Update on Treating Obesity: A Multidisciplinary Approach

Marie Harkins, FNP-BC, CDE
Cayuga Center for Healthy Living
Objectives

1. Define obesity as a disease
2. List the stepwise approach to obesity treatment
3. Identify modifiable environmental factors that contribute to obesity
The Measurement of Obesity

BMI Formula
weight (kg) / height squared (m²)
OR weight (lb) / [height (in)]² x 703

<table>
<thead>
<tr>
<th>BMI (kg/M²)</th>
<th>Obesity Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5 to 24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0 to 29.9</td>
</tr>
<tr>
<td>Obesity</td>
<td>30.0 to 34.9</td>
</tr>
<tr>
<td></td>
<td>35.0 to 39.9</td>
</tr>
<tr>
<td>Extreme Obesity</td>
<td>≥ 40</td>
</tr>
</tbody>
</table>

Is BMI The Whole Story?

BMI > 30
Measurement of Adiposity

1. BMI

2. Waist Circumference
   - Men < 40 inches
   - Women < 35 inches

3. Body Composition
Obesity Prevalence

Figure 11. Obesity among children and adolescents aged 2–19 and adults aged 20 years and over: United States, 1988–1994 through 2013–2014

NOTES: For children and adolescents aged 2–19, obesity is defined as a body mass index (BMI) at or above the sex- and age-specific 95th percentile of the CDC growth charts. For adults aged 20 years and over, obesity is a BMI of 30.0 or greater, grade 1 obesity is a BMI from 30.0 to 34.9, grade 2 obesity is a BMI from 35.0 to 39.9, and grade 3 obesity is a BMI greater than or equal to 40.0. Estimates for adults are age-adjusted. See data table for Figure 11.

Is Obesity Really a Disease?

NO

- Lifestyle choice
- No specific symptoms

YES

- Associated with impaired function
- Increased morbidity and mortality
- Genetic and environmental links
2013 AMA declares Obesity a Disease
ICD 10 Diagnoses

• E66 – Overweight and obesity
  • E66.0 – Obesity due to excess calories
  • E66.01 – Morbid(severe) obesity due to excess calories
  • E66.09 – Other obesity due to excess calories
  • E66.1 – Drug induced obesity
  • E66.2 – Morbid (severe) obesity with alveolar hypoventilation
  • E66.3 - Overweight
  • E66.8 – Other obesity
  • E66.9 – Obesity unspecified
Obesity as a Disease

Within subsets of patients with overweight and/or obesity

Deranged endocrine and immune responses

- Elevated blood glucose
- Elevated blood pressure
- Dyslipidemia
- Other metabolic diseases

Abnormal and pathologic physical forces

- Stress on weight bearing joints
- Immobility
- Tissue compression (eg, sleep apnea, gastrointestinal reflux, high blood pressure, etc)
- Tissue friction (eg, intertrigo, etc)

Sick fat disease (SFD) (adiposopathy)

Fat mass disease (FMD)

American Society of Bariatric Physicians 2013-2014
Addressing obesity can be overwhelming
Stepwise Approach to Obesity Management

- Surgery
- Pharmacotherapy
- Professionally directed lifestyle change
- Self directed lifestyle change
Lifestyle Change = Modifiable Components

- Diet
- Activity
- Sleep
- Stress
- Medication
DIET

Image source: www.dailyhiit.com
Comparison of Weight Loss Among Named Diet Programs in Overweight and Obese Adults: A Meta-analysis

JAMA. 2014;312(9):923-933. doi:10.1001/jama.2014.10397

<table>
<thead>
<tr>
<th>Diet Program</th>
<th>12-mo Weight Loss, kg</th>
<th>6-9-mo Weight Loss, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>No diet</td>
<td>4.10 (1.30 to 6.91)</td>
<td>3.85 (1.28 to 6.42)</td>
</tr>
<tr>
<td>LEARN</td>
<td>0.41 (-1.98 to 2.82)</td>
<td>0.39 (-2.52 to 3.31)</td>
</tr>
<tr>
<td>Moderate</td>
<td>2.69 (-0.73 to 6.10)</td>
<td>2.63 (-0.69 to 6.01)</td>
</tr>
<tr>
<td>Low fat</td>
<td>-0.83 (4.46 to 2.75)</td>
<td>-0.77 (5.72 to 3.93)</td>
</tr>
<tr>
<td>Atkins</td>
<td>-0.42 (-2.79 to 1.96)</td>
<td>-0.45 (-2.74 to 1.90)</td>
</tr>
<tr>
<td>Zone</td>
<td>0.05 (2.66 to 2.62)</td>
<td>0.07 (2.59 to 2.36)</td>
</tr>
<tr>
<td>Weight Watchers</td>
<td>0.65 (-2.37 to 3.61)</td>
<td>0.75 (-2.39 to 3.32)</td>
</tr>
<tr>
<td>Ornish</td>
<td>-0.12 (-4.86 to 4.40)</td>
<td>-0.57 (-6.19 to 5.05)</td>
</tr>
<tr>
<td>Jenny Craig</td>
<td>-0.44 (-6.75 to 6.06)</td>
<td>-0.44 (-6.35 to 4.53)</td>
</tr>
<tr>
<td>Volumetrics</td>
<td>0.49 (-5.31 to 6.20)</td>
<td>0.60 (-4.35 to 4.53)</td>
</tr>
<tr>
<td>Rosemary Conley</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Biggest Loser</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Nutrisystem</td>
<td>0.86 (-3.98 to 5.77)</td>
<td>1.97 (-2.18 to 6.19)</td>
</tr>
</tbody>
</table>

Cayuga Medical Center
A Member of Cayuga Health System
Do only calories matter?

- Eat at regular intervals
- Limit processed foods
- Choose unlimited amounts of non-starchy vegetables
- Include healthy fats
- Include protein source at meals and snacks

2000 calories/day = 10 cans, fat-free whipped cream
Lifestyle Change = Modifiable Components

- Diet
- Activity
- Medication
- Stress
- Sleep
Exercise

- Lean muscle mass
- Insulin sensitivity
- Mood
- Strength
- Sleep
- Increased bone density
- Lower risk of mortality
- Brain health
- Heart health
- Anti-aging
- Stress management
- And more…
Don’t Just Sit there!

Sitting for long periods of time is associated with increased mortality

- Van der Ploeg, Ann Internal Med 2012
Conclusion: Both the total volume of sedentary time and its accrual in prolonged, uninterrupted bouts are associated with all-cause mortality, suggestive that physical activity guidelines should target reducing and interrupting sedentary time to reduce risk for death.
Lifestyle Change = Modifiable Components

- Diet
- Activity
- Sleep
- Stress
- Medication
Sleep Deficit – Interrupted sleep

Increased Insulin Resistance
- Increased triglycerides
- Increased fat deposition

Broussard et al., Annals of Internal Medicine, Oct. 2012

Change in Appetite Hormones
- Decrease in Leptin
- Increase in Ghrelin
- Net appetite stimulation

Spegal et al., Annals of Internal Medicine; 2004
Chronic Sleep Restriction and Obesity

Magee et al., Journal of Obesity; 2010
Screening for Obstructive Sleep Apnea

- Berlin questionnaire (primary care setting)
  - 10 items
  - Snoring severity, significance of daytime sleepiness, witnessed apnea, obesity, hypertension

- STOP-BANG screening test (preoperative setting)
  - 8 items
  - STOP: Snoring, Tired, Observed apnea, high blood pressure history
  - BANG: elevated BMI, Age > 50, increased Neck circumference, Gender male

- Neither tool precludes formal sleep testing
Lifestyle Change = Modifiable Components

- Diet
- Activity
- Sleep
- Medication
- Stress
Stress

“STRESSED” is “DESSERTS” spelled backwards
STRESS and WEIGHT

- Increased Cortisol
- Increased insulin resistance
- Increased emotional eating
Food is the most abused anxiety drug. Exercise is the most underutilized antidepressant.
Lifestyle Change = Modifiable Components

- Diet
- Activity
- Sleep
- Stress
- Medication
Medications

Pharmacological Management of Obesity: An endocrine society clinical practice guideline

J Clin Endocrinol Metab 2015
## Classes of Drugs Associated With Weight Gain

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Medications</td>
<td>• Sulfonylurea (Glipizide, Glyburide)</td>
</tr>
<tr>
<td></td>
<td>• Insulin</td>
</tr>
<tr>
<td>Steroid Hormones</td>
<td>• Long term corticosteroid use</td>
</tr>
<tr>
<td></td>
<td>• Some birth control (Depo Provera, Implanon)</td>
</tr>
<tr>
<td>Psychiatric Medications</td>
<td>Antipsychotics &amp; Lithium</td>
</tr>
<tr>
<td></td>
<td>Some antidepressants</td>
</tr>
<tr>
<td>Anti-seizure Medications</td>
<td>• Depakote</td>
</tr>
<tr>
<td></td>
<td>• Neurontin</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>• Sedating antihistamines (Benadryl)</td>
</tr>
<tr>
<td></td>
<td>• Beta-blockers</td>
</tr>
</tbody>
</table>

Pharmacological Management of Obesity: An Endocrine Society Clinical Practice Guideline; J Clin Endocrinol Metab 2015
Stepwise Approach to Obesity Management

- Surgery
- Pharmacotherapy
- Professionally directed lifestyle change
- Self directed lifestyle change
## Stepwise Approach: Guidelines based on BMI

<table>
<thead>
<tr>
<th>Treatment</th>
<th>25 – 26.9</th>
<th>27 – 29.9</th>
<th>30 – 34.9</th>
<th>35 – 39.9</th>
<th>&gt; 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle Modification</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Pharmacotherapy</td>
<td>NO</td>
<td>With Comorbidities</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Surgery</td>
<td>NO</td>
<td>NO</td>
<td>LABG only*</td>
<td>With Comorbidities</td>
<td>+</td>
</tr>
</tbody>
</table>

- FDA approved LABG (laparoscopic adjustable gastric banding) for patients with BMI>30 and one weight related medical condition
Pharmacological Therapy

• FDA Approval Requirements:
  – Double-blind, randomized, placebo-controlled trials
  – Must show significantly greater (>5%) weight loss compared to placebo
  – Weight loss must be >5% baseline weight in at least 35% of the subjects in the treatment group
  – Rate of weight loss must be twice as high in the treatment vs the control group
# FDA Approved Weight Loss Medications

<table>
<thead>
<tr>
<th>Medication</th>
<th>Average Wt Loss</th>
<th>Possible Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phentermine</td>
<td>4-5%</td>
<td>Elevated BP and HR</td>
</tr>
<tr>
<td>Contrave (Naltrexone &amp; Bupropion)</td>
<td>5%</td>
<td>Nausea; contraindicated in people with seizure disorder</td>
</tr>
<tr>
<td>Belviq (Lorcaserin)</td>
<td>7%</td>
<td>Headache and fatigue</td>
</tr>
<tr>
<td>Qsymia (Phentermine &amp; Topamax)</td>
<td>9%</td>
<td>Elevated BP and HR, Potential birth defects</td>
</tr>
<tr>
<td>Saxenda (Liraglutide)</td>
<td>5%</td>
<td>Nausea, diarrhea, constipation</td>
</tr>
<tr>
<td>Xenical (Orlistat)</td>
<td>5%</td>
<td>Nausea, diarrhea, vitamin deficiencies</td>
</tr>
</tbody>
</table>
Stepwise Approach to Obesity Management

- Surgery
- Pharmacotherapy
- Professionally directed lifestyle change
- Self directed lifestyle change
The Normal Gastrointestinal (GI) Tract

- Liver
- Esophagus
- Duodenum
- Stomach
- Small Intestine
- Large Intestine
Vertical Sleeve Gastrectomy (Gastric Sleeve)
Roux-en-Y Gastric Bypass Surgery
Roux-en-Y Gastric Bypass Surgery
Roux-en-Y Gastric Bypass Surgery
Roux-en-Y Gastric Bypass Surgery
### Surgical Options

<table>
<thead>
<tr>
<th>Pros:</th>
<th>Gastric Bypass</th>
<th>Gastric Sleeve</th>
<th>Gastric Banding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Rapid initial weight loss</td>
<td>• Weight loss usually less than gastric bypass (60% EBW)</td>
<td>• Adjustable</td>
</tr>
<tr>
<td></td>
<td>• Better sustained weight loss (80% EBW)</td>
<td>• Few nutritional deficiencies after surgery</td>
<td>• Few nutritional deficiencies after surgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Can be reversed (requires an additional surgery)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cons:</th>
<th>Gastric Bypass</th>
<th>Gastric Sleeve</th>
<th>Gastric Banding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Limited absorption of vitamins and minerals</td>
<td>• Not reversible due to loss of stomach</td>
<td>• Requires monthly evaluation for adjustments</td>
</tr>
<tr>
<td></td>
<td>• requires supplements</td>
<td></td>
<td>• Less overall weight loss</td>
</tr>
<tr>
<td></td>
<td>• Sometimes have gut motility problems</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Case Study

- 45 year old female triathlete with chronic knee pain impacting her ability to train. Wants to improve her performance and avoid further injury
- Vital Signs: 65”, 255 lb, BMI 42, BP 122/76, P 70
- PMH: Impaired fasting glucose, PCOS, Depression
- Medications: Implanon, Abilify, multivitamins
Lifestyle Change = Modifiable Components

- Diet
  - Keep a food log
  - Consider nutrition referral

- Activity
  - Evaluate exercise

- Sleep
  - Screen for OSA
  - Evaluate sleep pattern

- Stress

- Medication
  - Identify weight promoting medications
  - Change if possible

- Screen for depression
- Refer for therapy if +
Case Study

2013
• Worked with therapist on binge eating in evenings
• Changed to different antidepressant
• Lost 20 lb

2014
• Diagnosed with Type 2 Diabetes (HgbA1C=10%)
• Worked with PCP with medications and lifestyle
• Weight plateau of 235 lb (BMI 39)

2015 / 2016
• Poor glycemic control despite interventions
• BMI between 39 – 42
• Decided to have bariatric surgery (RNY Gastric Bypass)

2017
• BMI between 27-28 (150-155 lb)
• Competed in full marathon and 2 sprint triathlons
• Last HgbA1C=5.2%, off all diabetic medications
What’s on the horizon for weight loss treatment?
The gut-brain connection

Fattening gut bacteria?
Gastroenterology Procedures

Aspire Assist
Gastric Emptying Device

Maestro
Implanted Vagal Stimulator

Gastric Balloon

GASTROINTESTINAL ENDOSCOPY 2015

Cayuga MEDICAL CENTER

A Member of Cayuga Health System
Thank you for coming!
Case Study

- 45 year old female triathlete with chronic knee pain impacting her ability to train. Wants to improve her performance and avoid further injury
- Vital Signs: 65”, 255 lb, BMI 42, BP 122/76, P 70
- PMH: Impaired fasting glucose, PCOS, Depression
- Medications: Implanon, Abilify, multivitamins
Interdisciplinary Specialist Credential

Board Certified Specialist in Obesity & Weight Management (CSOWM)
Eligibility Requirements

• Current, valid certification as:
  – AANPCB Nurse Practitioner
  – ACSM Certified Exercise Physiologist
  – ACSM Certified Clinical Exercise Physiologist
  – ACSM Registered Clinical Exercise Physiologist
  – ANCC Nurse Practitioner
  – CDR Registered Dietitian
  – Licensed Clinical Psychologist
  – Licensed Clinical Social Worker
  – NCC Nurse Practitioner
  – NCCPA Physician Assistant
  – PNCB Nurse Practitioner.

• Maintenance of above credential for minimum of two years
  • and

• Documentation of 2,000 hours of obesity/weight management specialty practice experience while holding credential within the past five years.
# Dates and Deadlines

For more information: [www.cdrnet.org/csowm](http://www.cdrnet.org/csowm)

<table>
<thead>
<tr>
<th>Application Submission Deadline</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 12, 2018</td>
<td>$350</td>
</tr>
<tr>
<td>July 10, 2018</td>
<td>$375</td>
</tr>
<tr>
<td>August 2, 2018</td>
<td>$400</td>
</tr>
</tbody>
</table>