Hiding in Plain Sight:
Recognition and Medical Evaluation of Individuals
with Eating Disorders in the Outpatient Setting

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Disclosure Information

I have no financial relationships to disclose.

I will not be discussing the off-label and/or investigational use of any medications.

Overview and Objectives

• Clinical case presentation
• General definitions
• Incidence, prevalence, and societal cost of eating disorders
• Initial medical evaluation of an eating disorder
• Medical complications of eating disorders
• Referring to specialized care

Case Example

• 36-year-old male with chief complaint of sore throat
• Also reports recent increase in life stressors
• Review of symptoms: snoring, witnessed apneas, daytime fatigue
• Physical exam remarkable for 20 lb (9.1 kg) weight gain in 3 months
• Oropharynx clear, dentition normal
Case – History

- Past Medical History:
  - Recurrent calcium oxalate nephrolithiasis, treated with lithotripsy
  - Retained stones bilaterally on imaging
- Medications:
  - Potassium citrate 1080 mg by mouth four times daily
- Social History:
  - Non-adherence to low-purine, low-oxalate, low-sodium diet
  - Admits to eating diet of high protein, high fat, mostly take-out foods
  - No alcohol or substance abuse

Case – Intervention

- Referred for mental health evaluation
  - Longstanding history of poor eating behaviors, worse under stress
  - Intermittent binging and purging since childhood (taught by mother)
  - Turbulent upbringing – learned to eat for comfort and to avoid conflict
  - Diagnosed with eating disorder not otherwise specified (EDNOS)
- Cognitive behavioral therapy (CBT) initiated
  - Received 11 sessions of CBT at community mental health clinic
  - Resolution of binging and purging behaviors
  - Not seen by a provider trained in ED-specific treatment

Case – Medical Cofactors

- Sore throat
  - Diagnosed with gastroesophageal reflux disease (GERD)
  - Resolved with cessation of binging and purging
- Nephrolithiasis
  - Recommended low animal protein, low oxalate, low sodium diet
  - Patient unable to adhere to medical recommendations due to ED
- Suspected obstructive sleep apnea

Case – Follow-up

- Maintained remission from binging/purging for 22 months
- Unable to describe or demonstrate replacement coping skills
- Recurrent weight gain after initial weight loss and stabilization worrisome for return of disordered eating behaviors
- Continued to report high levels of anxiety and stress
- Finally, referred to a dietician and a therapist experienced in the treatment of eating disorders
- If patient received comprehensive, multidisciplinary care from providers knowledgeable about ED from outset, outcome might have been different
**Diagnostic and Statistical Manual of Mental Disorders (DSM), 5th Ed.**

- Published by the American Psychiatric Association
- Establishes the formal diagnostic criteria for each eating disorder
- Released in 2014
- First update by the APA to its diagnostic criteria in 14 years
- An improvement on DSM-IV, but still does not fully capture patients’ lived experience

**Eating Disorders – General**

- Brain-based biological disorders
- NOT a choice or a lifestyle
- Occur in people of all ages, genders, sexual orientations, races, ethnicities, socioeconomic backgrounds, shapes, and weights
- There is no eating disorder “look”
- Carry the highest mortality of any psychiatric condition
- Are common – you are already treating these patients!
- Best treated by experienced professionals – refer early!

**DSM 5 Diagnostic Categories**

- Anorexia Nervosa (AN)
  - Binge-purge subtype (AN-BP)
  - Restricting subtype (AN-R)
- Bulimia Nervosa (BN)
- Binge Eating Disorder (BED)
- Avoidant/Restrictive Food Intake Disorder (ARFID)
- Other Specified Feeding and Eating Disorder (OSFED)
- Unspecified Feeding or Eating Disorder (UFED)

**Anorexia Nervosa**

- Restriction of caloric intake due to intense fear of weight gain and distorted body image, leading to significant weight loss
- In children and adolescents, may present as failure to appropriately gain weight or dropping off growth curve
- Characterized by ambivalence toward seriousness of situation
- Characterized by body shame and over-valuation of the thin-ideal
What Anorexia Nervosa is NOT

- A disease of solely young, white, wealthy, cis-gender women
- Individuals do NOT need to appear emaciated
- Amenorrhea is NOT required

Which One Has Anorexia?

Bulimia Nervosa

- Binge eating with purging or compensatory behaviors
  - e.g., self-induced vomiting, use of laxatives, diuretics, over-exercise, or diet pills
- At least once a week
- At least three months
- Characterized by body shame and over-valuation of the thin-ideal

What Bulimia Nervosa is NOT

- An effective dieting technique
- Harmless
- A phase
### Binge Eating Disorder

- Eating a large quantity of food in a short time span, until extremely full, without compensatory purging
- Unrelated to physical hunger
- Associated with loss of control, shame, or guilt
- At least once a week
- At least three months
- Individuals may be normal weight

### What Binge Eating Disorder is NOT

- Over-eating at a holiday dinner or a party
- Lack of willpower or effort
- Moral weakness or personal failing

### Avoidant/Restrictive Food Intake Disorder

- Extreme limitations in food intake
- May be due to sensory aversion (e.g., texture, smell)
- Or may be due to anxiety (e.g., fear of choking, being sick)
- Leads to weight loss, nutritional deficiencies
- Markedly interferes with psychosocial functioning
- Fear of gaining weight is absent

### What ARFID is NOT

- Just being picky
- Harmless
- A phase
<table>
<thead>
<tr>
<th><strong>Other Specified Feeding and Eating Disorder (OSFED)</strong></th>
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<tbody>
<tr>
<td>• The eating disorder formerly known as EDNOS (Eating Disorder, Not Otherwise Specified)</td>
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<tr>
<td>• Do not meet full formal criteria for another DSM diagnosis</td>
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<thead>
<tr>
<th><strong>OSFED - Examples</strong></th>
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<tbody>
<tr>
<td>• “Atypical” Anorexia Nervosa (AN)</td>
</tr>
<tr>
<td>• Meets all criteria for AN, other than weight loss/underweight</td>
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<td>• More common that “typical” AN</td>
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<td>• All of the same medical complications of starvation and malnutrition</td>
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<td>• Night Eating Syndrome</td>
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<td>• BED or BN of lower frequency/duration</td>
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<tr>
<td>• Purging Disorder</td>
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<tr>
<th><strong>Unspecified Feeding or Eating Disorder</strong></th>
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<td>• Typically used when there is insufficient information to classify the eating disorder</td>
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<td>• E.g., when the diagnostic evaluation is ongoing, or in an emergency department setting</td>
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<th><strong>Disordered Eating</strong></th>
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<tr>
<td>• Disordered eating behaviors, body dissatisfaction are on a continuum</td>
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<td>• Disordered eating, fat-shaming, and dysfunctional relationships with food are ubiquitous in US culture (and, unfortunately, in medicine)</td>
</tr>
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<td>• Maladaptive eating behaviors that are below diagnostic threshold may still be associated with serious psychological distress and medical complications</td>
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Prevalence in the United States

- Lifetime prevalence 9% (28.8 million Americans)
- Age range 5 – 80 years
- After OSFED, BED is the most common ED
  - Estimated to affect 25% of individuals with obese BMI
  - Past-year prevalence of BED 1.2% among U.S. adults (2001-03)
  - Lifetime prevalence of BED 2.8% among U.S. adults
  - 62.6% of people with BED experience impairment due to ED
  - For 18.5%, the impairment is severe

Morbidity and Mortality – Why Care?

- Eating disorders convey the highest risk of death of all mental illnesses
  - Anorexia nervosa (AN) is associated with a 5.2x higher risk of premature death from any cause compared to age- and gender-matched controls
  - Mortality rates across all ED (including bulimia nervosa (BN) and EDNOS) estimated around 4-5%
  - Meta-analysis found 62% of ED deaths are attributable to medical complications
  - Suicide 15.5%
  - Substance abuse 12%
  - No threshold to predict who is at most serious risk

Morbidity and Mortality – Why Care?

- Specific medical complications depend on underlying behaviors
  - Effects of starvation and malnourishment
  - Direct effects of method of purging
  - Electrolyte and acid-base abnormalities
  - Effects of binge-eating

Morbidity and Mortality – Why Care?

- Most medical complications resolve completely with both...
  - Cessation of behaviors (e.g., restriction, binging, purging, etc.)
  - Nutritional rehabilitation
  - Some complications are permanent
  - Early diagnosis and treatment of the ED is essential
Clinical Presentations

• Common presenting symptoms are often non-specific
  • Fatigue
  • Malaise
  • Weakness
  • Weight loss or gain
  • Cold intolerance
  • Skin thinning
  • Hair loss
  • Fine hair growth on face

Clinical Presentations

• Effects of malnourishment occur in all ED, even at normal BMI
  • Even individuals who binge may be under-nourished
  • Pre-disposes to injury, illness, medical co-morbidity
• ED may be underlying another condition
  • Overuse musculoskeletal injury
  • Gastroesophageal reflux disease
  • Hoarseness
  • Chronic constipation or diarrhea

Clinical Presentations

• Gastrointestinal (GI) complaints are common
  Abdominal pain  Early satiety
  Bloating  Dysphagia / odynophagia
  Diarrhea / constipation  Reflux symptoms
  Hematemesis  Hoarseness

Clinical Presentations

• Cardiovascular findings are also common
  Lightheadedness, dizziness
  Palpitations
  Peripheral edema
  Orthostatic hypotension
  Presyncope, syncope
  Paroxysmal tachycardia
  Bradycardia
Clinical Presentations

- Endocrinologic complications
  - Hypogonadism
  - Amenorrhea or oligomenorrhea
  - Osteoporosis
  - Euthyroid sick syndrome
- Incidental abnormal laboratory findings
  - Electrolyte abnormalities
  - Abnormal thyroid studies
  - Acid-base disturbances
  - Cytopenias
  - Transaminase elevations

Diagnostic Approach

- Diagnosis is suggested by history
- An ED is NOT a diagnosis of exclusion
  - Unnecessary testing delays definitive care
  - Unnecessary testing causes iatrogenic complications

Physical Examination

- Vital signs
  - Hypotension
  - Orthostasis
  - Inappropriate tachycardia
  - Bradycardia
  - Hypothermia
- Weight trend (blind weight) / growth trend
- Weight suppression
  - Difference between highest adult weight and current weight

Physical Examination

- Skin and hands
  - Russell’s sign
  - Lanugo hair
  - Hair loss
  - Hypercarotemia
  - Xerosis
**Diagnostic Approach**

- Head, Ears, Eyes, Nose, Throat (HEENT)
- Subconjunctival hemorrhages (forceful vomiting)
- Dental erosions (acid damage)
- Angular cheilitis (acid damage)
- Parotid swelling (chronic vomiting OR recent cessation of vomiting)
- **Cardiac**
  - Mid-systolic click (mitral valve prolapse)

**Baseline Evaluation**

- Electrocardiogram
- Orthostatic blood pressure
- Comprehensive metabolic panel
  - Phosphorus
  - Glucose
- Complete blood count
- Thyroid function studies
  - Normal/high TSH, normal/low free T4, low T3

**Baseline Evaluation**

- Amylase is neither sensitive nor specific for vomiting
- Albumin is NOT a reliable marker of nutritional status
- Consider pre-albumin
  - May indicate protein-calorie malnutrition
  - Only reflects the preceding 72 hours

**An Early Cardiovascular Sign of an ED**

- **Bradycardia**
  - May be the presenting feature
  - Often the first indication of food restriction or malnourishment
  - Distinct from athletic heart
  - Telemetry indicated for heart rate < 40 bpm
Severe Cardiovascular Complications

- Left Ventricular Atrophy (Anorexia Nervosa)
  - Loss of left ventricular (LV) mass occurring in starvation state
  - Weight restoration results in restoration of myocardial mass
  - Myocardial scar detected on cardiac MRI in 25% of weight-restored patients
  - Possible long-term risk of malignant arrhythmias

Sudden Cardiac Death

- Exact mechanisms remain unclear
  - Malignant arrhythmias from starvation-related structural heart changes
  - Long QT (usually due to medication, electrolytes, other correctible factor)
  - Autopsy results show no link to atherosclerotic heart disease
  - Hypothesis: possibly due to hypoglycemia

Other Cardiovascular Complications

- Mitral Valve Prolapse (Anorexia Nervosa)
  - Valve redundancy due to loss of LV mass relative to preserved valve annulus
  - May be associated with regurgitation
- Peripheral Vascular Dysregulation (Anorexia Nervosa)
  - Peripheral vasoconstriction and impaired blood flow
- Pericardial Effusion (Anorexia Nervosa)
  - Present in 22-37% of patients
  - Correlates with low BMI and low T3

Common GI Presentations

- Gastroesophageal Reflux Disease (GERD)
  - May be associated with hoarseness, dysphagia, or odynophagia
- Gastroparesis
- Constipation
- Diarrhea
- Functional GI symptoms
- Hepatitis / elevated transaminase levels
Severe GI Presentations

- Superior Mesenteric Artery (SMA) Syndrome (Anorexia Nervosa)
  - Symptoms include pain with eating, vomiting after eating, early satiety, bloating
  - Obtain imaging to rule out acute gastric dilatation (CT or upper GI series)
- Acute Gastric Dilatation (Anorexia Nervosa)
  - Emergent nasogastric tube decompression and surgical consultation
  - “Cathartic Colon Syndrome” (stimulant laxative abuse)
  - Discontinue all stimulant laxatives without taper
  - Use osmotic laxatives and hydration to alleviate constipation
  - Provide reassurance and re-education about “normal” stool pattern

Metabolic Effects of Purging

- Acid-base / electrolyte abnormalities are leading cause of death
  - Assess for low potassium and phosphorus
  - Hospitalize for severe electrolyte disturbances
- Hypokalemia without other cause strongly suggests purging
  - Specific but NOT sensitive
  - Avoid rapid infusions or boluses of fluids

Pseudo-Bartter Syndrome

- Chronic hypovolemia causes upregulation of aldosterone
  - Drives Na⁺, HCO₃⁻, and water retention in kidneys
  - K⁺ and H⁺ lost in urine
- Aggressive fluid resuscitation can cause sudden and severe edema
  - Fluid retention can precipitate heart failure or pulmonary edema
- Slow rate of infusion reduces risk (e.g., 50 cc/hr)
- Aldosterone levels normalize several weeks after cessation of purging and fluid resuscitation
- Spironolactone 25-100 mg daily for prevention and treatment

Osteoporosis

- Hormonal dysregulation and abnormal physiologic stress response
- Almost universal finding in AN with bone loss as early as 3-6 months
  - Bone loss may be more severe in men
- Treatment:
  - Avoid oral estrogen or contraceptives for purposes of restoring menses
  - Replace testosterone in men
  - Consider pros and cons of bisphosphonate therapy
  - Primary treatment is weight restoration
  - Diminished bone density may be permanent!
Other Medical Complications

- **Pancytopenia**
  - Occurs due to gelatinous marrow transformation in malnourishment

- **Hypoglycemia**
  - Occurs in starvation state and is poor prognostic indicator
  - Depletion of hepatic glycogen stores
  - Absence of substrates for gluconeogenesis
  - Often overtly asymptomatic despite glucose of 40-60 mg/dL (2.22 – 3.33 mmol/L)

- **Brain Atrophy**
  - Both gray and white matter are lost due to malnutrition
  - Some neurocognitive deficits may be permanent despite weight restoration

Case Example

- **Case – History**
  - Past medical history:
    - Weight range: 152 – 184 lb (68.9 – 83.5 kg)
    - Body mass index (BMI): 19.0 – 23.0 kg/m² (normal range 18.5 – 24.9 kg/m²)
    - Height: 75 inches (190.5 cm)
  - No other medical problems
  - No medications

- **Case – Intervention**
  - Referred for mental health evaluation
  - Longstanding fear of gaining weight and “being fat”
  - History of binging with compensatory purging, over-exercise
  - Diagnosed with anorexia nervosa, restricting type
  - Found to have anxiety symptoms and mild obsessive compulsive traits
  - Received care at specialized ED center
    - Intensive outpatient treatment, 8 weeks
    - Individual outpatient therapy, 8 weeks
  - Re-evaluated at conclusion of treatment
    - Eating disorder, not otherwise specified (EDNOS), in remission
Case – Medical Cofactors

- Chronic, non-specific abdominal complaints
  - Colonoscopy and biopsies normal
  - Ongoing complaints of food intolerance, abdominal pain, diarrhea
  - Abdominal MRI – normal
  - Upper gastrointestinal series and small bowel follow-through – normal

- Subclinical hypothyroidism
  - Elevated thyroid stimulating hormone, normal free thyroxine
  - Elevated thyroid peroxidase antibody
  - Patient blamed weight loss on untreated hypothyroidism
  - Started on levothyroxine by endocrinology

Case – Follow-up

- Re-evaluation 1 year later
  - Weight maintained, with BMI of 20.1 kg/m²
  - Mild restrictive/avoidant eating behaviors continued
  - Member able to describe improved coping skills
  - Continuing to excel academically and socially
  - Continuing to work with outpatient treatment team

When to Refer

Immediately

When to Refer

- As soon as an eating disorder is suspected
- Multi-disciplinary treatment is standard of care
  - Therapist
  - Dietician
  - Psychiatrist
  - Medical physician
- Early intervention facilitates recovery
- Experience with eating disorders is essential
### Signs of Medical Instability
- Severe malnourishment
  - ≤ 75% median BMI for age, sex, and height
  - Significant weight loss, even if not underweight
  - Rapid weight loss
- Hypoglycemia
- Abnormal electrolytes (hypokalemia, acid/base disorder)
- Hemodynamic instability
  - Bradycardia
  - Orthostatic hypotension
  - Hypothermia

### Indications for Hospitalization
- Acute medical complications of malnutrition
  - E.g., syncope, seizures, heart failure, pancreatitis, etc.
- ECG abnormalities
  - E.g., QTc longer than 450 ms, heart rate below 40 bpm, arrhythmia
- Abnormal electrolytes (hypokalemia, acid/base disorder)
- Complete food refusal
- Psychiatric instability
  - E.g., suicidal thoughts or behaviors, aggressive or unsafe behaviors

### It Doesn’t Stop Here...
- Weight restoration is just the beginning...
- Eating disorders are complex – medical, neurological, psychological, and behavioral components

### Online Resources
- Academy for Eating Disorders
  - Professional references and information on the diagnosis and treatment of eating disorders
  - www.aedweb.org
  - https://www.aedweb.org/publications

- National Eating Disorders Association
  - Information, advocacy, and patient support
  - https://www.nationaleatingdisorders.org/


Further Reading

References


