Definition: **anorexia nervosa** from *Philip's Encyclopedia*

Abnormal loss of the desire to eat. A pathological condition, it is seen mainly in young women anxious to lose weight. It can result in severe emaciation and in rare cases may be life-threatening. See also bulimia nervosa

Summary Article: **Anorexia Nervosa**

from *Encyclopedia of Obesity*

Eating disorders are a spectrum of illnesses that have serious psychological and medical consequences, both in the short and long term. In the case of anorexia nervosa, the person has an unyielding pursuit of thinness, and may use a variety of behaviors to elicit a rapid and severe degree of weight loss. To understand anorexia, a number of topics must be explored, including the clinical definition, epidemiology, the signs and symptoms, treatment, and consequences.

**DEFINITION**

Anorexia nervosa, as defined in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV), has four criteria. First, the individual must refuse to maintain a weight within a normal range for height and age, meaning more than 15 percent below ideal body weight. Second, the person experiences a fear of weight gain. Third, there is a severe body image disturbance, and the determination of self-worth is measured based on body image without acknowledgment of the severity of the illness. Last, in women who have begun to menstruate, amenorrhea, or the absence of three or more menstrual cycles, is part of the diagnostic criteria. Within this definition, there are two subtypes: a restricting type and a binge eating/purging type. The restricting subtype maintains a low body weight by restricting caloric intake. The binge/purge subtype will either binge (large intake of calories) or purge (using vomiting and/or laxatives to remove calories) to control their weight. The diagnosis of anorexia is still appropriate with the binge/purge subtype because there is still a body weight at 15 percent less than ideal body weight.

**EPIDEMIOLOGY**

Most often, it is females who are affected by anorexia, with males representing only 5 percent of all anorexic patients. It is estimated that up to 0.5 percent of young females meet the criteria for anorexia nervosa. Onset is usually four to five years after the onset of menarche. Overall data and trends of eating disorders are difficult to establish because the definition has changed over time and the disease often relies on self-reporting. Many studies demonstrate increasing prevalence of anorexia nervosa over the last 50 years in young women (15–24 years old) in the United States. The incidence of anorexia nervosa and other eating disorders is lower in developing countries. However, some studies suggest that an increasing westernization and modernization of these countries is contributing to a changing self-image and body image among women, and an increased reporting of anorexia.

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There is no medical consensus on the etiology of eating disorders including anorexia nervosa. Most models include psychological, biological, family, genetic, environmental, and societal factors. There seems to be an even distribution of anorexia nervosa across social classes. These forces can cause a decreased sense of self-esteem, body image, or self-control. There are several more specific factors that may be influential in the development of anorexia. For example, some literature suggests that an important predictor of eating disorders is dieting during adolescence. In addition, if there is a preoccupation or obsession with thin body image or if one feels a social pressure to be thin, this may be associated with the development of eating disorders. Feminist psychology theory has suggested that societal pressure to be “super” women in the setting of Western society can predispose women to develop eating disorders. Those who are later diagnosed with anorexia are often described as perfectionists, often excelling in school, athletics, and interpersonal experiences. It is unclear if there is a prodrome of symptoms that precede onset of anorexia. There may be family characteristics that are associated with individuals developing eating disorders. In particular, there is an association with the experience of high parental expectations related to achievement and appearance, and settings with poor communication or marital tension.

Anorexia nervosa involves the irrational fear of weight gain as well as significant body image disturbance.

In addition, there may be a genetic predisposition to development of eating disorders. If a first-degree relative has an eating disorder, a young woman is six- to tenfold more at risk for developing an eating disorder. Twin studies of identical (monozygotic) twins show a higher concordance rate of eating disorders than between nonidentical (dizygotic) twins. However, these observations do not exclude the role of environment and family influences. There is also a high incidence of psychiatric disorders in individuals with eating disorders. These include affective disorders such as depression, anxiety disorders, obsessive-compulsive disorders, and personality disorders. The psychiatric illness may be present in childhood. There may also be a higher rate of substance abuse.

Altered levels of neurotransmitters, including norepinephrine and serotonin, may be involved in the development of anorexia nervosa. There are decreased levels of norepinephrine in the brains of anorexics experiencing starvation, and this is thought to mediate the slow heart rate (bradycardia) and low blood pressure (hypotension) seen in these individuals. The brain’s satiety center is influenced by serotonin, and people with preexisting high level of serotonin in this region of the

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brain may be predisposed to obsessive behavior and eating disorders. There is also disruption of hormones in those with anorexia nervosa; however, many of them are seen in other states of starvation, and it is therefore unclear if the decreased levels of luteinizing hormone and decreased response to thyroid stimulating hormonal are involved in causation of anorexia or are resultant from starvation.

**SYMPTOMS**

A universal presenting symptom of anorexia nervosa is a distorted body image. Often, there is a belief that the individual is fat regardless of how much weight is lost. Cognitive reasoning cannot alter the individual's body perception. A person will use both diet and exercise to reduce body weight. The need to control caloric intake often manifests as an intense interest or obsession with food. Individuals will talk at length about food, will prepare elaborate meals, and the process of eating can become very ritualized.

With the same intensity used to monitor caloric intake, individuals pursue exercise such as running, jogging, or bicycling to lose weight. Weight lifting, swimming, or other activities that would increase muscle mass are avoided. Another method of removing calories and losing weight is self-induced vomiting after meals, as seen in the binge/purge subtype of anorexia nervosa. Laxative use to speed bowel transit time is another method of removing food and reducing absorption of calories.

These behaviors may lead to significant weight loss, often apparent to a casual observer. However, if the onset of anorexia nervosa is during puberty, the individual may not technically lose weight, but they will fail to gain weight as their height increases. As anorexia progresses and weight is lost, patients often feel depressed, have trouble concentrating, and experience insomnia. Amenorrhea is common and may manifest as delay in onset of menstruation, or discontinuation of menstruation in a previously menstruating female. The physical response to starvation can be seen in these individuals. There is a low body temperature, decreased heart rate, and a low blood pressure. Skin is dry and scaled, and a fine hair (lanugo) grows to cover the body. In patients with the binge/purge subtype, there may be erosion of teeth secondary to exposure to stomach acid.

There is a low level of red blood cells, platelets, and white blood cells in a patient with anorexia nervosa, increasing the risk of serious infections. Low levels of blood potassium is often seen, either secondary to vomiting or diarrhea or low dietary intake. Liver function tests are often abnormally elevated, and there are deficiencies in nutrients such as magnesium and thiamine. Beta-carotene levels are often elevated, giving skin a yellow coloration. Evaluation of heart electrical conduction with an electrocardiogram (ECG) often shows slowed heart rate and a variety of arrhythmias, including ventricular fibrillation, which may cause sudden cardiac death.

**TREATMENT**

Treatment of anorexia nervosa is goal-oriented, with a focus on weight restoration and reintegration of the patient into his/her family and social structure. Medical and behavioral therapy are used toward the goal of weight gain. Initial management involves deciding if an individual needs to be hospitalized or can be followed as an outpatient. However, due to the life-threatening nature of many of the manifestations of anorexia, patients are often hospitalized at the point that they present for medical care.

Initial medical management involves correcting life-threatening alterations in blood potassium, magnesium, and thiamine with supplementation. Forced feeding through nasogastric feeding tubes,
or more rarely, through parenteral nutrition administered through the veins, may be used. Subsequently, goal or ideal end weight is established by taking into consideration premorbid weight, the patient's level of comfort, bone structure, and other factors. Establishment of a daily routine, including weighing before and after meals and voiding (urine and bowel movements) is begun with a common goal of gaining at least half a pound per day. Care must be taken to avoid refeeding syndrome in severely underweight individuals. Withholding of rewarding activities is often used, as is the use of isolation with limited contact with family members or medical staff. Meals are presented at regular intervals, and snacks are available as desired.

In addition to intense behavioral modification, there are interventions with the family to establish realistic expectations. Similarly, psychotherapy has an important role in management of anorexia nervosa, on an individual and sometimes on the family level. Patients must develop coping skills both to manage healthy weight gain and to deal with challenges of adolescence. The use of medications in the treatment of anorexia nervosa is limited. Often, use of pharmacotherapy is to treat comorbidities, such as depression or obsessive-compulsive disorders. Medicines that decrease anxiety may be useful before meals.

**MORBIDITY AND MORTALITY**

There is significant mortality associated with anorexia nervosa. Young women with anorexia have a tenfold increased mortality as compared to unaffected women. A long-term, 10-year follow-up study found that the overall mortality rate was 6.6 percent, although other studies have found relatively lower rates when including women treated as outpatients. The natural course of anorexia demonstrates that without intervention, only 40 percent of patients will experience significant recovery, 35 percent will have some improvement, 20 percent will remain acutely ill and may still meet criteria for anorexia at 12 years after initial diagnosis, and the remaining five percent will die from medical complications related to anorexia or suicide.

There are several serious complications secondary to eating disorders such as anorexia nervosa, including osteopenia or osteoporosis, cardiac impairment, cognitive changes, gastrointestinal problems, hormone changes, and electrolyte abnormalities. Osteopenia or osteoporosis is often seen in anorexic patients, possibly due to estrogen deficiency, or low vitamin D and calcium intake. It is characterized by increased bone resorption and decreased bone formation, and may lead to increased risk of fractures later in life. Several cardiac problems are associated with anorexia nervosa, including mitral valve prolapse, changes in electrical activity, and heart failure. The risk of heart failure is greatest during the first two weeks of refeeding after prolonged starvation. Hormonal changes during starvation can lead to cessation of menstruation, which typically resumes within 6 months of achieving 90 percent of ideal body weight.

**SEE ALSO:**
- Bulimia Nervosa; Eating Disorders and Athletes; Eating Disorders and Gender; Eating Disorders and Obesity; Eating Disorders in School Children; Sexual Abuse and Eating Disorders

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