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INPATIENT EATING DISORDERS 101: THE ART OF MEDICAL STABILIZATION AND NEGOTIATION

• Absolutely no disclosures
Why a hospitalist?

Belief in Family Centered Care

Most challenging cases we will encounter

Lack of any local or regional treatment centers for ED

Great at managing multidisciplinary care!

Pediatric hospitalist?

No inpatient adolescent coverage

No facilities for kids in our state

No outpatient options

Only freestanding children’s hospital in the state
Our Eating Disorder Team

Epidemiology

- 1-4% prevalence of anorexia nervosa among adolescent females
- Will increase based on newer DSM-V criteria
- Under age 13: incidence of 1.3/100,000
- 1 in 10 patients diagnosed are male
<table>
<thead>
<tr>
<th>DSM-V (2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Anorexia nervosa (AN)</td>
</tr>
<tr>
<td>- Bulimia nervosa (BN)</td>
</tr>
<tr>
<td>- Avoidant Restrictive Food Intake Disorder (ARFID)</td>
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<tr>
<td>- Binge Eating Disorder (BED)</td>
</tr>
<tr>
<td>- Other Specified Feeding or Eating Disorder (OSFED)</td>
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<table>
<thead>
<tr>
<th>DSM-V</th>
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<tbody>
<tr>
<td>- Took away “ED Not Otherwise Specified” (ED-NOS)</td>
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<tr>
<td>- Removed Amenorrhea as requirement for AN</td>
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<tr>
<td>- New category: “Other specified feeding and eating disorders”</td>
</tr>
<tr>
<td>- Atypical anorexia nervosa, BN with low frequency/limited duration, BED with low frequency/limited duration, Purging disorder, Night eating syndrome</td>
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</tbody>
</table>
Anorexia Nervosa

- Restriction of energy intake
- Intense fear of gaining weight
- Undue influence of body weight on self-evaluation
- Significant low body weight

**AN Statistics**

- Lifetime prevalence: 0.9%-2.3%
  - 90% diagnosed prior to age 25
  - 85-90% female
- Mortality rate of 5-6%
- Highest treatment costs compared to other psychiatric disorders
- Peak age of onset 13-18 years old
- Evidence that early recognition/treatment show better outcomes
AN Statistics

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BN Definition

Bulimia Nervosa

- Recurrent episodes of binge eating
- Eating in discrete amount of time
- Sense of lack of control over eating
- Purging
BN description

- The binging and compensatory behavior occur at least once/week \( \times \) 3 months
- Self-evaluation unduly influenced by body weight and shape
- “Ego-dystonic”

### Anorexia Nervosa
- Onset early to mid-adolescent
- Introverted, obsessional, perfectionistic, rigid
- Binge eating not necessary
- Underweight
- Ego-syntotic
- +/- Amenorrhea

### Bulimia Nervosa
- Older adolescent onset
- Outgoing, impulsive, prone to acting out
- High, low, or normal weight
- Aware of problem and wants help (ego-dystonic)
ARFID

- Lack of interest in eating or food
  - Sensory aversion, choking phobia
- Not concurrent with episode of AN or BN
- Eating disturbance not explained by medical or psychiatric condition
- Poorly understood & a challenge to treat!
A Little History

383 AD: Follower of St. Jerome

1689: Richard Morton first describes anorexia nervosa

Renaissance: ‘Holy Anorexics’

1764: Nervous atrophy, bradycardia described (Whytt)

1873: Description by 2 neurologists (Bernard/Gull)

1889: Charcot ‘anorexia hysteria’ advocates isolation to treat
1930: Berkman realizes hypopituitarism is effect of starvation (not cause)

1950: Ancel Key
MN Starvation Study

1973: Hilde Bruch confirms abnormal body image/fear of obesity

1983: Death of Karen Carpenter

1987: Maudsley Approach with Family Based Therapy

2002: Lock and Lagrange FBT preferred
2011: Lock and Lagrange RCT supports Intensive Outpatient FBT

Think of the disorder as separate from patient

Patient

Eating Disorder
Case 1

- 16 year old female admitted from OSH with chest pain, 27 pound weight loss in past month
- Struggled with eating disorder x 4 years
- Treated by rural local mental health provider for “OCD” and “anxiety”
- Initially would restrict, now binges and purges
Case 1 continued

• + bullying at school → now online schooling
• Stressors include bio. Father and stepfather
• Recently approved for residential mental health stay by her insurance

Initial Studies

• CMP

<table>
<thead>
<tr>
<th>Value</th>
<th>136</th>
<th>88</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP</td>
<td>2.6</td>
<td>39</td>
<td>0.8</td>
</tr>
</tbody>
</table>

- Troponin <0.012
- Prealbumin 14.9
- TSH 0.441
- Free T4
- ESR 5
- UA + ketones

- AXR: large stool burden
- CXR: normal
Case 1: HR 59 (awake)

Case 1: Admission criteria

- Hypokalemia
- Metabolic alkalosis
- Hypochloremia
- Orthostatic VS positive
- Estimated to be 77% Ideal Body weight (5ft 5in, 98lbs)
- BMI 15.8
<table>
<thead>
<tr>
<th>Case 1 Hospital Course</th>
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</thead>
</table>

- No purging in hospital
- Incredibly compliant with diet at first (2000cal/day)
- Developed mild subclinical refeeding syndrome (Phos minimum 2.3)
- Required lots of K and Phos supplements (po)

**“I WANT HELP. I WANT TO FEEL NORMAL AGAIN.”**
Case 1: Course

- Diet compliance tapered off as she started to become anxious (1500cal/day)
- Heart rate minimum of 38, increased over 3 days
- QTc prolongation corrected with potassium
- Ultimately sent to ED facility after 6 days
- Gained 3.5 kg by time of transfer

Evidence for Acute Inpatient Stabilization?

- Loose recommendations (SAHM, APA)
- Much literature exists regarding refeeding syndrome
- Newer evidence supports more aggressive feeding
- Clear guidelines for when to admit (use this as best tool for insurance fights)
- Better “weight restoration” at discharge related to better outcomes
Indications for Inpatient (SAHM 2015)

Indications supporting hospitalization in an adolescent with an eating disorder

1. <75% Median body mass index for age and sex
2. Dehydration
3. Electrolyte disturbance (hypokalemia, hyponatremia, hypophosphatemia)
4. EKG abnormalities (e.g., prolonged QTc or severe bradycardia)
5. Physiological instability
   Severe bradycardia (heart rate <50 beats/min daytime; <45 beats/min at night)
   Hypotension (<90/45 mm Hg)
   Hypothermia (body temperature <96°F, 35.6°C)
   Orthostatic increase in pulse (>20 beats/min) or decrease in blood pressure (>20 mm Hg systolic or >10 mm Hg diastolic)
6. Arrested growth and development
7. Failure of outpatient treatment
8. Acute food refusal
9. Uncontrollable bingeing and purging
10. Acute medical complications of malnutrition (e.g., syncope, seizures, cardiac failure, pancreatitis, and so forth)
11. Comorbid psychiatric or medical condition that prohibits or limits appropriate outpatient treatment (e.g., severe depression, suicidal ideation, obsessive compulsive disorder, type 1 diabetes mellitus)

Ideal Body Weight

(Height in Meters)^2 X 50th Percentile BMI for gender/age
Disposition

- Consider options from day 1!
- Family dynamics, geography
- Age of patient (<12 is a challenge)
- Insurance (as always 😊)

SAHM 2015

A proposed classification of degree of malnutrition for adolescents and young adults with eating disorders

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>%mBMI(^a)</td>
<td>80%–90%</td>
<td>70%–79%</td>
<td>&lt;70%</td>
</tr>
<tr>
<td>BMI z score</td>
<td>−1 to −1.9</td>
<td>−2 to −2.9</td>
<td>−3 or Greater</td>
</tr>
<tr>
<td>Weight loss</td>
<td>&gt;10% Body mass loss</td>
<td>&gt;15% Body mass loss</td>
<td>&gt;20% Body mass loss in 1 year or &gt;10% body mass loss in 6 months</td>
</tr>
</tbody>
</table>

One or more of the terms would suggest mild, moderate, or severe malnutrition. BMI = body mass index.

\(^a\) Percent median BMI.
### Definitions of BMI, median BMI, and percent median BMI

<table>
<thead>
<tr>
<th>Term</th>
<th>Abbreviation</th>
<th>Data required and/or calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td>BMI</td>
<td>Weight (kg)/[height (m)]²</td>
</tr>
<tr>
<td>Median BMI&lt;sup&gt;a&lt;/sup&gt;</td>
<td>mBMI</td>
<td>50 Percentile BMI for age and sex&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Percent mBMI</td>
<td>%mBMI</td>
<td>(Current BMI/mBMI)&lt;sup&gt;a&lt;/sup&gt; × 100</td>
</tr>
</tbody>
</table>

BMI = body mass index.

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### COMMON INPATIENT COMPLICATIONS
• Let food be thy medicine!

Cardiac

• After suicide, leading cause of mortality
• Anticipate sinus bradycardia – can lead to junctional escape rhythm
• Pericardial effusions- marker of disease progression
• Myocardial atrophy- decrease LV mass size
• Prolonged QTc? Check for secondary cause!
• Cardiac remodeling causing myocardial fibrosis-lead to malignant arrhythmia (theory for increased mortality)
Refeeding Syndrome

- Body is chronically starved
- Insulin levels low (glucagon elevated)
- Producing energy from fatty acids (making ketones)
- Conserving muscle/protein
- Total body depletion of electrolytes
- Often electrolytes measured as normal in this state

Refeeding Syndrome

FOOD

Initial Glucose ↑

INSULIN SURGE

↓ Phos Mag K⁺

Rush to create energy
Shift Intracellular

ATP Generated
Refeeding Syndrome

- Glucose can also decline as the body rushes to create new energy (anabolic state)
- Usually presents 2-4 days into refeeding the patient
- Onset mitigated with liberal use of po phosphorus (Neutra Phos, etc.)
- Old mindset: 1200kcal/day to start

- First symptoms are increased HR, RR, lower body edema
- Hypophosphatemia: phosphorus less than 2.5 mg/dL
  - Mild low phos may be asymptomatic.
  - Other symptoms include weakness, respiratory distress, rhabdomyolysis, heart failure → Death
  - Neurological symptoms → paraesthesias, confusion and seizures.
Risk Factors for Refeeding Syndrome

- No food intake for > 5 days
- **BMI < 18**
- **Less than 75% ideal body weight**
- Recent retrospective reviews
  - Increased length of stay with no increased rate of refeeding syndrome in those more aggressively fed (starting with 1400kcal/day)
  - Probably due to supplementation of electrolytes

GI considerations

- Severe delayed motility
- Gastroparesis (worsened early satiety)
- Constipation (pain, bloating)
- Esophogeal tears, gastritis (excessive purging)
  - Utilize polyethylene glycol to help with constipation (no stimulant laxatives)
  - PPI’s as indicated
Endocrine/Reproductive

- Amenorrhea
- Thyroid function variable-usually low
- Severe osteopenia (long term damage)

Neurologic

- Brain atrophy +/- ventriculomegaly
- Wernicke encephalitis (B1 deficiency) leading to Korsakoff syndrome (severe cases)
- All reversible!
“You must do the things you think you cannot do.” ~Eleanor Roosevelt

Hospital Procedures

- Sitter
  - 24 hours a day
  - Monitor for ED behaviors
    - Use of laxatives, emesis, excessive exercise (pacing, excessive standing, etc)
  - Monitor parent and patient interactions
  - Monitor food consumption and post-prandial behaviors (playing with food, rituals, etc.)
Eating Disorder Treatment Team

- Psych Liaison Service
- Pediatric Hospital Medicine
- Dietitian
- Child Life/Expressive Therapy
- Care Managers
- Social Work
- Bedside RN
- Family

Weight and Vital Sign Procedures

- Height
  - Needed to calculate BMI and Ideal Body Weight
- Weight
  - Weigh on the same scale
  - Weigh in the morning, after voiding
  - The patient must be in a gown only
  - His/Her back to the scale
  - The patient should not be told the weight
- Vital Signs
  - Orthostatic BP q shift
  - Regular VS q4 hours (HR, BP, Temp)
  - CR Monitor when asleep
  - Telemetry if EKG concerning
  - Strict I/O measurements
Lab Studies and Testing

- CBC with Differential
- ESR
- RFP
- Magnesium
- TSH
- AST
- ALT
- EKG

Lab Studies and Testing

- CBC with Differential anemia
- ESR rule out other etiologies
- RFP usually normal at first
- Magnesium low with refeeding
- TSH rule out hyperthyroidism, can see sick euthyroid
- AST
- ALT
- EKG sinus bradycardia expected
Differential Dx of Weight Loss

- Inflammatory bowel disease, celiac disease, achalasia
- Hyperthyroidism, Addison disease, hypopituitarism, type 1 DM
- Lymphoma, CNS tumor, occult malignancies
- HIV infection, Tuberculosis
- Depression, substance abuse, use of diet pills
- Early pregnancy

History and ROS

**Eating Disordered Behavior History and Review of Systems**

"SCOFF Questionnaire" (one point for every "yes", score of 2 or more indicates likely AN/BN)

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 one stone (14lbs) in a 3 month period?
4. Would you say that food dominates your life?
5. Do you see yourself as being fat when others don't?

Restrictions?

Binge eating?

Self-induced vomiting?

Laxatives?

Diet pills?

Diuretics?

Exercise? How much time per day? Does the patient wear an activity tracker?

Other behaviors: Food eating habits? Excessive fidgeting? Under-portioning? Sneaks foods? Picks at food during meal times?

Body image? How does the patient view herself?
History and ROS

Other Dietary Questions:
- Current caloric intake
- Do you count calories? If so, how?
- Fluid intake restrictions or rules?
- Other dietary restrictions or rules?
- “Dislike” foods?
- How frequently does the patient step on scale?
- Meals eaten with family or alone?

Social media habits? Myfitnesspal, Instagram, Pinterest, Pro-ana sites, etc.

Weight history? Peak weight? Weight change over time

Psych History and Family history

Ideal body weight percentage: Helpful indicator of illness severity
\[ \text{m2} \times 50^{\text{th}} \text{ percentile BMI for age and sex} \]

Inpatient Treatment Goals

- Daily weight gain of 0.2 kg per day
  - Stabilize weight and vital signs
  - Avoid refeeding syndrome
  - Often see initial weight loss
- Maintain weight or continue weight gain while taking 100% by mouth
Avoiding ED behaviors

• To avoid purging episodes, hiding food, clandestine exercise
  – Remove wastebaskets and bags from the room and bed area.
  – Bed rest is required for 2 hours after meals, no bathroom privileges.
  – Showers may need sensitive monitoring to avoid purging and washing down the drain

Activity Limitations

• Initially on strict bedrest
• Advance activity as patient stabilizes
• No pacing, repetitive movements, etc.
• Can graduate to more activity if compliant
• Not much energy to spare at first
Meal Planning

- Occurs with the registered dietitian
- Calorie goals
- No discussion of calories with patient
- Food “exchange” discussion
- RD consult often very stressful
- Calorie count in chart

Meal Challenges

- Meal times should not be flexible
- Avoid interruptions during meals
- Use of outside food
- “Picky eaters”
- Vegetarianism/Veganism
- Innate knowledge of caloric content
- Avoid excessive use of diet drinks, tea, coffee, chewing gum, caffeine, etc.
Mitigating rituals

- Excessive playing with food
- Looking at pictures of food
- Social media outlets
- Other fitness apps
- Excuses about eating (belly discomfort, timing, etc.)

Meal Time Coaching

- Positive attitude and mindset!
- No conversation about: weight, taste of food, portion size, calories, any triggering topics
- Use distraction if possible
- Managing anxiety regarding meals is key
Use of Nasogastric Tube Feeds

- Depends on how entrenched the ED
- If mature → set expectation
- Some patients simply cannot eat (NG tube is not punishment but lifesaving)
- Make decision for NG feeds early
- Utilize overnight feeds of concentrated formula
- Still expect po meals during day

NG Feeds

Benefits
- more comfortable for patient, less pain
- transfers responsibility of weight gain from the patient to the treatment team
- may reduce power struggle with treatment team
- reduces the pressure patient perceive is being placed on them to eat

Adverse Effects
- may interfere with alliance between patient and treatment team
- invasive, frightening,
- medical complications, aspiration, nasal irritation
- patient can become emotionally attached to tube
APA Guidelines on Treatment Options

BMI Severity Classes (DSM V)

- **Mild:** BMI > 17
- **Moderate:** BMI 16-17
- **Severe:** BMI 15-16
- **Extreme:** BMI < 15
Psychiatric considerations

- Outpatient first
- Multidisciplinary team (pediatrician, psychotherapist, nutritionist)
- Nutritional rehabilitation is essential for psychotherapy to work

Behavioral Therapy

- Goal of restoring normal eating behavior
- Cognitive behavioral therapy helpful
Individual Therapy

- Patient education
- Practical strategies
- Develop insight
- Help patient resolve conflicts

Family therapy

- Family based treatments more effective than individual therapy
- Empowers parents to take actions to interrupt child’s cycle of starvation
Family Based Treatments

• Eating disorder is often externalized to remove self blame
• Three phases
  – Physical (parents feeding adolescent)
  – Behavioral (transferring control back to adolescent)
  – Psychological (relapse prevention, transition to adulthood, termination of care)

Psychopharmacology

• Reserved for comorbid conditions
• Disappointing results in most clinical studies
Pharmacology for Anorexia

Many patients will refuse medications

- Olanzapine may help
- Antidepressants may not help
- Benzodiazepines may help prior to meals
- Tricyclic antidepressants may cause cardio toxicity

- Avoid...
- Bupropion may cause seizures with eating disorders

Pharmacotherapy for Bulimia

- First Line: Fluoxetine
- Second Line: citalopram, fluvoxamine, sertraline
- Third Line: TCA desipramine, imipramine, nortriptyline, topiramate, trazodone, MAOI phenelzine

- Avoid bupropion
“Centers to Treat Eating Disorders are Growing, Raising Concerns” NY Times 3/14/16

References


Patient/Family Resources

[Image: Books and NEDA logo]

National Eating Disorders Association

[Text: NEDA Feeding hope.]


[Text: Life Without Ed]

[Text: Jenni Schaefer]

[Text: James Lock, MD, PhD; Jessica Le Grange, PhD]