



# EATING DISORDERS

NATIONAL INSTITUTE OF MENTAL HEALTH



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# WHAT ARE EATING DISORDERS?

**AN EATING DISORDER** is marked by extremes. It is present when a person experiences severe disturbances in eating behavior, such as extreme reduction of food intake or extreme overeating, or feelings of extreme distress or concern about body weight or shape.

A person with an eating disorder may have started out just eating smaller or larger amounts of food than usual, but at some point, the urge to eat less or more spirals out of control. Eating disorders are very complex, and despite scientific research to understand them, the biological, behavioral and social underpinnings of these illnesses remain elusive.

The two main types of eating disorders are anorexia nervosa and bulimia nervosa. A third category is “eating disorders not otherwise specified (EDNOS),” which includes several variations of eating disorders. Most of these disorders are similar to anorexia or bulimia but with slightly different characteristics. Binge-eating disorder, which has received increasing research and media attention in recent years, is one type of EDNOS.

Eating disorders frequently appear during adolescence or young adulthood, but some reports indicate that they can develop during childhood or later in adulthood. Women and girls are much more likely than males to develop an eating disorder. Men and boys account for an estimated 5 to 15 percent of patients with anorexia or bulimia and an estimated 35 percent of those with binge-eating disorder.

Eating disorders are real, treatable medical illnesses with complex underlying psychological and biological causes. They frequently co-exist with other psychiatric disorders such as depression, substance abuse, or anxiety disorders. People with eating disorders also can suffer from numerous other physical health complications, such as heart conditions or kidney failure, which can lead to death.

# Eating disorders are treatable diseases.

Psychological and medicinal treatments are effective for many eating disorders. However, in more chronic cases, specific treatments have not yet been identified.

In these cases, treatment plans often are tailored to the patient's individual needs that may include medical care and monitoring; medications; nutritional counseling; and individual, group and/or family psychotherapy. Some patients may also need to be hospitalized to treat malnutrition or to gain weight, or for other reasons.



# ANOREXIA NERVOSA

ANOREXIA NERVOSA is characterized by emaciation, a relentless pursuit of thinness and unwillingness to maintain a normal or healthy weight, a distortion of body image and intense fear of gaining weight, a lack of menstruation among girls and women, and extremely disturbed eating behavior. Some people with anorexia lose weight by dieting and exercising excessively; others lose weight by self-induced vomiting, or misusing laxatives, diuretics or enemas.

Many people with anorexia see themselves as overweight, even when they are starved or are clearly malnourished. Eating, food and weight control become obsessions. A person with anorexia typically weighs herself or himself repeatedly, portions food carefully, and eats only very small quantities of only certain foods.

Some who have anorexia recover with treatment after only one episode. Others get well but have relapses. Still others have a more chronic form of anorexia, in which their health deteriorates over many years as they battle the illness.

According to some studies, people with anorexia are up to ten times more likely to die as a result of their illness compared to those without the disorder. The most common complications that lead to death are cardiac arrest, and electrolyte and fluid imbalances. Suicide also can result.

Many people with anorexia also have coexisting psychiatric and physical illnesses, including depression, anxiety, obsessive behavior, substance abuse, cardiovascular and neurological complications, and impaired physical development.

#### OTHER SYMPTOMS MAY DEVELOP OVER TIME, INCLUDING:

- thinning of the bones (osteopenia or osteoporosis)
- brittle hair and nails
- dry and yellowish skin
- growth of fine hair over body (e.g., lanugo)
- mild anemia, and muscle weakness and loss
- severe constipation
- low blood pressure, slowed breathing and pulse
- drop in internal body temperature, causing a person to feel cold all the time
- lethargy

# TREATING ANOREXIA

involves three components:

1. restoring the person to a healthy weight;
2. treating the psychological issues related to the eating disorder; and
3. reducing or eliminating behaviors or thoughts that lead to disordered eating, and preventing relapse.

Some research suggests that the use of medications, such as antidepressants, antipsychotics or mood stabilizers, may be modestly effective in treating patients with anorexia by helping to resolve mood and anxiety symptoms that often co-exist with anorexia. Recent studies, however, have suggested that antidepressants may not be effective in preventing some patients with anorexia from relapsing. In addition, no medication has shown to be effective during the critical first phase of restoring a patient to healthy weight. Overall, it is unclear if and how medications can help patients conquer anorexia, but research is ongoing.

Different forms of psychotherapy, including individual, group and family-based, can help address the psychological reasons for the illness. Some studies suggest that family-based therapies in which parents assume responsibility for feeding their afflicted adolescent are the most effective in helping a person with anorexia gain weight and improve eating habits and moods. Shown to be effective in case studies and clinical trials, this particular approach is discussed in some guidelines and studies for treating eating disorders in younger, nonchronic patients.

Others have noted that a combined approach of medical attention and supportive psychotherapy designed specifically for anorexia patients is more effective than just psychotherapy. But the effectiveness of a treatment depends on the person involved and his or her situation. Unfortunately, no specific psychotherapy appears to be consistently effective for treating adults with anorexia. However, research into novel treatment and prevention approaches is showing some promise. One study suggests that an online intervention program may prevent some at-risk women from developing an eating disorder.

# BULIMIA NERVOSA

BULIMIA NERVOSA is characterized by recurrent and frequent episodes of eating unusually large amounts of food (e.g., binge-eating), and feeling a lack of control over the eating. This binge-eating is followed by a type of behavior that compensates for the binge, such as purging (e.g., vomiting, excessive use of laxatives or diuretics), fasting and/or excessive exercise.

Unlike anorexia, people with bulimia can fall within the normal range for their age and weight. But like people with anorexia, they often fear gaining weight, want desperately to lose weight,

and are intensely unhappy with their body size and shape. Usually, bulimic behavior is done secretly, because it is often accompanied by feelings of disgust or shame. The bingeing and purging cycle usually repeats several times a week.

Similar to anorexia, people with bulimia often have coexisting psychological illnesses, such as depression, anxiety and/or substance abuse problems. Many physical conditions result from the purging aspect of the illness, including electrolyte imbalances, gastrointestinal problems, and oral and tooth-related problems.

## OTHER SYMPTOMS INCLUDE:

- chronically inflamed and sore throat
- swollen glands in the neck and below the jaw
- worn tooth enamel and increasingly sensitive and decaying teeth as a result of exposure to stomach acids
- gastroesophageal reflux disorder
- intestinal distress and irritation from laxative abuse
- kidney problems from diuretic abuse
- severe dehydration from purging of fluids

As with anorexia,

## TREATMENT FOR BULIMIA

often involves a combination of options and depends on the needs of the individual.

To reduce or eliminate binge and purge behavior, a patient may undergo nutritional counseling and psychotherapy, especially cognitive behavioral therapy (CBT), or be prescribed medication. Some antidepressants, such as fluoxetine (Prozac), which is the only medication approved by the U.S. Food and Drug Administration for treating bulimia, may help patients who also have depression and/or anxiety. It also appears to help reduce binge-eating and purging behavior, reduces the chance of relapse, and improves eating attitudes.

CBT that has been tailored to treat bulimia also has shown to be effective in changing bingeing and purging behavior, and eating attitudes. Therapy may be individually oriented or group-based.

# BINGE-EATING DISORDER

**BINGE-EATING DISORDER** is characterized by recurrent binge-eating episodes during which a person feels a loss of control over his or her eating. Unlike bulimia, binge-eating episodes are not followed by purging, excessive exercise or fasting. As a result, people with binge-eating disorder often are overweight or obese. They also experience guilt, shame and/or distress about the binge-eating, which can lead to more binge-eating.

Obese people with binge-eating disorder often have coexisting psychological illnesses including anxiety, depression, and personality disorders. In addition, links between obesity and cardiovascular disease and hypertension are well documented.

## TREATMENT OPTIONS FOR BINGE-EATING DISORDER are similar to those used to treat bulimia.

Fluoxetine and other antidepressants may reduce binge-eating episodes and help alleviate depression in some patients.

Patients with binge-eating disorder also may be prescribed appetite suppressants.



Psychotherapy, especially CBT, is also used to treat the underlying psychological issues associated with binge-eating, in an individual or group environment.

## FDA WARNINGS ON ANTIDEPRESSANTS:

Despite the relative safety and popularity of selective serotonin reuptake inhibitors (SSRIs) and other antidepressants, some studies have suggested that they may have unintentional effects on some people, especially adolescents and young adults. In 2004, after a thorough review of data, the Food and Drug Administration (FDA) adopted a “black box” warning label on all antidepressant medications to alert the public about the potential increased risk of suicidal thinking or attempts in children and adolescents taking antidepressants. In 2007, the FDA proposed that makers of all antidepressant medications extend the warning to include young adults up through age 24. A “black box” warning is the most serious type

of warning on prescription drug labeling. The warning emphasizes that children, adolescents and young adults taking antidepressants should be closely monitored, especially during the initial weeks of treatment, for any worsening depression, suicidal thinking or behavior, or any unusual changes in behavior such as sleeplessness, agitation, or withdrawal from normal social situations. However, results of a comprehensive review of pediatric trials conducted between 1988 and 2006 suggested that the benefits of antidepressant medications likely outweigh their risks to children and adolescents with major depression and anxiety disorders. The study was partially funded by the National Institute of Mental Health.

# HOW ARE MEN AND BOYS AFFECTED?

Although eating disorders primarily affect women and girls, boys and men are also vulnerable. One in four preadolescent cases of anorexia occurs in boys, and binge-eating disorder affects females and males about equally.

Like females who have eating disorders, males with the illness have a warped sense of body image and often have muscle dysmorphia, a type of disorder that is characterized by an extreme concern with becoming more muscular. Some boys with the disorder want to lose weight, while others want to gain weight or “bulk up.” Boys who think they are too small are at a greater risk for using steroids or other dangerous drugs to increase muscle mass.

Boys with eating disorders exhibit the same types of emotional, physical and behavioral signs and symptoms as girls, but for a variety of reasons, boys are less likely to be diagnosed with what is often considered a stereotypically “female” disorder.

# HOW ARE WE WORKING TO BETTER UNDERSTAND AND TREAT EATING DISORDERS?

Researchers are unsure of the underlying causes and nature of eating disorders. Unlike a neurological disorder, which generally can be pinpointed to a specific lesion on the brain, an eating disorder likely involves abnormal activity distributed across brain systems. With increased recognition that mental disorders are brain disorders, more researchers are using tools from both modern neuroscience and modern psychology to better understand eating disorders.

One approach involves the study of the human genes. With the publication of the human genome sequence in 2003, mental health researchers are studying the various combinations of genes to determine if any DNA variations are associated with the risk of developing a mental disorder. Neuroimaging, such as the use of magnetic resonance

imaging (MRI), may also lead to a better understanding of eating disorders.

Neuroimaging already is used to identify abnormal brain activity in patients with schizophrenia, obsessive-compulsive disorder and depression. It may also help researchers better understand how people with eating disorders process information, regardless of whether they have recovered or are still in the throes of their illness.

Conducting behavioral or psychological research on eating disorders is even more complex and challenging. As a result, few studies of treatments for eating disorders have been conducted in the past. New studies currently underway, however, are aiming to remedy the lack of information available about treatment.

Researchers also are working to define the basic processes of the disorders, which should help identify better treatments.

For example, is anorexia the result of skewed body image, self esteem problems, obsessive thoughts, compulsive behavior, or a combination of these? Can it be predicted or identified as a risk factor before drastic weight loss occurs, and therefore avoided?

These and other questions may be answered in the future as scientists and doctors think of eating disorders as medical illnesses with certain biological causes. Researchers are studying behavioral questions, along with genetic and brain systems information, to understand risk factors, identify biological markers and develop medications that can target specific pathways that control eating behavior. Finally, neuroimaging and genetic studies may also provide clues for how each person may respond to specific treatments.



## REFERENCES

- Agency for Healthcare Research and Quality (AHRQ). Management of Eating Disorders, Evidence Report/Technology Assessment, Number 135, 2006; AHRQ publication number 06-E010, [www.ahrq.gov](http://www.ahrq.gov).
- American Psychiatric Association. *Diagnostic and Statistical Manual for Mental Disorders, fourth edition (DSM-IV)*. Washington, DC: American Psychiatric Press, 1994.
- American Psychiatric Association (APA). Let's Talk Facts About Eating Disorders. 2005. Available online at <http://www.healthyminds.org/letstalkfacts.cfm>
- American Psychiatric Association Work Group on Eating Disorders. Practice guideline for the treatment of patients with eating disorders (revision). *American Journal of Psychiatry*, 2000; 157(1 Suppl): 1-39.
- Andersen AE. Eating disorders in males. In: Brownell KD, Fairburn CG, eds. *Eating disorders and obesity: a comprehensive handbook*. New York: Guilford Press, 1995; 177-187.
- Anderson AE. Eating disorders in males: Critical questions. In R Lemberg (ed), *Controlling Eating Disorders with Facts, Advice and Resources*. Phoenix, AZ: Oryx Press, 1992, pp.20-28.
- Arnold LM, McElroy SL, Hudson JI, Weegele JA, Bennet AJ, Kreck PE Jr: A placebo-controlled randomized trial of fluoxetine in the treatment of binge-eating disorder. *Journal of Clinical Psychiatry*, 2002; 63:1028-1033.
- Becker AE, Grinspoon SK, Klibanski A, Herzog DB. Eating Disorders. *New England Journal of Medicine*, 1999; 340(14): 1092-1098.
- Birmingham CL, Su J, Hlynsky JA, Goldner EM, Gao M. The mortality rate of anorexia nervosa. *International Journal of Eating Disorders*. 2005 Sep; 38(2):143-146.
- Bridge JA, Iyengar S, Salary CB, Barbe RP, Birmaher B, Pincus HA, Ren L, Brent DA. Clinical response and risk for reported suicidal ideation and suicide attempts in pediatric antidepressant treatment, a meta-analysis of randomized controlled trials. *Journal of the American Medical Association*, 2007; 297(15): 1683-1696.
- Bryant-Waugh R, Lask B. Childhood-onset eating disorders. In CG Fairburn, KD Brownell (eds.), *Eating disorders and obesity: A comprehensive handbook, 2nd ed.* New York: Guilford Press, 2002, pp. 210-214.
- Bulik CM, Sullivan PF, Kendler KS. Medical and psychiatric comorbidity in obese women with and without binge eating disorder. *International Journal of Eating Disorders*, 2002; 32: 72-78.
- Eisler I, Dare C, Hodes M, Russel G, Dodge, and Le Grange D. Family therapy for adolescent anorexia nervosa: The results of a controlled comparison of two family interventions. *Journal of Child Psychology and Psychiatry*, 2000; 1: 727-736.
- Fitzgerald KD, Welsh RC, Gehring WJ, Abelson JL, Himle JA, Liberzon I, Taylor SF. Error-related hyperactivity of the anterior cingulate cortex in obsessive-compulsive disorder. *Biological Psychiatry*, February 1, 2005; 57 (3): 287-294.
- Halmi CA, Agras WS, Crow S, Mitchell J, Wilson GT, Bryson S, Kraemer HC. Predictors of treatment acceptance and completion in anorexia nervosa: implications for future study designs. *Archives of General Psychiatry*; 2005; 62: 776-781.
- Insel TR and Quirion R. Psychiatry as a clinical neuroscience discipline. *Journal of the American Medical Association*, November 2, 2005; 294 (17): 2221-2224.
- Lasater L, Mehler P. Medical complications of bulimia nervosa. *Eating Behavior*, 2001; 2:279-292.

Lock J, Agras WS, Bryson S, Kraemer, HC. A comparison of short-and long-term family therapy for adolescent anorexia nervosa. *Journal of the American Academy of Child and Adolescent Psychiatry*, 2005; 44: 632-639.

Lock J, Couturier J, Agras WS. Comparison of long-term outcomes in adolescents with anorexia nervosa treated with family therapy. *Journal of the American Academy of Child and Adolescent Psychiatry*, 2006; 45: 666-672.

Lock J, Le Grange D, Agras WS, Dare C. *Treatment Manual for Anorexia Nervosa: A Family-based Approach*. New York: Guilford Press, 2001.

McIntosh VW, Jordan J, Carter FA, Luty SE, et al. Three psychotherapies for anorexia nervosa: a randomized controlled trial. *The American Journal of Psychiatry*, Apr. 2005; 162: 741-747.

Meyer-Lindenberg AS, Olsen RK, Kohn PD, Brown T, Egan MF, Weinberger DR, et al. Regionally specific disturbance of dorsolateral prefrontal-hippocampal functional connectivity in schizophrenia. *Archives of General Psychiatry*, April 2005; 62(4).

National Institute for Clinical Excellence (NICE). *Core interventions in the treatment and management of anorexia nervosa, bulimia nervosa, and binge eating disorder*; 2004: London: British Psychological Society.

Pezawas L, Meyer-Lindenberg A, Drabant EM, Verchinski BA, Munoz KE, Kolachana BS, et al. 5-HTTLPR polymorphism impacts human cingulate-amygdala interactions: a genetic susceptibility mechanism for depression. *Nature Neuroscience*, June 2005; 8 (6): 828-834.

Pope HG, Gruber AJ, Choi P, Olivardi R, Phillips KA. Muscle dysmorphia: an underrecognized form of body dysmorphic disorder. *Psychosomatics*, 1997; 38: 548-557.

Romano SJ, Halmi KJ, Sarkar NP, Koke SC, Lee JS. A placebo-controlled study of fluoxetine in continued treatment of bulimia nervosa after successful acute fluoxetine treatment. *American Journal of Psychiatry*, Jan. 2002; 151(9): 96-102.

Russell GF, Szmuckler GI, Dare C, Eisler I. An evaluation of family therapy in anorexia nervosa and bulimia nervosa. *Archives of General Psychiatry*, 1987; 44: 1047-1056.

Spitzer RL, Yanovski S, Wadden T, Wing R, Marcus MD, Stunkard A, Devlin M, Mitchell J, Hasin D, Horne RL. Binge eating disorder: its further validation in a multisite study. *International Journal of Eating Disorders*, 1993; 13(2): 137-153.

Steiner H, Lock J. Anorexia nervosa and bulimia nervosa in children and adolescents: a review of the past ten years. *Journal of the American Academy of Child and Adolescent Psychiatry*, 1998; 37: 352-359.

Streigel-Moore RH, Franko DL. Epidemiology of Binge Eating Disorder. *International Journal of Eating Disorders*, 2003; 21: 11-27.

Taylor CB, Bryson S, Luce KH, Cunning D, Doyle AC, Abascal LB, Rockwell R, Dev P, Winzelberg AJ, Wilfley DE. Prevention of Eating Disorders in At-risk College-age Women. *Archives of General Psychiatry*; 2006 Aug; 63(8):881-888.

Walsh et al. Fluoxetine after weight restoration in anorexia nervosa: a randomized controlled trial. *Journal of the American Medical Association*. 2006 Jun 14; 295(22): 2605-2612.

Wilson GT and Shafran R. Eating disorders guidelines from NICE. *Lancet*, 2005; 365: 79-81.

Wonderlich SA, Lilienfeld LR, Riso LP, Engel S, Mitchell JE. Personality and anorexia nervosa. *International Journal of Eating Disorders*, 2005; 37: S68-S71.

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