A look at eating

Knowing the medical consequences of anorexia nervosa and bulimia nervosa will help you identify patients in trouble.

By James A. Ahacic, MS, RN

Food is vital—not only for nutrition and survival, but also socialization. Healthy individuals have adaptive eating responses and are able to maintain appropriate calorie intake, have balanced eating patterns, and maintain a body weight appropriate for their height. However, for some individuals just the thought of eating, especially in front of others, is a source of worry and anxiety.

Have you ever cared for a young female patient who has a fear of gaining weight although she should weigh at least 20 lb (9.07 kg) more? Or have you ever questioned why a young male patient complains about an upset stomach and the inability to "keep food down"? (See *Eating disorders in male patients*.) These individuals may have maladaptive eating regulation responses.

Illnesses associated with maladaptive eating regulation responses include the eating disorders of anorexia nervosa and bulimia nervosa. The following head-to-toe assessment guide will aid you in identifying patients with a potential eating disorder and initiating appropriate nursing interventions.

Anorexia nervosa

Anorexia nervosa, a form of starvation, results from a fear of gaining weight rather than a true loss of appetite. Symptoms of anorexia nervosa include a gross distortion of body image, preoccupation with food, and a refusal to eat.

Diagnostic criteria

The *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (*DSM-V*) lists the diagnostic criteria used by psychiatrists when diagnosing a patient with an eating disorder. The *DSM-V* criteria for anorexia nervosa include:

- 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 weight that's less than minimally normal or less than what's minimally expected for children and adolescents.)
- intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain even though one is 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.

Anorexia nervosa is also specified as either a restricting subtype or a binge-eating/purging subtype.

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The *DSM-V* criteria for the restricting subtype include: During the last 3 months, the individual hasn't engaged in recurrent episodes of binge-eating or purging behavior (such as self-induced vomiting or the misuse of laxatives, diuretics, or enemas) and his or her weight loss is accomplished primarily through dieting, fasting, and/or excessive exercise.

The binge-eating/purging subtype criteria include: During the last 3 months, the individual has engaged in recurrent episodes of binge-eating or purging behavior (such as self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

The difference between the binge-eating/purging anorexia nervosa subtype and bulimia nervosa is that in bulimia nervosa, the binge-eating and inappropriate compensatory behaviors occur, on average, at least once a week for 3 months.

Head-to-toe assessment

Obtain the patient's initial vital signs and height and weight on admission. These results may be normal, but usually abnormalities exist.

The temperature for a patient with anorexia nervosa can average between 96° F (35.5° C) and 97° F (36.1° C). Bradycardia (pulse less than 60 beats/minute) commonly occurs in these patients. The respiration rate may decrease to about 10 to 12 breaths/minute. Hypotension and orthostatic hypotension can also occur in patients with anorexia nervosa. These abnormal vital signs relate to the body's slowing metabolism—a way of conserving energy in light of inadequate food and calorie consumption.

After obtaining the initial vital signs, obtain a height and weight. Patients with anorexia nervosa often weigh less than 85% of their ideal body weight (see *Determining ideal body weight*).

Starting with the head, note the hair's condition and presence of hair loss. Common hair condition findings include dry and brittle hair, often with split ends. Hair loss becomes more common the longer the patient maintains a poor nutritional state.

Next, inspect facial features. Is there fine hair present not only over the patient's face, but also over the rest of his or her body? This fine hair called lanugo develops as the patient loses the subcutaneous fat layer and, therefore, the ability to insulate and maintain the body's temperature. Do the patient's eyes appear sunken? Are his or her cheekbones visible? Loss of facial muscles and the subcutaneous fat layer can cause a patient with anorexia nervosa to have a skeletal facial appearance.

Does the patient complain about sensitivity to noises or lights? The central nervous system won't function without the proper nutritional (glucose) and electrolyte levels. Hypersensitivity to noise and light, as well as the inability to focus and concentrate, commonly affect these patients.

Other areas of the head assessment include assessing the parotid glands and mouth. Parotid gland enlargement occurs if the patient purges frequently. The mouth,

Eating disorders in male patients

Usually the discussion of eating disorders centers on female patients; however, male patients may also develop eating disorders, accounting for roughly 10% of anorexia nervosa and bulimia nervosa cases. Some studies report that up to 25% of anorexia and bulimia cases are men.

Men are statically more likely to develop an eating disorder between the ages of 16 and 24, although men of any age can be affected. Men may try to obtain a masculine physique by focusing their weight loss to reduce body fat and increase muscle mass through excessive exercise, which is a way of compensating for any dietary intake.

Risk factors for men vary, but may include being premorbidly overweight, especially if they've been bullied as a result; participating in sports that require a specific body type, such as marathon runners, jockeys, and race car drivers; being in a profession where appearance is important, such as modeling; and having difficulties surrounding gender identity and sexuality.

There's a perceived stigma attached to men who have an eating disorder and this affects their willingness to seek help. The perception that eating disorders are a "female problem" may lead to men not actively seeking treatment. Because of this misperception, identifying male patients with eating disorders often falls to the primary care provider.

as well as other mucous membrane areas of the body, may become dry due to dehydration. Common signs of dehydration include cracked lips and furrows in the tongue. Dehydration can also cause swallowing difficulties.

After assessing the patient's head, assess his or her neck. The neck assessment should include inspecting and palpating the thyroid gland and noting the presence of any glandular enlargements. Thyroid function tests should also be performed. A triiodothyronine deficiency is often seen in patients with anorexia nervosa, which can lead to bradycardia, sluggish reflexes, dry skin, cold intolerance, and various hair abnormalities.

Next, begin the chest and cardiovascular system assessment with a visual inspection. Can you visualize each rib? Does the female patient have breast atrophy? Starvation will lead to a skeletal appearance, often with the rib cage appearing to protrude out of the chest. Does an ECG reveal abnormalities, such as arrhythmias and bradycardia? Deficient electrolytes, especially potassium, can lead to improper contraction of the heart muscle.

After assessing the cardiovascular system, begin the respiratory assessment. Assess the quality of respirations for adventitious breath sounds. Respiratory infections commonly occur in these patients due to a depleted immune system and malnutrition. Aspiration pneumonia can also occur if the patient purges.

The abdominal and gastrointestinal (GI) assessment comes next, including listening for the presence of bowel sounds and assessing for abdominal pain and cramping. The patient with anorexia nervosa will often complain of ongoing stomach pain. Although he or she may deny feeling hungry, ongoing stomach pain may be hunger pangs.

Constipation is often an issue for patients with anorexia nervosa either because of dehydration or minimal food ingestion. Intestinal peristalsis slows when minimal food digestion occurs. An inadequate amount of food consumed will lead to little waste production, which often results in laxative use. If the patient with anorexia nervosa admits to laxative usage, then a more complete upper and lower GI assessment should occur with a focus on whether an ulceration or perforation of the intestines has occurred. Remember that the patient with anorexia nervosa desires to keep consumed substances to a minimum; therefore, he or she will strain when defecating in an effort to remove all consumed substances. Straining may lead to the exacerbation of hemorrhoids, rectal fissures, and blood in the stool.

Anorexia also affects the urinary system. Minimal fluid intake will lead to dehydration. Urine becomes more concentrated as dehydration continues. This can then lead to the development of a urinary tract infection. Flank pain may indicate the presence of renal calculi, another common adverse reaction of dehydration and decreased fluid consumption. Renal failure may begin if the patient withholds fluids for a long period of time.

Gynecologic problems start to occur once a female patient reaches about 85% of her ideal body weight. The most common

Determining ideal body weight

Assessing a patient with an eating disorder includes determining his or her ideal body weight and weight range. The ideal weight range accounts for the individual's frame size: small, medium, or large.

A simple formula determines the ideal weight for an adult female patient. Assign 100 lb (45 kg) for the individual's first 5 ft in height and then add 5 lb (2.27 kg) for each inch above 5 ft. Calculate the ideal weight range by adding and subtracting 10 lb (4.5 kg) to the ideal weight. For example, an adult female patient who's 5'4" tall has an ideal weight of 120 lb (54 kg) and an ideal weight range of 110 (50 kg) to 130 lb (59 kg). A 5'4" adult female patient weighing 85 lb (38.5 kg) is at 71% of her ideal body weight.

A similar principle applies for an adult male patient. Assign 106 lb (48 kg) for the first 5 ft in height and add 6 lb (2.7 kg) for each inch above 5 ft. Calculate the ideal weight range by adding and subtracting 10 lb (4.5 kg) to the ideal weight. For example, an adult male patient who's 5'9" tall has an ideal weight of 160 lb (72.5 kg) and an ideal weight range of 150 (68) to 170 lb (77 kg). A 5'9" adult male patient weighing 135 lb (61.2 kg) is at 84% of his ideal body weight.

gynecologic consequences include amenorrhea, infertility, and menstrual irregularity. A decreased libido in both male and female patient also occurs.

The musculoskeletal assessment involves assessing and testing for osteoporosis and bone density. A calcium deficiency commonly occurs as a result of little or no dairy products in the diet. In severe anorexia nervosa, osteoporosis can begin to develop in patients as young as age 25. Severe anorexia nervosa may also cause a loss of muscle mass, which will lead to weakness. Muscle injury, especially to the legs or knees, develops if the patient excessively exercises. Muscle weakness and deterioration may necessitate the need to physically support the patient, even when he or she uses a wheelchair.

Finally, assess for edema when inspecting the lower legs and feet. As these patients begin to consume more food and calories, they often begin to retain fluids. This fluid increase usually begins as pedal edema but will eventually lead to congestive heart failure if not monitored and corrected.

Lab tests

Including lab tests in the assessment of the patient with anorexia nervosa is vital because they help determine his or her nutritional and hydration status. Many hematologic abnormalities may appear in the patient's lab test profile. The usual problems include anemia, leukopenia, and thrombocytopenia.

The following lab tests should be drawn on admission and then daily or weekly thereafter:

- potassium—usually decreased due to poor dietary intake and potential laxative or diuretic use and induced vomiting
- sodium—may be elevated due to dehydration and starvation
- chloride—may be elevated due to dehydration and potential anemia
- magnesium—may be decreased due to malnutrition
- calcium—may be decreased due to poor dietary intake and vitamin D deficiency
- phosphorus—usually decreased due to inadequate phosphorus intake, vitamin D deficiency, and malnutrition
- glucose—decreased due to starvation/malnutrition
- albumin—usually decreased due to malnutrition but can be increased in dehydration
- triglyceride—decreased due to malnutrition
- liver function tests—elevated liver enzymes may reflect liver damage or inflammation due to malnutrition
- thyroid function tests—thyroid hormone levels are decreased due to iodine insufficiency related to malnutrition
- complete blood cell count—decreased due to anemia related to malnutrition
- prothrombin time and partial thromboplastin time—may be elevated due to vitamin K deficiency related to malnutrition.

The reversibility of medical consequences depends on nutrition returning to a normal level and having no permanent organ damage present.

Medical management

Medical management focuses on weight restoration, nutritional rehabilitation, rehydration, and correction of electrolyte imbalances. Patients should receive

consider this

Anorexia nervosa

Jane, an 18-year-old freshman college student away from home for the first time in her life, feels overwhelmed with her new responsibilities. Her parents keep encouraging her to do better by telling her to "strive for the dean's list," yet her grades have continually fallen short of that goal. Over the past few weeks, she has fainted four times and experienced numerous episodes of dizziness. Although she goes to the dorm cafeteria, she'll only eat about a cup of salad each day. Jane is 5'5" tall. Her current weight of 97 lb (44 kg) has dropped from the 125 lb (57 kg) she weighed at the beginning of the school year, putting her at 78% of her ideal body weight. Jane's psychology instructor witnessed her last fainting episode and became concerned. He arranged for her transportation to the university health clinic. The triage nurse obtained the following baseline admission vital signs: temperature, 96.5° F (35.5° C); pulse, 52; respirations, 12; and BP, 82/50.

nutritionally balanced meals and snacks that gradually increase caloric intake. Severely malnourished patients may require total parenteral nutrition or tube feedings to receive adequate nutritional intake.

Once the individual is physically and nutritionally stable, a treatment plan is tailored to meet his or her needs. The treatment plan includes nutritional counseling, medical care and monitoring, psychotherapy, and medications. Nutritional counseling will assist with meal planning and weight maintenance. Medical care needs to be ongoing to help maintain the individuals' physical well-being. The most common types of psychotherapy include individual, group, and family-based therapy. Cognitive behavioral therapy and compassion-focused therapy may also be used to help monitor moods; develop problem-solving skills; and address shame, self-criticism, and self-directed hostility. Medications, such as antidepressants and antianxiety drugs, can be helpful to control the mood and anxiety symptoms that often occur with anorexia nervosa.

Bulimia nervosa

In general, bulimia nervosa involves episodic, uncontrolled, and compulsive rapid ingestion of large quantities of food over a short period of time (binging). Following this, to rid the body of the excessive calories, the individual may engage in purging behaviors (self-induced vomiting or the misuse of laxatives, diuretics, or enemas) or other inappropriate compensatory behaviors, such as fasting or excessive exercise.

Diagnostic criteria

The *DSM-V* criteria for bulimia nervosa include:

- recurrent episodes of binge-eating (An episode of binge-eating is characterized by both of the following: 1) eating in a discrete period of time, such as within any 2-hour period, an amount of food that's definitely larger than what most individuals would eat in a similar period of time under similar circumstances and 2) a sense of lack of control over eating during the episode, such as a feeling that one can't stop eating or control what or how much one is eating.)
- recurrent inappropriate compensatory behaviors to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise
- binge-eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months
- self-evaluation is unduly influenced by body shape and weight
- the disturbance doesn't occur exclusively during episodes of anorexia nervosa.

Head-to-toe assessment

Obtain the patient's baseline vital signs and determine his or her ideal body weight range. Patients at or below 85% of their ideal body weight may also have some of the same medical consequences found in patients with anorexia nervosa. Many patients with bulimia nervosa maintain an ideal body weight range and look healthy. Therefore, medical problems may not be immediately apparent.

If the patient states that he or she is bulimic, ask about the method of binging and purging and how often it occurs. Patients can purge by forcing themselves to vomit by gagging themselves with an object or finger. They can also purge by using laxatives, diuretics, or enemas, or they can exercise excessively or restrict food. Having this information will help guide your assessment.

Utilize the same head-to-toe assessment approach as for patients with anorexia nervosa. The patient's head and hair will

on the web

Binge Eating Disorder Association:
www.bedaonline.com

National Association of Anorexia Nervosa and Associated Disorders:
www.anad.org

National Eating Disorders Association:
www.nationaleatingdisorders.org

National Institute of Mental Health:
www.nimh.nih.gov/health/topics/eating-disorders/index.shtml

Individuals with anorexia nervosa and bulimia nervosa may require admission to an inpatient hospital or clinic for stabilization and treatment.

probably look fairly normal, with no significant hair loss or poor hair condition.

Assess the hydration of the mouth and dental condition next. Dehydration can develop, especially with excessive purging or laxative abuse. Assess for cracked lips and dry mucous membranes. Dental carries and tooth enamel erosion develop because of the frequent exposure to gastric acid when purging. Also assess for cuts or bruising to the interior of the mouth, resulting from using objects (such as fingers, toothbrushes, spoons, and straws) to force the gag reflex. Also assess for the presence of a gag reflex. Many patients with bulimia nervosa lose this reflex because of frequent purging. Therefore, swallowing a toothbrush or spoon isn't uncommon and will necessitate surgical removal. Excessive purging may also cause the parotid glands to enlarge or hypertrophy. Purging causes the body's protective mechanisms to increase production of mucus and saliva, which are produced by the parotid glands. Over time, hypertrophy may lead to chronic inflammation and parotitis, necessitating the need for surgical removal of the parotid glands.

Assessment of the throat follows and includes asking if the patient has had blood in his or her emesis. Esophageal perforations and lacerations (Mallory-Weiss syndrome), esophagitis, and esophageal varicosities are common consequences of frequent purging. These patients may only seek help after they've experienced the presence of blood when purging. Esophageal varicosity rupture may or may not accompany purging; if an esophageal varicosity ruptures, the patient may bleed to death if untreated.

Next, assess the cardiovascular system by initially assessing for chest pain, which can be either muscular in nature due to the force of purging or from cardiac arrhythmias. Potassium, sodium, and chloride deficiencies are commonly seen in these patients because diuretic and laxative abuse, as well as purging, deplete the electrolytes needed for normal cardiac functioning. An ECG can help determine the presence of cardiac arrhythmias or conduction abnormalities.

Respiratory assessment includes assessing the quality of respirations for adventitious breath sounds. The main concern for a patient with bulimia nervosa is aspiration pneumonia. This can occur if the patient purges and has lost his or her gag reflex.

The most common medical consequences of bulimia nervosa involve the GI system. Visual inspection of the abdomen should include checking for the presence of abdominal calluses, which result from frequent digital pressure used to force purging. Evaluate for abdominal pain next, assessing not only for pain, but also bloating and fullness. Hiatal hernia problems often develop because both binging and purging can cause excessive stress to the stomach, esophagus, and diaphragm. Indigestion and heartburn frequently follow binging episodes. Patients may overuse antacids to alleviate this discomfort.

Other GI consequences occur when patients abuse laxatives and become laxative dependent, which can lead to bowel ulceration or perforation and intestinal injury. Long-term laxative use can cause decreased intestinal peristalsis, an inability to control the anal sphincter, and, eventually, the need for surgical intervention (colostomy). Hemorrhoids can also occur with excessive laxative use.

For female patients, gynecologic problems include menstrual irregularity, amenorrhea, and infertility when the patient's weight is less than 85% of her ideal body weight. A more thorough gynecologic exam may need to be completed depending on the patient's stated sexual history.

The effects of bulimia on the musculoskeletal system depend on the patient's exercise habits and electrolyte levels. Muscle strain, injury, or weakness commonly occurs with excessive exercising. Leg cramping, or tetany, may also occur with deficient

calcium, magnesium, and potassium levels due to purging and laxative abuse.

Lab tests

Because electrolyte imbalances lead to many serious medical consequences, frequent lab testing is recommended. Initial lab tests should include the following and be repeated either daily or weekly depending on the results:

- potassium—usually decreased due to laxative or diuretic use and induced vomiting
- sodium—may be elevated due to dehydration
- chloride—may be elevated due to dehydration
- magnesium—may be elevated due to dehydration and the use of magnesium-containing laxatives
- calcium—may be elevated due to dehydration
- phosphorus—may be elevated due to the use of phosphate-containing laxatives
- glucose—may be elevated due to excessive food intake and the use of diuretics
- albumin—may be elevated due to dehydration
- amylase—may be elevated due to chronic vomiting
- triglyceride—may be elevated due to a high-carbohydrate diet
- liver function tests—elevated liver enzymes may reflect liver damage or inflammation
- thyroid function tests—used to rule out hyperthyroid states, which can cause binging episodes
- complete blood cell count—decreased levels may be related to anemia due to poor nutrition; elevated red blood cell levels may be related to dehydration.

Medical management

Medical management has a similar focus as for a patient with anorexia nervosa. The initial focus is to stop the binge/purge cycle. Once the cycle has stopped, then the focus turns to weight restoration or maintenance, rehydration, and correction of electrolyte imbalances. Ongoing cardiac and GI system assessments are needed, especially if excessive purging or laxatives were used. Patients should receive nutritionally-balanced meals and snacks that keep them from becoming hungry and triggering a binging episode.

Ongoing treatment for a medically-stable individual with bulimia nervosa is similar to the treatment plan developed for a patient with anorexia nervosa. The treatment plan includes nutritional counseling, medical care and monitoring, psychotherapy, and medications. Cognitive behavioral therapy that's tailored to bulimia nervosa is effective in changing binge-eating and purging behaviors. Antidepressants and antianxiety medications can also be used to treat the mood and anxiety symptoms associated with bulimia nervosa. Fluoxetine is the only FDA approved medication used for treating bulimia nervosa. It helps reduce binge-eating and purging behaviors, decrease the chance of relapse, and improve eating attitudes, according to the National Institute of Mental Health.

consider this

Bulimia nervosa

Mary, a single 25-year-old woman, has a 6-year history of bulimia nervosa. Currently, Mary exercises compulsively at least 4 hours a day following a set of rituals that includes swimming 3 miles, bicycling 20 miles, and running up to 5 miles, all before allowing herself to eat a meal. Mary also has periods of binge eating that can last up to 2 hours. During her binge time, she may consume between 10,000 and 15,000 calories. Usually, she consumes high-calorie food items, such as pizza, cakes, cookies, and soft drinks. Guilt follows these binging episodes and she then purges as many as five times, hoping to rid herself of the unwanted food. The last time she purged, she developed chest pain and had a large amount of blood in her emesis. Mary is 5'3" tall and weighs 117 lb (53 kg).

On the lookout

Individuals with anorexia nervosa and bulimia nervosa may require admission to an inpatient hospital or clinic as a result of medical consequences that necessitate stabilization and treatment. Similarities exist between the medical consequences of anorexia nervosa and bulimia nervosa,

including electrolyte imbalances, dehydration, and cardiac abnormalities. Many of these medical consequences can go undetected despite the fact that they can result in life-threatening complications.

Often, patients with eating disorders don't feel that their poor nutrition and maladaptive eating behaviors have led to these problems. Denial, shame, or embarrassment may keep patients from seeking help. For these reasons, nurses need to gain the knowledge of how to thoroughly assess for medical consequences in all patients suspected of having an eating disorder. This vital knowledge will assist you in saving a life. ■

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