## Viewing Time

The program will take up to one hour to complete.

## Target Audience

This program is designed for primary care physicians.

Other health care professionals working with patients and their families may also find this program of interest.

## Faculty Disclosure

It is the policy of Children's Hospitals and Clinics of Minnesota to ensure balance, independence, objectivity, and scientific rigor in all its educational programs. Our faculty have been asked to disclose to our program audience any real or apparent conflicts of interest related to the content of their presentation. They have also been requested to let you know when any product mentioned in their presentation is not labeled for the use under discussion or is still under investigation.

## Faculty Disclosure

**Joel Jahraus, MD** has disclosed no actual or potential conflict of interest in relation to this educational activity.

During this educational activity **Dr. Jahraus** will not be discussing the use of any commercial or investigational product not approved for any purpose by the FDA.

## Genes, Jeans, and Dreams: A Review of Eating Disorders

**Joel Jahraus, MD**
Medical Director, Eating Disorders Institute
Park Nicollet Health Services
Minneapolis, MN

## Genes, Jeans, and Dreams: A Review of Eating Disorders

*A lecture on the etiology and contributing factors to the development of eating disorders and a review of the appropriate evaluation, practical approaches, and current treatments of a patient with an eating disorder.*

## Program Objectives

***Upon completion of this program, participants should be able to:***

- Understand the etiology and contributing factors to the development of eating disorders.
- Review the appropriate evaluation of a patient with an eating disorder.
- Understand the current treatment of patients with eating disorders
- Review practical approaches to the patient and family.

## Disclaimer

Children's Hospitals and Clinics of Minnesota accepts no responsibility for the materials presented through these Grand Rounds seminars. Each professional host assumes all responsibility for maintaining confidentiality or obtaining authorization, in accordance with all applicable laws.

## Accreditation

Children's Hospitals and Clinics of Minnesota is accredited by the Minnesota Medical Association to provide continuing medical education for physicians. Children's Hospitals and Clinics of Minnesota designates this educational activity for a maximum of 1 AMA PRA Category 1 Credits™ toward the AMA Physician's Recognition Award. Each physician should only claim those credits that he/she actually spent in the activity.

## Receiving CME Credit

To receive CME credit you must view the entire program and complete the evaluation form at the end.

## Eating Disorders: Genes, Jeans and Dreams

Joel P. Jahraus, MD, Medical Director
Eating Disorders Institute
Park Nicollet Health Services
Minneapolis, MN

Methodist Hospital
Eating Disorders Institute

## Eating Disorders

- Total number of Americans with eating disorders = 11 million
- Full syndrome BN – 1to 3% of adolescent and young adult women in N. America
- Rate rising in Asia and Africa
- Rate rising in N. America among African Americans
- Sub-threshold eating disorders more common

Rodin G et al.; J Psychosomatic Research 2002

## Diagnostic Criteria

- **ANOREXIA NERVOSA**
- Refusal to maintain body weight at 85% of that expected for age and height
- Intense fear of gaining weight or becoming fat, even though underweight
- Disturbance in the way in which one's body weight or shape is experienced
- In menstruating women, the absence of at least 3 consecutive menstrual cycles (includes those that require hormones to maintain menses)
- Subtypes
  - Restricting
  - Binge-eating/Purging

## Diagnostic Criteria

- **BULIMIA NERVOSA**
- Recurrent episodes of binge eating
  - Eating, in a discrete period of time, an amount of food that is definitely larger than most people would eat during a similar period of time
  - A sense of lack of control over eating during the episode
- Recurrent inappropriate compensatory behavior in order to prevent weight gain
  - Vomiting, laxatives, diuretics, enemas, or other medications or excessive exercise

## Diagnostic Criteria

- The binge eating and inappropriate compensatory behaviors both occur on average, at least twice a week for 3 months
- Types
  - Purging
  - Nonpurging (fasting or excessive exercise)
- **EDNOS (Not otherwise specified)**
  - Most criteria for either AN or BN are met but not all

## Diagnostic Criteria

- **BINGE-EATING DISORDER**
- Most recently defined but not a DSM IV diagnosis
- Lack of control over eating and marked distress regarding binge-eating
- Binges occur an average of 2 days per week for 6 months

## Etiology

- Genetics
- Biologic
- Sociocultural
  - Media
  - Toys
  - Fashion
  - Peer pressure

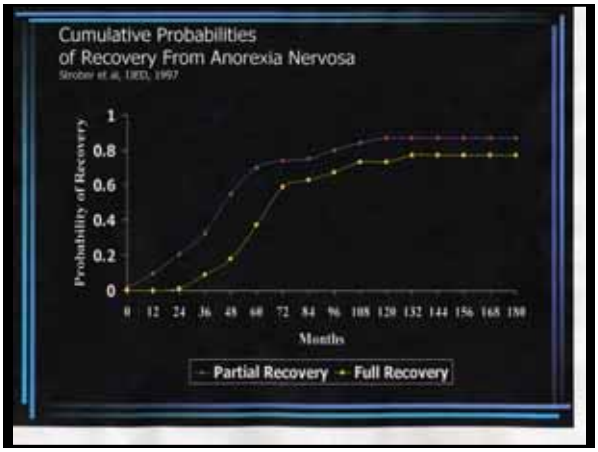
## Genetics

- Genetics
  - First-degree relatives of patients with anorexia nervosa have increased rates of the illness
  - Studies support a possible genetic vulnerability that becomes expressed in the setting of certain psychosocial conflicts
  - Evidence for presence of susceptibility loci on chromosome #1 for anorexia nervosa and chromosome #10 for bulimia nervosa

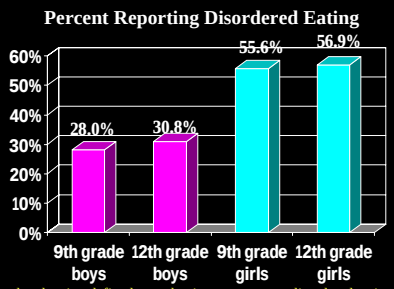
Bulik and Tozzi; CNS Spectrums – July 2004

## Statistics

- Up to 50% of individuals with EDs recover
- 25% of individuals improve but continue to experience some symptoms
- 25% go on to chronic problems
- Anorexia nervosa is fatal for 10-15% of patients and of these 2-5% complete suicide




## Frequency of Disordered Eating*




* Disordered eating defined as endorsing one or more disordered eating behaviors (fast/skip meals, smoking, diet pills/speed, vomit, laxatives) for the purpose of losing or controlling weight in the last 12 months or binge eating; MN Health Dept 2004

## Risk factors

- Female
- Developmental Issues – ED often begins during adolescence
- Early maturational development
- Dancers, gymnasts and similar pursuits
- Behavioral and attitudinal factors, especially excessive weight concern

## Risk factors

- Other mental health and physical disorders
  - OCD, Depression, Anxiety, Substance Abuse
- Family dynamics, peer pressure, and teasing
- History of physical or sexual abuse
- Dieting

## Psychiatric Co-Morbities

| Diagnosis | Association |
|---|---|
| Depression | 50%-75% |
| Bipolar Disorder | 4-13% |
| OCD | Up tp 25% in AN |
| Substance Abuse | 23-40% in BN<br>12-18% in AN |
| ADHD | 5%-10% |
| Anxiety Disorders | 43% |
| PTSD- Sexual Abuse | 20-50% |
| Personality Disorders | 42%-75%<br>Highest in purging subtype |

Association Statistics from ANAD

## Males and eating disorders

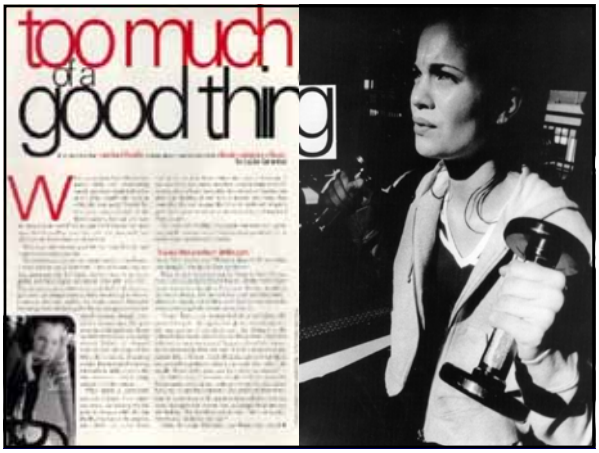
- 10% of ED patients are male
- Typically single
- Possible increased incidence among gay men
- Average age of onset 18 years
- Bingeing and vomiting common (50%)
- Excessive exercise more frequent

## Behaviors

- ❑Starvation
- ❑Starvation with purging
- ❑Starvation with binging and purging
- ❑Binging
- ❑Self induced vomiting
- ❑Laxative use
- ❑Ipecac abuse
- ❑Diuretic abuse (prescription and OTC)
- ❑Stimulant abuse (OTC diet pills, health food store products, caffeine)
- ❑Compulsive exercise

## OTC product abuse

- Laxatives/Enemas
  - Chronic constipation
  - Thickened, hypomotile bowel
  - Fluid shifts and hypokalemic, hypochloremic metabolic acidosis
- Diuretics
  - Chronic dehydration
  - Electrolyte disturbances
- Ipecac
  - Cardiomyopathy
  - Myopathy
- Appetite suppressants
  - Arrhythmias




## Hooked on Exercise?

- You force yourself to exercise even if you don't feel well
- You freak if you miss a workout
- You calculate how much to exercise based on how much you eat
- You would rather exercise than get together with friends
- You have trouble sitting still because you think you're not burning calories
- You worry that you'll gain weight if you skip exercise for one day

DA Klein et al; CNS Spectrums – July 2004

## Pathophysiology

- Primary response to starvation is reduced energy expenditure (often irrespective of end weight)
  - Elevated reverse $T_3$, normal TSH, low or normal Thyroxine ($T_4$) and low or normal tri-iodothyronine ($T_3$)
  - Increased cortisol
  - Increased growth hormone
  - Decreased estrogen, LH and FSH in women
  - Decreased testosterone in men
- These abnormalities resolve with weight restoration

Devlin and Walsh 1988

## Mental health effects of starvation

- Decreased mental alertness and ability to concentrate
- Interests narrow, isolation, loss of ambition
- Heightened interest in food
- Decreased interest in school work, career, family and friends
- Decreased socialization
- Depression and irritability
- Perfectionism
- Poor self-esteem

Devlin and Jahraus; Psychosomatic Med 2005

## Autonomic Effects in ED

- Hypothermia
- Reduction in noradrenergic activity in the CNS and peripheral nervous system with starvation (resolves with refeeding)
  - Hypotension
  - Bradycardia
  - Orthostasis

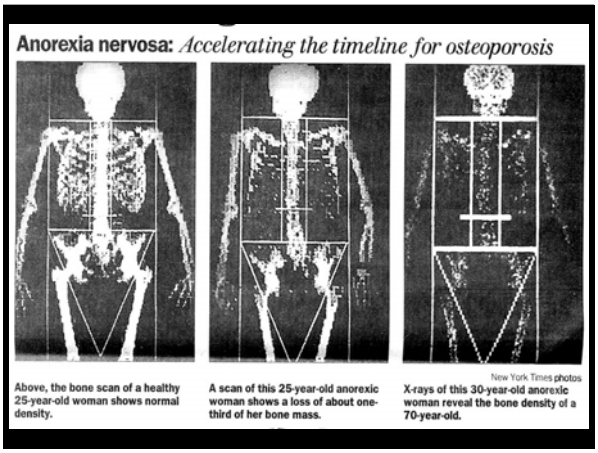
Rechlin et al. 1998

## Cardiovascular effects

- Complications
  - Loss of cardiac muscle – May have mitral valve prolapse secondary to weight loss
  - Congestive heart failure
  - Silent pericardial effusions
  - Conduction abnormalities
    - Prolonged QTc > 440 msec (malnutrition or other electrolyte imbalance or meds)
    - Sinus bradycardia most common – vagal hyperactivity
    - 1st degree AV block or junctional rhythm not uncommon

## Other medical effects

- Gastrointestinal
  - Gastroparesis, Refeeding hepatitis, Pancreatitis, Hematemesis, Sialoadenitis
- Genitourinary
  - Involution of uterus/ovaries and testicles
  - Amenorrhea in AN – hypothalamic amenorrhea syndrome – decreased GnRH which causes decrease in LH, FSH, estridiol, estrone, progesterone and testosterone Morgan 1999
  - Menstrual cycles usually resume 1-6 months after achieving 90% of ideal body weight Mehler and Andersen 1999
  - Typically need approximately 17% body fat for menarche and 22% body fat to maintain menses
- Osteopenia and osteoporosis - chronic effects of malnutrition - not readily reversible with weight recovery and affects 50% of adolescents and young adults with AN



## Treatment of low bone density

- #1 : Weight restoration to healthy body weight
- Unlikely to achieve pre-illness bone density
- Moderate exercise protective – strenuous activity is not
- Caution in using estrogen in adolescents – fusion of epiphyses – low dose (30-35 mcg) if given
- Depo-provera may exacerbate bone loss – AVOID IT
- Calcium benefit unclear but usually given – 1500 mg/day with Vit D 400 IU/day – consider dietary intake
- Biphosphonates efficacy unproven in eating disorders - DON'T USE!!!

## Eating disorders and diabetes mellitus

- Mortality rates Nielsen et al. 2002
  - 2.5% for Type I diabetes
  - 6.5% for AN
  - 34.8% for concurrent Type I diabetes and AN
- Marked increased risk of complications
- More predictive of retinopathy than duration of diabetes alone Rydall et al. 1997
- Requires frequent insulin changes during treatment with changes in meal plan, activity level, stress level and with symptom fluctuation
- Contemporary treatment regimens – units insulin/gms CHO

## Evaluation and Management of Eating Disorders

## Evaluation

- History is frequently vague and nonspecific
- Comprehensive history
  - Nutritional
  - Behavioral
  - Psychological
  - Motivational
- Include
  - Past and recent patterns of eating
  - Abnormal weight control behavior
  - Associated beliefs and attitudes
  - Timing of issues with eating and weight
  - Lifetime weight course
  - Attitudes toward body image – their weight goal

## Common Comments

***"I'm growing hair on my arms and losing it on my head. It REALLY sucks".***

## Medical Evaluation

- ✓ Medical history and physical exam
- ✓ Vital signs: Temperature, orthostatic BP and Pulse
- ✓ Weight and height – after voiding with gown and underwear only
- ✓ CBC with differential
- ✓ Urinalysis
- ✓ Drug screen
- ✓ Lipid profile
- ✓ Comprehensive metabolic panel
  - ✓ LFT's, Phos, Mag
- ✓ Thyroid function
- ✓ Pregnancy test
- ✓ EKG

## Physical findings suggestive of an undiagnosed eating disorder

- Overactivity in spite of cachectic appearance
- Enlargement of parotid and submandibular glands
- Multiple caries or erosion of enamel
- Lanugo hair
- Hypotension
- Bradycardia
- Hypothermia
- Edema
- Subconjunctival hemorrhages
- Russel's Sign
- Hypertrophied salivary glands
- Poor dentition

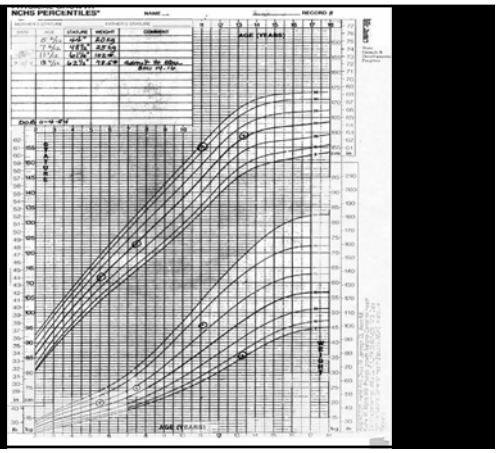
## Lab tests are frequently normal including albumin

## Laboratory/EKG evidence associated with eating disorders

- Hypercholesterolemia - AN
- Leukopenia - AN
- QTc Prolongation on EKG > 440 msec
- Elevated liver functions
- Metabolic Alkalosis or Acidosis
- Hypomagnesemia
- Hypoglycemia
- Hyperamylasemia
- Hypokalemia
- Hyponatremia

## Weight

- Establish goal weight range (NOT one number)
  - Method varies among programs
  - Use
    - CDC Growth charts with height, weight and BMI percentiles
    - Body mass index – wt (kg)/ht ($m^2$) – normal 19-25
    - Skinfolds ??
    - Menstrual weight
    - Mid parental height




## Measures

- Body mass index (BMI)
- Calculate as wt (kg)/ht ($m^2$)
- Normal BMI for late teens and adults is 19-25
- Can be artificially elevated if muscle mass increased with weight lifting
- Studies support poorer prognosis for those who present with BMI of < 13

## Common Comments

***"I'm at a healthy weight so why doesn't everyone just LEAVE ME ALONE"?***

## Evaluation Tips

- Build rapport
- Attitude about weight loss - anxious or unconcerned
- Obsession w/ food, weight, body image - diets & food rituals
- What does individual know about calories and fat in diet?
- 24 hour dietary recall
- How often do you weigh yourself?
- Is there tension between you and others during meals or do you choose not to eat with others?
- Are there thoughts or behaviors that occupy much of your time or that you feel you can't control?
- Do you feel you spend too much money on food?

## SCOFF Questionnaire

**A screening tool for eating disorders**

1. **Do you make yourself sick because you feel uncomfortably full?**
2. **Do you worry you have lost control over how much you eat?**
3. **Have you recently lost more than 15 pounds in a three-month period?**
4. **Do you believe yourself to be fat when others say you are too thin?**
5. **Would you say that food dominates your life?**

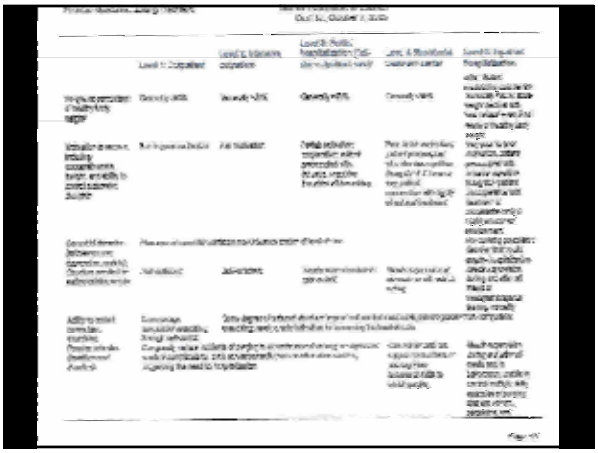
***Any person answering "yes" to two or more of these five questions is quite likely to have an eating disorder.***

***This tool has very high sensitivity and the specificity is acceptable at an approximately 12.5% false-positive rate.***

**Morgan, J.F., Lacey, J.H., & Luck, A. (2002, April)**

## Continuum Placement

- Determine level of care needed and urgency of medical and psychiatric intervention
- Gather basic information regarding:
  - Age and risk
  - Self harm risk
  - Medical status
    - Orthostatic vital signs
    - Weight/Ht
    - Labs/EKG



## Medical Evaluation

- Determine level of care needed and urgency of medical and psychiatric intervention
- Consider inpatient treatment if less than 75% of IBW, medically unstable, children/adolescents losing weight rapidly even if > 75% if IBW, completely uncontrolled symptoms with significant lifestyle disruption, not retaining meds, serious medical or psychiatric comorbidity or very poor motivation

## Care team

- Core team
  - Therapist (individual, group and family)
  - Psychiatrist
  - Medical provider
  - Registered dietitian
- Communication of team is essential to optimize treatment and avoid splitting

## Treatment

- Clinic protocols
  - Consistency with time of day if possible
  - Consistency with same scale
  - Weigh patient backwards and don't discuss numbers in most cases
  - Be aware of weight manipulation potential
    - Water loading, weights, etc.
  - Patient to void completely (may need to examine for bladder distention)
  - Underwear and gown only for weight
  - In children, recheck growth and adjust weight restoration expectations over time

## Treatment

- Cognitive-behavioral therapy (CBT)
  - Focus on specific behavioral change and change in thoughts and cognition associated with things like food, weight, and shape
- Interpersonal therapy (IPT)
  - Focuses on interpersonal relationships
- Dialectical Behavior Therapy (DBT)
  - Emotional regulation
- Family Therapy

## Pharmacologic treatment

- No FDA approval for eating disorders except for Fluoxetine for treating bulimia
- Antidepressants:
  - SSRI's: Fluoxetine, Sertraline, Escitalopram, Citalopram
  - SNRI: Venlaxafine, Mirtazepine
  - Trazadone
- Anti-anxiety: Hydroxyzine, Buspirone, Lorazepam, Clonazepine, Alprazolam
- Atypical anti-psychotics
  - Olanzepine, Quetiapine, Risperidone, Ziprasidone, Aripiprazole

## Nutrition

- Expected weight restoration (consistency important)
  - Outpatient 0.5-1 lbs/wk
  - Inpatient 2-3 lbs/wk
- With BN or BED, cessation of binge eating/purging and weight loss are incompatible goals – defer weight loss for overweight individuals until ED symptoms are well-controlled
- Need meal plan – calorie counting not helpful, exchanges are better
- Vegetarianism may be problematic
- With very low body weight go slowly with refeeding in inpatient setting – start around 1000 cals/day or 30-40 cals/kg/day and increase calories to reflect metabolic recovery – 200 calories every 2-3 days as tolerated
- Consider nocturnal tube feedings if volume is an issue

## Families

- Understand their concerns
  - Need for information
  - Dysfunctional relationships
  - Abuse issues - safety
  - Guilt
  - Insurance/financial concerns
- Family-based treatment (Maudsley)
  - For all patients up through age 17
  - Consider for those 18 and over who live at home
  - Parents "in-charge" (but not food cops)
  - Family therapy and meal education/planning
  - Appropriate consequences for non-compliance

## Discussions with family/friends

- Acknowledge the frustration
- No quick cures or easy answers - may need a variety of different approaches
- Be supportive and encouraging - need to trust the ED team and be supportive as well
- Give up the concept of blaming - no one is at fault
- Recognize that recovery is ultimately the responsibility of the patient but that the family has a responsibility to become aware of potential enabling behaviors
- Don't be overprotective

## Discussions with family/friends

- Develop dialogue with your child/friend about issues other than food, weight, appearance and achievement
- Don't make your concern contingent on demands about weight gain
- Avoid monitoring your child or friend's eating and weight gain
- Use constructive communication
- Participate in family therapy or a support group and don't isolate yourself

## Quote from pro-anorexia website

*If you have anorexia, then you do not need tips on how to not eat.*
*You do not need to be told how to stop eating.*
*You do not need to be motivated.*
*You look in the mirror.*
***Problem solved.***

- DREAMS?

***There are no anorexics or bulimics. There are only <u>people</u> with these illnesses.***

## Sources for additional info

- Eating Disorders Institute http://www.parknicollet.com/methodist/edi/ or 952-993-6200
- American Psychiatric Association Practice Guidelines for Eating Disorder Treatment 2006 (Revision #3)
- National Association of Anorexia Nervosa and Associated Disorders (ANAD) www.anad.org
- Academy of Eating Disorders www.aedweb.org
- Eating Disorders Coalition www.eatingdisorderscoalition.org
- National Eating Disorders Association www.edap.org
- www.somethingfishy.org
- The American Anorexia/Bulimia Association, Inc. 212-501-8351

## The Future of Treatment - Park Nicollet Melrose Institute

**Joel Jahraus, MD**
**Eating Disorders Institute**
**(Melrose Institute 2009)**
**Park Nicollet Health Services**
**Minneapolis, MN**
**Phone 952-993-6200**
**Email**
**joel.jahraus@parknicollet.com**

## Evidence-based Treatment

- Management of Eating Disorders
  US Department of Health – Agency for Healthcare Research and Quality (AHRQ)
  Evidence Report/Technology Assessment
  Number 135, April 2006
  - Review of the scientific literature published since 1980 by AHRQ's Evidence-based Practice Center

## Evidence-based Treatment

- Anorexia nervosa (AN)
  - CBT may reduce relapse risk for adults with AN after weight restoration
  - Specific forms of family therapy initially focusing on parental control of renourishment is efficacious in treating AN in adolescents and leads to clinically meaningful weight gain and psychological change
  - Family therapy does not appear to be effective with adults with AN with longer duration of illness

## Evidence-based Treatment

- Bulimia Nervosa (BN)
  - Fluoxetine (60 mg/day) administered for 6 to 18 weeks reduces core bulimia symptoms of binge eating and purging and associated psychological features in the short term
  - Fluoxetine as given above is associated with prevention of relapse at one year.
  - CBT administered individually or in group format is effective in reducing the core behavioral symptoms of binge eating and purging and psychological features in both the short and long term.

## Evidence-based Treatment

- Binge Eating Disorder (BED)
  - In short-term trials SSRIs led to greater rates of reduction in target eating, psychiatric and weight symptoms and severity of illness than placebo controls (no follow-up data regarding long-term benefits).
  - CBT decreases either the number of binge days or the actual number of reported binge episodes
  - CBT leads to greater rates of abstinence than does a waiting list control approach when administered either individually or in a group format and this abstinence persists for up to 4 months post-treatment.
  - CBT does not appear to produce decreases in weight.
  - Various forms of self-help were efficacious in decreasing binge days, binge eating episodes and psychological features associated with BED

## Outcomes AHRQ 2006

- Anorexia nervosa studies
  - More association with personality disorders, OCD
  - Suicide risk is lower with pure restricting than other groups
  - First suicide attempt is predicted by a history of suicide attempts at intake, greater drug use, and participation in individual therapy, use of neuroleptic medications and older age at disease onset

## Outcomes AHRQ 2006

- Anorexia nervosa studies
  - Higher mortality associated with alcohol and substance use disorders
  - Predictors of shorter time to death include longer duration of illness at intake, affective disorder hospitalization at intake, and suicidality associated with mental illness other than an ED
  - No evidence that age of disease onset is related to disease chronicity
  - A large percentage of patients cross over from the restricting subtype to the binge/purge subtype of the disease, but results are mixed concerning which subtype has better eating outcomes.
  - Substance abuse may be associated with binge eating

## Outcomes AHRQ 2006

- Anorexia nervosa studies
  - Evidence exists that lower weight at treatment presentation is related to poorer outcomes
  - Addition of medication increases dropout rates
  - CBT reduces relapse risk for adults with AN after weight restoration
  - Family therapy is superior to individual therapy for adolescent patients with shorter duration of illness.

## Outcomes AHRQ 2006

- Bulimia nervosa studies
  - BN is not associated with an increased risk of mortality
  - Only depression is associated with worse outcomes
  - Cochrane review supports CBT (cognitive behavioral therapy) in individual or group format and that combination treatments with psychotherapy and meds are superior to psychotherapy alone. However addition of meds decreases the acceptability to patients of psychotherapy.
  - Symptomatic changes appear more rapid with CBT than IPT (interpersonal therapy)
  - Dialectical behavioral therapy (DBT) and guided imagery both show preliminary promise for BN patients.

*Thanks for viewing this presentation!*

HOFFMAN
Medical Marketing & Education

*To receive CME credit, please click the CME Eval button below and complete the form.*