Obesity Management in Type 2 Diabetes

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Disclosures

- I have no disclosures.
Objectives

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

Summary from ADA/EASD Report

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
Outline

The Foundation of Hyperglycemic Management

Lifestyle
- Medical Nutrition Therapy
- Physical activity
- Behavioral Therapy

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
- Clinically meaningful reductions in triglycerides, BP, LDL and HDL
- Reduction in need for medications to control BG, BP and lipids

Trends in Arizona

From CDC.gov diabetes, and data in BRFSS

<table>
<thead>
<tr>
<th>Year</th>
<th>Diabetes</th>
<th>Obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>4.8%</td>
<td>13.3%</td>
</tr>
<tr>
<td>2016</td>
<td>9.7%</td>
<td>29%</td>
</tr>
</tbody>
</table>
Basic Science View of T2DM

Intensive Lifestyle Intervention Weight Loss Trials

- Da Qing, DPP, FDS - prevent progression to Diabetes
- LookAHEAD - ILI improved glucose, lipid, sleep apnea, liver fat, insulin resistance, depression, medication use, physical mobility, cost
- DiRECT Trial
Diet, Physical Activity, Behavioral Therapy Interventions:

- Designed to achieve and maintain >5% weight loss should be 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
Encouragement: Quick Tips

• Be A Champion, Not a Hero
  • Is Intensive Lifestyle available in your locale?
  • Pre-Diabetes - Diabetes Prevention Program
  • Advocate for coverage of programs
  • Empower Office Staff, Community Resources
  • Create Virtual Intensive Lifestyle Programs
  • Commercial Weight Loss Programs
  • Senior Centers/Gyms/Walking Trails/Running Groups

Lifestyle Intervention Programs

For patients who achieve short-term weight loss goals, long-term (≥1 year) comprehensive weight maintenance programs should be prescribed.
  – at least monthly contact
  – encourage ongoing monitoring of body weight (weekly or more frequently) and/or other self-monitoring strategies, such as tracking intake, steps, etc.
  – continued consumption of a reduced-calorie diet
  - participation in high levels of physical activity (200-300 min/week). A
Individualizing Care

• Always Encourage Patient in the Weight Loss Journey - Assess accomplishments and barriers
• Calorie restriction and Increased Activity are the process/Weight Loss 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/CDE

Recommendations: DSME/S

• **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
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>Body Mass Index (BMI) Category (kg/m²)</th>
<th>Treatment</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>X</td>
</tr>
<tr>
<td>Metabolic surgery</td>
<td>X</td>
</tr>
</tbody>
</table>

* Cutoff points for Asian-American individuals.
X Treatment may be indicated for selected, motivated patients.
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.


**Medical Lifestyle Programs**

**PHARMACOTHERAPY**

**ADA Recommendations**
**Medications**
**My Approach**
**Discontinuing Medications**
Pharmacotherapy: Recommendations

- Weight loss medication 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


FDA-Approved Medications for Treatment of Obesity

Table 8.2—Medications approved by the FDA for the treatment of obesity

<table>
<thead>
<tr>
<th>Medication name</th>
<th>Typical adult maintenance dose</th>
<th>Average wholesale price (30-day supply)</th>
<th>National Average Drug Acquisition Cost (30-day supply)</th>
<th>Weight loss (% loss from baseline)</th>
<th>Common side effects</th>
<th>Possible safety concerns/considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term treatment (≤12 weeks)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenethylamine (100)</td>
<td>8-37.5 mg q.d.*</td>
<td>$55-$56 (37.5 mg dose)</td>
<td>$4 (37.5 mg dose)</td>
<td>15 mg q.d.</td>
<td>7.5 mg q.d.</td>
<td>PRO</td>
</tr>
<tr>
<td><strong>Long-term treatment (≥12 weeks)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orlistat (3)</td>
<td>60 mg b.i.d. (OTC)</td>
<td>$45-$82</td>
<td>$42</td>
<td>120 mg b.i.d.</td>
<td>PRO</td>
<td>9.6</td>
</tr>
<tr>
<td></td>
<td>120 mg b.i.d. (Rx)</td>
<td>$248</td>
<td>$556</td>
<td></td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Selective serotonin (5-HT₂C) receptor agonist</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lorcaserin (14)</td>
<td>10 mg b.i.d.</td>
<td>$318</td>
<td>$259</td>
<td>10 mg b.i.d.</td>
<td>PRO</td>
<td>4.9</td>
</tr>
<tr>
<td>Lorcaserin XR</td>
<td>20 mg q.d.</td>
<td>$318</td>
<td>$254</td>
<td></td>
<td></td>
<td>1.5</td>
</tr>
</tbody>
</table>


American Diabetes Association.
FDA-Approved Medications for Treatment of Obesity

<table>
<thead>
<tr>
<th>Sympathomimetic amines</th>
<th>anorectic/antiepileptic combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phentermine/</td>
<td>topiramate</td>
</tr>
<tr>
<td>7.5 mg/46 mg</td>
<td>ER (100)</td>
</tr>
<tr>
<td>dose</td>
<td>$223 (7.5 mg/46 mg dose)</td>
</tr>
<tr>
<td>527 (7.5 mg/46 mg dose)</td>
<td></td>
</tr>
<tr>
<td>35 mg/92 mg q.d.</td>
<td>PBO</td>
</tr>
<tr>
<td>7.5 mg/46 mg q.d.</td>
<td>PBO</td>
</tr>
<tr>
<td>9.8</td>
<td>Constipation, paresthesia, insomnia, nasopharyngitis, xerostomia</td>
</tr>
<tr>
<td>7.8</td>
<td>Birth defects</td>
</tr>
<tr>
<td>3.2</td>
<td>Cognitive impairment</td>
</tr>
<tr>
<td>1.2</td>
<td>Acute angle-closure glaucoma</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opioid antagonist/antidepressant combination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naltrexone/ bupropion ER</td>
</tr>
<tr>
<td>8 mg/90 mg, 2 tablets b.i.d.</td>
</tr>
<tr>
<td>$334</td>
</tr>
<tr>
<td>$207</td>
</tr>
<tr>
<td>15 mg/180 mg, b.i.d.</td>
</tr>
<tr>
<td>3.0 Constipation, nausea, headache, xerostomia</td>
</tr>
<tr>
<td>1.8</td>
</tr>
<tr>
<td>Contraindicated in patients with uncontrolled hypertension and/or seizure disorders</td>
</tr>
<tr>
<td>Contraindicated for use with chronic opioid therapy</td>
</tr>
<tr>
<td>Acute angle-closure glaucoma</td>
</tr>
<tr>
<td>Black box warning: Risk of suicidal behavior/ideation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Glucagon-like peptide 1 receptor agonist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liraglutide (16)</td>
</tr>
<tr>
<td>3 mg q.d.</td>
</tr>
<tr>
<td>$3,441</td>
</tr>
<tr>
<td>$3,154</td>
</tr>
<tr>
<td>3.0 mg q.d.</td>
</tr>
<tr>
<td>1.8 mg q.d.</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>Hypoglycemia, constipation, nausea, headache, indigestion</td>
</tr>
<tr>
<td>0.7</td>
</tr>
<tr>
<td>Acute pancreatitis</td>
</tr>
<tr>
<td>Black box warning: Risk of thyroid C-cell tumors</td>
</tr>
<tr>
<td>Contraindicated with personal or family history of MTC or MEN 2</td>
</tr>
</tbody>
</table>

All medications are contraindicated in women who are or may become pregnant. Women of reproductive potential must be counselled regarding the use of reliable methods of contraception. Select safety and side effect information is provided; for a comprehensive discussion of safety considerations, please refer to the prescribing information for each agent. b.i.d., twice daily; ER, extended release; MTC, medullary thyroid carcinoma; OTC, over the counter; PBO, placebo; q.d., daily, fx, prescription; t.i.d., three times daily; XR, extended release.

*The lowest effective dose, maximum appropriate dose is 37.5 mg. Duration of treatment was 28 weeks in a general obese adult population. Enrolled participants had normal (70%) or impaired (21%) glucose tolerance. Maximum dose, depending on response, is 15 mg/92 mg q.d. Approximately 68% of enrolled patients had type 2 diabetes or impaired glucose tolerance.


My Approach to Weight Loss Meds

- Insurance Limitations
- Offer to those not reaching goal at 3-6 months
- Become comfortable with a few medications
- GLP-1 Agonists - treat hyperglycemia and weight
- Contrave: Safety. Rx naltrexone/bupropion?
- Phentermine: (-) CV side effects, (+) Cost, motivated patients, strictly short term.
Recomm: 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


METABOLIC SURGERY
Medical Devices for Weight Loss

- Several minimally invasive medical devices have been recently approved by the FDA for short-term weight loss
- It remains to be seen how these are used for obesity treatment
- Given high cost, extremely limited insurance coverage, and paucity of data in people with diabetes at this time, these are not considered to be the standard of care for obesity management in people with type 2 diabetes at this time

Sullivan S. Diabetes Spectr 2017;30:258–264

Metabolic Surgery

- Evidence supports gastrointestinal (GI) surgery 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 with a median of 8.3 years with Roux-en-Y gastric bypass.

• 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


Metabolic Surgery

• Should be recommended as option to treat T2DM in appropriate surgical candidates with BMI >40 kg/m² (37.5*), and in adults with BMIs 35.0-39.9 kg/m² (32.5-37.4*) who do not achieve durable weight loss and improvement in co-morbidities (including hyperglycemia) with reasonable nonsurgical methods. A

• May be considered as option for adults with T2DM and BMI 30-34.9 kg/m² (27.5-32.4*) who do not achieve durable weight loss and improvement in co-morbidities (including hyperglycemia) with reasonable nonsurgical methods. A

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. C

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 readiness and mental health assessment. B
Metabolic Surgery

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

Metabolic Surgery—Adverse Effects

- Mortality rates typically 0.1%-0.5%, similar to cholecystectomy or hysterectomy
- Morbidity has dramatically declined with laparoscopic approaches
- Major complication rates compare favorably to other elective operations (i.e., deep venous thrombosis)
- Long term- dumping syndrome, vitamin and mineral deficiencies, anemia, osteoporosis, hypoglycemia
Metabolic Surgery: Adverse Effects

- Costly, but may be cost-effective long term
- Patients undergoing metabolic surgery may be at higher risk for depression, substance abuse, and other psychosocial issues


Thank You!
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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
ADA Nutrition Tool

• Digital and recipe destination
• Innovative meal planning
• Shopping list tools
• Expert cooking tips and tricks

DiabetesFoodHub.org

References

  • JAMA 2012;308(23):2489-2496

• Medical Lifestyle Programs: PUB MED - Roy Taylor, Rena Wing. Two awesome researchers

• Metabolic Surgery: Diabetes Care 2016 June;39(6) - multiple articles