; identify alternative treatment for NSAID.
- Consider addition of more anti-HTN therapy.
- Increase activity level.
- Discuss weight loss medications

Case 2
- Which of the following is an appropriate medication treatment for Alex?
  A. Orlistat
  B. Lorcaserin
  C. Phentermine/Topiramate ER
  D. Naltrexone/Bupropion
  E. Liraglutide

Case 3
- Tom is an obese 64 yo Hispanic male with T2DM, HTN, dyslipidemia, OSA, retinopathy and peripheral neuropathy. He is unable to exercise due to his neuropathy.
- PE: 6’ 305# BMI 41.4 kg/m2 Waist Circ 60” VS’s: 138/88 74 12 98.6
  Except for 2+ LEE on exam and the finding of acanthosis nigricans on the back of his neck and the skin folds of his underarms, the remainder of the physical exam is normal.

Case 3
- Medications:
  - Metformin 500 mg twice daily
  - Glimepiride 4 mg daily
  - Lantus 15 units HS
  - Atorvastatin 80 mg daily
  - HCTZ 25 mg daily Amlodipine 10 mg daily
  - Trazodone 400 mg HS
  - Gabapentin 600 mg four times daily
- Labs: A1C 8.2%, SCr 1.1 mg/dL,
  TC 163 mg/dL, TG 130 mg/dL, HDL-C 42 mg/dL, LDL-C 95 mg/dL.
Case #3

- Issues
  - Meds contributing to obesity
  - Poorly controlled diabetes
  - Lower extremity edema
- Consider change of diabetes and BP regimens; identify alternative treatment for PN.
- Increase activity level.
- Discuss weight loss medications

Case 3

- Which of the following is the best treatment for Tom?
  A. Gastric Bypass
  B. Lorcaserin
  C. Phentermine/Topiramate ER
  D. Naltrexone/Bupropion
  E. Liraglutide

Case 4

- Samantha is a 48-year-old woman who seeks consultation for evaluation of weight gain following bariatric surgery.
- PMH: Laparoscopic Roux-en-Y gastric bypass (RYGB) in 2008. Her preoperative body weight was 325 lbs; BMI 50.9 kg/m2. Medical co-morbidities were OSA and HTN. Over the subsequent 2 years, she successfully lost 145 lbs, and achieved resolution of her OSA and HTN. She kept the weight off for three years but has regained 80 lbs over the last 2 years.

Case 4

- Due to a recidivism of previous eating habits and reduced physical activity, she has experienced a gradual and progressive weight regain. Symptoms of OSA have returned and she discontinued all nutritional supplements; she attributes all of these results as a result of becoming the primary care-giver of her elderly parents just over 2 years ago.
- PE: 5’7” 252# BMI 39.5 kg/m2 VS’s: 146/98 74 14
- Labs: H and H normal, MCV 98, vitamin B12 155 pg/mL (nL>180), homocysteine 22.2 μmoL/L (nL<14.9), 25-OH vitamin D 15.5 ng/mL (nL>30).

Strategies for Long-term Weight Loss Maintenance

- Engage in high levels of physical activity
- Eat a low fat, low calorie diet
- Eat breakfast every day
- Keep food logs
- Monitor weight regularly (e.g., daily)
- Maintain a consistent eating pattern (weekdays and weekends)

Case #4

- Issues
  - Taking care of elderly parents
  - Return of OSA/high BP
  - Nutritional deficiencies
- Needs help with parents
- Initiate C-PAP
- Start BP medication
- Restart nutritional supplements
Cost of 30-Day Medication Supply*

- Orlistat #90 $ 614.53**
- Lorcaserin #60 $ 239.40
- Phenterm/Topiramate #30 $ 223.20***
- Naltrex/Bupropion #120 $ 239.40
- Liraglutide 3 mg 5 boxes/3 pens $1075.33

* Lexicomp estimated monthly costs
** $52.79 for ninety 60 mg capsules (OTC)
*** 7.5/46 mg tablets; $239.40 for 15/92 mg tabs

Key Points

- Diet and exercise are the cornerstone of all obesity treatments.
- Pharmacotherapy will increase the chance of meaningful weight loss.
- Selection of appropriate weight loss medication in an individual patient includes consideration of medication contraindications, adverse effects, and drug interactions.

Self-Assessment Question 3

Which of the following statements is accurate?

a. All obesity medications are pregnancy category X.
b. All obesity medications are indicated for chronic use.
c. All obesity medications are approved for individuals with a BMI ≥26 kg/m² and at least 1 weight-related comorbidity.
d. All obesity medications are DEA schedule IV drugs.

Self-Assessment Question 4

Which of the following drugs inhibits dopamine and noradrenaline reuptake?

a. Liraglutide
b. Orlistat
c. Bupropion
d. Loracaserin