

Eating Disorders: Anorexia and Bulimia

WHAT ARE EATING DISORDERS?

Eating disorders are devastating behavioral maladies brought on by a complex interplay of factors, which may include emotional and personality disorders, family pressures, a possible genetic or biologic susceptibility, and a culture in which there is an overabundance of food and an obsession with thinness. There are four general categories of eating disorders:

- Bulimia nervosa.
- Anorexia nervosa.
- Binge eating.
- Eating disorders not otherwise specified.

These are not new disorders. Although anorexia nervosa was first defined as a medical problem in the late 1800s, descriptions of self-starvation have been found even in medieval writings.

Bulimia Nervosa

Bulimia nervosa is more common than anorexia and it usually begins early in adolescence. It is characterized by cycles of bingeing and purging, and typically takes the following pattern:

- Bulimia is often triggered when young women attempt restrictive diets, fail, and react by binge eating. (Binge eating involves consuming amounts of food within a two-hour period that are larger than average portions.)
- In response to the binges, patients compensate, usually by purging, by vomiting, by using enemas, or by taking laxatives, diet pills, or drugs to reduce fluids.
- Patients then revert to severe dieting, excessive exercise, or both. (Some patients with bulimia follow bingeing only with fasting and exercise. They are then considered to have non-purging bulimia.)
- The cycle then swings back to bingeing and then to purging again.
- Some studies have reported that patients with bulimia average about 14 episodes of binge-purging per week. To be diagnosed with bulimia, however, a patient must binge and purge at least twice a week for three months. (Some experts believe that going through the cycle only once a week is sufficient for a diagnosis.)
- In some cases, the condition progresses to anorexia. Most people with bulimia, however, have a normal to high-normal body weight, although it may fluctuate by more than 10 pounds because of the binge-purge cycle.

It should be noted that young people who occasionally force vomiting after eating too much are *not* considered bulimic, and most of the time this occasional unhealthy behavior does not continue beyond youth.

Anorexia Nervosa

Anorexia nervosa involves an aversion to food that leads to a state of starvation and emaciation. It is a very serious illness that some experts believe is an entirely different condition from bulimia and should be not be diagnosed as a simple eating disorder. Facts associated with anorexia nervosa include:

- At least 15% to as much as 60% of normal body weight is lost.
- The patient with anorexia nervosa has an intense fear of gaining weight, even when he or she is severely underweight.
- Individuals with anorexia nervosa have a distorted image of their own weight or shape and deny the serious health consequences of their low weight.
- Women with anorexia nervosa miss at least three consecutive periods. (Some experts believe women can be anorexic without this occurrence.)

Patients with this condition are often characterized as anorexia restrictors or anorexic bulimic patients. Each type is equally prevalent.

- Anorexia restrictors reduce their weight by severe dieting.
- Anorexic bulimic patients maintain emaciation by purging. Although both types are serious, the bulimic type, which imposes additional stress on an undernourished body, is the more damaging.

The term "anorexia" literally means absence of appetite. For example, severe anorexia is common in the elderly, who may experience weight loss because of social isolation, impaired gastrointestinal function, or loss of certain chemicals related to the feeding drive. Such anorexia, however, is not synonymous with anorexia nervosa, which is a psychological disorder.

Binge Eating (Binge Eating Disorder)

Bingeing without purging is characterized as compulsive overeating (binge eating) with the absence of bulimic behaviors, such as vomiting or laxative abuse (used to eliminate calories). Binge eating usually leads to becoming overweight.

To be diagnosed as a binge eater, a person typically has the following characteristics:

- Bingeing at least twice a week for six months.
- Consuming 5,000 to 15,000 calories in one sitting.
- Eating three meals a day plus frequent snacks.
- Overeating continually throughout the day, rather than consuming large amounts of food during binges.

Since binge eating disorder is generally associated with weight gain, it will not be further discussed in this report. [For more information on bingeing without purging, see the Well-Connected Report #53, *Obesity*.]

Eating Disorders Not Otherwise Specified

A fourth category called eating disorders not otherwise specified (NOS) has been established to define eating disorders not specifically defined as anorexia or bulimia. This category includes the following:

- Infrequent binge-purge episodes (occurring less than twice a week or having such behavior for less than three months).
- Repeated chewing and spitting without swallowing large amounts of food.
- Normal weight and anorexic behavior.

Such patients tend to be older at diagnosis. Although less serious than other eating disorders, these patients still face similar health problems, including a higher risk for fractures and other conditions.

WHO DEVELOPS EATING DISORDERS?

Many factors contribute to the risk of developing an eating disorder.

Age

In general, eating disorders occur in adolescents and young adults, although one study reported that 5% of cases occurred in children under 12 years old.

Age of Onset for Bulimia. A 1997 survey of high school students by the Centers for Disease Control reported that 4.5% induced vomiting after meals or used laxatives to lose weight. Estimates of the prevalence of bulimia nervosa among young women range from about 3% in adolescents to 10% in college women. Some experts claim that even these percentages grossly underestimate the problem because many people with bulimia are able to conceal their purging and do not become noticeably underweight. For example, a European study detected bulimic behavior in 14.4% of adolescents 14 to 16 years old, with full-blown bulimia observed in 1.8% of girls and 0.3% of boys.

Age of Onset for Anorexia Nervosa. After asthma and obesity, anorexia nervosa is the third most common chronic illness in adolescent women. It is estimated to occur in 0.5% to 3% of all teenagers. Anorexia usually first occurs in adolescence with peaks at 13 to 14 years of age and at 17 to 18 years of age. Over the past 40 years, however, the incidence has been steady in teenagers, but it has increased threefold in young adult women.

Gender

Studies typically report that 90% of those with eating disorders are females. However, the prevalence in males appears to be increasing. For example, a 2000 study of teenagers in Minnesota reported that 13% of girls and 7% of boys reported disordered eating behavior.

When eating disorders occur in young adults, men are more apt to conceal them, so the incidence among males may be underreported. One study of Navy men, for example, reported a prevalence of 2.5% for anorexia, 6.8% of bulimia, and 40% for binge eating.

Studies suggest that the psychiatric and behavioral profiles of men and women with eating disorders are very similar to each other, although there are some differences. Excessive physical activity is more prevalent in males with anorexia. Anorexics tend to have very low sexual interest, although there is a higher rate of homosexuality among young men than women. Sexual preference for men may tend to differ, however, by the specific eating disorders. One study reported that 42% of male civilians with bulimia were homosexual or bisexual while 58% of the men with anorexia were asexual.

Ethnic Factors

Most studies of individuals with eating disorders have been conducted using Caucasian middle-class females. Studies are now reporting, however, that minority populations, including Hispanic-Americans and African-Americans, are significantly affected. There is some indication that African-American girls and young women may be at particular risk for eating disorders because of poor body images caused by cultural attitudes that denigrate the physical characteristics of minorities. In one study, bulimia was equally common among both Caucasian and African American women, although the latter were more likely to binge recurrently, to fast, and to use laxatives and diuretics to control weight. Binge eating may be an even more severe a problem in Hispanic Americans. A 2000 study on Asian women also reported rates of dieting and body dissatisfaction that were similar to those in other cultures, but Asian women had much lower percentages of actual eating disorders.

Socioeconomic Factors

Living in any economically developed nation on any continent appears to pose more of a risk for eating disorders than belonging to a particular population group. Symptoms remain strikingly similar across high-risk countries.

Income Levels. Oddly enough, within developed countries there appears to be no difference in risk between the rich and the poor. Some studies suggest that those in lower economic groups may be at higher risk for bulimia.

Urban Life. City living is a risk factor for bulimia but it has no effect on the risk for anorexia.

Intelligence. In one sample, people with eating disorders scored significantly higher than average on IQ tests. People with bulimia, but not anorexia, had higher nonverbal than verbal scores.

Personality Disorders

A 2000 study reported that people with eating disorders tended to share similar personality traits, including low self-esteem, dependency, and problems with self-direction. Researchers have been attempting to determine specific personality disorders or behavioral characteristics that might put people at higher risk for one or both of the eating disorders. Some studies have reported the following personality disorders linked to particular eating disorders:

- Avoidant personalities, mostly seen in anorexia. Such people are generally high functioning, persistent, and perfectionists.
- Dependent personalities, mostly seen in anorexia. This group is usually over-controlled and withdrawn.
- Borderline and histrionic personalities, mostly seen in bulimia. Such individuals are emotionally uncontrolled and impulsive.
- Narcissism is seen in both anorexia and bulimia.

It should be noted that any of these personality traits can appear in either patients with bulimia or anorexia. Some experts believe that the patient's specific personality disorder, rather than whether they are anorexic or bulimic, may be the more important factor in determining treatment choice.

Avoidant Personalities. Some studies indicate that as many as a third of anorexic restrictors have avoidant personalities. This personality disorder is characterized by the following:

- Being a perfectionist.
- Being emotionally and sexually inhibited.
- Having less of a fantasy life than people with bulimia or those without an eating disorder.
- Not being rebellious, or being perceived as always being "good."
- Being terrified of being ridiculed or criticized or of feeling humiliated. People with anorexia are extremely sensitive to failure, and any criticism, no matter how slight, reinforces their own belief that they are "no good."

The person with both anorexia and an avoidant personality disorder may develop a behavioral and eating pattern as follows:

- For such individuals, achieving perfection, with all that that involves, is the only way they believe they can obtain love.
- Part of the drive for perfection and love is being trouble-free and attaining some ideal image of thinness. Eating is also associated with lower animal drives, so fasting has been linked historically to saintliness. The individual is driven to demand nothing, including food.
- Failure is inevitable, since being loved has nothing to do with being perfect. (In fact, people who are always seeking perfection often alienate others around them.)
- This failure to achieve love is followed by a sense of being even more imperfect (which is equivalent to being fat) and a renewed sense of striving for perfection (i.e., becoming even thinner).

In keeping with the avoidant personality, one expert described her anorexic patients as having a *total* lack of self, well beyond having low self-esteem. In support of this, a 2002 study reported that women with eating disorders were less likely to attend to their own needs and to care for themselves. In other words, they felt "self-less" and experienced guilt if they felt they were promoting their own self-interest.

The process of not eating may become an act of passive revenge on those whose love is always out of reach: "See? I am slowly disappearing, and you will be very sad when I am gone."

Obsessive-Compulsive Personality. Obsessive-compulsive *personality* defines certain character traits (e.g., being a perfectionist, morally rigid, or preoccupied with rules and order). This personality disorder has been strongly associated with a higher risk for anorexia. These traits should not be confused with the anxiety disorder called obsessive-compulsive *disorder* (OCD), although they may increase the risk for this disorder [see below].

Borderline Personalities. Studies indicate that almost 40% of people who are diagnosed with bulimic anorexia (losing weight by bingeing and purging) may have borderline personalities. Such people tend to:

- Have unstable moods, thought patterns, behavior, and self-images. People with borderline personalities have been described as causing chaos around them by using emotional weapons, such as temper tantrums, suicide threats, and hypochondriasis.
- Be frantically fearful of being abandoned.
- Be unable to be alone.
- Have difficulty controlling their anger and impulses. (In fact, between one-quarter and one-third of people with bulimia have impulsive symptoms.)
- Be prone to idealize other people. Frequently this is followed by rejection and by disappointment.

Some research has suggested that the severity of this personality disorder predicts difficulty in treating bulimia, and it might be more important than the presence of psychological problems, such as depression.

Narcissism. Studies have also found that people with bulimia or anorexia are often highly narcissistic and tend to:

- Have an inability to soothe oneself.
- Have an inability to empathize with others.
- Have a need for admiration.
- Be hypersensitive to criticism or defeat.

Accompanying Emotional Disorders

Between 40% and 96% of all eating-disordered patients experience depression and anxiety disorders. Depression, anxiety, or both is also common in families of patients with eating disorders. It is not clear if emotional disorders, particularly obsessive-compulsive disorder (OCD), cause the eating disorders, increase susceptibility to them, or share common biologic cause.

Obsessive-Compulsive Disorder (OCD). Obsessive-compulsive disorder is an anxiety disorder that occurs in up to 69% of patients with anorexia and up to 33% of patients with bulimia. In fact, some experts believe that eating disorders are just variants of OCD. Obsessions are recurrent or persistent mental images, thoughts, or ideas, which may result in compulsive behaviors (repetitive, rigid, and self-prescribed routines) that are intended to prevent the manifestation of the obsession. Women with anorexia and OCD may become obsessed with exercise, dieting, and food. They often develop compulsive rituals (e.g., weighing every bit of food, cutting it into tiny pieces, or putting it into tiny containers). The presence of OCD with either anorexia or bulimia does not, however, appear to have any influence on whether a patient improves or not.

Other Anxiety Disorders. A number of other anxiety disorders have been associated with both bulimia and anorexia.

- *Phobias.* Phobias often precede the onset of the eating disorder. Social phobias, in which a person is fearful about being humiliated in public, are common in both types of eating disorders.
- *Panic Disorder.* Panic disorder often follows the onset of an eating disorder. It is characterized by periodic attacks of anxiety or terror (*panic attacks*).
- *Post-Traumatic Stress Disorder.* One study of 294 women with serious eating disorders reported that 74% of them recalled a traumatic event and more than half exhibited symptoms of post-traumatic stress disorder (PTSD), which is an anxiety disorder that occurs in response to life-threatening circumstances.

Depression. Depression is common in people with eating disorders, particularly anorexia. Depression and eating disorders are also linked to a similar seasonal pattern, as indicated by the following observations:

- For many people, depression is more severe in darker winter months. Similarly, a subgroup of bulimic patients suffers from a specific form of bulimia that worsens in winter and fall. Such patients are more apt to have started bingeing at an earlier age and binge more frequently than those whose bulimia is more consistent year round.

- Onset of anorexia appears to peak in May, which is also the peak month for suicide.

Major depression is unlikely to be a *cause* of eating disorders, however, because treating and relieving depression rarely cures an eating disorder. The severity of the eating disorder is also not correlated with the severity of any existing depression. In addition, depression often improves after anorexic patients begin to gain weight.

Being Overweight

A 2002 study reported that among American teenagers 18% of overweight girls and 6% over overweight boys reported extreme eating disorder behaviors, including use of diet pills, laxatives, diuretics, and vomiting. With the increasing epidemic of obesity in America, such behaviors will only compound the health problems in obese young people.

Body Image Disorders

Body Dysmorphic Disorder. Body dysmorphic disorder involves a distorted view of one's body that is caused by social, psychological, or possibly biologic factors. It is often associated with anorexia or bulimia, but it can also occur without any eating disorder. People with this disorder commonly suffer from emotional disorders, including obsessive-compulsive disorder and depression. (Some evidence suggests that treatment with fluoxetine (Prozac), a common antidepressant known as an SSRI, helps reduce this problem, even in people without an eating disorder.)

Muscle Dysmorphia. Experts are also increasingly reporting a disorder in which people have distorted body images involving their muscles. It tends to occur in men who perceive themselves as being "puny," which results in excessive body building, preoccupation with diet, and social problems. Such individuals are prone to eating disorders and other unhealthy behaviors, including the use of anabolic steroids.

Excessive Physical Activity

Highly competitive athletes are often perfectionists, a trait common among people with eating disorders.

Female Athletes and Dancers. Women in "appearance" sports, including gymnastics and figure skating, and in endurance sports, such as track and cross-country, are at particular risk for anorexia. Success in ballet also depends on the development of a wiry and extremely slim body. Estimates for episodes of eating disorders among such athletes and performers range from 15% to over 60%.

Male Athletes. Male wrestlers and lightweight rowers are also at risk for excessive dieting. One-third of high school wrestlers use a method called weight-cutting for rapid weight loss. This process involves food restriction and fluid depletion by using steam rooms, saunas, laxatives, and diuretics. Although male athletes are more apt to resume normal eating patterns once competition ends, studies show that the body fat levels of many wrestlers are still well below their peers during off-season and are often as low as 3% during wrestling season. Of concern is a recently recognized body-image disorder, referred to as muscle dysmorphia, which occurs mostly in men who are preoccupied with weight lifting and who perceive themselves as puny.

Men and Women in the Military. Studies also show a higher-than-average risk for eating disorders in men and women in the military. A study of eating behavior on one Army base reported that 8% of the women had an eating disorder, compared to 1% to 3% in the civilian female population.

[For more detail, see *Excess Athleticism under What Causes Eating Disorders?*]

Vegetarianism

In general, vegetarianism, with careful planning, is a healthy practice for both adults and adolescents. Studies report, however, that vegetarianism in adolescence may be a risk factor for eating disorders in both males and females. In one study, while vegetarian teens ate more fruits and vegetables, they were also twice as likely to diet frequently, four times as likely to intensively diet, and eight times as likely to use laxatives as their non-vegetarian peers.

This study does not mean that being a vegetarian equates with having an eating disorder. It does suggest, however, that parents with children who suddenly become vegetarian, should be sure that their children are eating a balanced meal with sufficient protein, calories, and important minerals, such as calcium. Parents also might suspect anorexic behavior in their child under certain conditions:

- If the child has stopped eating meat only to avoid fat rather than from other motives, such as love of animals or to improve health.
- If vegetarian diet coincides with rapid weight loss.
- If the child avoids important vegetable products because of calories (such as whole grains) or because of fats and oils (such as tofu, nuts, and dairy products).

Diabetes or Other Chronic Diseases

According to one survey, 10.3% of teenage girls and 6.9% of boys with chronic illness, such as diabetes or asthma, had an eating disorder.

Diabetes. Eating disorders are particularly serious problems for people with either type 1 or type 2 diabetes.

- Binge eating (without purging) is most common in type 2 diabetes and, in fact, the obesity it causes may even trigger this diabetes in some people.
- Both bulimia and anorexia are common in type 1 diabetes. Some experts report that one-third of insulin-dependent patients have an eating disorder, most often because diabetic women omit or underuse insulin in order to control weight. If such patients develop anorexia, their extremely low weight may appear to control the diabetes for a while. Eventually, however, if they fail to take insulin and continue to lose weight, these patients develop life-threatening complications. [*See also How Serious Are Eating Disorders?*]

Early Puberty

There is a greater risk for eating disorders and other emotional problems for girls who undergo early puberty, when the pressures experienced by all adolescents are intensified by experiencing, possibly alone, these early physical changes, including normal increased body fat. One interesting study reported the following:

- Before puberty, girls ate quantities of food appropriate to their body weight, were satisfied with their bodies, and noted their depression increased with *lower* food intake.
- After puberty, girls ate about three-quarters of the recommended calorie intake, had a worse body self-image, and noted their depression increased with *higher* food intake.

This study reported on girls without eating disorders, but it certainly suggests patterns that can lead to eating problems, particularly in girls who go through puberty early.

WHAT CAUSES EATING DISORDERS?

There is no single cause for eating disorders. Although concerns about weight and body shape underlie all eating disorders, the actual cause of these disorders appear to result from a convergence of many factors, including cultural and family pressures and emotional and personality disorders. Genetics and biologic factors may also play a role.

Negative Family Influences

Negative influences within the family play a major role in triggering and perpetuating eating disorders. Some studies have produced the following observations and theories regarding family influence.

- *Insecure Infancy.* Some experts theorize that parents who fail to provide a safe and secure foundation in infancy may foster eating disorders. In such cases, children experience so-called *insecure attachments*. They are more likely to have greater weight concerns and lower self-esteem than are those with secure attachments.
- *Parental Behaviors.* Poor parenting by both mothers and fathers have been implicated in eating disorders. One study found that 40% of nine- to ten-year-old girls try to lose weight generally with the urging of their mothers. Some studies have found that mothers of anorexics tend to be over-involved in their child's life, while mothers of people with bulimia are critical and detached. On the other hand, a 2002 study reported that the father's behavior also plays a very important role in a child's eating disorder. Some research, for example, strongly implicates overly critical fathers, brothers, or both in the development of anorexia in both girls and boys.
- *Family History of Addictions or Emotional Disorders.* Studies report that people with either eating disorder are more likely to have parents with alcoholism or substance abuse than are those in the general population. Parents of people with bulimia appear to be more likely to have psychiatric disorders than parents of patients with anorexia.
- *History of Abuse.* Women with eating disorders, particularly bulimia, appear to have a higher incidence of sexual abuse. Studies have reported sexual abuse rates as high as 35% in women with bulimia.
- *Family History of Obesity.* People with bulimia are more likely than average to have an obese parent or to have been overweight themselves during childhood.

At least one study has reported that the most positive way for parents to influence their children's eating habits and to prevent weight problems and eating disorders is to have healthy eating habits themselves.

Problems Surrounding Birth

In some studies people with anorexia have reported a higher than average incidence of problems during the mother's pregnancy or after birth. These problems include the following:

- Infection.
- Physical trauma.
- Seizures.
- Low birth weight.
- Older maternal age.

Some experts believe that such patients experienced an injury to the brain while in the womb that predisposed them to eating problems in infancy and to subsequent eating disorders later in life. Studies have suggested that people with anorexia often had stomach and intestinal problems in infancy.

Genetic Factors

Anorexia is eight times more common in people who have relatives with the disorder, and some experts estimate that genetic factors may influence more than half of the variances in eating disorders. For example, a 2000 study reported that twins had a tendency to share specific eating disorders (anorexia nervosa, bulimia nervosa, and obesity). Some evidence has reported an association with genetic factors responsible for serotonin, the brain chemical involved with both well-being and appetite. Some inherited traits that might make someone susceptible to eating disorders include the following:

- A genetic propensity toward thinness caused by a faster metabolism and reinforced by cultural approval could predispose some people to develop anorexia.
- An inherited propensity for obesity could also trigger an eating disorder to compensate.
- Inherited personality traits also play some causal role.

Cultural Pressures

The approach to food in Western countries is extremely problematic. Enough food is produced in the US to supply 3,800 calories every day to each man, woman, and child, far more than any single person needs to sustain life. Obesity is a global epidemic, and few people living in this over-fed and sedentary culture eat a meal guiltlessly. One can nearly make the sweeping generalization that everyone who lives in a developed nation is at risk for either obesity or some eating disorder.

One interesting anthropologic study reported the following observations:

- During historical periods or in cultures where women are financially dependent and marital ties are stronger, the standard is toward being curvaceous, possibly reflecting a cultural or economic need for greater reproduction.
- During periods or in cultures where female independence has been possible, the standard of female attractiveness tends toward thinness.

Whether or not the current Western cultural pressure is for fewer children, the response of the media to both the cultural drive for thinness and overproduction of food play major roles in triggering obesity and eating disorders.

- On the one hand, advertisers heavily market weight-reduction programs and present anorexic young models as the paradigm of sexual desirability. Clothes are designed and displayed for thin bodies in spite of the fact that few women could wear them successfully.
- One study reported that teenage boys and girls who made strong efforts to look like celebrities of the same sex were more likely to be constant dieters.
- On the other hand, the media floods the public with attractive ads for consuming foods. And, the emphasis is on "junk" foods.

In a country where obesity is epidemic, young women who achieve thinness believe they have accomplished a major cultural and personal victory. They have overcome the temptations of junk food and, at the same time, created body images idealized by the media. Weight loss brings a feeling of triumph over helplessness. This sense of accomplishment is often reinforced by the envy of heavier companions who perceive the anorexic friend as being emotionally stronger and more sexually attractive.

Excessive Athleticism and the Female Athlete Triad. The cultural attitude toward physical activity is a fitting companion to the general disordered attitude regarding eating. Americans are encouraged to admire physical activity only as an intense competitive effort that few can attain, leaving most people in their armchairs as spectators (and at risk for obesity).

In the small community of athletes, excessive exercise is associated with many cases of anorexia (and, to a lesser degree, bulimia). In young female athletes, anorexia postpones puberty, allowing them to retain a muscular boyish shape without the normal accumulation of fatty tissues in breasts and hips that may blunt their competitive edge. Many coaches and teachers compound the problem by overemphasizing calorie counting and loss of body fat. Some over-control the athletes' lives and are even abusive to an athlete that goes over the weight limit. (Male athletes are also vulnerable to

their coaches' influence. Anorexia is also a problem among this group.)

In response, people who are vulnerable to such criticism may lose excessive weight, which has been known to be deadly even for famous athletes. The term "female athlete triad" in fact, is now a common and serious disorder facing young female athletes and dancers and describes the combined presence of the following problems:

- Eating disorders.
- Amenorrhea (absence or irregular menstruation). Evidence is mounting that overly restricting calories may be more important than low weight in causing menstrual problems. Studies suggest that amenorrhea occurs even in women with normal weight if they severely diet.
- Osteoporosis. Bone loss, on the other hand, appears to be related to low weight. The more severe the weight loss, the more bone is lost.

In one study, female athletes who consumed a high-fat diet (35% of daily calories) performed longer and with greater intensity than those with a standard athletic low-fat diet (27% of daily calories). And such a diet appeared to be more estrogen-protective.

Hormonal Abnormalities

Hormonal problems are rampant in eating disorders and include chemical abnormalities in the thyroid, the reproductive regions, and areas related to stress, well-being, and appetite. Many of these chemical changes are certainly a result of malnutrition or other aspects of eating disorders, but they also may play a role in perpetuating or even creating susceptibility to the disorders.

The primary setting of many of these abnormalities originate in a small area of the brain called the limbic system. A specific system called hypothalamic-pituitary-adrenal axis (HPA) may be particularly important in eating disorders. It originates in the following regions in the brain:

- Hypothalamus. The hypothalamus is a small structure that plays a role in controlling our behavior, such as eating, sexual behavior and sleeping, and regulates body temperature, emotions, secretion of hormones, and movement.
- The Pituitary Gland. The pituitary gland develops from an extension of the hypothalamus downwards. It is involved in controlling thyroid functions, the adrenal glands, growth, and sexual maturation.
- Amygdala. This small almond-like structure lies deep in the brain and is associated with regulation and control of major emotional activities, including anxiety, depression, aggression, and affection.

Stress Hormones. The HPA systems trigger the production and release of stress hormones called glucocorticoids, including the primary stress hormone *cortisol*. Chronically elevated levels of stress chemicals have been observed in patients with anorexia and bulimia. Cortisol is very important in marshaling systems throughout the body (including the heart, lungs, circulation, metabolism, immune systems, and skin) to deal quickly with any threat. Among the specific effects is inhibition of *neuropeptide Y (NPY)*, a powerful appetite stimulant that also has anti-anxiety properties. This process may serve as a biologic link between extreme stressful conditions in a young person's life and the later development of anorexia, although some imaging studies indicate that stress-hormone related changes occur *after* anorexia has developed. More work is needed to determine if changes in stress hormones are a cause or a result of eating disorders.

Release of Neurotransmitters. The HPA system also releases certain neurotransmitters (chemical messengers) that regulate stress, mood, and appetite and are being heavily investigated for a possible role in eating disorders. Abnormalities in the activities of three of them, serotonin, norepinephrine, and dopamine, are of particular interest. Serotonin is involved with both well-being and appetite (among other traits), and norepinephrine is a stress hormone. Abnormalities in both have been observed in patients who binge and in those with anorexia or bulimia. Dopamine is involved in reward-seeking behavior, so deficiencies might create a more intense need for rewards, such as carbohydrates. Studies on dopamine abnormalities have been mixed, however.

Low-Leptin Levels. Leptin is a hormone that appears to trigger the hypothalamus to stimulate appetite, and low levels have been observed in people with anorexia and bulimia.

Low Reproductive Hormones. The hypothalamic-pituitary system is also responsible for the production of important reproductive hormones that are severely depleted in anorexics. Although most experts believe that these reproductive abnormalities are a result of anorexia, others have reported that in 30% to 50% of people with anorexia, menstrual disturbances occurred *before* severe malnutrition set in and remained a problem long after weight gain, indicating that hypothalamic-pituitary abnormalities precede the eating disorder itself.

Compensating for Mood Swings during Binge-Purging Cycles

Low levels of serotonin have been observed not only in eating disorders but also in depression. One theory for the persistence of the binge-purge cycle in bulimia involves restoring serotonin imbalances and so improving mood. It

involves the following:

- Bingeing elevates tryptophan, a compound found in food, particularly carbohydrates, which is essential to the production of serotonin in the brain. People may binge in order to produce serotonin, thereby improving their mood. An initial increase in tryptophan, however, produces depression in some people. Both events are consistent with a study on young people with bulimia who reported negative moods before bingeing and even worse moods right after bingeing.
- Such depression may become associated with guilt over bingeing and the need to purge. Right before and after a purge cycle, however, studies report an improvement in mood, which might indicate the delayed increase in serotonin triggered by the tryptophan. The heightened mood after the purge cycle may be due to stimulation of natural opioids that occur during this process.
- The binge–purge cycle might then be stimulated by chemical changes and perpetuated by feelings of guilt and depression after bingeing and release from guilt and euphoria during and after purging.

Infections

In some cases, infection has been associated with anorexia. In such cases, immune factors released to fight these infections may cause inflammation and injury in the areas of the brain that affect appetite and behavior.

Streptococcal Infection. The bacteria responsible for strep throat and rheumatic fever—called group A beta–hemolytic streptococcal (GABHS)—is now a suspect in some cases of anorexia. Some children who have been infected with this bacteria develop a syndrome that includes obsessive–compulsive disorder (OCD), tics, and anorexia nervosa. The syndrome is called PANDAS (Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcus). More research is needed to confirm this as an actual cause of anorexia and to determine if it may be treatable with antibiotics.

Epstein Barr Virus. Epstein Barr, the virus that causes mononucleosis, has also been associated with the development of anorexia.

HOW SERIOUS IS BULIMIA NERVOSA WITHOUT SERIOUS WEIGHT LOSS (ANOREXIA)?

Most studies report that patients with bulimia that is not accompanied by severe weight loss have a much better outlook than patients with anorexia. Some studies have suggested that between 60% and 80% of bulimic patients are in remission within three months of treatment. However, relapse is common and over half of women with bulimia continue to battle disordered eating habits for years. In one study, bulimia itself persisted in 10% to 25% of patients after treatment.

Direct Adverse Effects of Bulimic Behavior on the Body

The following are medical problems directly associated with bulimic behavior, including self–induced vomiting and laxative abuse:

- Teeth erosion, cavities, and gum problems.
- Water retention, swelling, and abdominal bloating.
- Occasionally, fluid loss with low potassium levels. This occurs from excessive vomiting or laxative use. In severe cases it can cause extreme weakness, near paralysis, or lethal heart rhythms.
- Acute stomach distress.
- Problems in swallowing. This is an area of possible concern because of repetitive assaults on the esophagus (the food pipe) from forced vomiting. It is not clear, however, if this problem is common.
- Rupture of the esophagus, or food pipe. (Cases have been reported with forced vomiting but are not common.)
- Weakened rectal walls. In rare cases, walls may weaken to the extent that they protrude through the anus. This is a serious condition that requires surgery.
- Irregular periods. (It should be noted that menstrual irregularities in patients with bulimia do not have the serious effects, particularly bone loss, as they do in patients with anorexia.)

Long–Term Health Problems

Studies have been mixed on the long–term health consequences for bulimic people who maintain normal weight and who do not go on to become anorexic. Some report no major problems. A 2002 study, however, reported that eating disorders during adolescence put these young people at risk for a variety of psychological and medical problems later on, even in those without severe eating disorders. Health problems included circulatory disorders (such as high blood pressure), neurologic symptoms (such as seizures), chronic fatigue, headache, frequent flus and colds, and insomnia, regardless of weight loss. Even worse, only 22% of the subjects had received any psychiatric treatment. The study did not break down specific eating disorders, but related the health problems with specific behaviors. Furthermore, another 2002 study reported that bulimic patients were at higher risk for bone fractures. (The risk was lower than with anorexia and, unlike in anorexia, it returned to normal within a year of diagnosis and treatment.)

In all cases, patients who have both bulimia and anorexia are in greatest danger of health risks. [*See How Serious Is Anorexia Nervosa? below.*]

Long-Term Psychiatric Problems

In the 2002 study mentioned above, eating disorders, even with normal weight, were associated with a higher risk for anxiety and depressive disorders and with suicide attempts.

Effect on Pregnancy

Most pregnant women with a history of eating disorders have healthy pregnancies, although they face higher risks for a number of complications, including cesarean sections, postpartum depression, miscarriages, and complicated deliveries. Their babies may also have a higher risk for low birth weight, prematurity, and malformation.

Self-Destructive Behavior

A number of self-destructive behaviors occur with bulimia:

- *Smoking.* Many teenage girls with eating disorders smoke because it is thought to help prevent weight gain.
- *Impulsive Behaviors.* Women with bulimia are at higher-than-average risk for dangerous impulsive behaviors, such as sexual promiscuity, self-cutting, and kleptomania. Some studies have reported such behaviors in half of those with bulimia.
- *Alcohol and Substance Abuse.* An estimated 30% to 70% of patients with bulimia abuse alcohol, drugs, or both. This rate is higher than that of the general population and for people with anorexia. It should be noted, however, that this higher rate of substance abuse may be a distortion because studies are conducted only on diagnosed patients. Bulimia tends not to get diagnosed. And reports of bulimia in the community (where the incidence of the eating disorder is higher than statistics suggest) indicate that substance abuse is actually lower than in people with anorexia.

Abuse of Over-the-Counter Medications

Women with bulimia frequently abuse over-the-counter medications, such as laxatives, appetite suppressants, diuretics, and drugs that induce vomiting (e.g., ipecac). None of these drugs is without risk. For example, ipecac poisonings have been reported, and some people become dependent on laxatives for normal bowel functioning. Diet pills, even herbal and over-the-counter medications, can be hazardous, particularly if they are abused.

HOW SERIOUS IS ANOREXIA NERVOSA?

Anorexia nervosa is a very serious illness that has a wide range of effects on the body and mind. It is also associated with other problems ranging from frequent flus and general poor health to life-threatening conditions. Some experts believe that it should be not be approached as a simple eating disorder but as a serious condition requiring staging according to severity.

At this time no treatment program for anorexia nervosa is completely effective. Recovery rates vary between 23% and 50%, and relapses range from 4% to 27%. Even for those who recover, one study indicated that recovery took between four and nearly seven years. Depending on the duration of the study, anorexic patients have reported death rates ranging from 4% to 25%. Even after treatment and weight gain, many patients continue to display characteristics of the disorder, including perfectionism and a drive for thinness, that could keep them at risk for recurrence. In spite of these very serious findings, this condition has received very little research attention.

According to different studies, the risk for early death is higher for people with the following conditions or characteristics:

- Being younger.
- Having bulimia anorexia. (The mortality rate is twice as high in this group than in the anorexic-restrictor types.)
- Being severely low in weight at the time of treatment.
- Being sick for more than six years.
- Having been previously obese.
- Having personality disorders.
- Having an accompanying severe psychological disorder.
- Having a dysfunctional marriage.
- Being male. (The higher risk for life-threatening medical problems in males may be due to their tendency to be diagnosed with anorexia later than women.)

Hormonal Changes

One of the most serious effects of anorexia are hormonal changes, which can have severe health consequences:

- Reproductive hormones, including estrogen and dehydroepiandrosterone (DHEA), are lower. Estrogen is important for healthy hearts and bones. DHEA, a weak male hormone, may also be important for bone health and for other functions.
- Thyroid hormones are lower.
- Stress hormones are higher.
- Growth hormones are lower. Children and adolescents with anorexia may experience retarded growth.

The result of many of these hormonal abnormalities in women is long-term, irregular or absent menstruation (amenorrhea). This can occur early on in anorexia, even before severe weight loss. Over time this causes infertility, bone loss, and other problems. Low weight alone may not be sufficient to cause amenorrhea. Extreme fasting and purging behaviors may play an even stronger role in hormonal disturbance.

Psychologic Effects and Suicide

Adolescents with eating behaviors associated with anorexia (fasting, frequent exercise to lose weight, and self-induced vomiting) are at high risk for anxiety and depression in young adulthood. Some studies estimate that between 12% and 18% of people who are anorexic also abuse alcohol or drugs. Even worse, suicide has been estimated to account for as many as half the deaths in anorexia. In one study, suicide rates occurred in 1.4% of women with anorexia. The study, however, only looked at female death records. Such records may not have always recorded anorexia as an accompanying condition, so the incidence of suicide in anorexia may be much higher.

Heart Disease

Heart disease is the most common medical cause of death in people with severe anorexia. The effects of anorexia on the heart are as follows:

- Dangerous heart rhythms, including slow rhythms known as bradycardia, may develop. Such abnormalities can show up even in teenagers with anorexia.
- Blood flow is reduced.
- Blood pressure may drop.
- The heart muscles starve, losing size.
- Cholesterol levels tend to rise.

A primary danger to the heart is from abnormalities in the balance of minerals, such as potassium, calcium, magnesium, and phosphate, which are normally dissolved in the body's fluid. The dehydration and starvation that occurs with anorexia can reduce fluid and mineral levels and produce a condition known as *electrolyte imbalance*. Electrolytes (e.g., calcium and potassium) are critical for maintaining the electric currents necessary for a normal heartbeat. An imbalance in these electrolytes can be very serious and even life threatening unless fluids and minerals are replaced. Heart problems are a particular risk when anorexia is compounded by bulimia and the use of ipecac, a drug that causes vomiting.

Long-Term Outlook on Fertility

After treatment and an increase in weight, estrogen levels are usually restored and periods resume. In severe anorexia, however, even after treatment, normal menstruation never returns in 25% of such patients.

- If a woman with anorexia becomes pregnant before regaining normal weight, she faces a higher risk for miscarriage, cesarean section, and for having an infant with low birth weight or birth defects. She is also at higher risk for postpartum depression.
- Women with anorexia who seek fertility treatments have lower chances for success.

Long-Term Effect on Bones and Growth

Almost 90% of women with anorexia experience osteopenia (loss of bone minerals) and 40% have osteoporosis (more advanced loss of bone density). Up to two-thirds of children and adolescent girls with anorexia fail to develop strong bones during their critical growing period. Boys with anorexia also suffer from stunted growth. The less the patient weighs, the more severe the bone loss. Women with anorexia who also binge-purge face an even higher risk for bone loss.

Bone loss in women is mainly due to low estrogen levels that occur with anorexia. Other biologic factors in anorexia also may contribute to bone loss, including high levels of stress hormones (which impair bone growth) and low levels of calcium, certain growth factors, and DHEA (a weak male hormone). Weight gain, unfortunately, does not completely restore bone. Only achieving regular menstruation as soon as possible can protect against permanent bone loss. The

longer the eating disorder persists the more likely the bone loss will be permanent.

Testosterone levels decline in boys as they lose weight, which also can affect their bone density. In young boys with anorexia, weight restoration produces some catch-up growth, but it may not produce full growth.

Neurological Problems

People with severe anorexia may suffer nerve damage that affects the brain and other parts of the body. The following nerve-related conditions have been reported:

- Seizures.
- Disordered thinking.
- Numbness or odd nerve sensations in the hands or feet (a condition called peripheral neuropathy).

Brains scans indicate that parts of the brain undergo structural changes and abnormal activity during anorexic states. Some of these changes return to normal after weight gain, but there is evidence that some damage may be permanent. Still, the extent of the neurologic problems is unclear, and some studies have been unable to determine specific mental problems associated with anorexia.

Blood Problems

Anemia is a common result of anorexia and starvation. A particularly serious blood problem is pernicious anemia, which can be caused by severely low levels of vitamin B12. If anorexia becomes extreme, the bone marrow dramatically reduces its production of blood cells, a life-threatening condition called pancytopenia.

Gastrointestinal Problems

Bloating and constipation are both very common problems in people with anorexia.

Multiorgan Failure

In very late anorexia, the organs simply fail. The main signal for this is elevated levels of liver enzymes, which require immediate administration of calories.

Complications in Diabetic Adolescents

Eating disorders are very serious for young people with type 1 diabetes. The complications of anorexia that affect all patients are even more dangerous in this group of patients. Hypoglycemia, or low blood sugar, for example, is a danger for anyone with anorexia, but it is a particularly dangerous risk for those with diabetes. One study found that 85% of young women with diabetes and eating disorders had retinopathy, damage to the retina in the eye, which can lead to blindness.

WHAT ARE THE SYMPTOMS OF EATING DISORDERS?

Possibly the most bewildering symptom of eating disorders is the distorted body image (*body dysmorphia*). Although people typically associate distorted body image with severe anorexia, one study indicated that distortion may be more prevalent in people with bulimia. People with bulimia were more likely than those with anorexia to overestimate their size. There was also a greater disparity between what they wanted to look like and what they believed they looked like. In another study, people with anorexia tended to have an accurate perception of their upper body, but overestimated the size of their abdominal and pelvic area.

Symptoms Specific to Bulimia without Anorexia

People with bulimia nearly always practice it in secret, and, although they may be underweight, they are not always anorexic. Symptoms or signs of bulimia may, therefore, be very subtle and go unnoticed. They may include the following:

- Evidence of discarded packaging for laxatives, diet pills, emetics (drugs that induce vomiting), or diuretics (medications that reduce fluids).
- Regularly going to the bathroom right after meals.
- Suddenly eating large amounts of food or buying large quantities that disappear right away.
- Compulsive exercising.
- Broken blood vessels in the eyes (from the strain of vomiting).
- Swollen salivary glands. These occur within days of vomiting in about 8% of people with bulimia. They often give a pouch-like appearance to areas below the corners of the mouth.
- Dry mouth

- Teeth develop cavities, diseased gums, and irreversible enamel erosion from excessive acid. (Gargling with baking soda after purging rather than using toothpaste may help neutralize the acid.)
- Rashes and pimples.
- Small cuts and calluses across the tops of finger joints. (These cuts can occur from repeated self-induced vomiting, in which a person thrusts the hand down the throat past the front teeth.)

Symptoms Specific to Anorexia

Weight Loss. The primary symptom of anorexia is major weight loss from excessive and continuous dieting, which may either be restrictive dieting or binge-eating and purging. *Note.* Young women who have both diabetes and eating disorders may have normal weight or even be overweight from the effects of insulin. However, they still are at high risk from the medical consequences of anorexia.

Other symptoms may include the following:

- Menstruation may be infrequent or absent.
- Often, compulsive exercising coupled with emaciation leads to orthopedic problems, particularly in dancers and athletes. Such problems, in fact, may be the first sign of trouble that forces these patients to seek medical help.
- Refusal to eat in front of others.
- Ritualistic eating, including cutting food into small pieces.
- Hypersensitivity to cold. (In fact, some women wear several layers of clothing to both keep warm and hide their thinness.)
- Yellowish skin, especially on the palms of the hands and soles of the feet. (This occurs in people eating too many vitamin A-rich vegetables, such as carrots.)
- The skin may be dry and covered with fine hair.
- Normal scalp hair may be thin.
- The feet and hands may be cold or sometimes swollen.
- The stomach is often distressed and bloated after eating.

Thinking may be confused or slowed, and an anorexic patient may have poor memory and lack judgment.

WHAT WILL CONFIRM A DIAGNOSIS OF EATING DISORDERS?

The first step towards a diagnosis is to admit the existence of an eating disorder. Often, the patient needs to be compelled by a parent or others to see a doctor because the patient may deny and resist the problem. Some patients may even self-diagnose their condition as an allergy to carbohydrates, because after being on a restricted diet, eating carbohydrates can produce gastrointestinal problems, dizziness, weakness, and palpitations. This may lead such people to restrict carbohydrates even more severely.

It is often extremely difficult for parents as well as the patient to admit that a problem is present. For example, because food is such an intrinsic part of the mother/child relationship, a child's eating disorder might seem like a terrible parental failure. Parents may have their own emotional issues with weight gain and loss and perceive no problem with having a "thin" child.

Interview Tests

It is recommended that a supportive companion be present during part of the initial medical interview to offer additional information on the patient's eating history and to help offset any resistance or denial the patient may express.

Various questionnaires are available for assessing patients. Of note is a brief British test called the SCOFF questionnaire. It is proving to be very reliable in accurately identifying both very young and adult patients who meet the full criteria for anorexia or bulimia nervosa. (It may not be as accurate in people who do not meet the full criteria.) [See Box SCOFF Questionnaire.]

SCOFF Questionnaire

Do you feel **Sick** because you feel full?

Do you lose **Control** over how much you eat?

Have you lost more than **One** stone (about 13 pounds) recently?

Do you believe yourself to be **Fat** when others say you are thin?

Does **Food** dominate your life?

Answering yes to two of these questions is a strong indicator of an eating disorder.

Diagnosing Bulimia Nervosa

In spite of the prevalence of bulimia, in one study only 30% of Midwest family physicians had ever diagnosed bulimia in a patient. Younger and female physicians are more likely to detect bulimia. A physician should make a diagnosis of bulimia if there are at least two bulimic episodes per week for three months. Because people with bulimia tend to have complications with their teeth and gums, dentists could play a crucial role in identifying and diagnosing bulimia.

Diagnosing Anorexia Nervosa

Generally, an observation of physical symptoms and a personal history will quickly confirm the diagnosis of anorexia. The standard criteria for diagnosing anorexia nervosa are:

- The patient's refusal to maintain a body weight normal for age and height.
- Intense fear of becoming fat even though underweight.
- A distorted self-image that results in diminished self-confidence.
- Denial of the seriousness of emaciation and starvation.
- The loss of menstrual function for at least three months.

The physician then categorizes the anorexia further:

- Restricting (severe dieting only).
- Anorexia bulimia (binge-purge behavior).

Because the disorder rarely shows up in men, physicians may not be on the lookout for it in male patients, even if they show classic symptoms of anorexia. Physicians should be very aware of these symptoms in anyone, particularly in athletes and dancers.

Diagnosing Complications of Eating Disorders

Once a diagnosis is made, physicians should immediately check for any serious complications of starvation. They should also rule out other medical disorders that might be causing the anorexia. Tests should include the following:

- A complete blood count.
- Tests for electrolyte imbalances. Low potassium levels indicate that the disorder is more likely to be accompanied by the binge-purge syndrome.
- Test for protein levels.
- An electrocardiogram and a chest x-ray.
- Tests for liver, kidney, and thyroid problems.
- A bone density test.

WHAT ARE THE GENERAL GUIDELINES FOR TREATING EATING DISORDERS?

The first major difficulty in treating eating disorders is often the resistance by everyone involved:

- The anorexic patient often believes that the emaciation is normal and even attractive.
- The bulimic patient may feel that purging is the only way to prevent obesity.
- Even worse, the anorexic condition may be encouraged by friends who envy thinness or by dance or athletic coaches who encourage low body fat.
- The family itself may deny the problem and be obstructive or manipulative, adding to the difficulties of treatment.

It is very important that the patient and any close friends and relatives be informed about the serious potential of these conditions and the importance of receiving immediate help.

Getting Rid of Unrealistic Expectations

Patients may drop out of programs if they have unrealistic expectations of being "cured" simply through the therapists' insights. Before a program begins, the following possibilities should be made clear:

- The process is painful and requires hard work on the part of the patient and family.
- A number of therapeutic methods are likely to be tried until the patient succeeds in overcoming these difficult disorders.
- Relapse is common but should not be greeted with despair. (In one study, about 90% of bulimic patients responded to treatments after six years.)

Although the outcome for bulimics is generally more favorable than for anorexics, long-term studies are showing recovery in most people treated for anorexia.

General Treatment Approaches

Psychotherapies. All eating disorders are nearly always treated with some form of psychiatric or psychologic treatment. Depending on the problem, different psychologic approaches may work better than others. A 2001 study reported that patients at greater risk for not completing therapy are those with a history of childhood trauma (e.g., divorce, abuse). Dropout rates were not related to the severity or duration of the disorder.

Medications. A number of medications may be valuable for these patients depending on the type of eating disorder, psychiatric state, and severity of the condition.

[For specific information see treatment sections on either bulimia or anorexia and also What Are the General Psychologic Approaches Used in Eating Disorders?]

WHAT ARE SPECIFIC TREATMENTS FOR PATIENTS WHO HAVE BULIMIA WITHOUT WEIGHT LOSS?

Some experts recommend a stepped approach for patients with bulimia, which may follow these stages, depending on the severity and response to initial treatments:

- Support groups. This is the least expensive approach and may be helpful for patients who have mild conditions with no health consequences.
- Cognitive-behavioral therapy (CBT) along with nutritional therapy is the preferred first treatment for bulimia that does not respond to support groups.
- Drugs. The drugs used for bulimia are typically antidepressants known as selective serotonin-reuptake inhibitors (SSRIs). A combination of CBT and SSRIs is very effective if CBT is not helpful.

Patients with bulimia rarely need hospitalization except under the following circumstances:

- Binge-purge cycles have led to anorexia.
- Drugs are needed for withdrawal from purging.
- Major depression is present.

Psychotherapeutic Approaches and Medications for Bulimia

Psychologic Therapy. Cognitive-behavioral therapy (CBT) is the first-line of therapy for most patients with bulimia and is successful in about 60% of cases. In one study of bulimic patients those who did not respond to CBT tended to be less committed to the treatment, were more preoccupied with their symptoms, and had ritualized eating behaviors. Interpersonal therapy may be tried if CBT fails, although in one study it was no more successful than antidepressants. [For more information, see What Are the Specific Psychologic Therapies Used in Eating Disorders?]

Antidepressants. Because of the high incidence of depression in patients with bulimia, antidepressant medication is often recommended for patients who have normal weight or for those who are overweight. They should be used in combination with CBT. (These agents can cause weight loss and should not be used in patients who are underweight, unless it is part of a clinical trial.) The most common antidepressants prescribed for bulimia are selective serotonin reuptake inhibitors (SSRIs). They include fluoxetine (Prozac), sertraline (Zoloft), paroxetine (Paxil), and fluvoxamine (Luvox). Studies are mixed, however, on whether SSRIs offer an additional advantage in reducing binge-eating compared to CBT. Prozac has been approved for bulimia and is considered the drug of choice, although some studies suggest that other SSRIs, such as Luvox, may be even more effective.

If the drugs are not effective, the physician should be sure it is not because the patient is vomiting after taking the medication. Some experts believe that these agents should be continued even after symptoms have improved in order to restore healthy brain chemical balances.

Drug Therapy for Bulimia Nervosa

Agents to Prevent Vomiting. In one study, ondansetron, a drug that prevents vomiting, reduced the binge-purge episodes by half. The drug may cause depression in people already on SSRI antidepressants. More studies are needed.

Sibutramine. Sibutramine (Meridia) is a drug used for weight loss. It does so by keeping two important brain chemicals, serotonin and norepinephrine, in balance, which helps to increase metabolism. Some evidence suggests that the actions of this drug may be useful for people who binge. Note, however, that for bulimic patients this agent should be used only for those with normal or above normal weight and never for those who are anorexic.

Inositol. Inositol is a B vitamin that is being investigated for bipolar disorder, anxiety, and depression. A 2001 study suggests that it may also have benefits for bulimic patients.

Alternative Approaches to Bulimia

Hypnosis. A study on women with bulimia showed that they had a high susceptibility to hypnosis, suggesting that it might be beneficial as part of their treatment. People with anorexia, on the other hand, seem to be very resistant to the state of vulnerability required in this process.

Light Therapy. Some researchers have noted an association between bulimia and seasonal affective disorder (depression that intensifies in the darker winter months). This suggests that therapy using intense directed light may be useful. Studies report, however, that while light therapy relieves depression, it has little effect on binge–purging behavior. Some experts suggest it may be more useful in combination with medication and psychotherapy.

Guided Imagery. A technique called guided imagery reduced frequency of binges and vomiting by almost 75% in one study. This method uses audiotapes to evoke images that will reduce stress and help achieve specific goals.

WHAT ARE SPECIFIC TREATMENTS FOR PATIENTS WITH ANOREXIA?

The treatment goals for patients with anorexia require a team approach and include the following:

- Treatment of any existing medical conditions. Physicians should immediately check and treat any medical problems related to the condition, such as bone loss, imbalances in important electrolytes, and any hormonal deficiencies, including thyroid and reproductive hormones.
- Nutritional rehabilitation.
- Psychotherapy.

Many moderately to severely ill anorexic patients require hospitalization, particularly under the following circumstances:

- When weight loss continues even with outpatient treatment.
- When weight is 30% below ideal body weight.
- When depression is severe or the patient is suicidal.
- When symptoms of medical complications (e.g., disturbed heart rate, low potassium levels, altered mental status, low blood pressure, severe sensations of cold).

In some severe cases, patients with anorexia may need to be hospitalized involuntarily. A 2000 study reported that such patients respond as well as patients who were admitted voluntarily. And, most later agreed that such treatment had been necessary.

Duration of Inpatient Treatment. For people with severe anorexia, many experts believe that 10 to 12 weeks of hospitalization with full nutritional support are required to reach ideal body weight. Unfortunately, the pressures of managed care force most patients out much earlier before they have reached even a suboptimal weight. Insurance companies rarely cover more than 15 days in the hospital, which places patients with severe anorexia at great risk for relapse and serious health consequences. It is particularly critical for women with both diabetes and anorexia to achieve 100% of ideal weight before being released.

Team Approaches. A multidisciplinary team approach with consistent support and counseling is essential for long–term recovery from all severe eating disorders. Depending on the severity and type of disorder, team members may include the following:

- Physicians specializing in relevant medical complications.
- Dietitians.
- Cognitive–behavioral therapists. (Bulimia is best treated with a combination of antidepressants and cognitive therapy.)
- Psychotherapists.
- Nurses.

All should be skilled in treating eating disorders. Studies have found that people treated by such specialists have a lower mortality rate than those treated only as psychiatric patients.

Measuring Body Mass Index

The body mass index (BMI) is the measurement of body fat. It is derived by multiplying a person's weight in pounds by 703 and then dividing it twice by the height in inches.

- A healthy BMI for women over age 20 is between 19 and 24.

- Those over 24 are considered to be at risk for health problems related to obesity.
- Those under 17.5 are considered to be at risk for health problems related to anorexia. (It should be noted that young teenagers can have lower BMIs without necessarily being anorexic.)

For example, a woman who is 5'5" and weighs 125 pounds has a healthy BMI of 21. A woman at the same height who weighs 90 pounds would have a dangerously low BMI of 15.

Restoring Normal Weight and Nutritional Intervention

Nutritional intervention is essential. Weight gain is associated with fewer symptoms of anorexia and with improvements in both physical and mental function. Restoring good nutrition can help reduce bone loss. Restoring weight is also essential before the patient can fully benefit from additional psychotherapeutic treatments.

Goals for Weight Gain and Good Nutrition. One approach to weight gain involves the following steps:

- The weight-gain goal, usually one to two pounds a week, is strictly set by the physician or health professional. This goal is absolute, no matter how convincingly the patient (or even family members) may argue for a lower-weight goal.
- Patients who are severely malnourished may need to begin with a calorie count as low as 1,500 calories a day, however, in order to reduce the chances for stomach pain and bloating, fluid retention, and heart failure.
- Eventually, the patient is given foods containing as many as 3,500 calories or more a day.
- More calories than normal may be required to put on weight. In some cases, severe dieting has caused the metabolism to adapt to malnutrition and resist the effects of overfeeding. Some anorexic patients also may naturally have a higher metabolism than other individuals.
- Dietary supplements may be needed. Zinc supplementation has been shown to help increase body mass. Patients should receive calcium plus a multivitamin. Oral phosphates are also useful.
- Although eating is the problem, discussions of the disorder are never held during meals, which are times for relaxed social interaction.

Some physicians recommend cyproheptadine (Periactin), an antihistamine, which may stimulate appetite. (It is not useful for patients with bulimia and may even slow recovery.) One interesting study suggested that eating yogurt with active cultures of so-called good bacteria may boost immune factors that may help prevent infections.

Tubal Feedings. Feeding tubes that pass through the nose to the stomach are not commonly used, since many experts believe they discourage a return to normal eating habits and because many patients interpret their use as punishing forced feeding. A 2002 study reported, however, that when patients were given such tube feedings at night with oral feedings during the day, they gained twice as much weight as patients who were being fed orally only. More research is needed to see if benefits persist when patients return home.

Intravenous Feedings. Intravenous feedings may be needed in life-threatening situations. This involves inserting a needle into the vein and infusing fluids containing nutrients directly into the bloodstream. Overzealous administration of glucose solutions can trigger the so-called *refeeding syndrome*, in which phosphate levels drop severely and cause a condition called hypophosphatemia. Emergency symptoms include irritability, muscle weakness, bleeding from the mouth, disturbed heart rhythms, seizures, and coma.

The Role of Exercise in Recovery

The role of exercise in recovery is complex, since for those with anorexia, excessive exercise is often a component of the original disorder. However, very controlled exercise regimens may be used as both a reward for developing good eating habits and as a way to reduce the stomach and intestinal distress that accompanies recovery. Exercise should not be performed if severe medical problems still exist and if the patient has not gained significant weight.

Psychologic Approaches and Medications for Patients with Anorexia

Psychologic Therapies Used in Anorexia. Some studies suggest that for adolescents with anorexia, family therapy that employs cognitive-behavioral techniques works best. For those with late-onset anorexia, individual supportive therapy may be more effective, particularly since many people with anorexia lack a sense of self-survival. Family therapy is important for younger and older individuals. It should be noted that people with severe anorexia often have mental deficits and may not respond well to psychologic therapies until they have regained weight. [For more detailed information see What Are the Specific Psychologic Therapies Used in Eating Disorders?]

Antidepressants. Studies have not reported many benefits from selective serotonin reuptake inhibitors (SSRIs), the antidepressants that are often useful for patients with bulimia. Some SSRIs cause weight loss. Furthermore, experts fear that the effects of starvation may intensify their side effects and reduce their effectiveness. Nevertheless, few studies have actually been conducted using SSRIs in anorexia, particularly using some of the newer agents. Some, in fact, suggest that SSRIs may help prevent relapse in patients who have been treated and have restored weight. And a small study using sertraline (Zoloft) reported improvement in patients who were initially treated with the SSRI. These agents

may also be specifically useful for people with anorexia who also have obsessive–compulsive disorder (OCD) or similar features. More work is needed to determine if there is a possible role for these agents. [For a description of SSRIs, see *What Are Specific Treatments for Patients Who Have Bulimia without Weight Loss?*]

Anti-Anxiety Agents. Patients with anxiety disorders and anorexia may also benefit from other agents that treat anxiety. [See the *Well-Connected* report *Anxiety*.]

Atypical Antipsychotics. Certain agents, called atypical antipsychotics, are currently used for schizophrenia and bipolar disorders. Not only are they useful for stabilizing mood but they also produce significant weight gain. Specific agents that may be helpful for patients with severe treatment–resistant anorexia include olanzapine (Zyprexa).

Agents to Restore Hormonal Function and Bone Density.

Oral Contraceptives. Although abnormal reproductive hormone balances appear to be more important in bone loss than low weight, the use of oral contraceptives (OCs), which contain estrogen and progestin, have had mixed results, with many showing no improvement. Still, it is important to try to restore normal menstruation in women with anorexia nervosa.

Calcium and Vitamin D. Patients should take supplements of 1,000 to 1,500 mg of calcium and a multivitamin containing 400 IU of vitamin D.

Other Agents for Restoring Bone Density. Other drugs are useful for bone restoration, including parathyroid hormone and bisphosphonates, although research on these agents have been conducted primarily on postmenopausal women.

Investigative Agents. One 2002 study reported that recombinant human IGF–I (rhIGF–I), which is a growth hormone, was effective in restoring bone, particularly in combination with oral contraceptives.

Dehydroepiandrosterone (DHEA) is a weak male hormone that is reduced in anorexia and, like estrogen, has positive effects on bone density. In a 2002 study, patients with anorexia who took DHEA experienced both improved bone density and improved psychological well–being. Long–term effects of taking DHEA are unknown. Possible adverse effects include male characteristics (acne, facial hair), unfavorable effects on cholesterol, and a possible growth–stimulating effect on breast or prostate cancer.

WHAT ARE THE SPECIFIC PSYCHOLOGIC THERAPIES USED IN EATING DISORDERS?

Eating disorders are nearly always treated with some form of psychiatric or psychologic treatment. Depending on the problem, different psychologic approaches may work better than others.

Cognitive–Behavioral Therapy

Cognitive–behavioral therapy (CBT) works on the principle that a pattern of false thinking and belief about one's body can be recognized objectively and altered, thereby changing the response and eliminating the unhealthy reaction to food. One approach for bulimia is the following:

- Over a period of four to six months the patient builds up to three meals a day, including foods that the patient has previously avoided.
- During this period, the patient monitors and records the daily dietary intake along with any habitual unhealthy reactions and negative thoughts toward eating while they are occurring.
- The patient also records any relapses (binges or purging). Such lapses are reported objectively and *without self-criticism and judgment*.
- The patient discusses the responses with a cognitive therapist at regular sessions. Eventually the patient is able to discover the false attitudes about body image and the unattainable perfectionism that underlies the opposition to food and health.
- Once these habits are recognized, food choices are broadened and the patient begins to challenge any entrenched and automatic ideas and responses. The patient then replaces them with a set of realistic beliefs along with actions based on reasonable self–expectations.

An interesting Swedish study reported significant success in a small group of patients with anorexia and bulimia using specific behavioral techniques that were based on the premises that dieting and exercise stimulate regions in the brain to produce feelings of pleasure and reward. In the study, patients were initially severely restricted from physical activity (anorexic patients were in wheelchairs and bulimic patients could only walk slowly). Meals were monitored using a scale connected to a computer to measure the amount of food taken off the plate and to match intake against a scale. The patients were then trained to eat more by watching their progress on the screen. After each meal, they rested for an hour in a warm room to restore body temperature (which is low in anorexia). A higher percentage of patients remained in remission than those who did not have this treatment. This approach warrants more research.

Interpersonal Therapy

Interpersonal therapy deals with depression or anxiety that might underlie the eating disorders along with social factors that influence eating behavior. This therapy does not deal with weight, food, or body image at all.

The goals are the following:

- To express feelings.
- To discover how to tolerate uncertainty and change.
- To develop a strong sense of individuality and independence.
- To address any relevant sexual issues or traumatic or abusive event in the past that might be a contributor of the eating disorder.

Studies generally report that it is not as effective as cognitive therapy for bulimia and binge eating, but may be useful for some patients with anorexia. The skill of the therapist plays a strong role in its success.

Family Therapy

Because of the major role family attitudes play in eating disorders, one of the first steps in treating the patient with early-onset anorexia is to also treat the family. Family therapy is certainly useful for both younger and older patients.

If the patient is hospitalized, experts recommend that family therapy start after the patient has gained weight, but before discharge. It should usually continue after the patient has left the hospital.

The feelings of intense guilt and anxiety that caregivers experience are probably similar to those produced by living with a person who is suicidal. An over-involved parent may even support the patient's eating disorder for various reasons:

- Some parents may be afraid of releasing some underlying anger or grief directed at the patient.
- Other parents may identify with the goal of thinness and not even perceive that their child is unhealthily underweight.

In such cases, it is extremely important that the family fully understand the danger of this disorder and that they are collaborating in their child's illness, or even death, by encouraging this state.

WHERE ELSE CAN SOMEONE GET HELP FOR AN EATING DISORDER?

National Association of Anorexia Nervosa and Associated Disorders (www.anad.org). Call (847-831-3438). This is the oldest organization for eating disorders. They offer free information and help in finding or forming support groups in local areas.

Eating Disorders Awareness and Prevention (www.nationaleatingdisorders.org). Call (206-382-3587) or (800-931-2237).

Harvard Eating Disorders Centers (www.hedc.org).

Anorexia Nervosa and Related Eating Disorders (www.anred.com). Call (541-344-1144).

The Eating Disorders Coalition (www.eatingdisorderscoalition.org). Call (202-543-3842). This organization is an advocacy group to promote federal funding for eating disorders.

American Dietetic Association (www.eatright.org/). Call (800-877-1600) or (312-899-0040). The organization offers a hot line that allows people to speak to a licensed dietitian and also provides names of licensed dietitians for specific locations.

National Women's Health Network (www.womenshealthnetwork.org). Call (202-347-1140).

International Eating Disorder Referral Organization (www.edreferral.com). Call (858-481-1515).

Association for Advancement of Behavior Therapy (www.aabt.org). Call (800-685-2228) or (212-647-1890). They offer information packets that include a list of behavior therapists, fact sheets on various psychological problems, and methods for choosing a therapist.

American Institute for Cognitive Therapy (www.cognitivetherapynyc.com). Call (212-308-2440).

Association for the Advancement of Behavior Therapy (www.aabt.org). Call (800-685-AABT).

Eating Disorders: Anorexia and Bulimia

The American Psychiatric Association (www.psych.org). Call (888-357-7924).

The American Psychological Association (www.psychologicalscience.org). Call (202-783-2077).

The National Association of Social Workers (www.naswdc.org). Call (202-408-8600).

The American Psychiatric Nurses Association (www.apna.org). Call (703-243-2443).

American Academy of Child and Adolescent Psychiatry (www.aacap.org).

This site offers personal stories regarding eating disorders from The University of California UC Davis (www.eating.ucdavis.edu/speaking/told/told.html).

Site for family members and patients (<http://closetoyou.org/eatingdisorders>).

Interesting site assists in finding the right therapist (www.1-800-therapist.com).

An online catalog that offers kitchen products, bathroom helpers and daily living products for people of all ages and abilities or disabilities (www.dynamic-living.com).

ClinicalTrials.gov is a service of the National Institutes of Health and provides trials for eating disorders (<http://clinicaltrials.gov/ct/gui/action/FindCondition?ui=D001068&recruiting=true>).

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