# Eating disorders: Overview of prevention and treatment

**AUTHOR:** Joel Yager, MD
**SECTION EDITOR:** Peter P Roy-Byrne, MD
**DEPUTY EDITOR:** David Solomon, MD

All topics are updated as new evidence becomes available and our peer review process is complete.

Literature review current through: **Oct 2023.**
This topic last updated: **Oct 26, 2022.**

## INTRODUCTION

Eating disorders, including anorexia nervosa, bulimia nervosa, and binge eating disorder can be life-threatening due to general medical complications and suicide, and patients often refuse treatment.

This topic provides an overview of treatment in patients with eating disorders. The epidemiology, pathogenesis, clinical features, assessment, diagnosis, course of illness, and medical complications of eating disorders are discussed separately, as is the refeeding syndrome in anorexia nervosa.

- (See "Eating disorders: Overview of epidemiology, clinical features, and diagnosis".)
- (See "Anorexia nervosa in adults: Clinical features, course of illness, assessment, and diagnosis".)
- (See "Anorexia nervosa in adults and adolescents: Medical complications and their management".)
- (See "Anorexia nervosa in adults: Evaluation for medical complications and criteria for hospitalization to manage these complications".)
- (See "Bulimia nervosa in adults: Clinical features, course of illness, assessment, and diagnosis".)
- (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

- (See "Binge eating disorder in adults: Overview of treatment", section on 'Definition of binge eating disorder'.)
- (See "Anorexia nervosa in adults and adolescents: The refeeding syndrome".)

## GENERAL PRINCIPLES

**Treatment setting** — Patients with eating disorders who are not medically stable ( table 1) should be hospitalized for medical stabilization. Criteria for hospitalizing patients with eating disorders who are medically unstable or who have medical complications are discussed in the context of anorexia nervosa. (See "Anorexia nervosa in adults: Evaluation for medical complications and criteria for hospitalization to manage these complications", section on 'Treatment setting'.)

For patients with eating disorders who are medically stable, determining the treatment setting requires a thorough general medical and psychiatric evaluation, and the decision about disposition rests upon assessment of the risks and benefits of each option. Treatment options ( table 2) usually include inpatient hospitalization, partial hospital (day program), and outpatient care; in addition, residential care may be available [1]. Clinical judgment and some degree of individuation is required. The choice is based upon the severity of illness as well as underlying or concurrent general medical and psychiatric disorders. As an example, patients with eating disorders may have serious medical complications and are at increased risk for suicide or non-suicidal self-injurious behavior [2], and may thus require psychiatric hospitalization or day treatment programs.

**Interdisciplinary care** — Treatment of eating disorders generally involves an interdisciplinary team with experience in treating these disorders; the team includes a mental health clinician, dietitian, and a general medical clinician.

**Mental health clinician** — The mental health clinician typically coordinates care among the team members and administers the individual, group, and family psychotherapies that are the mainstays of treatment. In general, psychotherapy focuses primarily upon eating disorder cognitions and behaviors, and secondarily addresses affective issues, relationships, and underlying issues that may have initiated the eating disorder. In addition, clinicians with expertise in eating disorders can also provide pharmacotherapy. Psychotherapy and pharmacotherapy for anorexia and bulimia nervosa are discussed elsewhere in this topic. (See 'Anorexia nervosa' below and 'Bulimia nervosa' below.)

**Registered dietitian** — Dietary and nutritional support staff direct nutritional rehabilitation, discuss available dietary options and meal plan requirements with patients, and provide nutritional education regarding changes in eating behaviors. The dietitian, with the general medical clinician, sets appropriate weight goals.

**General medical clinician** — If the diagnosis of an eating disorder is not clear, the general medical clinician must rule out other nonpsychiatric medical causes of weight loss, vomiting, or menstrual irregularity. In addition, the clinician assesses patients for medical complications ( table 3), and monitors immediate medical issues (eg, vital sign stability, electrolyte abnormalities, and hydration status) as well as longer term issues (eg, bone density, menstruation, and growth issues in younger patients). For patients with anorexia nervosa, it is often necessary to check their weight and vital signs on a weekly basis to ensure weight gain and medical stability.

The evaluation of patients with eating disorders for medical complications is discussed separately, as is the management of these complications:

- (See "Anorexia nervosa in adults: Evaluation for medical complications and criteria for hospitalization to manage these complications".)
- (See "Anorexia nervosa in adults and adolescents: Medical complications and their management".)
- (See "Anorexia nervosa in adults and adolescents: The refeeding syndrome".)
- (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

**Reducing stigma** — The stigma of eating disorders may be associated with dysfunctional thoughts that may perhaps interfere with treatment. Education of patients that includes biological explanations may possibly mitigate stigma. Indirect evidence for incorporating biological explanations as part of psychoeducation includes a meta-analysis of four studies in 542 undergraduate students, which compared the efficacy of biological explanations with sociocultural explanations in reducing the stigma of eating disorders; three of the studies were randomized trials [3]. Reduction of stigma was superior with biological explanations, and the clinical advantage was moderate.

## PREVENTION

Educational programs may possibly prevent eating disorders. In a meta-analysis of 44 controlled studies (n >9000 participants), prevention programs had beneficial effects upon [4]:

- Knowledge of eating disorders
- Idealization of thinness
- Body dissatisfaction
- Dieting
- Negative affect (dysphoria)
- Eating disorder psychopathology
- Body mass index

The effects were clinically small but statistically significant; heterogeneity across studies was statistically significant [4]. In addition, the effectiveness of prevention programs was greater for the following types of interventions and participants:

- **Selected** programs that targeted high-risk participants (eg, dissatisfaction with body shape or weight), in contrast to universal programs that were offered to all available participants
- **Interactive** programs that included exercises focusing upon risk factors (eg, body dissatisfaction) for onset of eating disorder psychopathology, in contrast to didactic (psychoeducational) programs
- **Multisession** programs, in contrast to single session interventions
- **Females** rather than males
- **Age ≥15 years** rather than younger participants

Many prevention programs are conducted in schools. A one-year trial randomly assigned 12 high schools (n = 356 girls, mean age 16 years) to physical education plus a program focused upon weight-related problems or to physical education alone [5]. Improvement in body image, unhealthy weight control behaviors, and eating patterns were greater with the adjunctive intervention.

## TREATMENT

**Anorexia nervosa** — The treatment of anorexia nervosa generally involves nutritional rehabilitation and psychotherapy [6]. In addition, patients should be monitored for medical complications of anorexia nervosa ( table 3), as well as the refeeding syndrome. The evaluation of patients with anorexia nervosa for medical complications, the management of these complications, and the refeeding syndrome are discussed separately. (See "Anorexia nervosa in adults: Evaluation for medical complications and criteria for hospitalization to

manage these complications", section on 'Medical evaluation' and "Anorexia nervosa in adults and adolescents: Medical complications and their management" and "Anorexia nervosa in adults and adolescents: The refeeding syndrome".)

**Level of care** — Patients with anorexia nervosa who are not medically stable ( table 1) should be hospitalized for medical stabilization. Criteria for hospitalizing medically unstable patients or patients who have medical complications of anorexia nervosa are discussed elsewhere. (See 'Treatment setting' above and "Anorexia nervosa in adults: Evaluation for medical complications and criteria for hospitalization to manage these complications", section on 'Treatment setting'.)

For patients with anorexia nervosa who are medically stable, options for level of care usually include psychiatric inpatient hospitalization, partial hospital (day program), and outpatient care ( algorithm 1) [1]. In addition, residential care may be available.

One of the primary factors in deciding upon level of care is severity of weight loss and malnutrition. Although body mass index (calculator 1) is often used to measure weight loss and to determine weight goals, other metrics may be used, especially for young adults (eg, age 18 to 21 years). Alternative measures of weight loss and weight goals include ideal body weight, expected body weight, and median body weight [7].

**Nutritional rehabilitation** — For patients with anorexia nervosa who are underweight, we suggest nutritional rehabilitation. (See "Anorexia nervosa in adults and adolescents: Nutritional rehabilitation (nutritional support)".)

Patients with anorexia nervosa frequently resist refeeding and may require inpatient treatment to promote weight gain. (See 'Treatment setting' above.)

**Refeeding syndrome** — Although weight gain is the cornerstone of treatment for patients with anorexia nervosa, restoring weight by refeeding patients too rapidly and/or aggressively can lead to the refeeding syndrome, which is potentially fatal. The refeeding syndrome is discussed separately. (See "Anorexia nervosa in adults and adolescents: The refeeding syndrome".)

**Psychotherapy** — Standard treatment of anorexia nervosa includes psychotherapy. Although several therapies have been adapted or developed to treat the disorder, there is no compelling evidence that one therapy is clearly superior to the others [8-10]. Thus, the choice is based upon availability, patient age, patient preference, and cost. The options include:

- **Cognitive-behavioral therapy (CBT)** – CBT encourages patients to change the dysfunctional cognitions (thoughts and beliefs about body weight and shape) and behavioral disturbances (eg, excessive food restriction) that perpetuate anorexia nervosa, and places less emphasis upon the factors that caused the disorder [11]. The efficacy and administration of CBT for anorexia nervosa are discussed separately. (See "Anorexia nervosa in adults: Cognitive-behavioral therapy (CBT)".)

- **Psychodynamic psychotherapy** – Time-limited psychodynamic psychotherapy addresses conscious and unconscious meanings of eating disorder symptoms, the effects of symptoms upon current relationships, and the patient's relationship with the therapist, and does not advise patients about eating behaviors. Evidence supporting the use of psychodynamic psychotherapy includes a one-year randomized trial in 40 patients that compared psychodynamic psychotherapy (weekly sessions lasting 50 minutes, for one year) with usual treatment that included psychoeducation, encouraging patients to adopt a healthy diet, and monitoring patient weight (monthly sessions lasting 30 minutes) [9,12]. Improvement (body weight >85 percent of that expected for age and height) occurred in more patients who received active treatment than usual treatment (33 versus 5 percent). Additional information about psychodynamic psychotherapy is discussed separately in the context of depression. (See "Unipolar depression in adults: Psychodynamic psychotherapy".)

- **Specialist supportive clinical management** – This therapy combines features of clinical management and supportive psychotherapy to address the core symptoms of anorexia nervosa (including low body weight, restrictive eating, and inappropriate compensatory behaviors) by providing education and advice about the illness, eating, and weight; facilitating normal eating and weight gain; praising the patient's progress; and exploring other life issues identified by patients [11,13-15].

- **Motivational interviewing** – Motivational interviewing is used to motivate patients with anorexia nervosa to gain weight by eliciting both their reasons to do so, and their ambivalence about change [16]. The sessions explore how the illness affects the patient's life, the pros and cons of the disorder, the value and meaning of anorexia nervosa in the patient's life, the patient's goals, and the discrepancy between the patient's current state of functioning and desired future state.

- **Family therapy** – Family therapy can benefit adolescents with anorexia nervosa [17,18]. One type of family therapy is called family-based treatment (also called the Maudsley method), which is used for adolescents and focuses upon weight gain; the treatment initially places parents in charge of making decisions about appropriate eating and related

behaviors, with the support of a family therapist [8,19-22]. As patients begin to improve, control over eating is gradually transferred back to them, and other issues related to family functioning are addressed.

Another type of family therapy for adolescents with anorexia nervosa is called parent-focused treatment, in which a therapist meets with only the parents while a nurse meets with the patient for monitoring. The benefits of family-based treatment and parent-focused treatment appear to be comparable. One open-label randomized trial (n = 107 patients and their families) compared the two treatments, which each consisted of 18 sessions administered over six months; although remission at the end of treatment was greater with parent-focused treatment than family-based treatment (43 versus 22 percent of patients), follow-up assessments at 6 and 12 months posttreatment each found that remission was comparable [23].

Another reasonable alternative is systemic family therapy, which focuses upon general family functioning and processes. An open-label, nine-month randomized trial (n = 158 adolescents and their families) compared family-based treatment with systemic family therapy and found that weight gain during the first eight weeks was faster with family-based treatment than systemic family therapy, and that the median number of days of hospitalization required during the study was less with family-based treatment than systemic family therapy (8 versus 21) [24]. However, one year after the end of treatment, remission was comparable for the two groups (approximately 40 percent).

- **Cognitive remediation therapy** – Cognitive remediation therapy addresses cognitive processes (thinking styles) rather than the thought content and eating disorder core features [25]. Specific cognitive processes that are targeted include rigidity, which can manifest with strict attention to detail, perfectionistic tendencies, and all or nothing (black and white) thinking. The therapy also targets difficulties with shifting set, which is the ability to move back and forth between different concepts. Cognitive exercises are employed to improve cognitive flexibility and the ability to switch between concepts.

**Pharmacotherapy** — Pharmacotherapy is not an initial or primary treatment for anorexia nervosa [1,26]. However, adjunctive pharmacotherapy is indicated for acutely ill patients who do not gain weight despite initial treatment with nutritional rehabilitation and psychotherapy. The use of medications to treat anorexia nervosa is discussed separately. (See "Anorexia nervosa in adults: Pharmacotherapy".)

**Investigational approaches** — Experimental interventions for anorexia nervosa include repetitive transcranial magnetic stimulation and deep brain stimulation.

Repetitive transcranial magnetic stimulation (TMS) is an investigational approach for patients with anorexia nervosa but is clinically available for other disorders (eg, unipolar major depression). The intervention uses an alternating current passed through a metal coil placed against the scalp to generate a magnetic field, which induces an electric current that depolarizes neurons in a focal area of the surface cortex. A randomized trial compared one session of TMS with sham stimulation applied to the left dorsolateral prefrontal cortex in patients with anorexia nervosa [27]. The completer analysis (n = 49 female patients) of a composite measure of symptoms found a trend for greater improvement with TMS than sham treatment at 24 hours posttreatment.

Additional information about transcranial magnetic stimulation is discussed in the context of unipolar major depression. (See "Unipolar depression in adults: Indications, efficacy, and safety of transcranial magnetic stimulation (TMS)".)

Deep brain stimulation is an experimental procedure for intractable anorexia nervosa that may possibly be beneficial and safe [28]. However, the procedure is at only a preliminary stage of investigation:

- In a nine-month, prospective observational study in six female patients with severe and treatment-refractory anorexia nervosa (mean duration of illness 18 years; history of general medical complications), electrodes were implanted bilaterally into the subcallosal cingulate gyrus through burr holes using a stereotactic frame, magnetic resonance imaging, and fluoroscopic guidance [29]. A second procedure was performed to tunnel wires beneath the scalp and skin of the neck to connect the electrodes to a pulse generator that controlled stimulation parameters and was implanted subcutaneously in the chest. Weight gain occurred in three patients, and improvement of mood and anxiety symptoms occurred in four patients.

  The same research group subsequently enrolled another 10 female patients with severe and treatment-refractory anorexia nervosa; a total of 16 patients were thus treated prospectively for 12 months with bilateral deep brain stimulation targeting the subcallosal cingulate gyrus [30]. The average body mass index at the time of surgery was 13.8 kg/$m^2$, and comorbid psychopathology (eg, unipolar major depression) was present in 14 patients (88 percent). After 12 months, the mean body mass index increased to 17.3 kg/$m^2$; in addition, stimulation was associated with improvement of depression, anxiety, and quality of life. However, two patients had their devices deactivated or removed for unclear reasons, five patients had incision-site pain, two patients had a seizure, one patient had a surgical-sited infection that ultimately required device explantation with subsequent

reimplantation, one patient had an air embolus, and one patient had an intraoperative panic attack.

- In a third prospective observational study (mean length of follow-up 38 months), four severely ill female adolescents with anorexia nervosa that was refractory to multiple courses of pharmacotherapy (mean duration of illness 19 months) received bilateral deep brain stimulation of the nucleus accumbens [31]. The mean increase in body weight was 65 percent, such that all patients weighed greater than 85 percent of expected body weight and resumed menstruation. Side effects were not reported.

Additional information about deep brain stimulation is discussed in the context of intractable unipolar major depression. (See "Unipolar depression in adults: Treatment with surgical approaches", section on 'Deep brain stimulation'.)

**Bulimia nervosa** — Standard treatment for bulimia nervosa includes nutritional rehabilitation, psychotherapy, and pharmacotherapy, as well as monitoring patients for medical complications [1,32,33]. Patients are typically treated as outpatients or in partial hospital programs, but hospitalization may be necessary for suicidal ideation or behavior, or uncontrolled purging ( table 2). Medical complications are discussed separately. (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

**Nutritional rehabilitation** — For adult patients with bulimia nervosa, nutritional counseling is used with other treatment modalities to control binge eating as well as inappropriate compensatory behavior such as purging [1].

**Psychotherapy** — For patients with bulimia nervosa, CBT is superior to other psychotherapies. The indications, evidence of efficacy, and administration of CBT for bulimia nervosa are discussed separately. (See "Bulimia nervosa in adults: Cognitive-behavioral therapy (CBT)".)

For patients with bulimia nervosa who prefer initial treatment with CBT alone, there is evidence that a decrease in binge eating and purging of at least 70 percent by the sixth treatment visit predicts abstinence [34]. However, a less robust response suggests that the need for adjunctive pharmacotherapy should be considered. (See "Bulimia nervosa in adults: Pharmacotherapy".)

**Pharmacotherapy** — Pharmacotherapy combined with nutritional rehabilitation and psychotherapy is indicated for treatment of bulimia nervosa, as well as comorbid anxiety and depressive disorders [1,26,35-39]. However, if nutritional rehabilitation and psychotherapy are not available, pharmacotherapy alone is reasonable, in conjunction with self-help workbooks and educational material for patients and family members to read. The use of medications to

treat bulimia nervosa is discussed separately. (See "Bulimia nervosa in adults: Pharmacotherapy".)

**Binge eating disorder** — The treatment of binge eating disorder generally involves psychotherapy; however, pharmacotherapy is a reasonable alternative. For overweight or obese patients with binge eating disorder, behavioral weight loss therapy may be beneficial. In addition, patients should be monitored for medical complications. Psychotherapy, pharmacotherapy, behavioral weight loss therapy, and medical complications for binge eating disorder are discussed separately. (See "Binge eating disorder in adults: Overview of treatment" and "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

**Referral services in the United States** — It may be difficult for patients with eating disorders in the United States (and elsewhere) to access clinicians with expertise in these illnesses. Several national organizations provide referral services ( table 4).

## SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "Society guideline links: Eating disorders".)

## INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, “The Basics” and “Beyond the Basics.” The Basics patient education pieces are written in plain language, at the 5$^{th}$ to 6$^{th}$ grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10$^{th}$ to 12$^{th}$ grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on “patient info” and the keyword(s) of interest.)

- Basics topics (see "Patient education: Anorexia nervosa (The Basics)" and "Patient education: Bulimia nervosa (The Basics)")

## SUMMARY


- **Specific eating disorders** – Specific eating disorders include anorexia nervosa ( table 5), bulimia nervosa ( table 6), and binge eating disorder, as well as avoidant/restrictive food intake disorder, pica, and rumination disorder. (See "Eating disorders: Overview of epidemiology, clinical features, and diagnosis".)

- **Prevention** – Educational programs may perhaps prevent eating disorders, especially interactive, multisession interventions that focus upon high risk females aged 15 years or more. (See 'Prevention' above.)

- **Treatment setting** – Stabilization of and recovery from eating disorders may require hospitalization on a psychiatric, medical, or combined ward. Criteria for inpatient treatment are based upon practice guidelines ( table 2). (See 'Treatment setting' above.)

- **Treatment team** – Patients with eating disorders are best cared for by an interdisciplinary team consisting of a mental health clinician, dietitian, and general medical clinician. (See 'Interdisciplinary care' above.)

- **Treatment**

  - **Anorexia nervosa** – For patients who present with anorexia nervosa and are medically stable, options for level of care usually include psychiatric inpatient hospitalization, partial hospital (day program), and outpatient care ( algorithm 1).

    - Initial treatment – The treatment of anorexia nervosa generally involves nutritional rehabilitation and psychotherapy. Nutritional rehabilitation includes prescribing and supervising meals, and proscribing binge eating and purging; hospitalization may be necessary for patients who cannot adhere to treatment. Refeeding that is too rapid or aggressive can lead to the potentially fatal refeeding syndrome. Psychotherapy options for anorexia nervosa include family therapy, cognitive-behavioral therapy, specialist supportive clinical management, and motivational interviewing. In addition, adolescent patients may benefit from family therapy.

    - Treatment-resistant patients – Adjunctive pharmacotherapy is indicated for acutely ill patients who do not gain weight despite initial treatment with nutritional rehabilitation and psychotherapy.

  (See 'Anorexia nervosa' above.)

- **Bulimia nervosa** – Standard treatment for bulimia nervosa includes nutritional rehabilitation, psychotherapy, and pharmacotherapy. Cognitive-behavioral therapy is the psychotherapy of choice. (See 'Bulimia nervosa' above and "Bulimia nervosa in adults: Cognitive-behavioral therapy (CBT)" and "Bulimia nervosa in adults: Pharmacotherapy".)

- **Binge eating disorder** – The treatment of binge eating disorder generally involves psychotherapy; however, pharmacotherapy is a reasonable alternative. For overweight or obese patients with binge eating disorder, behavioral weight loss therapy may be beneficial. (See "Binge eating disorder in adults: Overview of treatment".)

- **Medical complications** – Patients with eating disorders should be monitored for general medical complications. (See "Anorexia nervosa in adults and adolescents: Medical complications and their management" and "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

## ACKNOWLEDGMENT

The UpToDate editorial staff acknowledges Sara F Forman, MD, who contributed to an earlier version of this topic review.



Topic 2094 Version 47.0

→