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1 CME CREDIT HOUR

Diagnosis and Care of Eating Disorders in Primary Care Patients

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Clinicians generally agree that the unrelenting pursuit of thinness manifests an underlying psychological struggle to maintain a sense of personal autonomy and self-control.

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Learning Objectives

As a result of this activity, the learner will be able to

1. Identify the associated medical conditions of eating disorders to recognize the underlying diagnosis of an eating disorder
2. Create strategies and identify screening methods to obtain information needed to identify when an eating disorder is present
3. Create treatment strategies based on the severity of the illness

Introduction to Eating Disorders

Eating disorders are real, complex, and devastating conditions that can have serious consequences for health, productivity, and relationships. In general, eating disorders are the result of deliberate weight-control practices used by patients either to lose weight or to minimize weight gain. Diagnostic criteria for eating disorders (anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified) have been established by the American Psychiatric Association in the current version of the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV[1]; see Tables 1-3). In addition, research criteria have been established for binge-eating disorder for possible inclusion in DSM-V.

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Table 1
DSM-IV-TR Criteria for Anorexia Nervosa[1]

- Refusal to maintain body weight at or above a minimally normal weight for age and height: weight loss leading to maintenance of body weight less than 85% of that expected or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected
- Intense fear of gaining weight or becoming fat, even though underweight
- Disturbance in the way one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight
- Amenorrhea (at least 3 consecutive cycles) in postmenarchial girls and women. Amenorrhea is defined as periods occurring only following hormone (eg, estrogen) administration

Type

- Restricting type: during the current episode of anorexia nervosa, the person has not regularly engaged in binge-eating or purging behavior (self-induced vomiting or misuse of laxatives, diuretics, or enemas)
- Binge-eating–purging type: during the current episode of anorexia nervosa, the person has regularly engaged in binge-eating or purging behavior (self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Table 2
DSM-IV-TR Criteria for Bulimia Nervosa[1]

- Recurrent episodes of binge eating characterized by both
  1. Eating, in a discrete period of time (eg, within any 2-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
  2. A sense of lack of control over eating during the episode, defined by a feeling that one cannot stop eating or control what or how much one is eating
- Recurrent inappropriate compensatory behavior to prevent weight gain
  1. Self-induced vomiting
  2. Misuse of laxatives, diuretics, enemas, or other medications
  3. Fasting
  4. Excessive exercise
- The binge eating and inappropriate compensatory behavior both occur, on average, at least twice a week for 3 months
- Self-evaluation is unduly influenced by body shape and weight
- The disturbance does not occur exclusively during episodes of anorexia nervosa

Type

- Purging type: during the current episode of bulimia nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas
- Nonpurging type: during the current episode of bulimia nervosa, the person has used inappropriate compensatory behavior but has not regularly engaged in self-induced vomiting or misused laxatives, diuretics, or enemas

Table 3
DSM-IV-TR Criteria for Eating Disorder Not Otherwise Specified[1]

Eating disorder not otherwise specified includes disorders of eating that do not meet the criteria for any specific eating disorder.

- For female patients, all of the criteria for anorexia nervosa are met except that the patient has regular menses
- All of the criteria for anorexia nervosa are met except that, despite significant weight loss, the patient's current weight is in the normal range
- All of the criteria for bulimia nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur less than twice a week or for less than 3 months
- The patient has normal body weight and regularly uses inappropriate compensatory behavior after eating small amounts of food (eg, self-induced vomiting after consuming 2 cookies)
- Repeatedly chewing and spitting out, but not swallowing, large amounts of food

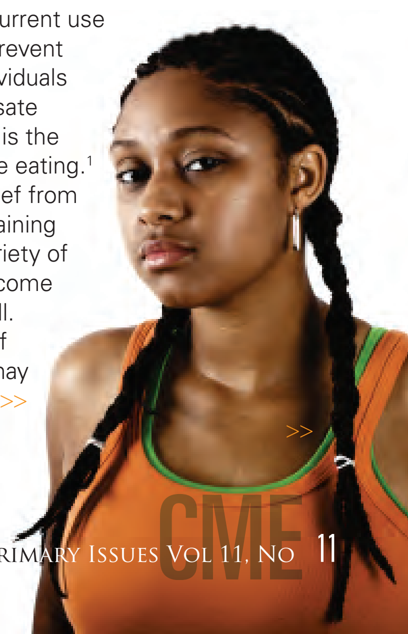
In practice, anorexia is defined as a syndrome whereby caloric intake insufficient to maintain weight is associated with a delusion of being fat and an obsession to be thinner. Neither the delusion nor the obsession diminishes with weight loss. Patients with anorexia believe they are fat, even when emaciated, and may feel driven to lose weight through a variety of means, including dieting and increased energy expenditure and, less often, vomiting and the use of cathartics. A feature that differentiates anorexia from simple dieting is the patient's inability to identify or to be satisfied with a healthy weight goal. An initial weight goal of 110 lb may drop to 105 lb, then to 100 lb, and then to 95 lb until emaciation sets in.[2]

Clinicians generally agree that the unrelenting pursuit of thinness manifests an underlying psychological struggle to maintain a sense of personal autonomy and self-control. On the surface, patients are stubbornly defiant and fiercely independent. They insist they are happy, fully aware of their condition, and completely capable of taking care of themselves. But underneath they are stricken with a paralyzing sense of helplessness and ineffectiveness.

Individuals with bulimia typically are within the normal weight range, although some may be slightly underweight or overweight. The key clinical feature of bulimia is not, as often assumed, vomiting. Binge eating is the essential clinical characteristic of bulimia and is typically triggered by dysphoric mood states, interpersonal stressors, intense hunger following dietary restraint, or feelings related to body weight, body shape, and food.[1] Binge eating may transiently reduce dysphoria, but disparaging self-criticism and depressed mood often follow. The binge eating often continues until the individual is uncomfortably, or even painfully, full.

Because they are aware that bingeing is an abnormal behavior, patients may associate these episodes of overeating with a subsequent desire to eliminate the source of the calories through a variety of purging means. More than 80% of patients with bulimia engage in self-induced vomiting or laxative or diuretic abuse for this purpose.[2] Patients with bulimia are more likely than patients with anorexia to be impulsive, not only in eating behavior, but also in their use of drugs and alcohol, self-mutilation or self-harm, sexual promiscuity, lying, stealing, and other manifestations of personality disturbance.[3] This type of character pathology makes it difficult to establish a therapeutic relationship with patients and requires consistency and patience by the provider.

Another essential feature of bulimia is the recurrent use of inappropriate compensatory behaviors to prevent weight gain following binge eating. Many individuals with bulimia use several methods to compensate for binge eating; the most common (80-90%) is the induction of vomiting after an episode of binge eating.[1] The immediate effects of vomiting include relief from physical discomfort and reduction of fear of gaining weight. Individuals with bulimia may use a variety of methods to induce vomiting and generally become adept at inducing vomiting and vomiting at will. Other purging behaviors include the misuse of laxatives and diuretics and some individuals may consume syrup of ipecac to induce vomiting. >>



Binge-eating disorder was introduced in 1994 as a provisional eating disorder diagnosis. The core symptom is recurrent binge eating in the absence of inappropriate compensatory mechanisms, such as vomiting. The diagnostic criteria are currently undergoing validation and review as a distinct diagnosis for inclusion in the DSM-V.[4]

Epidemiology

Eating disorders have been reported in up to 4% of adolescents and young adults. The most common age at onset for anorexia nervosa is the mid-teens; in 5% of the patients the onset of the disorder is in the early 20s.[5] The onset of bulimia is usually in adolescence but may be as late as early adulthood. For females aged 15 through 24 years with anorexia, the mortality rate associated with the illness is 12 times higher than the death rate of ***all*** other causes of death.[5] Lifetime prevalence estimates for anorexia is 0.6%, bulimia is 1.0%, and binge-eating 2.8%, with the risk up to 3-fold higher in women than men.[6]

Eating disorders are not distributed uniformly in the population. Of patients that present with classic signs and symptoms of anorexia or bulimia, greater than 90% are female, greater than 95% are white, and greater than 75% are adolescents when they first develop the eating disorder.[7] Most patients are from middle-class to upper-middle-class socioeconomic status families, but patients can be of any sex, race, age, or social class.[7]

Prevalence rates that include the entire population as the denominator grossly underestimate the prevalence of eating disorders in target groups. Age-specific and sex-specific estimates suggest that about 0.5% to 1% of teenage girls develop anorexia, whereas 5% of older adolescent and young adult women develop bulimia.[2] With respect to middle-aged patients, case reports and clinical consensus now suggest that as the baby boomer generation grows older, body image concerns and eating disorders are becoming more prevalent. One case report from an established residential program noted a shift in the age of its patients and reported treating more middle-aged women than a decade ago.[8]

At the other end of the age spectrum, incidence rates for anorexia among women older than age 50 are low, accounting for less than 1% of patients with newly diagnosed anorexia.[9] Anorexia nervosa has been reported in elderly patients in their 70s and 80s; these are generally women in whom the illness has been present for 40 or 50 years. In many cases, the illness started after age 25. In some case reports, adverse life events such as deaths, a marital crisis, or a divorce have been found to trigger these older-onset syndromes. The fear of aging has also been described as a major precipitating factor in some patients.[10] Regardless of the age at onset, concerns about comorbid medical conditions, especially osteopenia and osteoporosis, take on greater significance with older patients.

The literature on males with eating disorders is challenging and is characterized predominately by case reports and relatively small descriptive case series. There have been few prospective studies, and even fewer studies have assessed treatment or outcomes. Finally, because there is no established conceptual model for the development of eating disorders in males, there have been few testable hypotheses. While it is generally believed that men make up approximately 10% of all patients with eating disorders,[11] this number is likely underrepresented in actual healthcare practice. This is due both to the fact that healthcare providers are less likely to consider eating disorders in males and that men are less likely to voluntarily disclose the information.[12]

Eating disorders are more common in industrialized societies where there is an abundance of food, and being thin, especially for women, is considered attractive.[7] Eating disorders are most common in the United States, Canada, Europe, Australia, New Zealand, and South Africa. However, rates are increasing in Asia, especially in Japan and China, where women are exposed to cultural change and modernization. In the United States, eating disorders are common in young Latin American, Native American, and African American women, but the rates are still lower than in white women. African American women are more likely to develop bulimia and more likely to purge.[7]

Many efforts have been made to understand how eating disorders develop. Temperamental factors, eating dysregulation, attachment issues, deficient self-regulation, childhood abuse (in patients with bulimia), and sociocultural ideals of health and beauty may all contribute to the risk and pathogenesis.[13] High rates of childhood anxiety disorders often precede eating disorders—anxiety disorder in both anorexia and bulimia, obsessive compulsive disorder (OCD) in anorexia, and social phobia in bulimia. This is often clinically relevant when treating children and adolescents.[14,15]

Well-documented clinical histories of patients with anorexia nervosa followed over a span of 30 years from infancy to early midlife suggest several potential risk factors related to early perceived body image distortions, body regulatory problems, and academic and interpersonal problems.[16] Because the risk of eating disorders is transmitted in families, it is important to offer particular help to patients with eating disorders who are themselves mothers. Attention should be paid to their mothering skills and attachment styles and to their offspring to minimize the risk of eating disorders being transmitted.[17]

In some patients, increasingly compulsive exercise may precipitate anorexia and bulimia nervosa.[18] Female athletes in certain physical activities such as ballet and gymnastics are especially vulnerable.[19] Unlike habitual runners, ballet dancers exhibit eating pathology similar to that of individuals with eating disorders.[20] Male bodybuilders are also at risk, although the symptom picture often differs because bodybuilders may emphasize a wish to "get bigger" and may also abuse anabolic steroids to reach their goal.[21]

Assessing for Eating Disorders and Related Complications

Screening questions about eating patterns and satisfaction with body appearance should be asked of all preteens and adolescents as part of routine pediatric healthcare. In addition, all patients in high-risk categories for eating disorders should be screened during >>

routine office visits.[22] The medical history is the most powerful tool for initially diagnosing eating disorders, because physical examination and laboratory findings are frequently normal early in the course of eating disorders. Initial evaluation of the patient with a suspected eating disorder includes establishment of the diagnosis, determination of severity (including evaluation of medical and nutritional status), and performance of an initial psychosocial evaluation. Each of these initial steps can be performed in the adult or pediatric primary care setting. Primary and secondary prevention is accomplished by screening for eating disorders as part of routine annual healthcare, providing ongoing monitoring of weight and height, and paying careful attention to the signs and symptoms of an incipient eating disorder (Table 4).[23]

Patients with eating disorders often have physical symptoms that include significant weight loss or gain, cold intolerance, blue hands and feet, fatigue, headache, dizziness, fainting, or amenorrhea caused by starvation, induced emesis, excessive exercise, or diet pill and laxative abuse. Although these habits and physical symptoms are often first evaluated by a primary care clinician, many clinicians in this role lack the knowledge to diagnose or initiate treatment effectively, others are unable to invest the time and energy required to manage these patients, and some lack treatment resources in their community.[2] Because most patients do not typically present with the chief complaint of an eating disorder, a clinician must be attentive to the possible diagnosis, especially when caring for young women. Screening for eating disorders should be considered in the routine care of at-risk patients.[24] Recognition of clinical signs and symptoms is important not only to arrive at the correct diagnosis but also to assess risk and help explain the illness to the patient.[25]

Table 4

Possible Findings on Physical Examination in Patients With Eating Disorders[23]

General appearance: emaciated, sunken cheeks, sallow skin, flat affect. May be normal weight or overweight with bulimia nervosa/eating disorder not otherwise specified	
Vital signs: bradycardia, hypotension, hypothermia, orthostasis	
Skin: dry skin, lanugo (growth of fine, white hair), loss of shine or brittle hair, nail changes, hypercarotenemia, subconjunctival hemorrhage as the result of vomiting	
HEENT: sunken eyes, dry lips, gingivitis, loss of tooth enamel on lingual and occlusal surfaces, caries, parotitis	
Breasts: atrophy	
Cardiac: mitral valve prolapse, click and/or murmur, arrhythmias	
Abdomen: scaphoid, palpable loops of stool, tender epigastrium if vomiting	
Extremities: edema, calluses on dorsum of hand (Russell sign), acrocyanosis, Raynaud's phenomenon	
Neuro: Trousseau's sign, diminished deep tendon reflexes	

The initial assessment of a patient suspected to have an eating disorder should focus on health and exploration of underlying factors.[26] The denial that patients so frequently project when threatened with direct confrontation about an eating disorder is reduced when they are questioned about their nutritional habits and physical symptoms. The first step in assessment is to determine if weight loss is intentional or desired and ensure that the symptoms are not related to a medical disease, such as inflammatory bowel disease, hyperthyroidism, cancer, or an occult infection. Furthermore, some patients recover from a medical condition, such as infectious mononucleosis, but resist regaining weight because of positive reinforcement that they have received for the weight loss associated with the illness. Pubertal adolescents may fail to increase caloric intake during their growth spurt or may increase their caloric expenditure playing sports and lose weight unintentionally. Finally, many healthy adolescents lose weight while attempting to "get in shape" or "look better."

The second step in the assessment of a suspected eating disorder is to determine if weight-control habits are excessive and unhealthy. This requires determination of (1) amount and type of food and drink ingested, (2) type, duration, and intensity of exercise, and (3) vomiting, laxative, or diuretic use.

Questions to Ask When an Eating Disorder Is Suspected

- What is your ideal weight?
- What weight would you like to be?
- What was your heaviest weight? Achieved when?
- Why is it so important to lose weight?
- What are the best features of your body?
- When did you have your first period? Last period?
- How regular are your periods?
- Do you ever eat in binges? How often? Why?
- What do you eat on a typical day?
- What have you eaten during the past 24 hours?
- What exercise do you do? Why do you exercise?
- When do you exercise? (This can help identify whether exercise compensates for bingeing.)
- Do you feel "driven" to exercise (eg, do you continue to exercise while injured or underweight, or while social and work priorities suffer)?
- Do you use smoking (or other drugs) to suppress your appetite or as a substitute for eating?
- Do you vomit after eating?
- Do you use laxatives?[27]

A positive response to any of these questions warrants further evaluation. There are several formal, validated questionnaires that can be used to assess eating behavior symptoms in patients who may be experiencing health problems associated with dysfunctional eating habits.[28]

SCOFF Questionnaire

Eating Attitudes Test

The third step in assessment for an eating disorder is to determine if the pursuit of thinness is an overriding concern for patients who restrict their intake or if binge eating and purging are a driving force in the individual's daily activities. It is useful to have the patient identify a desired goal weight, especially if still within a normal weight range. Adolescents with anorexia either have an unrealistically low goal weight or cannot identify a specific weight at which they would be satisfied; adolescents with bulimia are more concerned about avoiding obesity. If the evidence indicates that the adolescent has dysfunctional >>

weight-control habits, the fourth step is to determine an immediate plan of action based on the adolescent's physical health status. For patients who have lost a significant amount of weight and are exhibiting signs of starvation and hypometabolism, or who have intractable vomiting and electrolyte imbalance, hospitalization should be considered. However, with early recognition, hospitalization usually can be avoided, as long as appropriate outpatient treatment is available.[26] It is also important to aggressively treat patients who have traits of eating disorders but who do not meet the full criteria for anorexia or bulimia.

Physical Health Issues

Early detection and management of an eating disorder may prevent the physical and psychological consequences of malnutrition that allow for progression to a later stage,[16] as patients with eating disorders are at risk of a wide range of physical complications (Tables 5 and 6). In anorexia, almost any physiologic system may be affected, whereas the complications in patients with bulimia are more restricted. Although some complications are relatively benign, others are potentially life threatening, with cardiac and biochemical abnormalities presenting a particular danger. Some complications are secondary to malnutrition, while others are the result of purging.[29]

All organ systems are impaired by the effects of the malnutrition that occur in anorexia. A classic study by Keys et al assessed young adult males who were "voluntarily" starved to determine the effects of starvation.[30] The young men all exhibited findings similar to those of anorexia, which reinforces that the clinical presentation of anorexia is related to the physiologic adaptation to low caloric intake. Among patients with eating disorders, the most critically important health problems are amenorrhea, hypothermia, bradycardia, and orthostatic cardiovascular instability. Decreased body weight, amenorrhea, and poor nutrition predispose females to osteoporosis. Hypothermia can be uncomfortable and profound, so temperature should be measured at each visit.

The cardiovascular adaptation to reduced caloric intake includes weakness, fatigue, dizziness, loss of energy, and fainting. These symptoms are often accompanied by bradycardia, with significant orthostatic changes.[31] In addition to bradycardia, cardiac findings may include acrocyanosis and a decrease in overall heart size and stroke volume. In patients who purge frequently, overuse of ipecac can cause cardiomegaly. Change in pulse of more than 30 beats per minute between supine and standing indicates significant compromise and warrants immediate attention. Patients with extreme weight loss, usually for a prolonged period, also can experience ventricular tachyarrhythmias, the most common cause of cardiac-related deaths in people with anorexia,[32] and in severe cases, hospitalization may be needed to stabilize cardiovascular status.[26] Cardiovascular instability also can occur in bulimia, but it is generally due to volume depletion and electrolyte imbalance.

Erosion of the dental enamel (due to stomach acid), abrasion of the knuckles of metacarpophalangeal joints (from rubbing against the maxillary central incisors), and enlargement of the salivary glands are indicators of significant binge eating and vomiting. Monitoring of serum potassium is important when these findings are noted on physical examination.[29] The gastrointestinal system also can be adversely affected with decreased bowel motility, leading to abdominal distension. Gastroesophageal reflux and pancreatitis can cause epigastric pain. If the patient is constipated, stool might be palpable in the left lower quadrant.

Osteoporosis is a significant problem in young women with anorexia and is easily diagnosed by the use of dual-energy X-ray absorptiometry (DXA) scanning. Prevalence rates range from 13% to 51% for osteoporosis and from 35% to 92% for osteopenia.[16] The etiology is complex; estrogen deficiency is a major risk factor, but other factors such as hypercortisolemia, androgen deficiency, and growth hormone resistance may also contribute. Although patients with anorexia are often losing bone mass when they should be optimizing bone growth, there is no good evidence to guide medicinal interventions.

The primary treatment for eating-disorder–related osteoporosis is weight gain. The >>

Table 5

Medical Complications Resulting From Bulima[24]

- Fluid and electrolyte imbalance, hypokalemia, hyponatremia, hypochloremic alkalosis
- Ipecac use: irreversible myocardial damage and a diffuse myositis
- Chronic vomiting: esophagitis, dental erosions, Mallory-Weiss tears, rare esophageal or gastric rupture, rare aspiration pneumonia
- Use of laxatives: depletion of potassium bicarbonate, causing metabolic acidosis; increased blood urea nitrogen concentration; predisposition to renal stones from dehydration; hyperuricemia; hypocalcemia, hypomagnesemia, chronic dehydration. With laxative withdrawal, may see fluid retention of up to 10 lb in 24 hours
- Amenorrhea (can be seen in normal or overweight individuals with bulimia nervosa), menstrual irregularities, osteopenia

Table 6

Medical Complications Resulting From Anorexia[24]

- Cardiovascular: electrocardiographic abnormalities, low voltage, sinus bradycardia (from malnutrition), T wave inversions, ST segment depression (from electrolyte imbalances). Prolonged corrected QT interval is uncommon but may predispose patient to sudden death. Dysrhythmias include supraventricular beats and ventricular tachycardia, with or without exercise. Pericardial effusions can occur in those severely malnourished. All cardiac abnormalities except those secondary to emetine (ipecac) toxicity are completely reversible with weight gain
- Gastrointestinal system: delayed gastric emptying, slowed gastrointestinal motility, constipation, bloating, fullness, hypercholesterolemia (from abnormal lipoprotein metabolism), abnormal liver function test results (probably from fatty infiltration of the liver). All reverssible with weight gain
- Renal: increased blood urea nitrogen concentration (from dehydration, decreased glomerular filtration rate) with increased risk of renal stones, polyuria (from abnormal vasopressin secretion, rare partial diabetes insipidus). Total body sodium and potassium depletion caused by starvation; with refeeding, 25% can develop peripheral edema attributable to increased renal sensitivity to aldosterone and increased insulin secretion (affects renal tubules)
- Hematologic: leukopenia, anemia, iron deficiency, thrombocytopenia
- Endocrine: euthyroid sick syndrome, amenorrhea, osteopenia
- Neurologic: cortical atrophy, seizures

Psychiatric comorbidity is extremely common in patients with eating disorders, and illnesses such as affective disorders, OCD, somatization disorder, and substance abuse must be considered when a patient's symptoms are suggestive of an eating disorder.

effectiveness of calcium and vitamin D supplementation, estrogen therapy, and growth factors (insulin-like growth factor I) has been mixed.[33] Bisphosphonates are currently not recommended because of concerns about effectiveness and long-term safety.[16] Therefore, early detection and weight restoration are of utmost importance until ongoing trials define effective therapies. To evaluate for osteoporosis, DXA is recommended, particularly in patients with amenorrhea for longer than 6 months.[16]

Amenorrhea, the hallmark feature of anorexia in postmenarcheal girls, is caused by hypothalamic dysfunction associated with starvation and weight loss.[34] One study conducted long-term follow-up studies of patients who recovered from anorexia nervosa and found that more than 90% of them were menstruating regularly. Using a standard formula for average body weight (ABW) for height (100 lb for 5 ft of height plus 5 lb for each inch over 5 ft tall), the researchers were able to calculate that the average patient is likely to restart menstruation when she achieves 92% of her ABW. This can be used as a quick answer to the frequently asked question, "How much weight do I need to gain to get my periods back?"[35]

Psychiatric comorbidity is extremely common in patients with eating disorders, and illnesses such as affective disorders, OCD, somatization disorder, and substance abuse must be considered when a patient's symptoms are suggestive of an eating disorder.[36] Major depression is the most common comorbid condition among patients with anorexia, with a lifetime risk as high as 80%.[5] Anxiety disorders, especially social phobia, also are common.[36] The prevalence of OCD is thought to be approximately 30% among patients with eating disorders. Substance abuse prevalence is estimated at 12% to 18% in patients with anorexia and 30% to 70% in patients with bulimia. Patients with bulimia are more likely to have a cluster B diagnosis (dramatic/erratic), whereas patients with anorexia are more likely to have a cluster C diagnosis (avoidant/anxious).[36]

Assessment

The most important measurement in a patient with an eating disorder is the accurate and regular assessment of height and weight. BMI, which compares weight with height and normally increases throughout adolescence, can be a helpful measurement in tracking weight concerns. Scales should be located in a private area, and comments about weight should be minimized and made discreetly. Staff should be aware that some patients with eating disorders, to avoid revealing their true weight, might drink extra fluids, put weights in their pockets, or wear layers of heavy clothing before being weighed.[37]

A baseline general medical and psychiatric assessment should be performed at the time of diagnosis and periodically thereafter, as clinically indicated. A full physical examination should include the following:

- **Measurements:** Height, weight in examination gown only (to prevent having weights in underwear) and after voiding (to measure urine specific gravity and to minimize likelihood of water loading prior to weigh-in), and body temperature
- **Skin:** Cold, blue hands/feet with slow capillary refill indicates hypometabolism and poor peripheral perfusion; edema usually due to capillary fragility rather than hypoproteinemia; decreased skinfold thickness. Orange tint to the skin common because of excessive carotene intake from fruits and vegetables
- **Hair:** Lanugo on face and torso to conserve body heat; parietal alopecia (may occur 1-2 months after weight gain)
- **HEENT:** Salivary enlargement and dental enamel erosion (lingual surfaces of maxillary premolars and molars) can occur with recurrent bingeing/vomiting; dry mucous membranes can occur with marked vomiting or laxative abuse; facial petechiae and/or subconjunctival hemorrhage with forceful vomiting
- **Cardiovascular:** Pulse less than 60 suggests hypometabolism; orthostatic pulse change (supine to standing) greater than 25 BPM suggests autonomic dysregulation and/or volume depletion (positional increase in pulse more sensitive than blood pressure drop). Blood pressure generally low in anorexia. Heart sounds may be distant with reduced cardiac output (which is usually normal when corrected for body surface area). EKG changes generally nonspecific, but QTc interval of greater than 0.45 msec deserves attention
- **Abdomen:** No organomegaly, but may be scaphoid with severe caloric restriction or distended with significant binge eating. Stool may be prominent throughout colon, especially in left lower quadrant in anorexia. Bowel sounds: hyperactive with recent laxative use, underactive with significant weight loss (gastric atony and decreased bowel motility)
- **Genitalia:** Females: unremarkable (minimal estrogen effect with prolonged low weight). Males: unremarkable
- **Rectal:** Usually normal
- **Orthopedic:** Usually unremarkable; skin over vertebrae, sacrum and/or pelvis may show irritation or breakdown with compulsive exercise (sit-ups, etc) due to inadequate subcutaneous tissue. Osteopenia/osteoporosis usually asymptomatic, and is not responsive to sex hormone therapy unless weight is normalized
- **Neurologic:** Comprehensive examination should be normal; with extreme weight loss, deep tendon reflexes can be diminished
- **Mental Status Examination (MSE):** Body image distortion, depression, anxiety (especially with issue of weight) and obsessive/compulsive symptoms often co-exist. With significant weight loss, psychomotor retardation can occur. If other MSE findings occur in patients with bulimia nervosa, consider substance abuse, which often co-exists. Suicidal risk greater in bulimia than anorexia, but safety should be assessed[38]

The patient should also be referred for a dental examination if necessary or indicated by medical history.[39]

Laboratory Studies

Recommended laboratory testing screening investigations for anorexia and bulimia are outlined in Table 7 (next page). Routine laboratory tests obtained during medical evaluation usually include a complete blood count and erythrocyte sedimentation rate, a chemistry panel, and urinalysis. These are usually normal. An electrocardiogram may >>

be indicated if there is significant bradycardia or rhythm disturbance. Findings of thyroid function tests are typically consistent with euthyroid sick syndrome, with low total T3 and T4 levels and normal TSH. An unusual finding is elevated serum cholesterol, with both elevated and normal low-density lipoprotein fractions being reported despite an extremely low fat and low cholesterol intake.[29]

Management

Adequate treatment of eating disorders requires a multidisciplinary team approach. The family clinician can and should be an integral member of that team. Early in the illness, frequent visits to the primary care clinician's office are helpful for surveillance of medical conditions, as well as for nutritional reeducation and reinforcement. The primary care clinician is also indispensable in the role of coordinating the entire team of professionals involved in the patient's care.

Treatment intensity and setting depend on the severity of the illness. Treatment goals include attainment and maintenance of a healthy weight, management of physical complications, management of comorbid psychiatric illness, and prevention of relapse. Eliciting cooperation from the patient, helping to change maladaptive thoughts, and educating the patient about proper health and nutrition also are important.

During the last decade there has been a trend away from prolonged hospital admissions to more flexible inpatient, day patient, or outpatient treatment programs. However, hospitalization may be required for patients with a BMI below 15 with rapid weight loss, uncontrollable vomiting, medical complications (eg, cardiac abnormalities, bradycardia less than 40/minute, fainting, hypotension less than 60 mm Hg systolic), suicidal behavior, lack of response to outpatient treatment in a very underweight patient, and extreme family distress.[16]

Management of serious complications requires close collaboration with appropriate medical specialists. For children and adolescents, the recommended treatment model is the team approach.[40] In this interdisciplinary management approach, general medical clinicians (eg, specialists in internal medicine, pediatrics, adolescent medicine, or nutrition) manage general medical issues, such as nutrition, weight gain, exercise, and eating patterns, whereas the psychiatrist addresses the psychiatric issues.

Good evidence supports the use of interpersonal and cognitive-behavioral therapies (CBT) as well as antidepressants, for treatment of binge-eating disorders and bulimia nervosa. For treatment of binge eating, a systematic review of randomized controlled trials shows moderate evidence of selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants, antiepileptics, and appetite suppressants, resulting in a significant decrease in binge frequency and illness severity when compared with placebo. Treatment dosages in most studies using SSRIs were at or near the high end of the recommended dosage range.[41] The addition of antidepressants to CBT does not appear to add to the effectiveness of CBT in reducing binge-eating episodes.[42]

For patients with bulimia, various classes of antidepressant medications appear to decrease binge eating and vomiting and SSRIs are recommended as first-line agents because of their effectiveness and safety profile.[16,43] At this time, however, fluoxetine (60 mg/day) is the only drug approved by the US Food and Drug Administration for the treatment of bulimia nervosa. Despite its proven effectiveness, bupropion is contraindicated because of the association of its use with seizures in patients who purge.[16] The combination of CBT plus medication has been shown to have added benefit over medication or therapy alone.[44]

Multiple behavioral interventions (eg, individual psychotherapy, CBT, family therapy) are commonly used for the treatment of anorexia nervosa. However, the long-term effectiveness of these therapies remains unclear.[16,45] Antidepressant medications for the treatment of anorexia nervosa have limited effectiveness and should not be the sole treatment modality.[46] Psychotropic medications may be particularly effective as an adjunctive therapy when treating comorbid disorders, such as depression and anxiety.

Prognosis

Although the overall percentage of individuals who fully recover from anorexia nervosa is modest, it is well established that younger patients who receive prompt and appropriate intervention have a much better full recovery rate.[47] Among adolescents with anorexia nervosa, approximately 50% to 70% recover, 20% are improved but continue to have residual symptoms, and 10% to 20% develop chronic anorexia nervosa.[48] Although some patients improve symptomatically over time, a substantial proportion continue to have body image disturbances, disordered eating, and other psychiatric difficulties.[48] Among people with bulimia nervosa, the overall short-term success rate for patients receiving psychosocial treatment or medication has been reported to be 50% to 70%.[49] Relapse >>

Table 7
Recommended Screening for Patients With Eating Disorders[29]

Anorexia	Bulimia
Essential	**Essential**
Full blood count	Full blood count
BUN and electrolytes	BUN and electrolytes
Serum calcium, magnesium, phosphate	Glucose
Serum proteins	Liver function tests
Liver function tests	Vitamin B12, folate levels
Glucose	EKG if electrolytes abnormal
Vitamin B12, folate levels	
EKG	
Additional	
Markers of iron status if anemia	
Creatine kinase	
Serum zinc	
Thyroid function tests*	
Dual-energy X-ray absorptiometry (DXA) scanning	
Echocardiography	

*if thyroid disease is suspected
Adapted from ref 29

rates of 30% to 85% have been reported for successfully treated patients at 6 months to 6 years of follow-up.[50]

Practice Pearls

Eating disorders are associated with substantial morbidity and mortality in both males and females and have become an increasingly important health concern. The role of the primary care clinician is to point out the reality and severity of this chronic illness while diligently monitoring and assessing the patient's physical status. Patients with serious but less severe weight loss should be treated by a multidisciplinary outpatient team that includes medical management together with behavioral and dietary therapy to prevent the inexorable decline and physiologic changes associated with weight loss. Because of the litany of medical complications associated with the disorder, severely emaciated patients are best treated in a specialty inpatient unit for eating disorders.

Most episodes of disturbed eating behavior resolve steadily with treatment. The key interventions are as follows:

Forging a therapeutic alliance. The aim behind most interventions is to help the patient develop a coherent sense of self and a positive self-image. This can be advanced by establishing a working partnership between the clinician and the patient. For younger patients, the therapeutic alliance should include the family.

Discussing concepts of normal eating, dieting, and exercise patterns. Younger people may have inaccurate or inadequate knowledge about the normal range of weight, eating habits, and nutritional needs; they may have false expectations of dieting and exercise; and they may not have thought about the psychological significance of their attitudes to food.

Locating a dietitian who specializes in the management of eating disorders. Patients need individualized instruction about sensible ways to maintain their daily caloric needs, as well as strategies to promote weight stability after episodes of disordered eating.

Instituting a food diary offers insight into dietary patterns and triggers to disordered eating. Food diaries give patients a positive method of observing and controlling their eating behaviors and provide clinicians with clues about eating triggers and amounts consumed.

Encouraging regular and moderate exercise. Patients who have previously engaged in compulsive exercise may need to consider forms of exercise with a different emphasis, such as yoga, t'ai chi, martial arts, or a specialized exercise program. These activities may increase feelings of personal control.

Asking about substance use. The patient's use of appetite suppressants, tobacco, alcohol, and illicit drugs should be identified. Appropriate advice includes accurate information about drug effects and risks, and how to recognize and deal with peer pressure.

Setting realistic short-term goals and recognizing achievements. This will give the encouragement needed to persevere with gradual behavioral change. Target weight is usually calculated on a BMI of 20; for those younger than 16, target weight should be the 25th percentile of the age-weight chart for white girls.

Providing new challenges and outlets for personal expression. These enhance well-being and may also discourage "risky" behaviors. The secret is finding what suits the individual and might include activities such as drama, art classes, or organized sports.

Planning for relapses. Relapse prevention involves predicting situations likely to lead to relapse (eg, exam pressure, relationship breakup, or ongoing family stress) and planning strategies to meet them. Planning should also address the question of how to cope with a relapse if one occurs (ie, a relapse must not become a sign of hopelessness and failure).

Case Study

Amanda Pines is a 17-year-old high school student accompanied to your office by her mother. Mom is concerned because Amanda became a vegetarian the previous year and subsequently began taking all of her meals alone in her bedroom. At that time she was 5'4," 130 lb (BMI 22). She considered herself overweight, and her father, brother and several friends often teased her about being fat. She had taken to wearing loose, heavy clothing in the middle of summer. She was more weepy and irritable and her school grades had dropped.

On exam, her weight is now 105 lb (BMI 17), temp 98.4° F; BP 110/60; heart rate 72. She has a slight orange tinge to her skin. Amanda says she "feels fine," but on further questioning admits that her periods had stopped 6 months previously. She describes a diet rich in fresh fruits and vegetables and minimal amounts of animal or vegetable protein, including dairy products. When asked about life at home, she reports that her parents are "intrusive" and not supportive of her vegetarian diet. She states that her parents do not get along and that she eats in her room because meal times have become "war zones." Amanda spends many hours exercising at the school gym or working at her home computer because "my friends all have boyfriends and don't have time for me."

Routine blood tests show no gross abnormalities.

What are your thoughts on this subject? Post them at

Take Post-test

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E-case Presentation at Alliance Conference

Primary Care Network, TCL Institute, and PharmCon will be presenting, in partnership, the educational session, *Turning the Technology Page: A Multi-faceted Approach to Case Based E-learning* at the 2010 Alliance for Continuing Medical Education (ACME) 35th Annual Conference being held in New Orleans.

The presentation will feature jointly developed E-cases: web-based CME activities that take the learners through "virtual patient" visits and showcases interactive, self-paced decision trees with feedback throughout case-based learning.

The 3 presenters, Erica Keheler, MBA, from TCL Institute, Kevin McCarthy, RPh, PharmCon, and Sandy Bihlmeyer, MEd, Primary Care Network, will present to their CME colleagues on the design and implementation of E-case learning at the Hilton New Orleans Riverside January 27-30, 2010. Over 300 abstracts were submitted for presentation, this session was one of less than 50% that were chosen.

To access E-case learning activities for CME credit, go to www.tclinstitute.com or www.primarycarenet.org.

Diagnosis and Care of Eating Disorders in Primary Care Patients

POST-TEST

1. Based on Amanda's clinical presentation, she likely has
   A. Binge-eating disorder
   B. Anorexia nervosa, restricting type
   C. Anorexia nervosa, binge-eating purging type
   D. Bulimia

2. What questions should you ask next to confirm your diagnosis?
   A. What is your ideal weight?
   B. Why is it important to lose weight?
   C. Do you use laxatives?
   D. What was your heaviest weight?
   E. None of the above
   F. All of the above

3. The most important assessment in a patient with eating disorder is
   A. Potassium
   B. Glucose
   C. Height and weight
   D. DXA scanning

Amanda was referred to a local dietitian with a specialty in vegetarian meal planning. After consulting with you to learn more of her medical history, the dietitian planned a program for Amanda that included foods rich in calcium and vegetable proteins, as well as a food diary, weekly phone follow-up and monthly visits (including a weigh-in). Amanda was encouraged to add in 1 new food item per week and to start a healthy vegetarian food blog for teenagers.

The dietitian calls you 8 weeks later to inform you that Amanda has missed her past 2 appointments; you arrange with Mrs. Pines to bring Amanda in for a visit.

PE: Height 5'4", weight 96 lb (BMI 16.5), BP 90/60; HR 59. Looks gaunt. HEENT: Teeth and gums appear WNL. Extremities: Feet and hands are cold; no knuckle abrasions. Cardiovascular: Feels "dizzy" when rising from sitting to standing.

4. In patients with eating disorders, which of the following may indicate the need for hospitalization?
   A. BMI <15
   B. Comorbid anxiety disorder
   C. Hypertension
   D. Amenorrhea

5. Cardiovascular adaptation to reduced caloric intake includes
   A. Tachycardia
   B. Bradycardia
   C. Mitral valve prolapse
   D. Atrial fibrillation

6. What should you do next?
   A. Involve the family
   B. Refer to mental health
   C. Hospitalize
   D. Call child protective services
   E. A and B
   F. B and C

7. Which of the following tests are not indicated at this time?
   A. CBC
   B. EKG
   C. Liver function tests
   D. Brain scan

8. Which of the following is the most common comorbid condition among people with anorexia?
   A. Obsessive compulsive disorder
   B. Anxiety disorders
   C. Substance abuse
   D. Major depression

You invite the rest of the family for education and reassurance, including some recommendations for reading material. The mother said that she herself had experienced short periods of restricted eating (when stressed and during times of change) starting as a teenager. She then expressed grief for an older daughter who had died in a car accident 3 years previously. Later, her husband aired his feelings about this loss, stating that he had not felt able to grieve openly for fear of distressing his wife. Discussion with the parents also focused on relieving the anxiety around mealtime and leaving the responsibility for eating with Amanda.

Amanda also benefited from 12 sessions of cognitive-behavioral therapy with a clinical psychologist, aimed at changing her dysfunctional ideas about food, eating, and body shape. She also returned to the dietitian. After 6 months the dietitian was satisfied with the change in types and quantity of food consumed and the psychologist was pleased with her progress. Amanda was eating with her family; her teachers reported that she was concentrating better and that she seemed happier. She continued to keep a food blog and to reach out to other teenagers. Over the 6 months, she regained 20 lb (BMI 21) and her period has resumed. She is scheduled for quarterly visits with the dietitian and semiannual appointments with you.

9. The recovery rate from eating disorders is estimated to be
   A. Up to 35%
   B. Up to 50%
   C. Up to 70%
   D. There is no recovery from eating disorders

10. Over the long-term, you can best help Amanda manage her eating behaviors by
    A. Forging a therapeutic alliance
    B. Threatening her with hospitalization
    C. Discouraging exercise
    D. Setting long-term goals