Obesity Management in Type 2 Diabetes

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Disclosures

• None

Objectives

• Describe the importance of lifestyle management for diabetes mellitus control
• Identify how pharmacotherapies effect patient weight
• Demonstrate when to recommend metabolic surgery for patients with type 2 diabetes
Outline

The Foundation of Hyperglycemic Management

Lifestyle
- Medical Nutrition Therapy
- Physical activity

Medications
Metabolic Surgery

Benefits of Weight Loss

• Delay progression from prediabetes to type 2 diabetes

• Positive impact on glycemia in type 2 diabetes
  – Most likely to occur early in disease development
Recommendations: Assessment

• At each patient encounter, BMI should be calculated and documented in the medical record. B
  – BMI should be:
    • Classified to determine the presence of overweight or obesity
    • Discussed with the patient
    • Documented in the patient record
  – Remember that BMI cut points for Asian Americans are lower than in other populations

Overweight/Obesity Treatment Options in T2DM

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Body Mass Index (BMI) Category (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25.0-26.9 (or 23.0-26.9*)</td>
</tr>
<tr>
<td>Diet, physical activity &amp; behavioral therapy</td>
<td>X</td>
</tr>
<tr>
<td>Pharmacotherapy +</td>
<td></td>
</tr>
<tr>
<td>Metabolic surgery +</td>
<td></td>
</tr>
</tbody>
</table>

* Cutoff points for Asian-American individuals.
+ Treatment may be indicated for selected, motivated patients.
Diet, Physical Activity, Behavioral Therapy Interventions

• Designed to achieve >5% weight loss, prescribed for overweight and obese patients ready to achieve weight loss. A

• High-intensity (≥16 sessions in 6 months) and designed to achieve a 500 - 750 kcal/day energy deficit. A
Recommendations: Diet

- **Individualize** dietary recommendations!
- Address individual nutrition needs based on
  - Personal and cultural preferences
  - Health literacy and numeracy
  - Access to healthful foods
  - Willingness/ability to make behavioral changes
  - Barriers to change

Obesity Management for the Treatment of Type 2 Diabetes: Standards of Medical Care in Diabetes - 2018. Diabetes Care 2018; 41 (Suppl. 1): S65-S72

Individualizing Care

- Calorie restriction is the goal
- Changes to amount of carbohydrate, fat or protein in dietary intake are equally effective and based on individual preferences and health status
- Refer to a registered dietitian
Encouragement: Quick Tips

• Stress the value of losing a small amount of weight
• Assess patient's current eating patterns and physical activity
• Find out what patient thinks needs to change in order to lose weight
• Eat less, move more
• Allow at least 3-4 hours between meals
• Plan ahead: parties, traveling, other activities outside normal routine
• Ask “Are there swaps you can make to reduce calories?”
  – Popcorn instead of potato chips

Lifestyle Intervention Programs

For patients who achieve short-term weight loss goals, long-term (≥1 year) comprehensive weight maintenance programs should be prescribed.

• Programs provide –
  – at least monthly contact
  – encourage ongoing monitoring of body weight (weekly or more frequently)
  – continued consumption of a reduced-calorie diet
  - participation in high levels of physical activity (200-300 min/week). A
Lifestyle Programs

To achieve weight loss of >5%, short-term (3-month) interventions that use very-low-calorie diets (≤800 kcal/day) and total meal replacements may be prescribed

- for carefully selected patients
- by trained practitioners in medical care settings
- with close medical monitoring

• To maintain weight loss, such programs must incorporate long-term comprehensive weight maintenance counseling.

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Annals of Internal Medicine
Established in 1929 by the American College of Physicians

Efficacy of Commercial Weight-Loss Programs
An Updated Systematic Review
Kimberly A. Gudzune, MD, MPH; Rashid S. Dash, BA; Amberleen K. Mahta, MD, MPh; Zobnie W. Chaudhry, MD; David K. Jacobs, BA; Rashid M. Yuki, BS; Clare J. Lee, MD; Sara N. Bleich, PhD; and Jeanne M. Clark, MD, MPh

Background: Commercial and proprietary weight-loss programs are popular obesity treatment options, but their efficacy is unclear.

Purpose: To compare weight loss, adherence, and harms of commercial or proprietary weight-loss programs versus control/education (no intervention, printed materials only, health education curriculum, or <3 sessions with a provider) or behavioral counseling among overweight and obese adults.

Data Sources: MEDLINE and the Cochrane Database of Systematic Reviews from inception to November 2014; references identified by program staff.

Study Selection: Randomized, controlled trials (RCTs) of at least 12 weeks’ duration; prospective case series of at least 12 months’ duration (harms only).

Data Extraction: Two reviewers extracted information on study design, population characteristics, interventions, and mean percentage of weight change and assessed risk of bias.

Data Synthesis: We included 45 studies, 39 of which were RCTs. At 12 months, Weight Watchers participants achieved at least 2.6% greater weight loss than those assigned to control/education. Jenny Craig resulted in at least 4.9% greater weight loss at 12 months than control/education and counseling. Nutrisystem resulted in at least 3.8% greater weight loss at 3 months than control/education and counseling. Very-low-calorie programs (Health Management Resources, Medifast, and Optifast) resulted in at least 4.0% greater short-term weight loss than counseling, but some attenuation of effect occurred beyond 6 months when reported. Atkins resulted in 0.1% to 2.9% greater weight loss at 12 months than counseling. Results for SlimFast were mixed. We found limited evidence to evaluate adherence or harms for all programs and weight outcomes for other commercial programs.

Limitation: Many trials were short (<12 months), had high attrition, and lacked blinding.

Conclusion: Clinicians could consider referring overweight or obese patients to Weight Watchers or Jenny Craig. Other popular programs, such as Nutrisystem, show promising weight-loss results; however, additional studies evaluating long-term outcomes are needed.

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For author affiliations, see end of text.

* Dr. Gudzune and Ms. Dash contributed equally to this work.
### Summary of 12-Month Evidence for Commercial Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Weight Loss*</th>
<th>BP</th>
<th>Lipids</th>
<th>Gluc</th>
<th>Costs**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight Watchers</td>
<td>5.9 kg</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>$43</td>
</tr>
<tr>
<td>Jenny Craig</td>
<td>6.4 kg</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>$570</td>
</tr>
<tr>
<td>Atkins</td>
<td>6.4 kg</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>$10 (book)</td>
</tr>
<tr>
<td>Ornish</td>
<td>6.6 kg</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>?</td>
</tr>
<tr>
<td>Volumetrics</td>
<td>6.0 kg</td>
<td>✔</td>
<td></td>
<td></td>
<td>$12 (book)</td>
</tr>
<tr>
<td>Zone</td>
<td>6.0 kg</td>
<td>✔</td>
<td></td>
<td></td>
<td>$20 (book)</td>
</tr>
</tbody>
</table>

*Relative to no diet control; **Estimated monthly costs


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**PHARMACOTHERAPY**
Pharmacotherapy

• Weight loss meds may be effective for selected patients with T2DM and BMI ≥27 kg/m².

• When choosing glucose-lowering meds for overweight or obese patients with T2DM, consider effect on weight. E

• Whenever possible, minimize the meds for comorbid conditions that are associated with weight gain. E

• Potential benefits must be weighed against the potential risks of the weight loss medications. A

Discontinuing Medication

• If patient’s response to weight loss medications is <5% weight loss after 3 months

• If there are any safety or tolerability issues at any time

• Then, alternative medication(s) or treatment approaches should be considered. A
### Weight Gain Promoting Medications

<table>
<thead>
<tr>
<th>Medication class</th>
<th>Proposed weight gain mechanism</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihistamines</td>
<td>Increased appetite</td>
<td>Leukotriene inhibitors</td>
</tr>
<tr>
<td>Beta-blockers (esp selective β1)</td>
<td>Reduced REE &amp; thermogenesis; Fatigue; Reduced exercise tolerance; Increased insulin resistance</td>
<td>ACE inhibitors, ARBs, CCBs</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>Impaired glucose tolerance; Increased truncal fat</td>
<td>NSAIDs</td>
</tr>
<tr>
<td>SSRIs</td>
<td>Increased appetite; Increased food cravings</td>
<td>SNRIs; Bupropion; Trazodone</td>
</tr>
<tr>
<td>TCAs</td>
<td>Increased appetite</td>
<td></td>
</tr>
<tr>
<td>Atypical antipsychotics</td>
<td>Increased appetite and binge eating</td>
<td>Ziprasidone, Quetiapine</td>
</tr>
<tr>
<td>Insulin</td>
<td>Anabolic effects; Increased appetite; Fluid retention</td>
<td></td>
</tr>
<tr>
<td>Sulfonylurea</td>
<td>Anabolic effects; Increased appetite; Fluid retention</td>
<td>Metformin, GLP-1 agonists, DPP-4 inhibitors, SGLT2 inhibitors</td>
</tr>
<tr>
<td>TZDs</td>
<td>Increased adipogenesis; Fluid retention; Increased appetite</td>
<td></td>
</tr>
</tbody>
</table>

**Diabetes drugs that promote weight loss**

**Sulfonylurea**  
**Insulin**  
**TZD**

**👍**  
Metformin  
Pramlintide  
GLP-1 agonist  
SGLT-2 inhibitor
Weight Loss Medications

- **Approved for use in patients with:**
  - BMI $\geq 30$ kg/m$^2$
  - BMI $\geq 27$ kg/m$^2$ + obesity-related condition
- **Two FDA-approved medication categories:**
  - Appetite suppressants
  - Lipase inhibitors

Short-Term Medications

- All sympathomimetic appetite suppressants
- Approved for up to 3 months of use
- Additional 3.0 to 3.6 kg weight loss over placebo
- Side Effects
  - Insomnia, tachycardia, increased blood pressure, xerostomia, headache, nervousness, irritability, dizziness, tremors, constipation
### Long-Term Weight Loss Medications

<table>
<thead>
<tr>
<th>Medication (Dosages)</th>
<th>Drug class</th>
<th>12M Mean Weight Loss Over Placebo</th>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Orlistat</strong>&lt;br&gt;(60mg TID)&lt;br&gt;(120 TID)</td>
<td>Lipase inhibitor</td>
<td>-2.5 kg&lt;br&gt;-3.4 kg</td>
<td>Diarrhea, flatulence, fecal urgency and incontinence, abdominal pain, fat soluble vitamin deficiencies</td>
</tr>
<tr>
<td><strong>Phentermine/Topiramate</strong>&lt;br&gt;(7.5/46mg daily)&lt;br&gt;(15/92mg daily)</td>
<td>Appetite suppressant</td>
<td>-6.7 kg&lt;br&gt;-8.9 kg</td>
<td>Constipation, altered taste, xerostomia, dizziness, insomnia, paresthesias, depression, birth defects, angle closure glaucoma</td>
</tr>
<tr>
<td><strong>Lorcaserin or Lorcaserin-XR</strong>&lt;br&gt;(10mg BID or 20mg daily)</td>
<td>Appetite suppressant</td>
<td>-3.2 kg</td>
<td>Nausea, fatigue, headache, dizziness, risk of serotonin syndrome</td>
</tr>
<tr>
<td><strong>Naltrexone/Bupropion</strong>&lt;br&gt;(16/180mg BID)</td>
<td>Appetite suppressant</td>
<td>-4.1 kg</td>
<td>Nausea, constipation, headache, vomiting, neuropsychiatric symptoms, seizures, opioid withdrawal</td>
</tr>
<tr>
<td><strong>Liraglutide</strong>&lt;br&gt;(3mg daily)</td>
<td>Appetite suppressant</td>
<td>-4.5 kg</td>
<td>Nausea, hypoglycemia, diarrhea, headache, medullary thyroid carcinoma, pancreatitis</td>
</tr>
</tbody>
</table>

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Summary

Lifestyle is the foundation*
  • Highly effective in motivated, adherent patients

Medications
  • Lots of choices
  • We hope to make it easier to navigate them
  • Safety, efficacy, cost and convenience

Metabolic surgery*
  • Consider it as very effective salvage therapy

*The only choices that can lead to disease remission

Metabolic Surgery

• Evidence supports gastrointestinal (GI) operations as effective treatments for overweight T2DM patients.

• Randomized controlled trials with postoperative follow-up ranging from 1 to 5 years have documented sustained diabetes remission in 30–63% of patients, though erosion of remission occurs in 35-50% or more.
Metabolic Surgery

• With or without diabetes relapse, the majority of patients who undergo surgery maintain substantial improvement of glycemic control for at least 5 to 15 years.

• People who undergo metabolic surgery should be evaluated to assess the need for ongoing mental health services to help them adjust to medical and psychosocial changes after surgery.

Bariatric Surgery

• Approved for use in patients with:
  – BMI ≥40 kg/m²
  – BMI ≥35 kg/m² + obesity-related condition such as CVD, OSA, uncontrolled T2DM or severe OA

<table>
<thead>
<tr>
<th>Surgery</th>
<th>Mechanism</th>
<th>Mean Weight Loss - 1 Year</th>
<th>Mean Weight Loss - 3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable Gastric Banding</td>
<td>Restriction</td>
<td>30.2 kg</td>
<td>34.8 kg</td>
</tr>
<tr>
<td>Sleeve Gastrectomy</td>
<td>Restriction</td>
<td>40.4 kg</td>
<td>37.2 kg</td>
</tr>
<tr>
<td>Roux-en-Y Gastric Bypass</td>
<td>Restriction + Malabsorption</td>
<td>43.5 kg</td>
<td>41.5 kg</td>
</tr>
<tr>
<td>Biliopancreatic Diversion</td>
<td>Malabsorption</td>
<td>51.9 kg</td>
<td>53.1 kg</td>
</tr>
</tbody>
</table>
**Bariatric Surgery**

**Benefits**
- Improved obesity-related comorbidities
  - T2DM – up to 77% resolve
  - HTN – up to 62% resolve
  - OSA – up to 84% resolve
- Improved quality of life
- Reduce mortality
  - 40% in overall mortality
  - 50% in CVD deaths

**Complications**
- Risk of death from procedures low
  - <5%
- Variable by procedure type
  - GI symptoms 7-38%
  - Nutrition/electrolyte imbalances 3-17%
  - Reoperation 2-12%


**Metabolic Surgery**

- Metabolic surgery should be performed in high-volume centers with multidisciplinary teams that understand and are experienced in the management of diabetes and gastrointestinal surgery.
• Long-term lifestyle support and routine monitoring of micronutrient and nutritional status must be provided after surgery, according to guidelines for postoperative management of metabolic surgery by national and international professional societies. C

• People presenting for metabolic surgery should receive a comprehensive mental health assessment. B

• Surgery should be postponed in patients with histories of alcohol or substance abuse, significant depression, suicidal ideation, or other mental health conditions until these conditions have been fully addressed. E

• People who undergo metabolic surgery should be evaluated to assess the need for ongoing mental health services to help them adjust to medical and psychosocial changes after surgery. C
Putting into Practice

Check your patients lifestyle perceptions
Example: Skipping meals can help you lose weight faster
True or False

False: Skipping meals makes your body less efficient and is likely to cause increased hunger and result in poor food choices.

Pop Quiz

When addressing nutritional needs for an overweight or obese patient with diabetes:

A. Consider cultural and personal preferences
B. Put the patient on a low carb diet
C. Prescribe the Official ADA diet
D. Focus solely on total fat consumption
Helpful Resources

Diabetes Self-Management Education

- Find a recognized Diabetes Self-Management and Support program service
- Become a recognized provider of DSME/S
- Tools and resources for DSMES
- Online education documentation tools

Professional.Diabetes.org/ERP
New ADA Nutrition Tool

- New digital and recipe destination
- Innovative meal planning
- Shopping list tools
- Expert cooking tips and tricks

DiabetesFoodHub.org

Thank You!