Comprehensive weight management:
Exploring a modern treatment paradigm for obesity

Primary Care Focus Symposium
Marco Island, FL
June 30, 2017

Disclosures:

- No disclosures at this time.

Objectives:

- Define obesity as a disease
- Have a better understanding of obesity physiology
- Identify a stepwise approach to obesity treatment
- Review the core principles of obesity treatment
- Become familiar with 2103 Obesity and Overweight management guidelines
- Become familiar with 2015 Pharmacological Management of Obesity guidelines
- Understand the need for consulting an obesity medicine specialist.

What is Obesity?

- Can be estimated by biomarkers:
  - body mass index (BMI)
  - percent body fat
  - body fat distribution
  - risk score assessments
- Biomarkers should not define obesity as a disease!

Arguments against Obesity as a disease:

- There are no signs and symptoms...
- This is a lifestyle choice
- This is a condition of “willpower”
- Obesity is a risk factor, not a disease
- “Because you just need to do this... And you lose weight”
- Identification of obesity as a disease would label a 3rd of the American population as having a chronic medical condition leading to a need to treat/possible pre-existing condition?

Additional things that obesity is NOT:

- It is not something that started within the last 30 years
- It is not a problem of simply eating too much
- It is not a lack of exercise problem
- It is not a singular disorder
  - Many obesity subtypes exist
- It is not mainly in the United States
- It is not going anywhere and is only becoming more prevalent
- It is not a disease that you wear on the inside
- It is not a new problem to the patient
- Mostly, it is not something that physicians feel comfortable talking about and treating!
What is Obesity?

- Excessive adipose tissue accumulation that presents a health risk

Why Obesity IS a Disease!!

- Obesity develops from impaired body physiologic function
- Obesity accelerates and exacerbates over 100 comorbid conditions
- It is associated with increased morbidity and mortality
- Significant impaired body function develops as a result of obesity
- Effective treatment plan requires an individualized and comprehensive approach.
- Therefore, in 2013 the American Medical Association officially recognizes Obesity as a disease.

Obesity Statistics:

- In 2011-2012:
  - Pediatrics - 8% of infants 0 to 2 years old
  - 16.9% of 2 to 19-year-old
- In 2011-2014:
  - Adults: overall 36.3% (male 34.3%, female 38.3%)
    - Non-Hispanic African-American females are the highest
    - Asian are the lowest
    - Hispanics overall 42.5% and Non-Hispanic white 32.6%
  - Age breakdown:
    - 20-39 = 32.3%
    - 40-59 = 40.2%
    - Over 60 = 17%

Obesity Trends:

US trends in prevalence of obesity (BMI ≥ 30 kg/m²) in men and women ≥ 18 years of age (1970-2014)

- 40% of adults in the US will have obesity by 2025

Obesity Trends Among U.S. Adults

BRFSS, 1990, 2000, 2010

*BRFSS, 1990, 2000, 2010 (*BMI ≥ 30, or about 30 lbs. overweight for 5’4” person)
World obesity map 2014: mean BMI

Obesity Burden:

- Obesity has a significant impact on all aspects of an individual's life: physical, emotional, and social impact.
- More than 1/3 of US adults are obese, while by 2030 ~51% of adults in the US will be obese.
- Obesity is closely linked to higher mortality and morbidity.
- In 2014, the direct cost of conditions causally related to obesity and overweight was $427.8 billion in the US, accounting for 14.3% of US healthcare spending.
- Obesity also leads to indirect social costs from decreased work productivity and lost workdays. In 2014, these indirect cost amounted to $988 billion.
- In 2014, 320,000 deaths can be attributed to obesity and overweight in the US.

Source: Lancet, 2008 Mar 28; 373(9669); Walters and De Vol. Weighing Down America. 206 Nov

Miami-Dade County community overview:

- Miami-Dade County, Florida, is tackling obesity throughout the community, which is home to nearly 2.5 million residents. The rate of obesity and overweight adults in the county is 67.4%. Approximately 43% of high-school students are obese and only 12% attend daily physical-education classes at school, which is lower than the state rate of 44%. Poor diet and physical inactivity contribute to the obesity problem. Only 22.1% of adults in the county meet the Federal government's guidelines for fruit and vegetable consumption, and 24.5% of the adult population reported no physical activity in the last 30 days.


So how did I end up this way??

Weight and Energy Balance:

Laws of physics teach us...

Food intake

Energy Expenditure

Weight and Energy Balance:

Food Intake

Energy Expenditure
Weight and Energy Balance:

- Average adults require approximately 1300 kcal/day
- Average adults consume 2000-2500 kcal/day
- Therefore we consume 1.5 to 2 times as much food as we need
- Maintenance of a stable fat mass requires precise disposal of 40-50% of ingested calories per day
- Maintaining weight within 20 lbs. between ages 21 and 65 requires matching of intake and expenditure within 0.2%* 
  - Corresponds to an accuracy of 4-5 kcal/day or less than one potato chip!

Therefore, daily energy balance must be a tightly regulated physiological function!!

*Treating obesity: a overview, Lee Kaplan MD, PhD, June 2016

Obesity results from a failure of normal weight and energy regulatory mechanisms... leading to an elevated fat mass "Set Point"
Obesity Physiology:

- The body needs to defend a fat mass set point
- To shed the excess calories consumed daily
- To recover appropriately from acute illness or injury
- The body defends its fat mass set point
- Even if it is abnormally high (i.e., obesity)

Obesity Treatment: A battle of forces!

**Lifestyle Modification**
- Healthy diet
- Regular physical activity
- More and better sleep
- Stress reduction
- Stable eating patterns
- Weight stabilizing alternatives

**Anti-Obesity Medications**
- Body fat mass set point
- Abnormal dietary constituents
- Unhealthy muscle
- Sleep deprivation
- Stress
- Disrupted circadian rhythms
- Weight gain inducing medications

Core Principles of Obesity Treatment:

1. The goal of effective treatment is to reduce the fat mass set point.
2. There is wide heterogeneity in the causes of obesity and manifestations of obesity.
3. This leads to wide patient-to-patient variability in the response to all anti-obesity therapies.
4. People who respond to one therapy may not respond to another.
5. The strategy is to match each patient with the treatment most effective and suited to them.
Comprehensive Obesity management can be overwhelming!!

The Paradigm Shift:

Treat Weight First - Then Comorbidities

Current Evidence Based Guidelines:

2013 AHA/ACC/TOS Guidelines for the Management of Overweight and Obesity in adults:

Obesity subtype clues:

• Timing of obesity onset
• Fat location and distribution
• Metabolic consequences
• Phenotypic differences
  – Hunger
  – Satiety
  – Reward-based eating
  – Energy expenditure
• Response to environmental causes
  – Eating
  – Exercise
  – Stress
  – Sleep deprivation
  – Circadian disruption
• Response to Therapies!!!
**General Obesity Treatment Strategy:**

- Treating obesity: an overview, Lee Kaplan MD, PhD, June 2, 2016
  Circulation 2013;01.cir.0000437739.71477.ee, originally published November 12, 2013

* Medications account for 5-10% of Obesity cases!!

  - In each relevant category, remove or substitute weight gain-promoting medications with weight neutral or weight loss-promoting meds.*

* Appovian et al J clin Endocrinol Metab 100: 342-362

**Medication Induced Weight Gain:**

Medications account for 5-10% of Obesity cases!!

In each relevant category, remove or substitute weight gain-promoting medications with weight neutral or weight loss-promoting meds.*

*Appovian et al J clin Endocrinol Metab 100: 342-362

**What is this Patient’s lifestyle strategy??**

- Keep the goal in mind: **NOT** quick weight loss... **Permanent** weight loss is the goal!!
- Take a different history than what you are used to:  
  - Current lifestyle, job, habits  
  - Look for changes that influenced the onset of Obesity, not the onset of other pathologies or co-morbidities  
- Pursue sequential applications of **limited** lifestyle changes  
  - Rely on importance your ability to motivate along the stages of change  
- Discuss expectations every time!!!
General Obesity Treatment Strategy:

Stepwise Approach
- Pharmacotherapy
- Behavioral Change
- Medical Guidelines

Obesity Pharmacotherapy:

BMI ≥30 or BMI ≥27 with comorbidity—option for adding pharmacotherapy as an adjunct to comprehensive lifestyle intervention (See Box 12)

Obesity Pharmacotherapy:

FDA-Approved Anti-Obesity Medications

Obesity Pharmacotherapy:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mechanism of Action</th>
<th>Mean Weight Loss</th>
<th>Study Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phentermine</td>
<td>Norepinephrine-releasing agent</td>
<td>5.6 kg</td>
<td>2 to 24 weeks</td>
</tr>
<tr>
<td>Diethylpropion</td>
<td>Norepinephrine-releasing agents</td>
<td>3.0 kg</td>
<td>0 to 52 weeks</td>
</tr>
<tr>
<td>Orlistat</td>
<td>Pancreatic and gastric lipase inhibitor</td>
<td>2.9% to 3.4%</td>
<td>1 year</td>
</tr>
<tr>
<td>Lorcaserin</td>
<td>GLP-1 receptor agonist</td>
<td>3.1 kg</td>
<td>1 year</td>
</tr>
<tr>
<td>Phentermine/Orlistat</td>
<td>GLP-1 receptor agonist</td>
<td>4.8%</td>
<td>1 year</td>
</tr>
<tr>
<td>Naltrexone Bupropion</td>
<td>Naltrexone for hypoglycemia and appetite suppressant</td>
<td>4.8% (recommended dose 3.6 mg or 6.4 mg high dose)</td>
<td></td>
</tr>
<tr>
<td>Li–statinide</td>
<td>GLP-2 receptor</td>
<td>3.8 kg</td>
<td>1 year</td>
</tr>
</tbody>
</table>

Obesity Pharmacotherapy:

<table>
<thead>
<tr>
<th>Drug</th>
<th>Common Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phentermine</td>
<td>Headache, elevated BP, elevated heart rate, insomnia, dry mouth, constipation, anxiety, palpitation, tachycardia,</td>
</tr>
<tr>
<td>Diethylpropion</td>
<td>Decreased absorption of fat-soluble vitamins, steatorrhea, oily spotting, fecal urgency, oily evacuation, increased defecation</td>
</tr>
<tr>
<td>Orlistat</td>
<td>Headache, nausea, dry mouth, diziness, fatigue, constipation</td>
</tr>
<tr>
<td>Lorcaserin</td>
<td>Insomnia, dry mouth, constipation, paresthesia, diziness, dysgeusia</td>
</tr>
<tr>
<td>Phentermine/Orlistat</td>
<td>Nausea, constipation, headache, vomiting, diziness</td>
</tr>
<tr>
<td>Naltrexone Bupropion</td>
<td>Nausea, constipation, headache, vomiting, diziness</td>
</tr>
<tr>
<td>Li–statinide</td>
<td>Nausea, vomiting</td>
</tr>
</tbody>
</table>

Obesity Pharmacotherapy:

Appovian et al J Clin Endocrinol Metab 100: 342-362

Obesity Pharmacotherapy:

Appovian et al J Clin Endocrinol Metab 100: 342-362
• Strategy for using anti-obesity medications
  1. Wait until the patient's weight is stable for 2-3 months
  2. Choose a medication that fits the patient profile
  3. Institute a safe use protocol
  4. “Start low and go slow” (use introductory dose and escalate as needed)
  5. Evaluate for safety and effectiveness at 1 and 3 months
  6. Next step is based upon patient response.
Weight loss surgery:

- Effectiveness

Swedish Obesity Subjects Diabetes Prevention Program

- Lifestyle & Medications 2%
- Gastric Banding 13%
- Gastric Bypass 27%

Time After Surgery (years)

Percent Total Weight Loss

Weight loss surgery - Improves T2DM

Body Mass Index

- Intensive medical therapy
- Sleeve gastrectomy
- Roux-en-Y gastric bypass

Change from Baseline

Time (months)

Weight loss surgery - Reduces T2DM incidence

Svedish Obesity Subjects (SOS) Study

- Change from Baseline

Time (months)

Weight loss surgery - Mortality reduction

US Veterans Administration Experience

Reduction in 7-year mortality after RVGB
- Overall: 40%
- From T2DM: 92%
- From heart disease: 56%
- From cancer: 60%

Utah Bypass Study

https://asmbs.org/patients/bariatric-surgery-procedures

Baptist Health Medical Group
Weight Loss Surgery - metabolic effects?

<table>
<thead>
<tr>
<th></th>
<th>Diet</th>
<th>RYGB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy expenditure</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Appetite</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Hunger</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Satiety</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>Reward-based eating</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Stress response</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Gut peptides</td>
<td>↓</td>
<td>↓</td>
</tr>
<tr>
<td>Ghrelin</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>GLP-1, PYY, CCK, amylin</td>
<td>↓</td>
<td>↓</td>
</tr>
</tbody>
</table>

Weight Loss Surgery - metabolic effects?

- Recovery of gas trostasis
- Luminal changes (proximal, middle and distal gut)
- Mucosal interaction
- Neuronal
- Hormonal
- Immune
- CNS and systemic effects

Weight loss surgery - variability from RYGB

![Graph showing variability from RYGB](image)


General Obesity Treatment strategy:

- Obesity Treatment Strategy (Stepwise approach, progression through algorithms as clinically required)
- Pre-bariatric counseling
- Weight loss surgery
- Post-bariatric nutrition
- Counseling, behavior change group
- Self-directed medical change

What is 70 going to look like for you?

![Graph showing weight loss goals](image)

Proportion Studies Collaboration. Louis 2006

Additional concerns:

- Patients with obesity are a poorly served patient population in healthcare
- Work to build emotional rapport
  - Physicians are 35% less likely to build emotional rapport with a patient with overweight and 31% less likely to build emotional rapport with a patient with obesity.
- Minimize weight bias!
  - Always ask if it is ok to address any weight concerns
  - Use patient first language
  - Create a bias free and obesity centric culture that is accommodating and sensitive to the patient’s needs
Components of Emotional Rapport:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empathy</td>
<td>“It must be very difficult to live with this weight every day.”</td>
</tr>
<tr>
<td>Legitimization</td>
<td>“It sounds like you have probably been struggling with your weight for a long time.”</td>
</tr>
<tr>
<td>Concern</td>
<td>“I am worried that your weight is not only causing the current problem but it also placing you at high risk for other complications.”</td>
</tr>
<tr>
<td>Reassurance</td>
<td>“There are treatment options for your weight that we can discuss.”</td>
</tr>
<tr>
<td>Partnership</td>
<td>“I am going to work WITH you to help you lose weight.”</td>
</tr>
<tr>
<td>Self-disclosure</td>
<td>“There are no miracles or magic pills. Sometime it takes time to find the right treatment for the right person.”</td>
</tr>
</tbody>
</table>

“Healthcare That Cares”

“To achieve a common vision we must first have perspective”

-someone important

Administration’s perspective:

- Vision, mission statement and goals of the BHSF Weight Management Committee
  - “best in class” weight management
  - Improve health through “evidence based programs that empower individuals”
  - “streamlined system wide treatments for a unified approach”
  - “Implement best practices for weight management”
  - “Provide a standard of care for medical, nutritional, physical, psychological, and educational strategies offered”
  - To develop a system-wide process that supports, connects and refers patients to multidisciplinary professionals, Baptist Health department and resources, across the continuum of care in weight loss, weight management and prevention and treatment of obesity.

Patient perspective:

Provider perspective:

Business/Opportunity perspective:
What is My Vision???

Adipose physiology (hormone signaling) needs to be the focus of obesity management, not adipose physics (calories in/calories out).

Individualized obesity centric care is necessary for success.

Peruse a stepwise strategy that implements the multiple modalities available.

Clinical guidelines for obesity management exist and should be followed as any other common chronic condition.

A multidisciplinary approach in a comprehensive weight management center is best suited for the needs of the obese population.

Approach in a supportive and non-judgmental way.

Conclusions:

Comments/ Questions??