Identification & Management of Eating Disorders in Pediatric Primary Care

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Overview

• Define criteria for eating disorders including anorexia nervosa, bulimia nervosa and binge eating disorder
• Describe how pediatricians should screen for eating disorders including using a validated screen for adolescents
• List inpatient admission criteria specific for eating disorders
• Describe how pediatricians can be part of the interdisciplinary management team for outpatient management of eating disorders
Eating Disorders in DSM-5

- Anorexia Nervosa (AN)
- Bulimia Nervosa (BN)
- Binge Eating Disorder (BED)
- Avoidant/Restrictive Food Intake Disorder (ARFID)
- Other Specified Feeding or Eating Disorder (Eating Disorder NOS)

A girl arrives to your office

She complains of frequent nausea, decreased appetite, and early satiety even after eating very small portions. Her weight today is 20lb less than a documented weighted obtained 1 year ago. She has no vomiting or diarrhea. +constipation. She complains of increased fatigue but is able to participate in diving 5 days a week. She is doing well in school academically. She attained menarche at 12 years of age and had monthly periods for about 18 months, but she has had no menses for the past 7 months. She has been a vegetarian for the past 18 months and feels she is at a good weight currently. On physical examination, her BMI is 17. Her urine pregnancy test is negative.
Of the following, the MOST likely diagnosis is:

a) Anorexia nervosa  
b) Depression  
c) Hypothalamic tumor  
d) Hypothyroidism  
e) Inflammatory bowel disease

Of the following, the MOST important next step in the management of this girl would be to have:

a) Start combined oral contraception  
b) Increase her calcium and vitamin D intake  
c) Increase her overall nutritional intake  
d) Try gluten free diet  
e) Keep menstrual diary and return in 3 months
Pathogenesis of Eating Disorders

Biological + Psychological + Social

The Role of Genetics

• Women with first degree relative with an eating disorder are at 7-to-12-fold increased risk

• Higher rate of concordance for eating disorders among monozygotic twins than dizygotic twins
Predisposing Factors

• Being female although eating disorders are increasingly being identified in males especially LGBTQ youth
• Being obese or overly concerned about thinness in a culture where thinness is highly valued
• Being perfectionistic and eager to please others
• Having difficulty communicating negative emotions
• Having difficulty resolving conflict
• Having low self-esteem
• Chronic illnesses especially insulin-dependent diabetes mellitus

Epidemiology of Eating Disorders

- Prevalence
  • Anorexia Nervosa 0.5-2%
  • Bulimia Nervosa 1-3%
  • ED-NOS 4.8%
  • Binging/purging 15%

- Peak onset
  • AN 13-15
  • BN 18-19 years
Mortality Rates in Patients with Anorexia Nervosa and Other Eating Disorders

- **Anorexia Nervosa**
  - Standardized mortality ratios 5.86 (ratio of observed to expected deaths)
  - Weighted mortality rates 5.1 per 1,000 person years
  - 1 in 5 deaths due to suicide

- **Higher standardized mortality ratios than other psychiatric disorders**
  - 2.5-2.8 in Schizophrenia
  - 1.9-2.1 in Bipolar disorder
  - 1.9 in Bulimia Nervosa

Psychiatric Comorbidities

*May present premorbid, comorbid, or after recovery*

**Depression**
- 50-68% prevalence of depression among patients with AN
- 50-70% prevalence of mood disorders among patients with BN

**Anxiety**
- 30-65% prevalence of anxiety disorder among patients with AN
- 13-65% prevalence of anxiety disorder among patients with BN

**Obsessive Compulsive Disorder**

**Post-traumatic Stress Disorder**

**Personality Disorder**

**Substance Abuse Disorder**
- 25% prevalence among patients with BN

**Self-Injurious Behavior**
Rose

RJ is a 16yo girl, gyn age 4yrs, with no sig PMH presents to PMD for sports participation physical for ice hockey. Has ice hockey practice for 1.5h 5 days a week and runs for over an hour on weekends. Only complaint is infrequent hard, nonbloody stools with straining. Highest weight 116lbs 1.5yrs ago.

HEADDSSS: Strained relationship with mom. In 10th grade, straight A’s. Reports mood is “fine”. Denies HI/SI/NSSI. Denies using any substances. Has never been sexually active.

LMP 4 months prior. Menarche 13yo. Menses previously regular.

Vitals, Biometric Data, PE

PE: Wt 107lbs, Ht 5’4”, BMI 18.4
Median BW=120lb; Median BMI 20.6
RJ is at 89.3% of median BMI
HR 56 supine, 60 standing
BP 102/60 supine, 110/50 standing.

Her exam is notable for gaunt appearance
HEENT: no dental decal, no parotid enlargement
CV: bradycardic, reg rhythm, nl S1/S2, no m/g/r
Ext: cold hands with purplish discoloration to fingertips, neg Russel’s sign
She has Tanner 5 breast and pubic hair.
Establish Diagnosis
Anorexia Nervosa DSM-5 criteria

During the last 3 months:
1. Restriction of energy intake with significantly low body weight (less than minimally expected for age and height)
2. Intense fear of gaining weight or becoming fat even though at a significantly low weight
3. Disturbance in perception of body weight and shape or persistent lack of recognition of the seriousness of the low body weight

Specify whether:
- Restrictive Type: Wt loss primarily through dieting, fasting, and/or excessive exercise
- Binge-eating/purging Type: Engages in self-induced vomiting, use of laxatives, diuretics, or enemas

Role of Physician

- Physicians, an important member of the multidisciplinary team, play a critical role in recognizing and referring for diagnosis a spectrum of eating disorders in adolescents and monitoring for medical complications
- Most adolescents with eating disorders can be managed as outpatients. Family-based therapy is a first-line psychological treatment for adolescents with anorexia nervosa
Effective nutrition counseling for low-weighted restrictors

• Talk about food, not just calories ("If I had my way, this is what your daughter would eat for dinner tonight")
• Be clear and direct: "Food is your medicine" (Respect religious diets and vegetarian diet if preceded eating disorder. Patients cannot be vegan, macrobiotic, paleo and only if medically indicated, gluten free and lactose-free)
• Sample menus at www.maudsleyparents.org

24 hour diet history

Breakfast: Oatmeal made with water, banana
Lunch: Chicken, pesto and wrap
Dinner: tuna salad, corn, broccoli, baked potato
Snacks: None
Drinks: water, Diet Coke

Does not eat butter, cheese, ice cream, pasta
She does not want to gain any weight. Denies binging, purging, diet pills, laxative pills, counting calories
Effective nutrition counseling for low-weighted restrictors

Breakfast: 2/3 cup oatmeal, 1/3 cup peanut butter, banana
Lunch: 8oz protein (poultry, deli meat), 1.5 cup starch (rice/bread), 1 serving veggies, 2Tbsp dressing/mayo, hummus, avocado. 1/3 cup trail mix
Dinner: similar to Lunch above, with meal cooked in oil/butter
2-3 Snacks: Cliff bar, or 6 oz yogurt + 2 Tbsp seeds or Ensure

Observing meals

- Patients should be encouraged to eat meals within 45 minutes.
- Suggested interventions for food refusal:
  Explore why the student does not want to eat/drink
  Help the patient identify what would be helpful to facilitate eating or drinking including if it would be helpful to listen to music or what has been helpful in the past.
  ◦ Consider offering an incentive following the meal if the student is able to complete the meal
Female Athlete Triad

= 
Eating Disorder 
+ 
Amenorrhea 
+ 
Osteoporosis

Bulimia Nervosa: DSM-5

1. Recurrent episodes of binge eating (eating more than typical in a discrete period of time AND a sense of lack of control over eating)
2. Recurrent inappropriate compensatory behaviors to prevent wt gain (self-induced vomiting; misuse of laxatives, diuretics, other meds; fasting; excessive exercise)
3. Occurs at least 1x/week for 3 months
4. Self-evaluation is unduly influenced by body weight and shape
5. Disturbance does not occur exclusively during episodes of anorexia nervosa
Amy

AM is a 17yo with a PMH of exercise-induced asthma and obstructive sleep apnea. She is coming in an asthma exacerbation. Her vitals are notable for an 8 lb. weight gain since her last visit 3 months ago. BMI now 35. AM denies purging, use of laxatives, or any exercise. She admits to feeling guilty after eating lunch and dinner. She is unhappy about her body, and is especially upset to hear that she gained weight.

• Upon questioning, AM reports the following 24-hour diet history:
  Breakfast: None
  Lunch: (from 3-4pm once home from school): 2 chicken wings. 2 servings of rice and beans. Peanut butter and jelly sandwich on wheat bread. Can of spaghetti and meatballs. Bowl of honey bunches of oats with 2% milk. 8 oreos. Large cappuccino with milk.
  Dinner: (Refuses to eat family meal; eats alone at 8pm): 2 slices pizza.

Binge-Eating Disorder: DSM-5

1. Recurring episodes of binge eating
   • Eating significantly more food in a short period of time than most people would eat under similar circumstances
   • Feelings of loss of control
2. Episodes associated with 3 or more
   • Eating much more rapidly than normal
   • Eating until feeling uncomfortably full
   • Eating large amounts of food when not hungry
   • Eating alone out of embarrassment
   • Feeling disgusted with oneself, depressed, or very guilty afterwards
3. Marked distress regarding binge eating
4. Occurs at least 1x/week for 3 months
5. NOT associated with recurrent use of inappropriate compensatory behavior
Ann

AM is a 12yo underweight girl with GERD, lactose intolerance, constipation, generalized anxiety disorder, and ADHD with a 6 week history of decreased appetite and 6 lb weight loss. She is coming in complaining of typical heartburn symptoms. She reports decreased eating to avoid heartburn symptoms and bloating. She thinks she is too skinny and wants to gain weight. She denies binging, purging, laxative use. She exercises once per week by participating in gym class.

Avoidant/Restrictive Food Intake Disorder (ARFID): DSM-5

1. Eating or feeding disturbance as manifested by persistent failure to meet appropriate nutritional and/or energy needs
   - Eating disturbance: lack of interest in food, avoidance due to sensory characteristics of food, concern about aversive consequences of eating
   - Associated with either significant wt loss/ FTT, nutritional deficiency, dependence on enteral feeding, or marked interference with psychosocial functioning
2. Disturbance is not better explained by lack of available food or culturally sanctioned practice
3. Does not occur exclusively during the course of AN or BN. No negative body image.
4. NOT attributable to concurrent medical condition or mental disorder
Katie

• Katie is a 12yo who lost 18lbs in the past year. Her parents recently became aware at her physical, and now notice she restricts what she eats. Reports panic attacks once every 2 weeks often before tests. Denies HI/SI, NSSI or history of suicide attempts. Katie reports she is not happy at her current weight and with her stomach and wants to loose weight. She eats 1 meal daily after school. Denies binging, purging, diet pills/laxative use, any exercise.
• Wt 52.7kg, 163.7cm. BMI 19.6
• Median BMI 18.5

☑ What is her likely diagnosis?

Review of Growth Charts Essential
Atypical Anorexia Nervosa

AN except weight is within or above normal range

Screening for Eating Disorders

• Adolescents should screen annually at health visits and during pre-participation sports exams
• BMI percentile/ growth trajectory
  ◦ Younger patients may present with failure to make expected gains in weight or height as opposed to weight loss
• Menstrual history (LMP as a vital sign!)
• Dieting history or excessive exercise
  ◦ Restriction of entire food groups (ie new onset vegetarianism) or food rituals
  ◦ SCOFF Questionnaire
SCOFF Questionnaire

>2 = likely case of anorexia nervosa or bulimia

**Sick**: Do you make yourself sick because you feel uncomfortably full?

**Control**: Do you worry that you have lost control over how much you eat?

**Over 1 stone**: Have you recently lost one stone (14 lbs or 6.3 kg) in a 3-mo period?

**Fat**: Do you believe yourself to be fat when others say that you are too thin?

**Feed**: Would you say that feeding dominates your life?

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Screen for Eating Disorder behaviors

In the past 2 weeks:
Do you Vomit/Purge?
Do you Binge?
Do you Restrict?
Are there foods you avoid?
Do you use Laxatives?
Do you use diet pills, diuretics, or weight loss supplements?
Do you ever feel guilty about eating?
Do you count calories, fat, and/or carbohydrates?
Do you exercise? If yes, how would you feel if you could not exercise for 1 day?
History of Eating Disorder

PMH
- Time course of weight loss including min and max wt during adolescence
- Perceived goal weight
- Body image
- Dietary habits including 24-hr recall, history of restricting, binge eating, and/or purging
- Exercise history
- Previous therapy

Relevant ROS
- Sx of systemic illnesses such as IBD, DM, celiac, lupus
- Presyncope, syncope, HA, fatigue, exercise intolerance, sleep disturbance, dry skin, increased shedding of hair/hair loss, cold intolerance, easy bruising

FHX
- Eating disorders, psychiatric disorders, alcoholism or drug abuse

HEADSSS
- Recent stressors
- Tobacco, alcohol, illicit drug use
- Use of pro-eating disorder Web sites
- Mood changes
Physical Exam Findings

- Hypothermia
- Sinus bradycardia or arrhythmias
- Hypotension, orthostatic changes
- Xerosis (dry, scaly skin),
- Lanugo, thinning scalp hair,
- Acrocyanosis
- Bruising/abrasions over spine
- Cachexia, facial wasting, atrophic breasts
- Dependent edema
- Scaphoid abdomen, Hypoactive bowel sounds
- BN or other purging disorders: Callouses or abrasions over knuckles, parotid enlargement, dental enamel erosion, scleral hemorrhage, palatal petechiae, loss of gag reflex

Initial Work-Up

- CBC, ESR, CRP
- BMP, magnesium, phosphorous, LFTs, amylase
- TSH, free T4, total T3
- HCG, LH, FSH, Estradiol (females)
- Testosterone (males)
- Celiac panel
- UA
- EKG (indicated if bradycardia <50 bpm or purging)
- DEXA Scan (if secondary amenorrhea >6 months)
Anorexia: Medical Complications

- Cardiac: myocardial atrophy, mitral valve prolapse, pericardial effusion, hypotension, bradycardia, EKG changes/prolonged QTc, arrhythmias
  - **Orthostatic changes
- Ob/Gyn: amenorrhea (HPO-axis suppression)
- Endocrine: osteoporosis, growth disturbance, sick euthyroid, hypoglycemia, neurogenic DI
- GI: constipation, hepatitis, SMA syndrome
- Renal/Electrolytes: decreased GFR, renal calculi, impaired concentration of urine, hypokalemia, hypomagnesemia, hypophosphatemia
- Pulm: decreased lung capacity, spontaneous ptx/pneumomediastinum
- Heme: anemia, leukopenia, thrombocytopenia, iron and B12 deficiencies
  - Note: no increased infectious risk
- Neuro: cerebral atrophy, cognitive impairment, peripheral neuropathy, seizures
- Derm: xerosis, lanugo, telogen effluvium
- Musculoskeletal: musculoskeletal

Bulimia: Medical Complications

- Cardiac: hypotension, sinus tachycardia, ECG changes/QT prolongation, arrhythmias
- Pulm: aspiration pneumonitis, pneumomediastinum
- GI: Mallory Weiss/Boerhaave’s Syndrome, salivary gland hypertrophy, GERD, pancreatitis, diarrhea and malabsorption, constipation
- Renal/Electrolytes: Dehydration, hypokalemia, hypochloremia, metabolic alkalosis (contraction)
- Endocrine: menstrual irregularities, osteopenia/osteoporosis
- Dental: erosion, decalcification, discoloration, gum disease
- Skin: xerosis, telogen effluvium
- Eyes: conjunctival hemorrhage
Ryan

• RF is a patient with known bulimia nervosa followed closely by your practice, here for a follow up visit.

• Which of the following physical exam and/or lab findings are indications for hospital admission? (pick all that apply)
  ◦ Laying HR 60 BPM
  ◦ Laying BP 108/60
  ◦ Sitting HR 95 BPM
  ◦ Sitting BP 98/60
  ◦ K⁺ 2.9
  ◦ Cl⁻ 95
  ◦ CO₂ 32
  ◦ WBC 3.2

Indications for Hospitalization

HR < 50 BPM (daytime), <45 BPM (nighttime).
BP < 90/45 mmHg
Orthostatic changes
  ▪ Pulse increase > 20 BPM
  ▪ Systolic BP drop > 20 mmHg; diastolic BP drop >10 mm Hg
Arrhythmia/prolonged QTc
Temp < 35.6°C
< 75% median body mass index (<80% if prepubertal)
Refusal to eat or ongoing weight loss despite intensive outpatient management
Serum K⁺ < 3.2
Serum Cl⁻ <88
Hematemesis, intractable vomiting, esophageal tear
Suicidal risk

*Per SAHM and American Academy of Child and Adolescent Psychiatry
Setting Goal weights

• Median BMI often utilized in research studies and to determine if inpatient hospitalization is needed
• Review previous growth curve and goal to return to growth curve prior to eating disorder and at least 4lbs above weight at which last had regular menses (if postmenarchal girl)
• If always overweight-obese, goal is BMI at 75th-85th%
• If always underweight without documented medical need, goal is mid-parental height with BMI at 25th%

Refeeding Syndrome

• Potentially fatal shift of fluid and electrolytes, which can occur when feeding a malnourished patient
• Low Phos, Low K, Low Mg → arrhythmias, renal failure, seizures
• Risk factors:
  ▪ Little-to-no intake for >10 days
  ▪ Recent rapid weight loss
  ▪ Abnormal electrolytes (particularly hypophosphatemia)
• Prevention when feeding:
  ▪ Monitor fluid replacement
  ▪ Regularly check electrolytes
  ▪ Monitor vital signs and mental status
Inpatient Eating Disorder Protocol

• Baseline weight every morning at 7am. Weigh patient after he empties his bladder and dressed in a hospital gown with no clothing on.
  • Recommend initial BMP, Mag, Phos, LFT, amylase, TSH, free T4, total T3, CBC, ESR, CRP, GI (celiac), UA. Recommend daily BMP with magnesium and phosphorous and UA given at increased risk for refeeding disorder with acute food refusal
  • Recommend EKG to evaluate for prolonged QTc, and consider telemetry if needed
  • Recommend bed rest if HR <50, BP <90/50. If HR >50 then bed rest for 1 hour after meals. If history of purging, bed rest 2h after meals
  • Recommend a dietitian meet with patient and parents to discuss eating habits and assist with developing a meal plan. Determine how many calories are currently being consumed and start with a similar calorie count at a minimum of 1500 calories and increase by 250 calories daily.

Discharge criteria

• Discharge criteria includes resolution of dehydration, patient is compliant with their meals 100% by mouth, and ideally documented weight gain on inpatient unit
  Vital sign improvement from admission and stabilization
  Cleared by psychiatry as no safety risk for suicide
• Vitals
  ▪ HR >45 (supine while resting)
  ▪ BP>80/50 with no Orthostasis Rise of >20 of Heart Rate, Drop of >10 in systolic blood pressure, hypotension or Hypothermia.
Management

INTERDISCIPLINARY TEAM APPROACH!!!
- PMD
- Adolescent Medicine
- Nutrition
- Psychiatry
- Psychology

Appropriate Level of Care

- Inpatient Hospitalization
- Residential treatment
- Partial Hospitalization Program
- Intensive Outpatient Program
- Outpatient
Goals of Management

- Nutritional rehabilitation
- Weight restoration
- Medical stabilization
- Resumption of menses (if appropriate)
- Cessation of any inappropriate compensatory behaviors
- Correction of body image disturbance
- Restoration of meal patterns which promote health and social connections
- Reestablish social engagement
- Improve interpersonal relationships and family dynamic
Collaborative Hub Procedure: Eating Disorders

- **Referring to the Hub:** After screening the patient using the SCOFF and/or based on clinical judgement following the exam, providers can fax the PPC Hub. Providers should send a complete referral form, screening tools, and any other clinically relevant information.

- **What Does the Hub Staff Need?** All of the information the PPC Hub staff needs is on the referral form, including relevant background information, current clinical picture, demographic information, and reason for referral. Some providers may choose to send notes from previous visits as well, which can be very helpful, but is not required.

- **Communicating with the Family:** Please be sure you have discussed the PPC Hub with the patient and family prior to faxing a referral to the PPC Hub, so that the family is aware that a Hub staff psychologist/LCSW/other mental health specialist will be contacting them to discuss current concerns and suggestions for support/treatment.

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Collaborative Hub Procedure: Eating Disorders

- **What will the PPC Hub Staff Do?** Hub staff will call the patient’s family and complete a clinical intake. The family will discuss their main concerns. Case managers will evaluate for severity and level of care. Depending on the patient’s needs, Hub staff will:

  - Recommend an appropriate level of care (inpatient, PHP, IOP, or outpatient) - the family is sent a list of referrals for therapy services to address current mental health concerns.

  - Match the patient with a therapist based on their insurance and geographical location. The referrals are researched by staff psychologists/LCSWs, and most often accept patient insurance.

- **“Closing” the Loop:** Hub staff will communicate with you, sending you notes on what occurred with the family. They will also encourage the family to call them back if they need another resource. Hub staff will also follow-up with referred families 3 and 9 months after initial referral.
Screen for Depression with PH-2

Over the past 2 weeks, how often have you been bothered by any of the following problems?"

- “Little interest or pleasure in doing things”
- “Feeling down, depressed, or hopeless.”

➢ “Not at all,” “Several days,” “More than half the days,” and “Nearly every day,” scored as 0, 1, 2, and 3, respectively.
➢ Score can range from 0 to 6. Score of 3 points or more has a sensitivity of 83 percent and a specificity of 92 percent for major depressive episode.

Psychotherapy

- Anorexia Nervosa
  - Family based treatment (FBT) – largest evidence base
  - Cognitive based therapy (CBT)

- Bulimia
  - CBT, DBT, or modified family therapy are effective
  - FBT is more effective than CBT in meta-analysis of 2 studies with 165 adolescents aged 12-20 years

- ARFID
  - Targeted occupational therapy
Family based treatment

- Adolescent with ED is not able to make best choices with respect to eating behaviors and needs parental support.
- Parental strengths can be harnessed to effectively change ED behaviors in adolescents.
- Outpatient family therapy that consists of 10-20 family meetings over 6- to 12-month treatment course
  - Phase 1: restoring patient’s weight by parents taking control of meal planning and preparation, reintroducing forbidden foods. Parents taught to externalize illness from child.
  - Phase 2: Parents transition age-appropriate control over eating to adolescent
  - Phase 3: Adolescent issues and termination

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A meta analysis of 3 RCT including a total of 183 adolescents with Anorexia Nervosa have found that FBT is effective and superior to individual therapy

Lock et al (2010)- RCT of 121 adolescents (12-18yrs) with AN treated with either 12months of treatment with FBT or Adolescent Focused Individual Therapy, FBT was significantly better than AFT at facilitating full-remission (weight > 95% IBW and within 1SD global mean EDE) at 6- and 12-month follow-up.

*Couturier J. Int J Eat Disord 2013:45:3-11*
Pharmacotherapy

- **Anorexia Nervosa**
  - *Not always indicated, but may be added as adjunctive therapy*
  - SSRIs - for patients with severe comorbid affective or anxiety disorders

- **Bulimia Nervosa**
  - *Pharmacotherapy proven efficacious, especially in addition to nutritional rehab and psychotherapy*
  - SSRIs - fluoxetine = FDA approved for BN

- **Bupropion – Contraindicated** due to higher incidence of seizures in eating disorders
Prognosis

• Anorexia
  ◦ Poorer prognosis associated with long duration of illness, coexistent personality disorder, presence of vomiting, disturbed family relationships
  ◦ More favorable outcomes with early identification and definitive treatment of patient and families
  ◦ 43% have good outcome (return of menses and weight gain), 36% have partial or residual features of disorder, 20% are chronically ill

• Bulimia
  ◦ Poorer prognosis associated with presence of depression, comorbid substance abuse, coexistent personality disorder, h/o sexual abuse
  ◦ Poor outcome in approximately 30% of patients

*Steinhausen H. Am J psychiatry. 2002; 159: 1284-1293

Take home points

• Communication with parents and therapist regarding diagnosis
• Agree upon a clear-cut plan to patient and family talking concretely
• Screen for depression, suicidality, and other mood disorders given increased prevalence
• Help parents and patients see through to the other side of the eating disorder

*Steinhausen H. Am J psychiatry. 2002; 159: 1284-1293
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