Amenorrhea	
Pathophysiology cont.	• **Primary and secondary w/ normal secondary sex characteristics**: Hypothalamic causes (idiopathic, phenothiazines, heroin, stress, exercise, weight loss, chronic illness, craniopharyngioma, tuberculous granuloma, meningoencephalitis, polycystic ovary syndrome), pituitary causes (Sheehan's syndrome, aneurysm, empty sella, tumors), ovarian causes (premature ovarian insufficiency), uterine causes (Asherman syndrome), pregnancy.
Symptoms	May see absence of secondary sex characteristics in conjunction w/ amenorrhea
Physical Exam	• Height, weight • Webbed neck, low set ears, broad shield-like chest in Turner's syndrome • Signs of malnutrition, androgen excess, thyroid dysfunction • Tanner stage, breast exam and pelvic exam
Evaluation	• Pregnancy test, TSH, FSH, prolactin, ultrasound to evaluate for presence of uterus • **Primary w/o secondary sex characteristics or absent uterus**: Karyotype: androgen insensitivity, mullerian agenesis, 46XY steroid enzyme defects, agonadism; FSH; Testosterone level. • **Primary and secondary w/ normal secondary sex characteristics**: Urine pregnancy; FSH; Testosterone level; prolactin level – if elevated, need MRI of head to evaluate for prolactinoma; Progestin withdrawal test: Positive response indicates the production of estrogen w/o normal cycling such as inPCOS (if evidence of hyperandrogenism or elevated testosterone). Negative test w/ low FSH suggests low estrogen state as is seen in hypothalamic amenorrhea from nutritional deficiency. Negative test w/ high FSH indicates ovarian insufficiency
Management	• **PCOS**: hormonal contraception or cyclical provera 10mg/day x 10d to induce bleeding • **Irreversible hypopituitarism or ovarian insufficiency**: Premarin 0.625-2.5 mg/day or transdermal estrogen and Provera 10mg/day medroxyprogesterone 10-14 days per month. • **Hypothalamic amenorrhea related to nutritional deficiency**: energy re-balance/weight

Welt, C. Etiology, diagnosis, and treatment of secondary amenorrhea. www.uptodate.com. Literature review current through: Feb 2019. | This topic last updated: Mar 21, 2018.

Anorexia Nervosa	
PowerPlans	• Restrictive Eating Power Plan and Admission Orderset • Restrictive eating EBG
Definition	• Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health • Significantly low weight is defined as a weight that is less than minimally normal or, for children and adolescents, less than minimally expected • Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes w/ weight gain, even though at a significantly low weight. • Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.
Clinical Manifestations	Weight loss, abdominal pain, bloating, constipation, cold intolerance, lanugo, fatigue, weakness, delayed puberty
Physical Exam	Low body temp, bradycardia, low blood pressure, orthostatis, lanugo, dry skin and hair, scalp hair thinning, scaphoid abdomen, palpable stool, breast atrophy, hypoestrogenized vaginal mucosa

Eating Disorders continued on next page →

Anorexia Nervosa	
Evaluation	• CBC w/ differential, UA, urine pregnancy, chem 10, LFT, TFT, and EKG • Weight (compared to prior growth charts; calculate IBW based off of 50% BMI for age (unless previously tracking on different percentile))
Inpatient Management	• Goal is to medically stabilize (weight >80% of IBW), VSS (HR >50, no longer orthostatic), electrolytes stable (monitor potassium, phos and mag) • Refeed gradually to target meal plan while monitoring for refeeding syndrome (watch for edema, low phos) • Weight increase of 0.2kg/day, supplement if not gaining weight; 1750-2000kcal diet to be increased by 250 kcal per day until goal calories met, meals per EBG (set time for meal, replace w/ 120% ensure if <75% complete (either PO or via NG)) • Bed rest while orthostatic • No physical activity while inpatient; can earn wheelchair rides, bathroom privileges, etc. • Check electrolytes daily and supplement w/ PhosNaK and/or MVI if abnormal (at Children's the protocol is to start both supplements at admission) • Psychiatry and nutrition consult • Sitter needed if active SI

Bulimia Nervosa	
Definition	• Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following: ▪ Eating, in a discrete period of time (eg, w/i any two-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances ▪ A sense of lack of control over eating during the episode (eg, a feeling that one cannot stop eating or control what or how much one is eating) • Recurrent inappropriate compensatory behavior to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise • The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months • Self-evaluation is unduly influenced by body shape and weight • The disturbance does not occur exclusively during episodes of anorexia nervosa.
Clinical Manifestations	See anorexia nervosa, plus esophagitis and cavities
Physical Exam	See anorexia nervosa, plus calluses on fingers, cavities, and tooth decay
Evaluation	See anorexia nervosa
Inpatient Management	See anorexia nervosa, plus purging precautions (no bathroom privileges; must use bedside commode, room searches)

Acute Refusal of Food Intake Disorder (ARFID)	
PowerPlans	ARFID protocol and PowerPlan
Definition	• Persistent failure to meet appropriate nutritional and/or energy needs associated w/ one (or more) of the following: ▪ Significant weight loss ▪ Significant nutritional deficiency ▪ Dependence on enteral feeding or oral nutritional supplements ▪ Marked interference w/ psychosocial functioning • Disturbance not better explained by lack of available food • **No evidence of a disturbance in body image**
Pathophysiology	• Patients w/ autism, ADHD, and intellectual disabilities are more likely to develop ARFID • Often have co-occurring anxiety disorder; high risk for other psychiatric disorders
Symptoms	See anorexia nervosa plus fear of choking or vomiting, limited range of preferred foods becomes narrower over time, will only eat certain textures of food
Evaluation	See anorexia nervosa
Inpatient Management	• ARFID protocol • Often requires enteral nutrition (many patients will go home on enteral feeds)

Additional Resources: Society for Adolescent Health & Medicine Resident Curriculum