Goals

- Provide an overview of the complex biopsychosociology of obesity
- Discuss therapeutic approaches to hunger, eating behaviors, satiety and long term weight management
- Reinforce the limits of psychopharmacology

Objectives

- Obesity
- PICA
- Night Eating Syndrome
- Binge Eating Disorder
- Treatment Approaches (Behavioral, Psychotherapeutic and Pharmacologic)

Facts

- Of all eating disorders, **PICA and obesity** are more commonly assoc'd with IDD
- Important to consider age of onset, gender, genetic risk/familial factors, temperament and socio-cultural values regarding body image and attractiveness, caloric intake and expenditures habitus
- Overweight and obesity are the most common medical problems seen in primary care settings, affecting over 68% of adults and 32% of children and adolescents
- Known to affect at least nine organ systems and is linked to the most prevalent and costly medical problems in the US
Reasons for Delayed Action

- Lack of education and training in obesity management
- Time restraints
- Lack of reimbursement for obesity as a diagnostic code
- Clinician attitudes of futility and lack of perceived benefit and reward

Medical Assessment

- What factors contribute to the obesity?
- How does the obesity affect the patient’s health?
- What is the patient’s level of risk regarding obesity?
- What are the patient’s goals and expectations for weight control?
- Is the patient motivated and engaged?
- What kind of help does the patient need?

Medical Assessment

- Age of onset, description of gain and loss, precipitating events, body image and perception, graph of weight pattern
- Common patterns: progressive weight gain, weight cycling, yo-yo dieting, periods of weight stability

Why now?

- Health Belief Behavior Model
  - Individuals are not likely to initiate behavior change unless they feel their health is threatened and that the threat can be lessened by taking action
  - How does your body weight affect you? Is there anything you cannot do because of your weight?

Facts

- Studies show that 10% weight loss, even if the patient remains overweight, often improves many of the health complications of obesity
- Improvements in mobility, appearance, body image, and self-esteem are often associated with even modest losses

Stages of Change Model

- Pre-contemplation
- Contemplation
- Preparation
- Action
- Maintenance
- Relapse
Risk Factors for Weight Gain
- Smoking cessation
- Initiation of new medication
- Change in marital status, occupation or illness
- Females: pregnancy, child-rearing (25-34 years), menopause
- Familial predisposition
- Onset prior to puberty
- PCOS: hyperandrogenism (hirsutism, acne, or alopecia), irregular menstrual cycles, obesity

Cardiovascular/Metabolic Issues
Clearly higher risk in the ID population: higher incidence of cardiac disease, HTN, CHF
PCP less likely to recommend preventive or maintenance care for patients with ID
Identified risk for less expected life among patients with MI; for those with MI/ID even more significant

Cardiovascular/Metabolic Issues
Fleming et al 2008
Higher rates of obesity were related to: female gender, elderly, residential placement, Down syndrome
Mild ID >> Severe/profound ID

Diabetes Mellitus
Significantly higher prevalence among ID
Associated with seizure disorder and use of anticonvulsants
ADA 2010: those with ID have specialized needs and multiple nutritional concerns
Sohler et al 2009

Medications Associated with Body Fat Weight Gain

Antipsychotics
- Ten-fold decrease in tardive dyskinesia risk
- Less acute EPS
- "New" side effects:
  - Hyperglycemia (high blood glucose)
  - Hyperinsulinemia
  - Type 2 Diabetes
  - Cataract formation
  - QT Prolongation

Psychiatric/Neurologic
- Antipsychotics
- Mood stabilizers, lithium
- Antidepressants
- Antiepileptics

Steroid Hormones
- Corticosteroids
- Progestational steroids

Anti-diabetes Agents
- Insulin, Sulfonylureas, Thiazolidinediones

Antihypertensive Agents
- Beta- and alpha-1 adrenergic receptor blockers

Antihistamines
- Cyproheptadine
Consensus Statement, 2004

- “Clinicians should be alerted to assess patients receiving atypical antipsychotics for rapid weight gain and for metabolic effects, including diabetes and dyslipidemia.”

  Journal of Clinical Psychiatry and Diabetes Care, 2004

Psychiatric Comorbidity

- Approx 25-35% obese individuals have comorbid psychopathology
- Persons with extreme obesity are 5 times as likely to have MDD (even higher for females)
- Class I obesity (BMI 30-34.9) & Class II (BMI 35-39.9) had similar rates of depression whereas Class III (BMI >40) were 50% more likely to have depression

PICA

- Ingestion of a broad range of nonnutritive objects
- Dangers abound: aspiration, poisoning, gut perforation or obstruction
- Persistent and recurring ingestion
- Developmental level/cultural practices
- Differentiation of neuro conditions with significant environmental dependency or hyper-orality (i.e. Kluver-Bucy)

PICA

- Lead poisoning (check lead levels), mineral deficiency, hyperkalemia, iron deficiency, celiac disease, zinc deficiency, hookworm/roundworm infections, other infectious processes, anemia, constipation, and micronutrient deficiency

PICA

- Antidepressants/anxiolytics: SSRI (selective serotonin reuptake inhibitor) may decrease pica if there is any stress or anxiety related component.
- The mood stabilizers can be used for impulsivity and episodic nature of the incidents; could also be used as an adjunctive agent or as primary treatment for a mood disorder. Carnitine level should be monitored.
- Literature supports use of atypical antipsychotics to reduce the dopamine transmission

PICA

- Psychological: Experiential and scientific literature suggests that behavioral interventions are the highest yield in treatment of pica. A behavior support plan and behavioral therapy have the most scientific support. Core etiologies should be ruled out including: attention seeking, escape, avoidance, sensory feedback (provide alternative), oral stimulus (may be replaced with alternate safe oral stimulus).
- Interventions which have been shown to have varying levels of efficacy include: positive reinforcement, discrimination training (between edible and inedible items), visual screening, antecedent manipulation, and over-correction (correct the environment, or practice appropriate alternative responses), sensory reinforcement, and self-protection devices that prohibit placement of objects in mouth.
Binge Eating Syndrome

- Hippocrates described as “sick form of hunger.”
- First described in 1959; two core features and several associated symptoms identified
- 1) eating within a discreet period of time...an amount that is definitely larger than most would eat under similar circumstances

Binge Eating Disorder

- 2) experiencing a loss of control over eating during this period of time, as if one cannot stop eating or limit the quantity eaten
- Distinguished from bulimia nervosa by the absence of compensatory mechanisms
- Sense of shame or disgust w/c cause significant distress

Night Eating Syndrome

- Eating disorder characterized by phase delay in the circadian pattern of food intake
- Evening hyperphagia (>25% caloric intake after evening meal);
- >=3 awakenings accompanied by nocturnal ingestions several times weekly; or both
- Morning anorexia; awakening accompanied by frequent nocturnal ingestion

Psychiatric Comorbidity/BED

- Depression and Axis II disorders, especially clusters B (dramatic/emotional) and C (anxious/fearful) are common among BED
- Increased vulnerabilities: parental depression, more exposure to negative comments about body, morbid perfectionism, negative self-evaluation

Treatment/NES

- Psychotherapy (espec CBT, limited data but shows success)
- Behavioral Interventions
- Pharmacologic Options (SSRIs, Topiramate, other antiepileptics)
- Hypnotics used exclusively unsuccessful
- Surgical Options
- Phototherapy, progressive muscle relaxation
- Psychoeducation, low cal diet and exercise plan
Pharmacology

- Problem: side effects (CV, suicidal ideation, metabolic, insomnia, dry mouth, etc)
- Problem: lack of reimbursement; paying out of pocket
- Problem: patient’s unrealistic expectations
- Problem: lack of combination with behavioral and lifestyle modifications

Pharmacologic Treatment

- Alpha 1 receptors: modulate feeding and BP
- Alpha 2 receptors: modulates food intake and metabolic rate
- Beta 2 receptors: modulates food intake and body weight
- Glucagon like peptide-1 (GLP-1): released from GI; works on pancreas/brain to reduce food intake
- Amylin from pancreas can reduce food intake

Mechanisms of Action

- Suppression of the appetite
- Increase of the body’s metabolism
- Interference with the body’s ability to absorb specific nutrients in food

Pharmacologic Interventions

- Meds that cause decreased appetite (psychostimulants, topiramate, etc)
- Topiramate/phenteramine combination
- Naltrexone/Wellbutrin (32mg/400mg) approved 05/12
- Lorcaserin (Contrave) approved 5/12; Select 5HT 2C agonist; initial concern of increased risk of tumors
- Liraglutide; glucagon-like peptide 1 inhibitor; approved for tx of DM II
- Orlistat: Approved by the FDA; modestly effective; inhibits pancreatic lipase which reduces digestion of fat (Rx and OTC); fecal fat loss, GI sx common, reduces fat sol vitamins

Pharmacologic Interventions

- Belviq: approved by the FDA in June 2012, the first one in 13 years; CV and 5HT synd. concerns; works by activating a receptor in the brain that may help a person feel full after eating smaller amounts of food; modest success
- Qsymia is approved for those with a body mass index of 30 or greater, and overweight adults, those with BMI of 27 or greater, who have at least one weight-related condition such as high-blood pressure, type 2 diabetes or high cholesterol; pairs an old stimulant drug with an epilepsy drug; approved July 2012

Drugs used to treat obesity but not approved by FDA for this purpose

- Metformin: approved for DM II; reduces hepatic glucose production, reduces GI glucose absorption, enhances insulin sensitivity; limited data shows that may be beneficial to prescribe with antipsychotic medications to reduce or prevent weight gain
- Pramlintide: form of amylin, peptide secreted from the beta cell of the pancreas; approved for tx of DM; can act as negative feedback signal to brain and inhibit food intake
Drugs that produce weight loss
- Bupropion: NE/DA RI; for depression and smoking cessation; receptors involved in regulation of food intake
- Topiramate: anticonvulsant; migraine HA; shown to reduce food intake; SE: paresthesias, somnolence, decreased conc/memory

10,000 steps daily
- Common public health message is to accumulate 10,000 steps per day (~30 minutes of moderate intensity physical activity per day)
- Chan et al (2004) reported 12 week pedometer campaign linked more steps with decreased waist circumference (but not BMI)

Behavioral Strategies
- Self-efficacy: predictive of physical activity in overweight and obese adults
- Barrier identification: lack of motivation and lack of time; identify perceived barriers and use problem solving skills
- Motivational Interviewing

Behavioral Treatment
- Should be first line of intervention for overweight and obese individuals
- Three components: Goal setting, self monitoring and stimulus control
- Group tx more effective and less costly
- Healthy selections in restaurants, portion control, utilizing social support

CBT
- Clearly the leading treatment for BN and BED; also moderately effective for AN and eating disorder NOS
- The new ‘enhanced’ CBT appears to be even more effective
- IPT takes 8-12 months longer than CBT to achieve a comparable effect

Conclusions
- Various dietary strategies coupled with behavior therapy and ongoing support can produce long lasting effects
- Improvements in DM and CVD risk factors noted in weight loss of 10%-45%
- Overall most research shows sustained adherence to any diet supersedes ‘following a certain type of diet’ is the key to success
Conclusions

- The experience of hunger is not innate; it contains important elements of learning
- The ability to differentiate ‘hunger’ from other signals of discomfort may have been incorrectly learned throughout development
- Emotional tension states aroused by conflicts and problems can be mistakenly interpreted as physiologic hunger

Goals

- Provide an overview of the complex neurobiology of obesity, focusing mainly on gene-environment interactions
- Review current information from the neurosciences regarding assessment and relationship between the regulation of hunger, satiety, metabolism and obesity
- Discuss three interesting and novel approaches to treating obesity

Extent of the Obesity Problem

- Widespread problem for individuals with IDD
- Risk factor for cancer, Type II DM, HTN, heart disease, stroke, sleep related breathing disorder, immune activation and dementia
- Balance between intake, patterns of eating, levels of activity, basal metabolism
- Relationship to psychiatric disorder

My Genes Made Me Do It

- Genes play a role but genetic determinism is not it
- Entrainment (environmental effects) begin in utero, shaped by parents, change through time by influencing when certain genes are turned on or off
- In some respects, obesity resembles drug addiction/behaviors
My Whole Family Is Overweight—
I Don’t Stand a Chance
- Early environmental experiences shape the regulation of food intake and nature of activity
- Obesity during early childhood is most problematic, genes are regulation of hunger/satiety and food preferences (hi cal/lo cal; fat; sweet tooth)
- Eating when hungry or when food is present
- Food as reinforcement- hunger cues v stress

Brain, Gut and Feeding
- Flight or Fight v feed or breed
- Gut actions- full stomach and the Vagal n.; satiety signals; delayed action of regulatory peptides
- Ghrelin- hunger in spite of food, PWS
- MC-4r/CCK/peptide YY/ GLP-4-, serotonin, hormones and proteins, leptin, insulin and effects on hormone activity

Fat Cells- The Devil Is in the Details
- Genes- number of fat cell (hyper); size of fat cells, metabolically active; insulin, FA metabolism
- Endocrine activity- converting (aromatases), leptins/adiponectins, cytokines and immune system activation
- Regulation of insulin activity, Ob-Ob rats, leptin hyperactivity-receptor-down regulation

New Ideas
- H. pylori and regulation of ghrelin activity- GERD/PUD and overpopulation
- Brown or metabolically active fat (body temp regulation)- exercise and conversion of white to “tan” fat
- In obesity is food a drug of addiction- sugar craving, opiate release, withdrawal; Rimonabant, endocannabinoid (CB1) inh

Conclusions
- Nonexercise related thermogenesis-
- Starvation is not the answer, many with obesity behave as if starving
- Genes are important but not the only factor
- Developmental aspects of obesity
- Most pharmacological treatments produce limited results; behavioral/addiction like programs