PRACTICE GUIDELINE FOR THE
Treatment of Patients With Eating Disorders
Third Edition

WORK GROUP ON EATING DISORDERS

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STATEMENT OF INTENT

The American Psychiatric Association (APA) Practice Guidelines are not intended to be construed or to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual patient and are subject to change as scientific knowledge and technology advance and practice patterns evolve. These parameters of practice should be considered guidelines only. Adherence to them will not ensure a successful outcome for every individual, nor should they be interpreted as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgment regarding a particular clinical procedure or treatment plan must be made by the psychiatrist in light of the clinical data presented by the patient and the diagnostic and treatment options available.

This practice guideline has been developed by psychiatrists who are in active clinical practice. In addition, some contributors are primarily involved in research or other academic endeavors. It is possible that through such activities some contributors, including work group members and reviewers, have received income related to treatments discussed in this guideline. A number of mechanisms are in place to minimize the potential for producing biased recommendations due to conflicts of interest. Work group members are selected on the basis of their expertise and integrity. Any work group member or reviewer who has a potential conflict of interest that may bias (or appear to bias) his or her work is asked to disclose this to the Steering Committee on Practice Guidelines and the work group. Iterative guideline drafts are reviewed by the Steering Committee, other experts, allied organizations, APA members, and the APA Assembly and Board of Trustees; substantial revisions address or integrate the comments of these multiple reviewers. The development of the APA practice guidelines is not financially supported by any commercial organization.

More detail about mechanisms in place to minimize bias is provided in a document available from the APA Department of Quality Improvement and Psychiatric Services, "APA Guideline Development Process."

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GUIDE TO USING THIS PRACTICE GUIDELINE

The *Practice Guideline for the Treatment of Patients With Eating Disorders,* Third Edition, consists of three parts (A, B, and C) and many sections, not all of which will be equally useful for all readers. The following guide is designed to help readers find the sections that will be most useful to them.

Part A, "Treatment Recommendations," is published as a supplement to the *American Journal of Psychiatry* and contains general and specific treatment recommendations. Section I summarizes the key recommendations of the guideline and codes each recommendation according to the degree of clinical confidence with which the recommendation is made. Section II provides further discussion of the formulation and implementation of a treatment plan as it applies to the individual patient. Section III, "Clinical Features Influencing the Treatment Plan," discusses a range of clinical considerations that could alter the general recommendations discussed in Section I.

Part B, "Background Information and Review of Available Evidence," and Part C, "Future Research Needs," are not included in the *American Journal of Psychiatry* supplement but are provided with Part A in the complete guideline, which is available in print format from American Psychiatric Publishing, Inc. (http://www.appi.org), and online through the American Psychiatric Association (http://www.psych. org). Part B provides an overview of eating disorders, including general information on their natural history, course, and epidemiology. It also provides a structured review and synthesis of the evidence that underlies the recommendations made in Part A. Part C draws from the previous sections and summarizes areas for which more research data are needed to guide clinical decisions.

To share feedback on this or other published APA practice guidelines, a form is available at http:// www.psych.org/psych_pract/pg/reviewform.cfm.

DEVELOPMENT PROCESS

This practice guideline was developed under the auspices of the Steering Committee on Practice Guidelines. The development process is detailed in "APA Guideline Development Process," which is available from the APA Department of Quality Improvement and Psychiatric Services. The key features of this process include the following:

- A comprehensive literature review to identify all relevant randomized clinical trials as well as less rigorously designed clinical trials and case series when evidence from randomized trials was unavailable
- Development of evidence tables that summarized the key features of each identified study, including funding source, study design, sample sizes, subject characteristics, treatment characteristics, and treatment outcomes
- Initial drafting of the guideline by a work group that included psychiatrists with clinical and research expertise in eating disorders
- Production of multiple revised drafts with widespread review (10 organizations and 58 individuals submitted significant comments)
- Approval by the APA Assembly and Board of Trustees
- Planned revisions at regular intervals

A MEDLINE search, using PubMed, of "anorexia nervosa OR bulimia OR binge eating disorder OR binge eating disorders OR eating disorder OR eating disorders" yielded 15,561 citations, of which 3,596 were published between 1998 and 2004, were written in English, and contained abstracts. Of these, 334 were reports of clinical trials (including randomized controlled trials) or meta-analyses. Abstracts for these articles as well as abstracts for an additional 634 review articles were screened individually for their relevance to the guideline. The Cochrane Library was also searched for relevant abstracts. Additional, less formal literature searches were conducted by APA staff and individual members of the Work Group on Eating Disorders.

The recommendations contained in this practice guideline are based on the best available data and clinical consensus. The summary of treatment recommendations is keyed according to the level of confidence with which each recommendation is made (indicated by bracketed Roman numeral). In addition, each reference is followed by a bracketed letter that indicates the nature of the supporting evidence.

INTRODUCTION

As this practice guideline was developed and then reviewed by psychiatrists, researchers, and other clinicians throughout North America and Europe, a number of important general themes emerged. So that readers may better appreciate the recommendations of this guideline, the following points merit emphasis:

- **A diagnosis is presumed before the recommendations of this practice guideline apply.** Considerations for performing a detailed differential diagnosis are not included in this guideline. Special attention, however, is given to the treatment of eating disorders and common co-occurring conditions and clinical features (Section III).
- **The evidence base (including data and clinical experience) for the treatment of children and adolescents differs from that for adults.** APA practice guidelines are intended for the care of adults. However, because anorexia nervosa and bulimia nervosa often begin during adolescence and because clinicians commonly treat all ages spanning from childhood to adulthood, this guideline includes recommendations that apply to both age groups and notes if any recommendation applies exclusively to a certain age group.
- **There is a growing evidence base for the treatment of eating disorders; at the same time, there are many situations that arise in clinical care for which recommendations must be based on expert opinion and experience in the absence of data from randomized controlled trials or other systematic research studies.** This perspective is also recognized in guidelines for eating disorders available from other groups, notably the National Institute for Clinical Excellence (NICE) in England (1), the Royal Australian and New Zealand College of Psychiatrists (2), and the Society for Adolescent Medicine (3).
- **Well-conducted, small-scale studies that demonstrate the feasibility and effectiveness of a particular intervention cannot define community standards until clinicians trained in the application of that intervention are generally available.** For example, some innovative, university-based programs have demonstrated that specialized interventions can avert or reduce the length of inpatient stays for some patients with anorexia nervosa. However, the availability of such programs is limited, and it is unclear if results of small-scale studies of these interventions are generalizable to other settings and patient groups. The recommendations of this practice guideline are made with the recognition that it is inappropriate to refuse patients and families access to a more intensive treatment simply because a less intensive treatment has been demonstrated to be effective in a few small-scale studies.
- **Medical testing should be limited to that required for making clinical decisions for the individual patient.** Clinicians differ in their test-ordering patterns for various reasons. In general, this practice guideline recommends the performance of only those laboratory tests and procedures most likely needed for clinical decision making. In patients with eating disorders, many clinical parameters are likely to be abnormal; however, they typically normalize without specific attention as the patient's clinical condition improves. This guideline does not suggest ordering tests for all parameters.
- **Good clinical decisions regarding anorexia nervosa should not rely primarily on simplistic, artificial categories based on body weight percentages.** In making a diagnosis of anorexia nervosa, body weight is one of the factors that is taken into consideration. Various diagnostic criteria have suggested specific weight values that can be used as estimated thresholds for diagnosis. For example, DSM-IV-TR offers a weight of "less than 85% of that expected," whereas ICD-10 specifies weight "15% below that expected for health." Despite their

potential utility in defining reliable and valid diagnostic categories, such criteria are not strict or absolute, nor are they designed for use as thresholds in clinical care. This practice guideline concurs with the NICE guideline that states, "In anorexia nervosa, although weight and BMI are important indicators they should not be considered the sole indicators of physical risk (as they are unreliable in adults and especially in children)" (1, p. 10).

PART A
TREATMENT RECOMMENDATIONS FOR PATIENTS WITH EATING DISORDERS

I. EXECUTIVE SUMMARY

A. CODING SYSTEM

Each recommendation is identified as meriting one of three categories of endorsement, based on the level of clinical confidence regarding the recommendation, as indicated by a bracketed Roman numeral after the statement. The three categories are as follows:

[I] Recommended with substantial clinical confidence
[II] Recommended with moderate clinical confidence
[III] May be recommended on the basis of individual circumstances

B. EXECUTIVE SUMMARY

1. Psychiatric management

Psychiatric management begins with the establishment of a therapeutic alliance, which is enhanced by empathic comments and behaviors, positive regard, reassurance, and support [I]. Basic psychiatric management includes support through the provision of educational materials, including self-help workbooks; information on community-based and Internet resources; and direct advice to patients and their families (if they are involved) [I]. A team approach is the recommended model of care [I].

a) Coordinating care and collaborating with other clinicians

In treating adults with eating disorders, the psychiatrist may assume the leadership role within a program or team that includes other physicians, psychologists, registered dietitians, and social workers or may work collaboratively on a team led by others. For the management of acute and ongoing medical and dental complications, it is important that psychiatrists consult other physician specialists and dentists [I].

When a patient is managed by an interdisciplinary team in an outpatient setting, communication among the professionals is essential to monitoring the patient's progress, making necessary adjustments to the treatment plan, and delineating the specific roles and tasks of each team member [I].

b) Assessing and monitoring eating disorder symptoms and behaviors

A careful assessment of the patient's history, symptoms, behaviors, and mental status is the first step in making a diagnosis of an eating disorder [I]. The complete assessment usually requires at least several hours and includes a thorough review of the patient's height and weight history; re-

strictive and binge eating and exercise patterns and their changes; purging and other compensatory behaviors; core attitudes regarding weight, shape, and eating; and associated psychiatric conditions [I]. A family history of eating disorders or other psychiatric disorders, including alcohol and other substance use disorders; a family history of obesity; family interactions in relation to the patient's disorder; and family attitudes toward eating, exercise, and appearance are all relevant to the assessment [I]. A clinician's articulation of theories that imply blame or permit family members to blame one another or themselves can alienate family members from involvement in the treatment and therefore be detrimental to the patient's care and recovery [I]. It is important to identify family stressors whose amelioration may facilitate recovery [I]. In the assessment of children and adolescents, it is essential to involve parents and, whenever appropriate, school personnel and health professionals who routinely work with the patient [I].

c) Assessing and monitoring the patient's general medical condition

A full physical examination of the patient is strongly recommended and may be performed by a physician familiar with common findings in patients with eating disorders. The examination should give particular attention to vital signs, physical status (including height and weight), cardiovascular and peripheral vascular function, dermatological manifestations, and evidence of self-injurious behaviors [I]. Calculation of the patient's body mass index (BMI) is also useful (see http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-tables.pdf [for ages 2–20] and http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-adults.pdf [for adults]) [I]. Early recognition of eating disorder symptoms and early intervention may prevent an eating disorder from becoming chronic [I]. During treatment, it is important to monitor the patient for shifts in weight, blood pressure, pulse, other cardiovascular parameters, and behaviors likely to provoke physiological decline and collapse [I]. Patients with a history of purging behaviors should also be referred for a dental examination [I]. Bone density examinations should be obtained for patients who have been amenorrheic for 6 months or more [I].

In younger patients, examination should include growth pattern, sexual development (including sexual maturity rating), and general physical development [I]. The need for laboratory analyses should be determined on an individual basis depending on the patient's condition or the laboratory tests' relevance to making treatment decisions [I].

d) Assessing and monitoring the patient's safety and psychiatric status

The patient's safety will be enhanced when particular attention is given to suicidal ideation, plans, intentions, and attempts as well as to impulsive and compulsive self-harm behaviors [I]. Other aspects of the patient's psychiatric status that greatly influence clinical course and outcome and that are important to assess include mood, anxiety, and substance use disorders, as well as motivational status, personality traits, and personality disorders [I]. Assessment for suicidality is of particular importance in patients with co-occurring alcohol and other substance use disorders [I].

e) Providing family assessment and treatment

For children and adolescents with anorexia nervosa, family involvement and treatment are essential [I]. For older patients, family assessment and involvement may be useful and should be considered on a case-by-case basis [II]. Involving spouses and partners in treatment may be highly desirable [II].

2. Choosing a treatment site

Services available for treating eating disorders can range from intensive inpatient programs (in which general medical care is readily available) to residential and partial hospitalization programs to varying levels of outpatient care (in which the patient receives general medical treat-

ment, nutritional counseling, and/or individual, group, and family psychotherapy). Because specialized programs are not available in all geographic areas and their financial requirements are often significant, access to these programs may be limited; petition, explanation, and follow-up by the psychiatrist on behalf of patients and families may help procure access to these programs. Pretreatment evaluation of the patient is essential in choosing the appropriate treatment setting [I].

In determining a patient's initial level of care or whether a change to a different level of care is appropriate, it is important to consider the patient's overall physical condition, psychology, behaviors, and social circumstances rather than simply rely on one or more physical parameters, such as weight [I]. Weight in relation to estimated individually healthy weight, the rate of weight loss, cardiac function, and metabolic status are the most important physical parameters to be considered when choosing a treatment setting; other psychosocial parameters are also important [I]. Healthy weight estimates for a given individual must be determined by that person's physicians [I]. Such estimates may be based on historical considerations (often including that person's growth charts) and, for women, the weight at which healthy menstruation and ovulation resume, which may be higher than the weight at which menstruation and ovulation became impaired. Admission to or continuation of an intensive level of care (e.g., hospitalization) may be necessary when access to a less intensive level of care (e.g., partial hospitalization) is absent because of geography or a lack of resources [I].

Generally, adult patients who weigh less than approximately 85% of their individually estimated healthy weights have considerable difficulty gaining weight outside of a highly structured program [II]. Such programs, including inpatient care, may be medically and psychiatrically necessary even for some patients who are above 85% of their individually estimated healthy weight [I]. Factors suggesting that hospitalization may be appropriate include rapid or persistent decline in oral intake, a decline in weight despite maximally intensive outpatient or partial hospitalization interventions, the presence of additional stressors that may interfere with the patient's ability to eat, knowledge of the weight at which instability previously occurred in the patient, co-occurring psychiatric problems that merit hospitalization, and the degree of the patient's denial and resistance to participate in his or her own care in less intensively supervised settings [I].

Hospitalization should occur before the onset of medical instability as manifested by abnormalities in vital signs (e.g., marked orthostatic hypotension with an increase in pulse of 20 bpm or a drop in standing blood pressure of 20 mmHg, bradycardia <40 bpm, tachycardia >110 bpm, or an inability to sustain core body temperature), physical findings, or laboratory tests [I]. To avert potentially irreversible effects on physical growth and development, many children and adolescents require inpatient medical treatment, even when weight loss, although rapid, has not been as severe as that suggesting a need for hospitalization in adult patients [I].

Patients who are physiologically stabilized on acute medical units will still require specific inpatient treatment for eating disorders if they do not meet biopsychosocial criteria for less intensive levels of care and/or if no suitable less intensive levels of care are accessible because of geographic or other reasons [I]. Weight level per se should never be used as the sole criterion for discharge from inpatient care [I]. Assisting patients in determining and practicing appropriate food intake at a healthy body weight is likely to decrease the chances of their relapsing after discharge [I].

In shifting between levels of care, it is important to establish continuity of care [II]. If the patient is going from one treatment setting or locale to another, transition planning requires that the care team in the new setting or locale be identified and that specific patient appointments be made [I]. It is preferable that a specific clinician on the team be designated as the primary coordinator of care to ensure continuity and attention to important aspects of treatment [II].

Most patients with uncomplicated bulimia nervosa do not require hospitalization; indications for the hospitalization of such patients include severe disabling symptoms that have not responded to adequate trials of outpatient treatment, serious concurrent general medical prob-

lems (e.g., metabolic abnormalities, hematemesis, vital sign changes, uncontrolled vomiting), suicidality, psychiatric disturbances that would warrant the patient's hospitalization independent of the eating disorder diagnosis, or severe concurrent alcohol or drug dependence or abuse [I].

Legal interventions, including involuntary hospitalization and legal guardianship, may be necessary to address the safety of treatment-reluctant patients whose general medical conditions are life threatening [I].

The decision about whether a patient should be hospitalized on a psychiatric versus a general medical or adolescent/pediatric unit should be made based on the patient's general medical and psychiatric status, the skills and abilities of local psychiatric and general medical staff, and the availability of suitable programs to care for the patient's general medical and psychiatric problems [I]. There is evidence to suggest that patients with eating disorders have better outcomes when treated on inpatient units specializing in the treatment of these disorders than when treated in general inpatient settings where staff lack expertise and experience in treating eating disorders [II].

Outcomes from partial hospitalization programs that specialize in eating disorders are highly correlated with treatment intensity. The more successful programs involve patients in treatment at least 5 days/week for 8 hours/day; thus, it is recommended that partial hospitalization programs be structured to provide at least this level of care [I].

Patients who are considerably below their healthy body weight and are highly motivated to adhere to treatment, have cooperative families, and have a brief symptom duration may benefit from treatment in outpatient settings, but only if they are carefully monitored and if they and their families understand that a more restrictive setting may be necessary if persistent progress is not evident in a few weeks [II]. Careful monitoring includes at least weekly (and often two to three times a week) weight determinations done directly after the patient voids and while the patient is wearing the same class of garment (e.g., hospital gown, standard exercise clothing) [I]. In patients who purge, it is important to routinely monitor serum electrolytes [I]. Urine specific gravity, orthostatic vital signs, and oral temperatures may need to be measured on a regular basis [II].

In an outpatient setting, patients can remain with their families and continue to attend school or work. Inpatient care may interfere with family, school, and work obligations; however, it is important to give priority to the safe and adequate treatment of a rapidly progressing or otherwise unresponsive disorder for which hospital care might be necessary [I].

3. Choice of specific treatments for anorexia nervosa

The aims of treating anorexia nervosa are to 1) restore patients to a healthy weight (associated with the return of menses and normal ovulation in female patients, normal sexual drive and hormone levels in male patients, and normal physical and sexual growth and development in children and adolescents); 2) treat physical complications; 3) enhance patients' motivation to cooperate in the restoration of healthy eating patterns and participate in treatment; 4) provide education regarding healthy nutrition and eating patterns; 5) help patients reassess and change core dysfunctional cognitions, attitudes, motives, conflicts, and feelings related to the eating disorder; 6) treat associated psychiatric conditions, including deficits in mood and impulse regulation and self-esteem and behavioral problems; 7) enlist family support and provide family counseling and therapy where appropriate; and 8) prevent relapse.

a) Nutritional rehabilitation

The goals of nutritional rehabilitation for seriously underweight patients are to restore weight, normalize eating patterns, achieve normal perceptions of hunger and satiety, and correct biological and psychological sequelae of malnutrition [I]. For patients age 20 years and younger, an individually appropriate range for expected weight and goals for weight and height may be determined by considering measurements and clinical factors, including current weight, bone age estimated from wrist X-rays and nomograms, menstrual history (in adolescents with sec-

ondary amenorrhea), mid-parental heights, assessments of skeletal frame, and benchmarks from Centers for Disease Control and Prevention (CDC) growth charts (available at http://www.cdc.gov/growthcharts/) [I].

For individuals who are markedly underweight and for children and adolescents whose weight has deviated below their growth curves, hospital-based programs for nutritional rehabilitation should be considered [I]. For patients in inpatient or residential settings, the discrepancy between healthy target weight and weight at discharge may vary depending on patients' ability to feed themselves, their motivation and ability to participate in aftercare programs, and the adequacy of aftercare, including partial hospitalization [I]. It is important to implement refeeding programs in nurturing emotional contexts [I]. For example, it is useful for staff to convey to patients their intention to take care of them and not let them die even when the illness prevents the patients from taking care of themselves [II]. It is also useful for staff to communicate clearly that they are not seeking to engage in control battles and have no punitive intentions when using interventions that the patient may experience as aversive [I].

In working to achieve target weights, the treatment plan should also establish expected rates of controlled weight gain. Clinical consensus suggests that realistic targets are 2–3 lb/week for hospitalized patients and 0.5–1 lb/week for individuals in outpatient programs [II]. Registered dietitians can help patients choose their own meals and can provide a structured meal plan that ensures nutritional adequacy and that none of the major food groups are avoided [I]. Formula feeding may have to be added to the patient's diet to achieve large caloric intake [II]. It is important to encourage patients with anorexia nervosa to expand their food choices to minimize the severely restricted range of foods initially acceptable to them [II]. Caloric intake levels should usually start at 30–40 kcal/kg per day (approximately 1,000–1,600 kcal/day). During the weight gain phase, intake may have to be advanced progressively to as high as 70–100 kcal/kg per day for some patients; many male patients require a very large number of calories to gain weight [II].

Patients who require much lower caloric intakes or are suspected of artificially increasing their weight by fluid loading should be weighed in the morning after they have voided and are wearing only a gown; their fluid intake should also be carefully monitored [I]. Urine specimens obtained at the time of a patient's weigh-in may need to be assessed for specific gravity to help ascertain the extent to which the measured weight reflects excessive water intake [I]. Regular monitoring of serum potassium levels is recommended in patients who are persistent vomiters [I]. Hypokalemia should be treated with oral or intravenous potassium supplementation and rehydration [I].

Physical activity should be adapted to the food intake and energy expenditure of the patient, taking into account the patient's bone mineral density and cardiac function [I]. Once a safe weight is achieved, the focus of an exercise program should be on the patient's gaining physical fitness as opposed to expending calories [I].

Weight gain results in improvements in most of the physiological and psychological complications of semistarvation [I]. It is important to warn patients about the following aspects of early recovery [I]: As they start to recover and feel their bodies getting larger, especially as they approach frightening, magical numbers on the scale that represent phobic weights, they may experience a resurgence of anxious and depressive symptoms, irritability, and sometimes suicidal thoughts. These mood symptoms, non-food-related obsessional thoughts, and compulsive behaviors, although often not eradicated, usually decrease with sustained weight gain and weight maintenance. Initial refeeding may be associated with mild transient fluid retention, but patients who abruptly stop taking laxatives or diuretics may experience marked rebound fluid retention for several weeks. As weight gain progresses, many patients also develop acne and breast tenderness and become unhappy and demoralized about resulting changes in body shape. Patients may experience abdominal pain and bloating with meals from the delayed gastric emptying that accompanies malnutrition. These symptoms may respond to pro-motility agents [III]. Constipation may be ameliorated with stool softeners; if unaddressed, it can progress to obstipation and, rarely, to acute bowel obstruction.

When life-preserving nutrition must be provided to a patient who refuses to eat, nasogastric feeding is preferable to intravenous feeding [I]. When nasogastric feeding is necessary, continuous feeding (i.e., over 24 hours) may be better tolerated by patients and less likely to result in metabolic abnormalities than three to four bolus feedings a day [II]. In very difficult situations, where patients physically resist and constantly remove their nasogastric tubes, feeding through surgically placed gastrostomy or jejunostomy tubes may be an alternative to nasogastric feeding [II]. In determining whether to begin involuntary forced feeding, the clinician should carefully think through the clinical circumstances, family opinion, and relevant legal and ethical dimensions of the patient's treatment [I]. The general principles to be followed in making the decision are those directing good, humane care; respecting the wishes of competent patients; and intervening respectfully with patients whose judgment is severely impaired by their psychiatric disorders when such interventions are likely to have beneficial results [I]. For cooperative patients, supplemental overnight pediatric nasogastric tube feeding has been used in some programs to facilitate weight gain [III].

With severely malnourished patients (particularly those whose weight is <70% of their healthy body weight) who undergo aggressive oral, nasogastric, or parenteral refeeding, a serious refeeding syndrome can occur. Initial assessments should include vital signs and food and fluid intake and output, if indicated, as well as monitoring for edema, rapid weight gain (associated primarily with fluid overload), congestive heart failure, and gastrointestinal symptoms [I]. Patients' serum levels of phosphorus, magnesium, potassium, and calcium should be determined daily for the first 5 days of refeeding and every other day for several weeks thereafter, and electrocardiograms should be performed as indicated [II]. For children and adolescents who are severely malnourished (weight <70% of healthy body weight), cardiac monitoring, especially at night, may be desirable [II]. Phosphorus, magnesium, and/or potassium supplementation should be given when indicated [I].

b) Psychosocial interventions

The goals of psychosocial interventions are to help patients with anorexia nervosa 1) understand and cooperate with their nutritional and physical rehabilitation, 2) understand and change the behaviors and dysfunctional attitudes related to their eating disorder, 3) improve their interpersonal and social functioning, and 4) address comorbid psychopathology and psychological conflicts that reinforce or maintain eating disorder behaviors.

(i) Acute anorexia nervosa

During acute refeeding and while weight gain is occurring, it is beneficial to provide anorexia nervosa patients with individual psychotherapeutic management that is psychodynamically informed and provides empathic understanding, explanations, praise for positive efforts, coaching, support, encouragement, and other positive behavioral reinforcement [I]. Attempts to conduct formal psychotherapy with starving patients who are often negativistic, obsessional, or mildly cognitively impaired may be ineffective [II].

For children and adolescents, the evidence indicates that family treatment is the most effective intervention [I]. In methods modeled after the Maudsley approach, families become actively involved, in a blame-free atmosphere, in helping patients eat more and resist compulsive exercising and purging. For some outpatients, a short-term course of family therapy using these methods may be as effective as a long-term course; however, a shorter course of therapy may not be adequate for patients with severe obsessive-compulsive features or nonintact families [II].

Most inpatient-based nutritional rehabilitation programs create a milieu that incorporates emotional nurturance and a combination of reinforcers that link exercise, bed rest, and privileges to target weights, desired behaviors, feedback concerning changes in weight, and other observable parameters [II]. For adolescents treated in inpatient settings, participation in family group psychoeducation may be helpful to their efforts to regain weight and may be equally as effective as more intensive forms of family therapy [III].

(ii) Anorexia nervosa after weight restoration

Once malnutrition has been corrected and weight gain has begun, psychotherapy can help patients with anorexia nervosa understand 1) their experience of their illness; 2) cognitive distortions and how these have led to their symptomatic behavior; 3) developmental, familial, and cultural antecedents of their illness; 4) how their illness may have been a maladaptive attempt to regulate their emotions and cope; 5) how to avoid or minimize the risk of relapse; and 6) how to better cope with salient developmental and other important life issues in the future. Clinical experience shows that patients may often display improved mood, enhanced cognitive functioning, and clearer thought processes after there is significant improvement in nutritional intake, even before there is substantial weight gain [II].

To help prevent patients from relapsing, emerging data support the use of cognitive-behavioral psychotherapy for adults [II]. Many clinicians also use interpersonal and/or psychodynamically oriented individual or group psychotherapy for adults after their weight has been restored [II]. For adolescents who have been ill <3 years, after weight has been restored, family therapy is a necessary component of treatment [I]. Although studies of different psychotherapies focus on these interventions as distinctly separate treatments, in practice there is frequent overlap of interventions [II].

It is important for clinicians to pay attention to cultural attitudes, patient issues involving the gender of the therapist, and specific concerns about possible abuse, neglect, or other developmental traumas [II]. Clinicians need to attend to their countertransference reactions to patients with a chronic eating disorder, which often include beleaguerment, demoralization, and excessive need to change the patient [I]. At the same time, when treating patients with chronic illnesses, clinicians need to understand the longitudinal course of the disorder and that patients can recover even after many years of illness [I]. Because of anorexia nervosa's enduring nature, psychotherapeutic treatment is frequently required for at least 1 year and may take many years [I].

Anorexics and Bulimics Anonymous and Overeaters Anonymous are not substitutes for professional treatment [I]. Programs that focus exclusively on abstaining from binge eating, purging, restrictive eating, or excessive exercising (e.g., 12-step programs) without attending to nutritional considerations or cognitive and behavioral deficits have not been studied and therefore cannot be recommended as the sole treatment for anorexia nervosa [I]. It is important for programs using 12-step models to be equipped to care for patients with the substantial psychiatric and general medical problems often associated with eating disorders [I].

Although families and patients are increasingly accessing worthwhile, helpful information through online web sites, newsgroups, and chat rooms, the lack of professional supervision within these resources may sometimes lead to users' receiving misinformation or create unhealthy dynamics among users. It is recommended that clinicians inquire about a patient's or family's use of Internet-based support and other alternative and complementary approaches and be prepared to openly and sympathetically discuss the information and ideas gathered from these sources [I].

(iii) Chronic anorexia nervosa

Patients with chronic anorexia nervosa generally show a lack of substantial clinical response to formal psychotherapy. Nevertheless, many clinicians report seeing patients with chronic anorexia nervosa who, after many years of struggling with their disorder, experience substantial remission, so clinicians are justified in maintaining and extending some degree of hope to patients and families [II]. More extensive psychotherapeutic measures may be undertaken to engage and help motivate patients whose illness is resistant to treatment [II] or, failing that, as compassionate care [I]. For patients who have difficulty talking about their problems, clinicians have reported that a variety of nonverbal therapeutic methods, such as the creative arts, movement therapy programs, and occupational therapy, can be useful [III]. Psychosocial programs designed for patients with chronic eating disorders are being implemented at several treatment sites and may prove useful [II].

c) Medications and other somatic treatments

(i) Weight restoration

The decision about whether to use psychotropic medications and, if so, which medications to choose will be based on the patient's clinical presentation [I]. The limited empirical data on malnourished patients indicate that selective serotonin reuptake inhibitors (SSRIs) do not appear to confer advantage regarding weight gain in patients who are concurrently receiving inpatient treatment in an organized eating disorder program [I]. However, SSRIs in combination with psychotherapy are widely used in treating patients with anorexia nervosa. For example, these medications may be considered for those with persistent depressive, anxiety, or obsessive-compulsive symptoms and for bulimic symptoms in weight-restored patients [II]. A U.S. Food and Drug Administration (FDA) black box warning concerning the use of bupropion in patients with eating disorders has been issued because of the increased seizure risk in these patients. Adverse reactions to tricyclic antidepressants and monoamine oxidase inhibitors (MAOIs) are more pronounced in malnourished individuals, and these medications should generally be avoided in this patient population [I]. Second-generation antipsychotics, particularly olanzapine, risperidone, and quetiapine, have been used in small series and individual cases for patients, but controlled studies of these medications are lacking. Clinical impressions suggest that they may be useful in patients with severe, unremitting resistance to gaining weight; severe obsessional thinking; and denial that assumes delusional proportions [III]. Small doses of older antipsychotics such as chlorpromazine may be helpful prior to meals in very disturbed patients [III]. Although the risks of extrapyramidal side effects are less with second-generation antipsychotics than with first-generation antipsychotics, debilitated anorexia nervosa patients may be at a higher risk for these than expected. Therefore, if these medications are used, it is recommended that patients be carefully monitored for extrapyramidal symptoms and akathisia [I]. It is also important to routinely monitor patients for potential side effects of these medications, which can result in insulin resistance, abnormal lipid metabolism, and prolongation of the QTc interval [I]. Because ziprasidone has not been studied in individuals with anorexia nervosa and can prolong QTc intervals, careful monitoring of serial electrocardiograms and serum potassium measurements is needed if anorexic patients are treated with ziprasidone [I]. Antianxiety agents used selectively before meals may be useful to reduce patients' anticipatory anxiety before eating [III], but because eating disorder patients may have a high propensity to become dependent on benzodiazepines, these medications should be used routinely only with considerable caution [I]. Pro-motility agents such as metoclopramide may be useful for bloating and abdominal pains that occur during refeeding in some patients [II]. Electroconvulsive therapy (ECT) has generally not been useful except in treating severe co-occurring disorders for which ECT is otherwise indicated [I].

Although no specific hormone treatments or vitamin supplements have been shown to be helpful [I], supplemental calcium and vitamin D are often recommended [III]. Zinc supplements have been reported to foster weight gain in some patients, and patients may benefit from daily zinc-containing multivitamin tablets [II].

(ii) Relapse prevention

Some data suggest that fluoxetine in dosages of up to 60 mg/day may help prevent relapse [II]. For patients receiving cognitive-behavioral therapy (CBT) after weight restoration, adding fluoxetine does not appear to confer additional benefits with respect to preventing relapse [II]. Antidepressants and other psychiatric medications may be used to treat specific, ongoing psychiatric symptoms of depressive, anxiety, obsessive-compulsive, and other comorbid disorders [I]. Clinicians should attend to the black box warnings in the package inserts relating to antidepressants and discuss the potential benefits and risks of antidepressant treatment with patients and families if such medications are to be prescribed [I].

(iii) Chronic anorexia nervosa

Although hormone replacement therapy (HRT) is frequently prescribed to improve bone mineral density in female patients, no good supporting evidence exists either in adults or in adolescents to demonstrate its efficacy [II]. Hormone therapy usually induces monthly menstrual bleeding, which may contribute to the patient's denial of the need to gain further weight [II]. Before estrogen is offered, it is recommended that efforts be made to increase weight and achieve resumption of normal menses [I]. There is no indication for the use of bisphosphonates such as alendronate in patients with anorexia nervosa [II]. Although there is no evidence that calcium or vitamin D supplementation reverses decreased bone mineral density, when calcium dietary intake is inadequate for growth and maintenance, calcium supplementation should be considered [I], and when the individual is not exposed to daily sunlight, vitamin D supplementation may be used [I]. However, large supplemental doses of vitamin D may be hazardous [I].

4. Choice of specific treatments for bulimia nervosa

The aims of treatment for patients with bulimia nervosa are to 1) reduce and, where possible, eliminate binge eating and purging; 2) treat physical complications of bulimia nervosa; 3) enhance patients' motivation to cooperate in the restoration of healthy eating patterns and participate in treatment; 4) provide education regarding healthy nutrition and eating patterns; 5) help patients reassess and change core dysfunctional thoughts, attitudes, motives, conflicts, and feelings related to the eating disorder; 6) treat associated psychiatric conditions, including deficits in mood and impulse regulation, self-esteem, and behavior; 7) enlist family support and provide family counseling and therapy where appropriate; and 8) prevent relapse.

a) Nutritional rehabilitation counseling

A primary focus for nutritional rehabilitation is to help the patient develop a structured meal plan as a means of reducing the episodes of dietary restriction and the urges to binge and purge [I]. Adequate nutritional intake can prevent craving and promote satiety [I]. It is important to assess nutritional intake for all patients, even those with a normal body weight (or normal BMI), as normal weight does not ensure appropriate nutritional intake or normal body composition [I]. Among patients of normal weight, nutritional counseling is a useful part of treatment and helps reduce food restriction, increase the variety of foods eaten, and promote healthy but not compulsive exercise patterns [I].

b) Psychosocial interventions

It is recommended that psychosocial interventions be chosen on the basis of a comprehensive evaluation of the individual patient that takes into consideration the patient's cognitive and psychological development, psychodynamic issues, cognitive style, comorbid psychopathology, and preferences as well as patient age and family situation [I]. For treating acute episodes of bulimia nervosa in adults, the evidence strongly supports the value of CBT as the most effective single intervention [I]. Some patients who do not respond initially to CBT may respond when switched to either interpersonal therapy (IPT) or fluoxetine [II] or other modes of treatment such as family and group psychotherapies [III]. Controlled trials have also shown the utility of IPT in some cases [II].

In clinical practice, many practitioners combine elements of CBT, IPT, and other psychotherapeutic techniques. Compared with psychodynamic or interpersonal therapy, CBT is associated with more rapid remission of eating symptoms [I], but using psychodynamic interventions in conjunction with CBT and other psychotherapies may yield better global outcomes [II]. Some patients, particularly those with concurrent personality pathology or other co-occurring disorders, require lengthy treatment [II]. Clinical reports suggest that psychodynamic and psychoanalytic approaches in individual or group format are useful once bingeing and purging improve [III].

Family therapy should be considered whenever possible, especially for adolescent patients still living with their parents [II] or older patients with ongoing conflicted interactions with parents [III]. Patients with marital discord may benefit from couples therapy [II].

A variety of self-help and professionally guided self-help programs have been effective for some patients with bulimia nervosa [I]. Several innovative online programs are currently under investigation and may be recommended in the absence of alternative treatments [III]. Support groups and 12-step programs such as Overeaters Anonymous may be helpful as adjuncts in the initial treatment of bulimia nervosa and for subsequent relapse prevention, but they are not recommended as the sole initial treatment approach for bulimia nervosa [I].

Issues of countertransference, discussed above with respect to the treatment of patients with anorexia nervosa, also apply to the treatment of patients with bulimia nervosa [I].

c) Medications

(i) Initial treatment

Antidepressants are effective as one component of an initial treatment program for most bulimia nervosa patients [I], with SSRI treatment having the most evidence for efficacy and the fewest difficulties with adverse effects [I]. To date, fluoxetine is the best studied of these and is the only FDA-approved medication for bulimia nervosa. Sertraline is the only other SSRI that has been shown to be effective, as demonstrated in a small, randomized controlled trial. In the absence of therapists qualified to treat bulimia nervosa with CBT, fluoxetine is recommended as an initial treatment [I]. Dosages of SSRIs higher than those used for depression (e.g., fluoxetine 60 mg/day) are more effective in treating bulimic symptoms [I]. Evidence from a small open trial suggests fluoxetine may be useful for adolescents with bulimia [II].

Antidepressants may be helpful for patients with substantial concurrent symptoms of depression, anxiety, obsessions, or certain impulse disorder symptoms or for patients who have not benefited from or had only a suboptimal response to appropriate psychosocial therapy [I]. Tricyclic antidepressants and MAOIs have been rarely used with bulimic patients and are not recommended as initial treatments [I]. Several different antidepressants may have to be tried sequentially to identify the specific medication with the optimum effect [I].

Clinicians should attend to the black box warnings relating to antidepressants and discuss the potential benefits and risks of antidepressant treatment with patients and families if such medications are to be prescribed [I].

Small controlled trials have demonstrated the efficacy of the anticonvulsant medication topiramate, but because adverse reactions to this medication are common, it should be used only when other medications have proven ineffective [III]. Also, because patients tend to lose weight on topiramate, its use is problematic for normal or underweight individuals [III].

Two drugs that are used for mood stabilization, lithium and valproic acid, are both prone to induce weight gain in patients [I] and may be less acceptable to patients who are weight preoccupied. However, lithium is not recommended for patients with bulimia nervosa because it is ineffective [I]. In patients with co-occurring bulimia nervosa and bipolar disorder, treatment with lithium is more likely to be associated with toxicity [I].

(ii) Maintenance phase

Limited evidence supports the use of fluoxetine for relapse prevention [II], but substantial rates of relapse occur even with treatment. In the absence of adequate data, most clinicians recommend continuing antidepressant therapy for a minimum of 9 months and probably for a year in most patients with bulimia nervosa [II]. Case reports indicate that methylphenidate may be helpful for bulimia nervosa patients with concurrent attention-deficit/hyperactivity disorder (ADHD) [III], but it should be used only for patients who have a very clear diagnosis of ADHD [I].

(iii) Combining psychosocial interventions and medications

In some research, the combination of antidepressant therapy and CBT results in the highest remission rates; therefore, this combination is recommended initially when qualified CBT therapists are available [II]. In addition, when CBT alone does not result in a substantial reduction in symptoms after 10 sessions, it is recommended that fluoxetine be added [II].

(iv) Other treatments

Bright light therapy has been shown to reduce binge frequency in several controlled trials and may be used as an adjunct when CBT and antidepressant therapy have not been effective in reducing bingeing symptoms [III].

5. Eating disorder not otherwise specified

Patients with subsyndromal anorexia nervosa or bulimia nervosa who meet most but not all of the DSM-IV-TR criteria (e.g., weight >85% of expected weight, binge and purge frequency less than twice per week) merit treatment similar to that of patients who fulfill all criteria for these diagnoses [II].

a) Binge eating disorder

(i) Nutritional rehabilitation and counseling

Behavioral weight control programs incorporating low- or very-low-calorie diets may help with weight loss and usually with reduction of symptoms of binge eating [I]. It is important to advise patients that weight loss is often not maintained and that binge eating may recur when weight is gained [I]. It is also important to advise them that weight gain after weight loss may be accompanied by a return of binge eating patterns [I]. Various combinations of diets, behavior therapies, interpersonal therapies, psychodynamic psychotherapies, non-weight-directed psychosocial treatments, and even some "nondiet/health at every size" psychotherapy approaches may be of benefit for binge eating and weight loss or stabilization [III]. Patients with a history of repeated weight loss followed by weight gain ("yo-yo" dieting) or patients with an early onset of binge eating may benefit from following programs that focus on decreasing binge eating rather than on weight loss [II].

There is little empirical evidence to suggest that obese binge eaters who are primarily seeking weight loss should receive different treatment than obese individuals who do not binge eat [I].

(ii) Other psychosocial treatments

Substantial evidence supports the efficacy of individual or group CBT for the behavioral and psychological symptoms of binge eating disorder [I]. IPT and dialectical behavior therapy have also been shown to be effective for behavioral and psychological symptoms and can be considered as alternatives [II]. Patients may be advised that some studies suggest that most patients continue to show behavioral and psychological improvement at their 1-year follow-up [II]. Substantial evidence supports the efficacy of self-help and guided self-help CBT programs and their use as an initial step in a sequenced treatment program [I]. Other therapies that use a "nondiet" approach and focus on self-acceptance, improved body image, better nutrition and health, and increased physical movement have been tried, as have addiction-based 12-step approaches, self-help organizations, and treatment programs based on the Alcoholics Anonymous model, but no systematic outcome studies of these programs are available [III].

(iii) Medications

Substantial evidence suggests that treatment with antidepressant medications, particularly SSRI antidepressants, is associated with at least a short-term reduction in binge eating behavior but, in most cases, not with substantial weight loss [I]. The medication dosage is typically at the high end of the recommended range [I]. The appetite-suppressant medication sibutramine is effective for binge suppression, at least in the short term, and is also associated with significant weight loss [II].

The anticonvulsant medication topiramate is effective for binge reduction and weight loss, although adverse effects may limit its clinical utility for some individuals [II]. Zonisamide may produce similar effects regarding weight loss and can also cause side effects [III].

(iv) Combining psychosocial and medication treatments

For most eating disorder patients, adding antidepressant medication to their behavioral weight control and/or CBT regimen does not have a significant effect on binge suppression when compared with medication alone. However, medications may induce additional weight reduction and have associated psychological benefits [II]. Adding the weight loss medication orlistat to a guided self-help CBT program may yield additional weight reduction [II]. Fluoxetine in conjunction with group behavioral treatment may not aid in binge cessation or weight loss but may reduce depressive symptoms [II].

b) Night eating syndrome

Progressive muscle relaxation has been shown to reduce symptoms associated with night eating syndrome [III]. Sertraline has also been shown to reduce these symptoms [II].

II. FORMULATION AND IMPLEMENTATION OF A TREATMENT PLAN

A. PSYCHIATRIC MANAGEMENT

Psychiatric management includes a broad range of therapeutic actions that are performed by the psychiatrist or that the psychiatrist ensures are provided to all patients with eating disorders in combination with other specific treatment modalities. Psychiatric management begins with the establishment of a therapeutic alliance, which is then enhanced by empathic comments and behaviors, positive regard, reassurance, and support. Basic psychiatric management includes support through the provision of educational materials, including self-help workbooks (4), information on community and Internet resources (5, 6), and direct advice to patients and their families (when they are involved) (7). It is important to caution patients and families about Internet sites that encourage eating disorder lifestyles ("pro-ana" sites). Although many service providers have made attempts to police and encourage elimination of these sites, they still continue to appear, to the concern of families and professionals (8, 9). In some settings, judicious use of e-mail contact with patients has been increasingly used (5, 10). Some resources for patients and families are presented in Table 1.

1. Establish and maintain a therapeutic alliance

At the very outset and through ongoing interactions with the patient, it is important for clinicians to attempt to build trust, establish mutual respect, and develop a therapeutic relationship that will serve as the basis for ongoing exploration and treatment of the problems associated with the eating disorder. Eating disorders are frequently long-term illnesses that can manifest themselves in different ways at different points during their course; treating them often requires the psychiatrist to adapt and modify therapeutic strategies. Many patients with anorexia nervosa are initially reluctant to enter treatment and may feel invested in their symptoms. Many are secretive and may withhold information about their behavior because of shame. During the course of treatment, they may resist looking beyond immediate symptoms to possible coexisting psychiatric disorders, comorbid psychopathology, and underlying psychodynamic issues. Conversely, some patients may resist discussing eating disorder symptoms and want to focus on only "core

TABLE 1. Self-Help Books and Internet Resources on Eating Disorders

CBT-oriented workbooks	Agras WS, Apple RF: *Overcoming Eating Disorders: A Cognitive-Behavioral Treatment for Bulimia Nervosa and Binge-Eating Disorder.* New York, Oxford University Press, 1997 (client workbook)
	Agras WS, Apple RF: *Overcoming Eating Disorders: A Cognitive-Behavioral Treatment for Bulimia Nervosa and Binge-Eating Disorder.* New York, Oxford University Press, 1997 (therapist workbook)
	Cash TF: *The Body Image Workbook: An 8-Step Program for Learning to Like Your Looks.* Oakland, CA, New Harbinger, 1997
	Fairburn C: *Overcoming Binge Eating.* New York, Guilford, 1995
	Goodman LJ, Villapiano M: *Eating Disorders: The Journey to Recovery Workbook.* New York, Brunner-Routledge, 2001 (client workbook)
	Goodman LJ, Villapiano M: *Eating Disorders: Time for Change. Plans, Strategies, and Worksheets.* New York, Brunner-Routledge, 2001 (therapist workbook)
	Schmidt U, Treasure J: *Getting Better Bit(e) by Bit(e): A Survival Kit for Sufferers of Bulimia Nervosa and Binge Eating Disorder.* East Sussex, UK, Psychology Press, 1993
Other books reported to be helpful by patients/families	Bulik CM, Taylor N: *Runaway Eating: The 8-Point Plan to Conquer Adult Food and Weight Obsessions.* New York, Rodale Books, 2005
	Ellis A, Abrams M, Dengelegi L: *The Art and Science of Rational Eating.* Fort Lee, NJ, Barricade Books, 1992
	Goodman LJ, Villapiano M: *Eating Disorders: The Journey to Recovery Workbook.* New York, Brunner-Routledge, 2001 (client workbook)
	Hall L: *Full Lives: Women Who Have Freed Themselves From Food and Weight Obsessions.* Carlsbad, CA, Gürze Books, 1993
	Lock J, le Grange D: *Help Your Teenager Beat an Eating Disorder.* New York, Guilford, 2005
	Michel DM, Willard SG: *When Dieting Becomes Dangerous.* New Haven, CT, Yale University Press, 2003
	Walsh BT, Cameron VL: *If Your Child Has an Eating Disorder: An Essential Resource for Parents.* New York, Guilford, 2005
	Zerbe K: *The Body Betrayed: A Deeper Understanding of Women, Eating Disorders, and Treatment.* Carlsbad, CA, Gürze Books, 1995
Books reported to be helpful for male patients	Andersen AE, Cohn L, Holbrook T: *Making Weight: Men's Conflicts With Food, Weight, Shape and Appearance.* Carlsbad, CA, Gürze Books, 2000
Internet resources for health care professionals	Academy for Eating Disorders (http://www.aedweb.org)
Internet resources for patients, families, and professionals	National Eating Disorders Association (http://www.nationaleatingdisorders.org)
	National Association of Anorexia Nervosa and Associated Disorders (http://www.anad.org/site/anadweb/)
	Eating Disorder Referral and Information Center (http://www.edreferral.com)
	Something Fishy (http://www.something-fishy.org; a well-monitored advocacy site)

issues," apparently to avoid relinquishing their symptoms. Psychiatrists should be mindful of the fact that the recommended interventions create extreme anxieties for individuals with anorexia nervosa. Encouraging patients to gain weight asks them to do the very thing of which they are most frightened. Patients may believe that the psychiatrist just wants to make them fat and does not understand or empathize with their underlying emotions. Consequently, by recognizing and acknowledging an awareness of patient anxieties, psychiatrists can assist in building the therapeutic alliance. The clinician may foster rapport by letting patients know that eating disorder symptoms often serve a number of important functions, such as providing a sense of accomplishment or a way to feel looked after or protected (11, 12). Addressing patients' resistance to treatment and enhancing their motivation for change may be important in allowing therapy to proceed through impasses as well as helping to ameliorate factors that serve to aggravate and maintain eating disorders (13–18). Finally, letting patients know that full recovery from anorexia nervosa takes time (19) may help build rapport, as the patient senses that the clinician is not expecting a magical, rapid turnaround, which the patient may sense is unrealistic.

2. Coordinate care and collaborate with other clinicians

Professionals from several disciplines may collaborate in the patient's care. The specific role of each professional may vary with the organizational structure of the eating disorders program and the professional qualifications of those working within the program. The psychiatrist may assume the leadership role in the patient's treatment program or the patient's treatment team or work collaboratively on a team led by other health professionals, including other physicians or psychologists. Registered dietitians with specialized training in eating disorders often provide nutritional counseling. Therapists from a variety of professional fields may provide family, individual, or group psychotherapy, including CBT. Other physician specialists and dentists may be consulted for management of acute and ongoing medical and dental complications. Often in the treatment of children and adolescents, school coaches, teachers, and school counselors may be asked to collaborate in a patient's treatment. In treatment settings where staff do not have the training or experience to deal with patients with eating disorders, the provision of education, supervision, and leadership by a qualified psychiatrist can be crucial to the success of treatment.

Although a variety of management models are used for adult patients with eating disorders, no data exist on their comparative efficacies. Psychiatrists who choose to manage both general medical and psychiatric issues should have appropriate medical backup to treat the medical complications associated with eating disorders. Some programs routinely arrange for interdisciplinary teams to manage treatment (sometimes called *split management*). In this model, the psychiatrist handles administrative and general medical requirements, prescribes medications when clinically necessary and appropriate, and recommends interventions aimed at normalizing disturbed cognitions and eating and weight-reducing behaviors. Other clinicians then provide individual and/or group psychotherapeutic interventions (e.g., CBT, psychodynamic psychotherapy, family therapy). For this management model to be effective and to avoid reinforcing some patients' tendencies to play staff off each other (i.e., split the staff), all personnel must work closely together and maintain open communication and mutual respect.

For children and adolescents, the recommended treatment model is the team approach (3). In this interdisciplinary management approach, general medical care clinicians (e.g., specialists in internal medicine, pediatrics, adolescent medicine, or nutrition) manage general medical issues, such as nutrition, weight gain, exercise, and eating patterns, whereas the psychiatrist addresses the psychiatric issues (3, 20, 21). The biopsychosocial nature of anorexia nervosa and bulimia nervosa dictates the need for interdisciplinary treatment, and each aspect of care must be developmentally tailored to the treatment of adolescents (22). In unusual circumstances, psychiatrists may be qualified to act as the primary provider of comprehensive medical care.

TABLE 2. DSM-IV-TR Diagnostic Criteria for Anorexia Nervosa

Criterion	Description
A	Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).
B	Intense fear of gaining weight or becoming fat, even though underweight.
C	Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
D	In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting type: During the current episode of anorexia nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

Binge-eating/purging type: During the current episode of anorexia nervosa, the person has regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

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When a patient is managed by an interdisciplinary team in an outpatient setting, communication among the professionals is essential so that all team members have a clear understanding of each other's responsibilities and approaches. For example, in team management of outpatients with anorexia nervosa, one professional must be designated to consistently monitor weights so that this essential function is not inadvertently omitted from care.

3. Assess and monitor eating disorder symptoms and behaviors

It is important for the psychiatrist to carefully assess the patient's eating disorder symptoms and behaviors (23). Such an assessment will assist the clinician in identifying target symptoms and behaviors that will be addressed in the treatment plan as well as determining whether a DSM-IV-TR diagnosis of anorexia nervosa or bulimia nervosa is present (Tables 2 and 3).

It is important to note that a significant number of patients are relegated to the heterogeneous diagnostic group referred to as eating disorders not otherwise specified because they have not been amenorrheic for 3 months and consequently do not meet current criteria for anorexia nervosa. In terms of their clinical course, treatment response, or level of impairment, such patients do not differ from those who fulfill the DSM-IV-TR criteria for anorexia nervosa (24, 25). These observations have important implications with respect to making clinical treatment decisions. They also imply that patients with continued menses who fulfill other criteria for anorexia nervosa should be eligible for the same levels of care as patients with anorexia nervosa.

Obtaining a detailed report of food intake during a single day in the patient's life or using a calendar as a prompt may help elicit specific information about a patient's eating behaviors, particularly regarding perceived intake. A clinician may also obtain useful information by sharing a meal with the patient or observing the patient eating a meal; in this way, the clinician can observe any difficulties the patient may have in eating particular foods, anxieties that erupt in the course of a meal, and rituals concerning food (such as cutting, separating, or mashing) that the patient feels compelled to perform.

TABLE 3. DSM-IV-TR Diagnostic Criteria for Bulimia Nervosa

Criterion	Description
A	Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
	(1) Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.
	(2) A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
B	Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.
C	The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.
D	Self-evaluation is unduly influenced by body shape and weight.
E	The disturbance does not occur exclusively during episodes of anorexia nervosa.
Specify type:	
	Purging type: During the current episode of bulimia nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
	Nonpurging type: During the current episode of bulimia nervosa, the person has used other inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

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It is important to explore the patient's understanding of how the illness developed and the effects of any interpersonal problems at the onset of the eating disorder. A family history should be obtained regarding eating disorders and other psychiatric disorders, alcohol and other substance use disorders, obesity, family interactions in relation to the patient's disorder, and family attitudes toward eating, exercise, and appearance. It is essential that the clinician avoid articulating theories that imply blame or permit family members to blame one another or themselves for the patient's disorder. No evidence exists to prove that families cause eating disorders. Furthermore, blaming family members harms their psychological well-being and often impairs their desire, willingness, and capacity to be helpful to patients and to participate actively and constructively in treatment and recovery. Rather, the point is to identify family stressors whose amelioration may facilitate recovery.

In the assessment of young patients, it is always helpful to involve parents and, whenever appropriate, school and health professionals who routinely work with children. The complete assessment usually requires several hours. Even when directly questioned, patients and their families may not initially reveal pertinent information about sensitive issues; important information may be uncovered only after a trusting relationship has been established and the patient is better able to accurately identify inner emotional states.

Formal measures are available for the assessment of eating disorders, including self-report questionnaires and semistructured interviews. Examples are listed in Table 4. Clinical decisions about a diagnosis cannot be made on the basis of self-report screening instruments. Patients who are identified on initial screening as likely to have an eating disorder must be followed up in a second-stage determination by trained clinical interviewers. The instruments shown in Table 4, used by clinicians to interview patients in a structured format, are generally taken as "gold standards" to determine clinical diagnoses.

TABLE 4. Representative Instruments for the Assessment of Eating Disorders

Instrument	Completion Time (min)	Comments
Clinician-administered measures		
Eating Disorder Examination (EDE) (26)	30–60	Measures the presence and severity of eating disorder features and provides operational DSM-IV diagnoses
Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS) (27, 28)	10–15	Includes a 65-item symptom checklist plus 19 questions, covering 18 general categories of rituals and preoccupations; requires a trained administrator
Self-report measures		
Diagnostic Survey for Eating Disorders (DSED) (29)	30–40	Has 12 sections covering demographics, weight history and body image, dieting, binge eating, purging, exercise, related behaviors, sexual functioning, menstruation, medical and psychiatric history, life adjustment, and family history
Bulimia Test—Revised (BULIT-R) (30)		Brief (36-item) measure designed to assess eating behaviors and attitudes related to bulimia
Eating Attitudes Test (EAT) (31, 32)	5–10	Brief (26-item), standardized self-report screening test of symptoms and concerns characteristic of eating disorders
Eating Disorder Examination—Questionnaire (EDE-Q) (33)	8–10	Self-report version of the EDE, designed for situations in which an interview cannot be used; validated against the EDE
Eating Disorders Inventory–2 (EDI-2) (34–36)	15–20	Standardized measure of psychological traits and symptom clusters presumed to have relevance to understanding and treating eating disorders; 11 subscales presented in 6-point, forced-choice format; three scales assess attitudes and behaviors concerning eating, weight, and shape; eight assess more general psychological traits
Eating Disorders Questionnaire (EDQ) (37)	45–60	Addresses eating disorder and associated symptoms, time course, and treatment
Questionnaire on Eating and Weight Patterns (QEWP) (38, 39)	5–15	Measures the nature and quantity of binge eating episodes to assess binge eating disorder

4. Assess and monitor the patient's general medical condition

A full physical examination should be performed by a physician familiar with common findings in patients with eating disorders, with particular attention to vital signs; physical status (including height and weight); heart rate and rhythm; jugular venous pressure; heart sounds (especially midsystolic clicks or murmurs from mitral valve prolapse); acrocyanosis; delayed capillary refill; lanugo; salivary gland enlargement; scarring on the dorsum of the hands (Russell's sign); evidence of self-injurious behaviors, such as ecchymoses, linear scars, and cigarette burns; muscular weakness; indications of muscular irritability due to hypocalcemia, such as in Chvostek's and Trousseau's signs; and gait and eye abnormalities (40–43). The patient should also be referred for a dental examination if necessary or indicated by the patient's history (44). In

younger patients, examination should include growth pattern and sexual development, including sexual maturity rating, as well as general physical development. The use of a growth chart of standardized values for pediatric populations may allow the clinician to identify patients who have failed to gain weight and have growth retardation (3, 45); such charts are available on the web site of the CDC (http://www.cdc.gov/growthcharts/).

BMI, in conjunction with weight and height, has gained increasing attention in research and clinical settings as a tool for assessing eating disorder patients. BMI is calculated as weight (in kilograms) divided by height (in meters squared) and is particularly useful for comparing groups according to index percentiles that take into account height, sex, and age (46). It is important to remember that BMI is a calculation based only on height and weight and does not provide any further measure of body composition. Except in individuals who are extremely under- or overweight, it is often not useful in estimating nutritional status. Furthermore, considerable debate in the scientific community exists about appropriate BMI ranges for various ethnic groups. Among Caucasian women, for example, the range of a healthy BMI may be higher than for some groups of Asian women (47). Adults with a BMI <18.5 kg/m^2 are considered to be underweight. In addition, abnormal muscularity, body frame size, fluid status, marked constipation, and fluid loading can decrease the validity of BMI as an indicator of the patient's nutritional status (48–52). In children and adolescents, an age-adjusted BMI is used (see http://www.cdc.gov/nccdphp/dnpa/bmi/00binaries/bmi-tables.pdf). Children with a BMI <5th percentile for age are considered to be underweight.

Commonly found signs, symptoms, and associated laboratory abnormalities for anorexia nervosa and bulimia nervosa are shown in Table 5 and Table 6, respectively. Although patients treated in outpatient practice may report few symptoms and show few obvious physical signs or abnormal laboratory test results, significant occult abnormalities may be present (e.g., in bone, heart, and brain).

The need for laboratory analyses should be determined on an individual basis depending on the patient's condition or when necessary for making treatment decisions (43). Some of the laboratory assessments that may be indicated for patients with eating disorders appear in Table 7.

5. Assess and monitor the patient's psychiatric status and safety

In addition to assessing patients' physiological and nutritional status as well as their behaviors, cognitions, and emotions associated with eating and exercise, it is essential that clinicians attend to the overall psychiatric status and safety of patients. Associated psychiatric issues that bear close monitoring include historical evidence, signs, and symptoms related to psychiatric conditions that are often comorbid with eating disorders (e.g., mood, anxiety, and substance use disorders) as well as personality traits and personality disorders that greatly influence patients' clinical course and outcome (78–82). Patients' motivational status also bears monitoring, as it is likely to determine their capacity to engage in treatment (15). Safety issues for patients with eating disorders include both physiological and psychiatric parameters. Many of the physiological safety parameters are described in Section II.B.1, "Choosing a Treatment Site." Clinicians must be vigilant regarding shifts in patients' weight, blood pressure, pulse, other cardiovascular parameters, and behaviors that are likely to provoke physiological decline and collapse. General psychiatric safety issues that bear constant attention include suicidal ideation and suicide attempts as well as impulsive and compulsive self-harm behaviors (83, 84).

6. Provide family assessment and treatment

The available evidence affirms the importance of family involvement and treatment in the management of children and adolescents with anorexia nervosa (85–87). In addition, clinical consensus supports the value of family assessment and involvement in the treatment of both younger and older patients with other eating disorders (88, 89). Since eating is a quintessential family activity, the opportunity to observe patterns of family interaction around the eating and particularly

TABLE 5. Physical Complications of Anorexia Nervosa

Organ System	Symptoms	Signs	Laboratory Test Results
Whole body	Increased symptoms with degree of malnutrition; include weakness and lassitude	Low body weight, dehydration, hypothermia, cachexia	*Weight:* Low weight and BMI *Anthropometrics:* Low body fat percentage by anthropometrics or underwater weighing[a]
Cardiovascular and peripheral vascular	Palpitations, faintness, weakness, dizziness, shortness of breath, chest pain, cold extremities	Most common: bradycardia, orthostatic hypotension, weak irregular pulse, acrocyanosis	*ECG:* Bradycardia or arrhythmias, QTc prolongation,[b] QT dispersion correlated with weight loss, increased PR interval, first-degree heart block, ST-T wave abnormalities *Echocardiogram:* Mitral valve prolapse,[c] pericardial effusion[d] *Chest X-ray:* Small heart
Central nervous system	Apathy, poor concentration	Cognitive impairment; anxious, depressed, irritable mood; in severe cases, seizures, peripheral neuropathy	*CT scan:* Enlarged ventricles *MRI:* Decreased gray and white matter *EEG:* Nonspecific changes, seizures (rare)[e]
Endocrine, metabolic	Fatigue, cold intolerance, diuresis	Low body temperature (hypothermia)	*Complete metabolic panel:* Electrolyte abnormalities, including hypokalemia, hypomagnesemia, hypophosphatemia (especially on refeeding), hypoglycemia (rare), hypercholesterolemia *Thyroid testing:* Decreased T_3; increase in reverse T_3 *Serum cortisol:* Increased serum cortisol *Vitamin assays:* In severe cases, folate, B_{12}, niacin, and thiamine deficiencies
Gastrointestinal	Vomiting, abdominal pain, bloating, obstipation, constipation	Abdominal distension with meals; abnormal bowel sounds; acute gastric distension (rare); in purging patients, benign parotid hyperplasia, caries, or gingivitis; in patients with vitamin deficiencies, angular stomatitis, glossitis, diarrhea	*Liver function and associated tests:* Occasionally abnormal liver function test results, increased serum amylase in purging patients; abnormal results rarely due to pancreatitis *Gastric motility testing:* Delayed gastric emptying, increased whole bowel and colonic transit time, anorectal dysfunction *Endoscopy:* Occasional inflammation or Barrett's esophagus *Radiography:* Rarely, superior mesenteric artery syndrome, pancreatitis *Stool for guaiac:* Occasionally positive because of purging or laxative abuse[f]

TABLE 5. Physical Complications of Anorexia Nervosa *(continued)*

Organ System	Symptoms	Signs	Laboratory Test Results
Genitourinary	Decreased or increased urinary volume[g]		*Renal function tests:* Increased blood urea nitrogen, decreased glomerular filtration rate, decreased serum creatinine because of low lean body mass (normal creatinine may indicate azotemia), renal failure (rare) *Other renal findings:* Greater formation of renal calculi, hypovolemic nephropathy, hypokalemic nephropathy
Hematologic	Fatigue, cold intolerance	Bruising/clotting abnormalities (rare)	*Complete blood count:* Anemia (may be normocytic, microcytic, or macrocytic); leukopenia with relative lymphocytosis; low erythrocyte sedimentation rate; thrombocytopenia; clotting factor abnormalities (rare) *Other hematologic abnormalities:* Decreased serum ferritin, B_{12}, folate
Immune system	Fewer than expected viral infections	None (during weight restoration may develop viral infections), reduced febrile response to bacterial infection	Multiple unexplained immune system abnormalities; abnormalities in tumor necrosis factor–α and interleukin subtypes[h]
Integument	Change in hair, including hair loss and dry and brittle hair; yellowing of skin	Lanugo, self-injury marks, numerous integumentary abnormalities, including xerosis, carotenoderma, and acne[i]	*Vitamin assays:* Increased serum carotene; in severe cases, vitamin deficiencies (e.g., niacin)[j]
Muscular	Symptoms are unusual; with severe malnutrition or ipecac-associated myopathy, muscle weakness, muscle aches, cramps	In severe cases, muscle wasting	*Enzyme tests:* With severe malnutrition, creatine kinase and other muscle enzyme abnormalities; creatine kinase isoenzymes for skeletal vs. cardiac source
Pulmonary	With severe malnutrition, reduced aerobic capacity	In severe states, wasting of respiratory muscles	*Pulmonary function tests:* Decreased pulmonary capacity[k]

TABLE 5. Physical Complications of Anorexia Nervosa *(continued)*

Organ System	Symptoms	Signs	Laboratory Test Results
Reproductive	Arrested development of secondary sex characteristics and psychosexual maturation or interest, loss of libido	Loss of menses or primary amenorrhea, arrested sexual development or regression of secondary sex characteristics, fertility problems, higher rates of pregnancy complications and neonatal complications; deficiencies in the mother can result in deficiencies in the fetus	*Serum gonadotropins:* Decreased serum estrogen in female patients; decreased serum testosterone in male patients; prepubertal patterns of luteinizing hormone, follicle-stimulating hormone secretion *Pelvic ultrasound:* Lack of follicular development and/or lack of dominant follicle
Skeletal	Bone pain with exercise	Point tenderness; in severe cases, short stature and arrested skeletal growth	*Radiography and bone scans:* Increased rate of pathological stress fractures; delayed bone age in some cases *DEXA:* Osteopenia or osteoporosis, especially in hip and lumbar spine

Note. More information on the physical complications of anorexia nervosa is available in Birmingham CL, Beumont PJV: *Medical Management of Eating Disorders.* Cambridge, Cambridge University Press, 2004. CT = computed tomography; DEXA = dual-energy X-ray absorptiometry; ECG = electrocardiogram; EEG = electroencephalogram; MRI = magnetic resonance imaging.

[a]Anthropometrics estimate only peripheral fat. Underwater weighing assesses total body fat.

[b]QTc prolongation in patients with anorexia nervosa has been associated with sudden death (53, 54), but QTc intervals typically normalize with refeeding (54, 55). If QTc prolongation is present, other medications known to prolong QTc intervals should generally be avoided and any electrolyte abnormalities (e.g., hypokalemia) and hypomagnesemia should be corrected (56).

[c]Powers et al. (57). [d]Frolich et al. (58). [e]Prousky (59); Winston et al. (60). [f]Waldholtz (61).

[g]Some chronically ill patients have renal abnormalities associated with decreased urinary volume. Some drink excessive amounts of fluids to assuage hunger, producing increased urinary volume.

[h]Brown et al. (62).

[i]Birmingham and Beumont (40); Strumia (63); Glorio et al. (64).

[j]Prousky (59).

[k]Birmingham and Tan (65).

TABLE 6. Physical Complications of Bulimia Nervosa

Organ System	Symptoms	Signs	Laboratory Test Results
Cardiovascular	Weakness, palpitations	Arrhythmias	*ECG:* Hypokalemia-associated depressed ST segment, QT prolongation.[a] In severe cases, hypokalemia-widened QRS complex, increased P-wave amplitude, increased PR interval, increased supraventricular and ventricular ectopic rhythms; torsade de pointes correlated with hypokalemia; autonomic dysfunction on spectral analysis *Cardiac function testing:* Cardiomyopathy in ipecac abusers
Central nervous system	Apathy, poor concentration	In severe cases, cognitive impairment; anxious, depressed, irritable mood; seizures; peripheral neuropathy	*CT scan:* Cortical atrophy, ventricular enlargement *PET, fMRI:* Abnormal cerebral blood flow and metabolism *MRI:* Decreased gray and white matter *EEG:* Nonspecific abnormalities[b]
Gastrointestinal	Heartburn, reflux, occasional blood streaking in vomitus, abdominal pain and discomfort in vomiters; occasional involuntary vomiting, obstipation, constipation, bowel irregularities; bloating in laxative abusers; acute gastric or esophageal rupture, perforation, necrosis (rare)	Enlarged salivary glands, occasional blood-streaked vomitus; in vomiters, possibly gastritis, esophagitis, gastroesophageal erosions, esophageal dysmotility patterns (including gastroesophageal reflux and, rarely, Mallory-Weiss [esophageal] or gastric tears), increased rates of pancreatitis; in chronic laxative abusers, possibly colonic dysmotility or melanosis coli	*Serum amylase:* Increased serum amylase (if fractionation is available, usually salivary gland isoenzymes); increased pancreatic amylase (rare), possibly indicating laxative abuse or other causes for pancreatic inflammation or pancreatitis
Integument		Scarring on dorsum of hand (Russell's sign), petechia, conjunctival hemorrhages shortly after vomiting	
Metabolic	Weight fluctuation; rarely, proximal weakness, irritability, muscle cramping	Poor skin turgor; pitting edema; Chvostek's and Trousseau's signs (rare)	*Urinalysis:* Dehydration (increased urine specific gravity, osmolality) *Serum electrolyte abnormalities:* Hypokalemic, hypochloremic alkalosis in vomiters; hypomagnesemia and hypophosphatemia in vomiters and laxative abusers

TABLE 6. Physical Complications of Bulimia Nervosa *(continued)*

Organ System	Symptoms	Signs	Laboratory Test Results
Muscular	In ipecac abusers, weakness, palpitations	Muscle weakness, peripheral myopathy	*EMG:* Nonspecific abnormalities
Oropharyngeal	Dental decay, pain in pharynx, swollen cheeks and neck (usually painless)	Dental caries with erosion of dental enamel, particularly the lingular surface of incisors; erythema of pharynx; palatal scratches; enlarged salivary glands	*Radiography:* Erosion of dental enamel *Serum amylase:* Increased serum amylase associated with benign parotid hyperplasia
Reproductive	Fertility problems	Spotty/scanty menstrual periods, oligomenorrhea or amenorrhea	*Serum gonadotropins:* May be hypoestrogenemic
Skeletal[c]	Bone pain with exercise	Point tenderness, short stature, arrested skeletal growth	*Radiography and bone scans:* Possible pathological stress fractures; delayed bone age in some cases *DEXA:* Possible osteopenia or osteoporosis,[c] especially in hip and lumbar spine

Note. CT = computed tomography; DEXA = dual-energy X-ray absorptiometry; ECG = electrocardiogram; EEG = electroencephalogram; EMG = electromyogram; fMRI = functional magnetic resonance imaging; MRI = magnetic resonance imaging; PET = positron emission tomography.

[a]Because QTc prolongation may be associated with sudden death, other medications known to prolong QTc intervals should generally be avoided, and any electrolyte abnormalities (e.g., hypokalemia) and hypomagnesemia should be corrected if QTc prolongation is present.

[b]Frank et al. (66); Doraiswamy et al. (67); Hoffman et al. (68, 69).

[c]Although patients with bulimia nervosa who are of normal weight may not need extensive evaluation for osteopenia or osteoporosis, those who have had previous episodes of anorexia nervosa may be at higher risk for these abnormalities (70) and require a similar assessment to that recommended for patients with anorexia nervosa.

TABLE 7. Laboratory Assessments for Patients With Eating Disorders

Assessment	Patient Indication
Basic analyses	All patients with eating disorders
Blood chemistry studies	
Serum electrolytes	
Blood urea nitrogen	
Serum creatinine (interpretations must incorporate assessments of weight)	
Thyroid-stimulating hormone test; if indicated, free T_4, T_3	
Complete blood count including differential	
Erythrocyte sedimentation rate	
Aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase	
Urinalysis	
Additional analyses	Malnourished and severely symptomatic patients (serum magnesium should be obtained prior to administering certain medications if QTc is prolonged)[b]
Complement component 3[a]	
Blood chemistry studies	
Serum calcium	
Serum magnesium	
Serum phosphorus	
Serum ferritin	
Electrocardiogram	
24-hour urine for creatinine clearance[c]	
Osteopenia and osteoporosis assessments	Patients amenorrheic for >6 months
Dual-energy X-ray absorptiometry	
Serum estradiol in female patients	
Serum testosterone in male patients	
Nonroutine assessments	
Toxicology screen	Patients with suspected substance use, particularly those with anorexia nervosa, binge/purge subtype, or patients with bulimia nervosa
Serum amylase (fractionated for salivary gland isoenzyme if available to rule out pancreatic involvement)	Patients with suspected surreptitious vomiting
Serum luteinizing hormone, follicle-stimulating hormone, β-human chorionic gonadotropin, prolactin	Patients with persistent amenorrhea but who are normal weight
Brain magnetic resonance imaging, computed tomography	Patients with significant cognitive deficits, other neurological soft signs, unremitting course, or other atypical features
Stool for guaiac	Patients with suspected GI bleeding
Stool or urine for bisacodyl, emodin, aloe-emodin, rhein	Patients with suspected laxative abuse[d]

[a]Some experts recommend the routine use of complement component 3 as a sensitive marker that may indicate nutritional deficiencies even when other laboratory test results are apparently in the normal range (71, 72).
[b]During hospital refeeding, it is recommended that serum potassium, magnesium, and phosphorus levels be determined daily for 5 days and thereafter at least three times/week for 3 weeks (73, 74).
[c]Boag et al. (75). Creatinine clearance should be calculated using equations that involve body surface using assessments of height and weight. [d]Duncan and Phillips (76); Turner et al. (77).

around the eating problems can be useful in assessment (89a). Family members can provide useful perspectives on factors contributing to the onset of the disorders and issues that may aid or hamper efforts at recovery. Family members are often distressed by difficulties in understanding and interacting with the patient. Clinicians need to empathically listen to family members, advise them on their interactions with the patient, and, when indicated, involve them in conjoint or individual treatment so that the patient and family all stand the best chance of achieving a good outcome (90). Patients with anorexia nervosa who are in a relationship may present with a higher motivation to change (91), and the involvement of spouses and partners in treatment may be highly desirable. Families of adolescents with anorexia nervosa may be directed to the Maudsley approach, which focuses on the family as a resource for recovery and puts parents in charge of refeeding their affected child (87, 92, 93). Although this approach is promising, additional data are required to determine if it is the best approach for adolescents with anorexia nervosa.

B. DEVELOPING A TREATMENT PLAN FOR THE INDIVIDUAL PATIENT

1. Choice of a treatment site

Services available for the treatment of eating disorders can range from intensive inpatient settings (in which subspecialty general medical consultation is readily available) to residential and partial hospitalization programs to varying levels of outpatient care (in which the patient can receive general medical treatment, nutritional counseling, and/or individual, group, and family psychotherapy). Because specialized programs are not available in all geographic areas and financial considerations are often significant, access to these programs may be difficult. The resources listed in Table 1 may provide guidance to patients and families for accessing suitable programs.

Pretreatment evaluation of the patient is essential for determining the appropriate treatment setting. Patient weight, rate of weight loss, cardiac function, and metabolic status are the most important physical parameters for making this choice. Eating disorders should be recognized and early treatment implemented as soon as possible after the onset of symptoms. This is especially true in children, adolescents, and young adults, to avoid the disorder becoming chronic.

As a general rule, patients who weigh less than approximately 85% of their individually estimated healthy weights have considerable difficulty gaining weight outside of a highly structured program that includes inpatient care; such a program may be medically and psychiatrically necessary even for patients above that weight level. It is important to underscore that these are individually estimated healthy weights, not weights simply listed in a standard insurance table. Healthy weight estimates for a given individual must be determined by that person's physicians on the basis of historical data (e.g., growth charts) (3) and, for women, the weight at which healthy menstruation and ovulation resume, which may be higher than the weight at which menstruation and ovulation became impaired (94–96).

It is equally important that the decision to hospitalize a patient be based on psychiatric and behavioral factors, including a rapid or persistent decline in oral intake; a decline in weight despite maximally intensive outpatient or partial hospitalization intervention; the presence of additional stressors, such as dental procedures, that may interfere with the patient's ability to eat; the weight at which the patient was medically unstable in the past; and co-occurring psychiatric problems that merit hospitalization. The degree of a patient's denial and resistance to participate in his or her own care in less supervised settings is critical in deciding whether to hospitalize the patient. Once weight loss is severe enough to indicate the need for immediate hospitalization, treatment may be less effective, refeeding may entail greater risks, and prognosis may be more problematic than if intervention had been provided earlier. Because cortical gray matter deficits result from malnutrition and persist after refeeding (97–99), earlier (rather than later) interven-

tions may be important to minimize the persistent effects of these physiological impairments. Therefore, hospitalization should occur before the onset of medical instability as manifested by vital signs, physical findings, or laboratory test results outside of the normal range.

Vital sign changes that indicate a need for immediate medical hospitalization include marked orthostatic hypotension, with an increase in pulse of 20 bpm or a drop in blood pressure of 20 mmHg standing; bradycardia, with a heart rate <40 bpm; tachycardia, with a heart rate >110 bpm; or the patient's inability to sustain his or her body core temperature (e.g., body temperatures <97.0°F) (3). Most severely underweight patients, particularly those with physiological instability, require inpatient medical management and comprehensive treatment to support their weight-gaining efforts. To avert potentially irreversible effects on physical growth and development, many children and adolescents require inpatient medical treatment, even when weight loss, although rapid, has not been as severe as that suggesting a need for hospitalization in adult patients (3). If children refuse fluids or food out of concern about gaining weight, they may become dehydrated quickly. Also, a child's small size may mean that relatively smaller reductions in weight will result in greater physiological danger.

In determining a patient's initial level of care or suitability for change to a different level of care, expert consensus indicates that it is important to consider a patient's overall clinical and social picture rather than simply rely on weight criteria. Furthermore, weight level per se should never be used as the sole criterion for discharge from inpatient care. Patients need to both gain healthy body weight and learn to maintain that weight prior to discharge; patients who reach a healthy body weight but are discharged before this learning occurs are likely to immediately decrease their caloric intake to excessively low levels that are often insufficient to sustain their healthy body weight. Assisting patients in determining and practicing appropriate food intake at a healthy body weight is likely to decrease the chances of their relapsing. Patients who are medically stabilized on acute medical units will still require inpatient treatment for eating disorders if they do not meet biopsychosocial criteria for partial hospitalization programs or if no suitable partial hospitalization program for eating disorders treatment is accessible because of geographic or other reasons. Patients with inadequate motivation or support who are discharged from inpatient to partial hospitalization programs before they are clinically ready often have high rates of early relapse, greater struggles with recovery, and slower rates of progress, necessitating longer future inpatient stays.

In shifting between levels of care, it is important to establish continuity of care. Stepping down from one level of care to a less intensive level may be destabilizing for a patient and can be even more so when this involves a change in physician, therapist, or treatment team. At times, patients may erroneously conclude that moving to a less restrictive treatment setting means that they are suddenly fully improved. The patient's ability to continue treatment with familiar and trusted staff in a partial hospitalization or outpatient setting may contribute to the success of aftercare planning. Consequently, if the patient is moving from one treatment setting or locale to another, transition planning requires that the care team in the new setting or locale be identified and that specific patient appointments be made. It is preferable that a specific clinician on the team be designated as the primary coordinator of care to ensure continuity and attention to important aspects of treatment. Guidelines for treatment settings are provided in Table 8.

Although most patients with uncomplicated bulimia nervosa do not require hospitalization, indications for hospitalization can include severe disabling symptoms that have not responded to adequate trials of outpatient treatment, serious concurrent general medical problems (e.g., metabolic abnormalities, hematemesis, vital sign changes, uncontrolled vomiting), suicidality, psychiatric disturbances that would warrant patients' hospitalization independent of the eating disorder diagnosis, or severe concurrent substance use.

Legal interventions, including involuntary hospitalization and legal guardianship, may be necessary to address the safety of patients who are reluctant to receive treatment but whose general medical conditions are life threatening (102). On a short-term basis at least, outcomes for

TABLE 8. Level of Care Guidelines for Patients With Eating Disorders

	Level 1: Outpatient	Level 2: Intensive Outpatient	Level 3: Partial Hospitalization (Full-Day Outpatient Care)[a]	Level 4: Residential Treatment Center	Level 5: Inpatient Hospitalization
Medical status	Medically stable to the extent that more extensive medical monitoring, as defined in levels 4 and 5, is not required			Medically stable to the extent that intravenous fluids, nasogastric tube feedings, or multiple daily laboratory tests are not needed	*For adults:* Heart rate <40 bpm; blood pressure <90/60 mmHg; glucose <60 mg/dl; potassium <3 mEq/L; electrolyte imbalance; temperature <97.0°F; dehydration; hepatic, renal, or cardiovascular organ compromise requiring acute treatment; poorly controlled diabetes *For children and adolescents:* Heart rate near 40 bpm, orthostatic blood pressure changes (>20 bpm increase in heart rate or >10 mmHg to 20 mmHg drop), blood pressure <80/50 mmHg, hypokalemia,[b] hypophosphatemia, or hypomagnesemia
Suicidality[c]	If suicidality is present, inpatient monitoring and treatment may be needed depending on the estimated level of risk				Specific plan with high lethality or intent; admission may also be indicated in patient with suicidal ideas or after a suicide attempt or aborted attempt, depending on the presence or absence of other factors modulating suicide risk
Weight as percentage of healthy body weight[d]	Generally >85%	Generally >80%	Generally >80%	Generally <85%	Generally <85%; acute weight decline with food refusal even if not <85% of healthy body weight

TABLE 8. Level of Care Guidelines for Patients With Eating Disorders *(continued)*

	Level 1: Outpatient	Level 2: Intensive Outpatient	Level 3: Partial Hospitalization (Full-Day Outpatient Care)[a]	Level 4: Residential Treatment Center	Level 5: Inpatient Hospitalization
Motivation to recover, including cooperativeness, insight, and ability to control obsessive thoughts	Fair-to-good motivation	Fair motivation	Partial motivation; cooperative; patient preoccupied with intrusive, repetitive thoughts[e] >3 hours/day	Poor-to-fair motivation; patient preoccupied with intrusive repetitive thoughts[e] 4–6 hours a day; patient cooperative with highly structured treatment	Very poor to poor motivation; patient preoccupied with intrusive repetitive thoughts[e]; patient uncooperative with treatment or cooperative only in highly structured environment
Co-occurring disorders (substance use, depression, anxiety)	Presence of comorbid condition may influence choice of level of care				Any existing psychiatric disorder that would require hospitalization
Structure needed for eating/gaining weight	Self-sufficient	Self-sufficient	Needs some structure to gain weight	Needs supervision at all meals or will restrict eating	Needs supervision during and after all meals or nasogastric/special feeding modality
Ability to control compulsive exercising	Can manage compulsive exercising through self-control	Some degree of external structure beyond self-control required to prevent patient from compulsive exercising; rarely a sole indication for increasing the level of care			
Purging behavior (laxatives and diuretics)	Can greatly reduce incidents of purging in an unstructured setting; no significant medical complications, such as electrocardiographic or other abnormalities, suggesting the need for hospitalization			Can ask for and use support from others or use cognitive and behavioral skills to inhibit purging	Needs supervision during and after all meals and in bathrooms; unable to control multiple daily episodes of purging that are severe, persistent, and disabling, despite appropriate trials of outpatient care, even if routine laboratory test results reveal no obvious metabolic abnormalities

TABLE 8. Level of Care Guidelines for Patients With Eating Disorders *(continued)*

	Level 1: Outpatient	Level 2: Intensive Outpatient	Level 3: Partial Hospitalization (Full-Day Outpatient Care)[a]	Level 4: Residential Treatment Center	Level 5: Inpatient Hospitalization
Environmental stress	Others able to provide adequate emotional and practical support and structure		Others able to provide at least limited support and structure	Severe family conflict or problems or absence of family so patient is unable to receive structured treatment in home; patient lives alone without adequate support system	
Geographic availability of treatment program	Patient lives near treatment setting			Treatment program is too distant for patient to participate from home	

Source. Adapted and modified from La Via et al. (100).

Note. In general, a given level of care should be considered for patients who meet one or more criteria under a particular level. These guidelines are not absolutes, however, and their application requires physician judgment.

[a]This level of care is most effective if administered for at least 8 hours/day, 5 days/week; less intensive care is demonstrably less effective (101).

[b]If the patient is dehydrated, whole-body potassium values may be low even if the serum potassium value is in the normal range; determine concurrent urine specific gravity to assess for dehydration.

[c]Determining suicide risk is a complex clinical judgment, as is determining the most appropriate treatment setting for patients at risk for suicide. Relevant factors to consider are the patient's concurrent medical conditions, psychosis, substance use, other psychiatric symptoms or syndromes, psychosocial supports, past suicidal behaviors, and treatment adherence and the quality of existing physician-patient relationships. These factors are described in greater detail in the APA's *Practice Guideline for the Assessment and Treatment of Patients With Suicidal Behaviors* (84).

[d]Although this table lists percentages of expected healthy body weight in relation to suggested levels of care, these are only approximations and do not correspond to percentages based on standardized values for the population as a whole. For any given individual, differences in body build, body composition, and other physiological variables may result in considerable differences as to what constitutes a healthy body weight in relation to "norms." For example, for some patients, a healthy body weight may be 110% of the standardized value for the population, whereas for other individuals it may be 98%. Each individual's physiological differences must be assessed and appreciated. For children, also consider the rate of weight loss. Finally, weight level per se should never be used as the sole criterion for discharge from inpatient care. Many patients require inpatient admission at higher weights and should not be automatically discharged just because they have achieved a certain weight level unless all other factors are appropriately considered. See text for further discussion regarding weight.

[e]Individuals may experience these thoughts as consistent with their own deeply held beliefs (in which case they seem to be ego-syntonic and "overvalued") or as unwanted and ego-alien repetitive thoughts, consistent with classic obsessive-compulsive disorder phenomenology.

those patients who are hospitalized involuntarily are comparable with outcomes of those hospitalized voluntarily with respect to rates of weight restoration (103). The decision to hospitalize on a psychiatric versus a general medical or adolescent/pediatric unit depends on the patient's general medical status, the skills and abilities of local psychiatric and general medical staff, and the availability of suitable programs to care for the patient's general medical and psychiatric problems (104). There is evidence to suggest that patients treated in specialized inpatient eating disorder units have better outcomes than patients treated in general inpatient settings where staff lack expertise and experience in treating patients with eating disorders (105).

Partial hospitalization and day hospital programs are being increasingly used in attempts to decrease the length of inpatient stays or even in lieu of hospitalization for individuals with milder symptoms. However, such programs may not be appropriate for patients with lower initial weights. The failure of outpatient treatment is one of the most frequent indications for the more intensive treatment provided in a day, partial hospitalization, or inpatient program. In deciding whether a patient requires a partial hospitalization program, the patient's motivation to participate in treatment and ability to work in a group setting should be considered (106, 107). A growing body of evidence suggests that partial hospitalization outcomes are highly correlated with treatment intensity and that more successful programs involve patients at least 5 days/week for 8 hours/day (101).

Patients who are considerably below their healthy body weight but who are highly motivated to adhere to treatment, have cooperative families, and have brief symptom duration may benefit from treatment in outpatient settings, but only if they are carefully monitored and if they and their families understand that a more restrictive setting may be necessary if persistent progress is not evident within a few weeks (108, 109). Careful monitoring includes at least weekly (and often twice or thrice weekly) weight determinations done immediately after the patient voids and while the patient is wearing the same class of garment (e.g., hospital gown, standard exercise clothing). Measurement of urine specific gravity, orthostatic vital signs, oral body temperature, and, in purging patients, electrolytes may also need to be monitored on a regular basis. Although child and adolescent patients treated in the outpatient setting can remain with their families and continue to attend school or work, these advantages must be balanced against the risks of failure to progress in recovery.

2. Choice of specific treatments for anorexia nervosa

Anorexia nervosa is a complex, serious, and often chronic condition that may require a variety of treatment modalities at different stages of illness and recovery. Specific treatments include nutritional rehabilitation, psychosocial interventions, and medications. The aims of treatment are to 1) restore the patient to a healthy weight (associated with the return of menses and normal ovulation in female patients, normal sexual drive and hormone levels in male patients, and normal physical and sexual development in children and adolescents); 2) treat the patient's physical complications; 3) enhance the patient's motivation to cooperate in the restoration of healthy eating patterns and participate in treatment; 4) educate the patient regarding healthy nutrition and eating patterns; 5) help the patient reassess and change core dysfunctional cognitions, attitudes, motives, conflicts, and feelings related to the eating disorder; 6) treat the patient's associated psychiatric conditions, including deficits in mood and impulse regulation, self-esteem, and behavior; 7) enlist family support and provide family counseling and therapy where appropriate; and 8) prevent the patient from relapsing.

a) Nutritional rehabilitation

The goals of nutritional rehabilitation for seriously underweight patients are to restore weight, normalize eating patterns, achieve normal perceptions of hunger and satiety, and correct biological and psychological sequelae of malnutrition (110, 111).

Healthy target weights should be established as part of the initial treatment plan and discussed explicitly with the patient, but with considerable sensitivity to how generally fearful patients are of gaining weight. On occasion it may be judicious to delay this discussion until the patient is less likely to be terrified of his or her ultimate weight goal. In general, a healthy goal weight for female patients is the weight at which normal menstruation and ovulation are restored and, for male patients, the weight at which normal testicular function is resumed. For female patients who previously had a healthy menses and ovulation, the clinician can estimate their healthy weight as approximately the same weight at which full physical and psychological vigor were present. In one study of 100 adolescent patients with anorexia nervosa (94), the resumption of menses occurred at a weight approximately 4.5 pounds greater than the weight at which menses was lost; at 90% of healthy weight, 86% of patients resumed menses. In children and adolescents, growth curves should be followed and are most useful when longitudinal data are available, given that extrapolations from cross-sectional data at one point in time can be misleading. Therefore, for most clinical work, it is reasonable to simply weigh patients and gauge how far they are from their individually estimated healthy body weight (112). Bone age may be accurately estimated from wrist X-rays and nomograms. In conjunction with bone measurements, menstrual history in adolescents with secondary amenorrhea, mid-parental heights, and assessments of skeletal frame, CDC growth charts (available at http://www.cdc.gov/growthcharts/) may be used to accurately estimate individually appropriate ranges for "expected" weights for current age and to set individually realistic expectations and goals for weight and height for patients up to age 20 years.

For individuals who are markedly underweight and for children and adolescents whose growth is substantially less than that predicted by growth curves, hospital-based programs for nutritional rehabilitation should be considered. For those in inpatient or residential settings, the weight at which it is appropriate to discharge a patient may vary in relation to the patient's healthy target weight and will depend on the patient's ability to feed him- or herself, the patient's motivation and ability to participate in aftercare programs, and the adequacy of aftercare, including partial hospitalization. In general, the closer a patient is to his or her healthy body weight before discharge, the less the risk he or she has of relapsing and being readmitted. Having patients maintain their weight for a period of time before they are discharged from inpatient treatment probably decreases the risk of their relapsing as well.

Refeeding programs should be implemented in nurturing emotional contexts. Staff should convey to patients their intention to take care of them and not let them die even when the illness prevents the patients from taking care of themselves. Staff should clearly communicate that they are not seeking to engage in control battles and have no punitive intentions when using interventions that the patient may experience as aversive. Some positive reinforcements (e.g., privileges) and negative reinforcements (e.g., required bed rest, exercise restrictions, restrictions of off-unit privileges) should be built into the program; negative reinforcements can then be reduced or terminated and positive reinforcements accelerated as target weights and other goals are achieved.

As patients work to achieve their target weights, their treatment plan should also establish expected rates of controlled weight gain. Clinical consensus suggests that realistic targets are 2–3 lb/week for hospitalized patients and 0.5–1 lb/week for individuals in outpatient programs, although an intensive partial hospitalization, stepped-down program has reported gains of up to 2 lb/week (113). Occasionally some patients may gain as much as 4–5 lb/week, but these individuals must be carefully monitored for refeeding syndrome and fluid retention. Dietitians can help patients choose their own meals and provide a structured meal plan that ensures nutritional adequacy and inclusion of all the major food groups. Formula feeding may have to be added to achieve large caloric intake. Some authorities advocate that the amount of solid food eaten should not exceed the amount that patients would ordinarily be eating at their target weight. Expanding cuisine options is important to avoid the severely restricted food choices fre-

quently seen in eating disorder patients. Legitimate food allergies and patients' religious and cultural practices must be considered and discussed to limit patient rationalizations for restricted eating. Intake levels should usually start at 30–40 kcal/kg per day (approximately 1,000–1,600 kcal/day). During the weight gain phase, intake may have to be advanced progressively to as high as 70–100 kcal/kg per day for some patients; many male patients require a very large number of calories to gain weight. Patients who require significantly higher caloric intakes may be discarding food, vomiting, or exercising frequently or they may engage in more nonexercise motor activity such as fidgeting; others may have a truly elevated metabolic rate. Patients requiring much lower caloric intakes or those suspected of artificially increasing their weight by fluid loading should be weighed in the morning after voiding while they are wearing only a gown; their fluid intake also should be carefully monitored. Assessing urine specimens obtained at the time of weigh-in for specific gravity may help ascertain the extent to which the measured weight reflects excessive water intake.

Particularly in residential or hospital treatment programs, it may initially be difficult to obtain the cooperation of patients who do not wish to be there. In addition, many patients have delayed gastric emptying that initially impairs their ability to tolerate 1,000 calories/day. Under such circumstances, it is often more effective to begin with 200–300 calories above the patient's usual caloric intake (e.g., a patient consuming 400 calories/day may need to start at 600–700 calories/day). During hospitalization, giving patients a liquid feeding formula in the early stages of weight gain and then gradually exposing them to food and slowly increasing their activity level can be a very effective strategy for inducing weight gain (114). As patients are able and as their cooperation improves, a 2–3 lb/week gain in residential or hospital programs can be expected without compromising the patients' safety.

In addition to an increased caloric intake, patients also benefit from vitamin and mineral supplements. Serum potassium levels should be regularly monitored in patients who are persistent vomiters. Hypokalemia should be treated with oral or intravenous potassium supplementation and rehydration.

Physical activity should be adapted to the food intake and energy expenditure of the patient, taking into account bone mineral density and cardiac function. For the severely underweight patient, exercise should be restricted and always carefully supervised and monitored. Once a safe weight is achieved, the focus of an exercise program should be on physical fitness as opposed to expending calories. The focus on fitness should be balanced with restoring patients' positive relationship with their bodies—helping them to take back control and get pleasure from physical activities rather than being compulsively enslaved to them. An exercise program should involve exercises that are not solitary, are enjoyable, and have endpoints that are not determined by time spent expending calories or changing weight and shape. Sports such as soccer, basketball, volleyball, or tennis are examples (115).

Staff should help patients deal with their concerns about weight gain and body image changes, given that these are particularly difficult adjustments for patients to make. In fact, there is general agreement among clinicians that distorted attitudes about weight and shape are the least likely to change and that excessive and compulsive exercise may be one of the last of the behaviors associated with an eating disorder to abate. Although it is by no means certain that patients' abnormal eating habits will improve simply as a function of weight gain (116), there is considerable evidence to suggest that other eating disorder symptoms diminish as weight is restored with nutritional rehabilitation. For example, clinical experience indicates that with weight restoration, food choices increase, food hoarding decreases, and obsessions about food decrease in frequency and intensity, although they do not necessarily disappear.

Providing anorexia nervosa patients who have associated binge eating and purging behaviors with regular structured meal plans may also enable them to improve. For some patients, however, giving up severe dietary restrictions and restraints appears to increase binge-eating behavior, which is often accompanied by compensatory purging.

As weight is regained, changes in associated mood and anxiety symptoms as well as in physical status can be expected (117). Clinicians should advise patients of what changes they can anticipate as they start to regain weight. In the initial stages, the apathy and lethargy associated with malnourishment may abate. However, as patients start to recover and feel their bodies becoming larger, and especially as they approach frightening magical numbers on the scale that represent phobic weights, they may experience a resurgence of anxious and depressive symptoms, irritability, and sometimes suicidal thoughts. These mood symptoms, non-food-related obsessional thoughts, and compulsive behaviors, although often not eradicated, usually decrease with sustained weight gain.

Weight gains result in improvement in most of the physiological complications of semistarvation, including improvement in electrolyte levels, heart and kidney function, and attention and concentration. Initial refeeding may be associated with mild transient fluid retention, and patients who abruptly stop taking laxatives or diuretics may experience marked rebound fluid retention for several weeks, presumably from salt and water retention caused by elevated aldosterone levels associated with chronic dehydration. Refeeding edema and bloating occur frequently.

Patients may experience abdominal pain and bloating with meals from the delayed gastric emptying that accompanies malnutrition. Constipation, which may be ameliorated with stool softeners, can progress to obstipation and, rarely, acute bowel obstruction. As weight gain progresses, many patients also develop acne and breast tenderness. Many patients become unhappy and demoralized about resulting changes in body shape. Management strategies for dealing with these milder adverse effects include careful refeeding, frequent physical examinations, and forewarnings to patients about mild refeeding edema.

A severe refeeding syndrome may occur when severely malnourished patients (generally those weighing <70% of their healthy body weight) are re-fed too rapidly, particularly in the context of enteral or parenteral feedings but also with vigorous oral refeeding regimens. This syndrome consists of hypophosphatemia, hypomagnesemia, hypocalcemia, and fluid retention. Thiamine deficiency may also be seen as a feature of this syndrome. In some case series, the refeeding syndrome has been reported to occur in roughly 6% of hospitalized adolescents (118). Excessively rapid refeeding and nasogastric or parenteral feeding may be particularly dangerous because of their potential for inducing severe fluid retention, cardiac arrhythmias, cardiac failure, respiratory insufficiency, delirium, seizures, rhabdomyolysis, red cell dysfunction, and even sudden death, especially in the lowest-weight patients (118, 119). In such cases, phosphorus, magnesium, and/or potassium supplementation will be necessary (118, 120). In one series of hospitalized adolescents, moderate hypophosphatemia occurred in 5.8% and mild hypophosphatemia in 21.7% of patients, requiring some degree of phosphorus replacement in 27.5% of these patients (120).

Besides monitoring of mineral and electrolyte levels, general medical monitoring during refeeding should include assessment of vital signs, monitoring of food and fluid intake and output (if indicated), and observation for edema, rapid weight gain (associated primarily with fluid overload), congestive heart failure, and gastrointestinal symptoms. For children and adolescents who are severely malnourished (weigh <70% of their standard body weight), cardiac monitoring, especially at night, may be advisable (120).

Some patients are completely unable to recognize their illness, accept the need for treatment, or tolerate the guilt that would accompany eating, even when performed to sustain their lives. On the rare occasions when staff have to take over the responsibilities for providing life-preserving care, nasogastric feedings are preferable to intravenous feedings. In some programs, supplemental overnight pediatric nasogastric tube feedings have been used to facilitate weight gain in cooperative patients. This practice is not routinely recommended at present, although it appears to be well tolerated, may slightly decrease hospital stays in children, and may be experienced positively by some patients, particularly younger patients, who may feel relieved to

know that they are being cared for and who, while they cannot bring themselves to eat, are willing to allow physicians to feed them (121). If used, such interventions should never supplant expectations that the patient will resume normal eating patterns on his or her own. Total parenteral feeding is required only rarely and for brief periods in life-threatening situations.

Forced nasogastric or parenteral feeding can each be accompanied by substantial dangers. When nasogastric feeding is necessary, clinical experience suggests that continuous feeding (i.e., over 24 hours) may be less likely than three to four bolus feedings a day to result in metabolic abnormalities or patient discomfort and may be better tolerated by patients. As an alternative to nasogastric feedings, in very difficult situations where patients physically resist and constantly remove their nasogastric tubes, gastrostomy or jejunostomy tubes may be surgically inserted. As described above, rapid refeeding can be associated with the severe refeeding syndrome, and infection is always a risk with parenteral feedings in emaciated and potentially immunocompromised patients with anorexia nervosa. Consequently, these interventions should not be used routinely but should be considered only when patients are unwilling or unable to cooperate with oral feedings or when the patients' health, physical safety, and recovery are being threatened. In situations where involuntary forced feeding is considered, careful thought should be given to clinical circumstances, family opinion, and relevant legal and ethical dimensions of the patient's treatment.

If using interventions that patients with anorexia nervosa may experience as coercive, the clinician should consider the potential impact on the therapeutic relationship, especially since maintaining a sense of control is often a key dynamic in these patients. The setting of limits is developmentally appropriate in the management of children and adolescents and may help shape the patient's behavior in a healthy direction. It is essential for caregivers to be clear about their own intentions and empathic capacities regarding the patient's impression of being coerced. Caregivers should not be seen as using techniques intended to be coercive. Rather, caregivers' interventions should always be clearly seen as components of a general medical treatment required for the patient's health and survival.

During the last few years, there has been considerable debate about the ethics of involuntarily feeding patients with anorexia nervosa (122, 123). There is general agreement that children and adolescents who are severely malnourished and in grave medical danger should be refed, involuntarily if necessary, but that every effort should be made to gain their cooperation as cognitive function improves.

Ethical as well as clinical dilemmas often confront clinicians dealing with adult patients with chronic anorexia nervosa and their families. The general principles to be followed are those directing good, humane care; respecting the wishes of competent patients; and intervening respectfully with patients whose judgment is severely impaired by their psychiatric disorders when such interventions are likely to have beneficial results (124, 125).

b) Psychosocial interventions

The goals of psychosocial interventions in patients with anorexia nervosa are to help them 1) understand and cooperate with their nutritional and physical rehabilitation, 2) understand and change the behaviors and dysfunctional attitudes related to their eating disorder, 3) improve their interpersonal and social functioning, and 4) address comorbid psychopathology and psychological conflicts that reinforce or cause them to maintain eating disorder behaviors. Efforts to achieve these goals often benefit from an initial enhancement of a patient's motivation to change along with ongoing efforts to sustain this motivation.

(i) Acute anorexia nervosa

Few controlled studies offer guidance for the psychosocial treatment of anorexia nervosa. Clinical consensus suggests that during the acute refeeding and weight gain stages, it is beneficial to provide patients with individual psychotherapeutic management that is psychodynamically in-

formed and that provides empathic understanding, explanations, praise for positive efforts, coaching, support, encouragement, and other positive behavioral reinforcement. During all phases of treatment, seeing patients' families is also helpful, particularly for children and adolescents, for whom controlled trials suggest that family treatment is the most effective intervention (86, 126). For patients who initially lack motivation, their awareness and desire for recovery may be increased by psychotherapeutic techniques based on motivational enhancement, although solid evidence for this contention is lacking.

At the same time, clinical consensus suggests that psychotherapy alone is generally not sufficient to treat severely malnourished patients with anorexia nervosa. Although the value of establishing and maintaining a psychotherapeutically informed relationship is clearly beneficial and psychotherapeutic sessions to enhance patient motivation and further patient weight gain are likely to be helpful, the value of formal psychotherapy during the acute refeeding stage is uncertain (127). Attempts to conduct formal psychotherapy may be ineffective with starving patients, who are often negativistic, obsessional, or mildly cognitively impaired, presumably in relation to the known cortical atrophy seen in nutritionally compromised patients. One study documented the difficulty researchers have had in initiating and sustaining cognitive-behavioral therapies for patients with anorexia nervosa (128).

Most nutritional rehabilitation programs incorporate emotional nurturance and one of a variety of behavioral interventions that link exercise, bed rest, and privileges with target weights, desired behaviors, and informational feedback. Several studies of individual therapy have shown modest success, sometimes in only a small percentage of patients (7, 85). In one controlled trial, nonspecific supportive clinical management appeared to be at least as effective as CBT or IPT in some patients. However, 70% of patients either did not complete or made only small gains from the active psychotherapies they received (7). In this study, clinical management included education, care, support, and the fostering of a therapeutic relationship designed to promote adherence to treatment through the use of praise, reassurance, and advice.

The accumulated evidence strongly supports the value of family therapy for the acute treatment of children and adolescents in outpatient settings. Studies show that whether patients and parents are seen together or are treated separately in ongoing treatment, the results are better than when families are not involved at all (86, 126). This approach begins with the therapist's attempting to unite the parents in developing a consistent approach to refeeding, sympathizing with their plight, and explicitly disclaiming the notion that the parents have caused the eating problem. When families are involved in treatment, sibling subsystems can be engaged to support the affected sibling. Parents can determine for themselves how best to refeed their child with anorexia nervosa with the therapist's ongoing support and consultation. For some outpatients, a short-term course of family therapy may be as effective as a long-term course; however, a shorter course of therapy may not be adequate for patients with severe obsessive-compulsive features or nonintact families (129). In these studies (129), inpatient care was used briefly for medical stabilization. For adolescents treated in inpatient settings, participation in family group psychoeducation may help promote weight gain and may be as effective as more intensive forms of family therapy (130).

(ii) Anorexia nervosa after weight restoration

Clinical consensus suggests that psychotherapy can be helpful for patients with anorexia nervosa once their malnutrition has been corrected and they have begun gaining weight (131). Because of the enduring nature of many of the psychopathological features of anorexia nervosa and the patient's need for support during recovery, ongoing individual psychotherapeutic treatment is frequently required for at least 1 year and may take many years (132, 133).

Although there have been few formal studies of its effectiveness (134, 135), psychotherapy is generally thought to help patients understand 1) what they have been through; 2) developmental, familial, and cultural antecedents of their illness; 3) how their illness may have been a mal-

adaptive attempt to cope and emotionally self-regulate; 4) how to avoid or minimize the risk of relapse; and 5) how to better deal with salient developmental and other important life issues in the future. At present there is no absolute weight or percentage of body fat that indicates when a patient is actually ready to begin formal psychotherapy. In addition, patients often display improved mood, enhanced cognitive functioning, and clearer thought processes once their nutritional status has significantly improved and even before they make substantial weight gains.

Little evidence from controlled studies exists to guide clinicians in the use of specific therapies for adults with anorexia nervosa. Nonetheless, some data are emerging in support of individual CBT (136–138) for helping patients maintain healthy eating behaviors and CBT or IPT for inducing cognitive restructuring and promoting more effective coping (139, 140). After a patient has begun to gain weight, CBT may be helpful in reducing the risk of relapse and improving outcome, as demonstrated in a small randomized controlled trial (136). In that study, patients who received CBT were more likely to remain in treatment (78%) and have a good outcome after a year (44%) than those assigned to nutritional counseling (7%).

Many clinicians also use psychodynamically oriented individual or group psychotherapy to address underlying personality disorders that may hamper treatment and help sustain the illness and to foster psychological insight and maturation in patients who have made strides toward weight restoration (141–148). Clinical consensus suggests that psychosocial interventions should incorporate an understanding of the patient's developmental traumas, cognitive development, psychodynamic conflict and defense styles, disorders of self-esteem, self-regulation, and "sense of self," as well as other psychological deficits, the presence of other psychiatric disorders, and the complexity of family relationships (149–152). Although studies of psychotherapies focus on different interventions as distinctly separate treatments, in practice there is frequent overlap among treatments. Indeed, most experienced clinicians report using interventions that cross theoretical boundaries when treating patients with eating disorders (153).

In adolescents, controlled studies have shown that for patients who are younger than age 19 years, have been ill for 3 years or less, and have restored their weight, family therapy is more beneficial than individual therapy, whereas individual therapy is more beneficial for patients with later-onset disorders (154). At 5-year follow-up of patients who received these therapies, much of the improvement could be attributed to the natural outcome of the illness, but it was still possible to detect long-term benefits of the psychological therapies (155).

Regardless of the clinical or theoretical approach used in treatment, some patients with eating disorders challenge clinicians' understanding and in some instances provoke countertransference reactions, particularly in response to patients' communications of aggression and defiance (140, 147, 156–162). Clinical consensus suggests that eating disorders are often difficult to ameliorate with short-term interventions, at least in older adolescents and adults; for this reason, clinicians often feel they have not done enough to change the patient's plight. Countertransference feelings often include beleaguerment, demoralization, and excessive need to change patients with a chronic eating disorder. At the same time, when treating patients with chronic illnesses, clinicians need to understand the longitudinal course of the disorder and that patients can recover even after many years of symptoms. Such awareness may help clinicians maintain a degree of therapeutic optimism and deal with the feelings of pessimistic demoralization that may arise (13, 163).

Some observations suggest that the gender of the clinician may play a role in the particular kind of countertransference reactions that come into play (156, 157). A patient's concerns about the gender of a clinician may be tied to concerns about potential boundary violations and should be attended to when selecting clinicians, including psychiatrists (164, 165). In addition, cultural differences between patients and clinicians or patients and other aspects of the care system may also influence the course and conduct of treatment and require attention. Ongoing processing of one's countertransference reactions, sometimes with the help of a supervisor or consultant, can be useful in helping the clinician persevere and reconcile intense, troublesome countertransference reactions.

When a patient with an eating disorder has been sexually abused or has felt helpless in other situations of boundary violations, this may stir up needs in the clinician to rescue the patient, which can occasionally result in a loosening of the therapeutic structure, the loss of therapeutic boundary keeping, and a sexualized countertransference reaction. In some cases, these countertransference responses have led to overt sexual acting out and unethical treatment on the part of the clinician that have not only compromised treatment but also severely harmed the patient (166). The maintenance of clear boundaries is critical in treating all patients with eating disorders, not only those who have been sexually abused but also those who may have experienced other types of boundary intrusions regarding their bodies, eating behaviors, and other aspects of the self by family members or others. Regular meetings with other team members and/or formal supervision can also help clinicians avoid boundary violations with eating disorder patients. Particularly with some adolescents, a clinician's obvious warmth and direct educational approach may facilitate initiating and sustaining the patient's trust. However, the license to be informal may create a climate in which a clinician is at a greater risk to violate therapeutic boundaries; such an occurrence must be consistently and carefully prevented. At the same time, according to some clinicians, a clinician's excessively rigid, cold manner and formal distancing behaviors (e.g., avoiding even benign pats on the shoulder that a patient might seek for reassurance) may be disconcerting to some patients and inhibit them from fully engaging in treatment.

Some clinicians use group psychotherapy as an adjunctive treatment for anorexia nervosa; in such cases, however, caution must be taken that patients do not compete to be the thinnest or sickest patient in the group or become excessively demoralized by observing the ongoing struggles of other patients in the group. For that reason, clinicians sometimes prefer heterogeneous groups that combine patients with bulimia nervosa and those with anorexia nervosa. Although there has been little formal study of group psychotherapy in the treatment of anorexia nervosa, one naturalistic study suggests that CBT may have promise (137).

Some clinicians consider that eating disorders may be usefully treated through addiction models, but no data from short- or long-term outcome studies using these methods have been reported. Literature from Anorexics and Bulimics Anonymous and Overeaters Anonymous emphasizes that these programs are not substitutes for professional treatment. These organizations specifically recommend that members seek appropriate medical and nutritional guidance. Nevertheless, there are concerns about zealous and narrow application of the 12-step philosophy in addiction-oriented programs for eating disorders. Programs that focus exclusively on abstaining from binge eating, purging, restrictive eating, and exercise (e.g., 12-step programs) without attending to nutritional considerations or cognitive and behavioral deficits have not been studied and therefore cannot be recommended as the sole treatment for anorexia nervosa. Clinicians frequently report encountering patients who, while attempting to resolve anorexia nervosa by means of a 12-step program alone, might have been greatly helped by concurrent conventional treatment approaches such as nutritional counseling and rehabilitation, medications, and psychodynamic or cognitive-behavioral approaches. By limiting their attempts to recover to their participation in a 12-step program alone, patients not only deprive themselves of the potential benefits of conventional treatments but also may expose themselves to misinformation about nutrition and eating disorders offered by well-intended nonprofessionals participating in and sometimes running these groups. Attempts have been made to integrate traditional and 12-step approaches into treatment; such approaches can offer a strong sense of community, but the effectiveness and potential adverse effects of these combined interventions have not been systematically studied (167). It is important for programs using a 12-step model to be equipped to care for patients with the substantial psychiatric and general medical problems often associated with eating disorders.

Selective support groups led by professionals and advocacy organizations may be beneficial as adjuncts to other psychosocial treatment modalities. However, clinicians should remain cognizant of the idiosyncratic recommendations made in some self-help groups. Sometimes, participants

or leaders will eschew clinician-recommended treatments such as psychotropic medication or insist that a participant follow a particular kind of meal structure. These recommendations may conflict with other treatment recommendations and potentially increase the patient's resistance to treatment.

Patients and their families are increasingly using online web sites, news groups, and chat rooms as resources. Although substantial amounts of worthwhile information and support are available in this fashion, the lack of professional supervision of these sources may sometimes lead to misinformation and unhealthy dynamics among users. Clinicians should ask patients about their use of electronic support and other alternative and complementary approaches and be prepared to openly and sympathetically discuss the information and ideas they and their families have gathered from these sources.

As with any form of intervention, various psychosocial interventions may generate adverse effects; however, these have not been systematically studied with regard to treating anorexia nervosa. Some that have been observed by clinicians, patients, and families include 1) fostering negative attitudes in patients and/or families toward health care professionals without adequate discussion and reflection, thereby increasing the risk that patients will drop out of treatment and become less willing to seek or engage in professional treatment; 2) delaying referral to more appropriate interventions; and 3) generating burdensome costs without reasonable or expected benefits (13, 168).

Patients often have difficulty with certain elements of psychotherapy. For example, among patients receiving CBT, some are quite resistant to self-monitoring, whereas others have difficulty mastering cognitive restructuring. Most patients are initially resistant to changing their eating behaviors, particularly when it comes to increasing their caloric intake or reducing exercise. However, the complete lack of acceptance of a psychotherapeutic approach appears to be rare, although this has not been systematically studied.

Management strategies to deal with potential negative effects of psychotherapeutic interventions include 1) conducting a careful pretreatment evaluation, during which the therapist must assess and enhance the patient's level of motivation for change and determine the most appropriate therapeutic approach and format (e.g., individual versus group); 2) being alert to a patient's reactions to and attitudes about the proposed treatment and listening to and discussing the patient's concerns in a supportive fashion; 3) ongoing monitoring of the quality of the therapeutic relationship; and 4) identifying patients for whom another treatment should be coadministered or given before psychotherapy begins (e.g., substance use disorder treatment for those actively abusing alcohol or other drugs, antidepressant treatment for patients whose depression makes them unable to become actively involved, more intensive psychotherapy for those with severe personality disorders, group therapy for those not previously participating). Alternative strategies may be necessary to facilitate the therapeutic process and prevent the abrupt termination of therapy (13). As with all therapeutic interventions, it is essential that the therapist be alert to potential countertransference phenomena toward these often difficult-to-treat patients. If unresolved, these reactions have a high potential for disrupting or hastening the termination of treatment.

(iii) Chronic anorexia nervosa

Available studies of patients with chronic anorexia nervosa typically show a lack of substantial clinical response to psychotherapy. For example, in the study of Dare et al. (85), 84 patients, ill for an average of 6.3 years and with an initial average BMI of 15.4 kg/m^2, were assigned to one of three individual psychotherapies or a control group. The results after 1 year of psychotherapy were modest in all groups, although the psychoanalytic psychotherapy and family therapy groups fared better than those in the low-contact, routine-care control group. Nevertheless, many clinicians report seeing patients with chronic anorexia nervosa who, after many years of struggling with their disorder, experience substantial remission; thus clinicians are justified in maintaining and extending some degree of hope to patients and families.

For patients whose anorexia nervosa continues to be resistant to treatment despite substantial trials of nutritional rehabilitation, medications, and hospitalizations, more extensive psychotherapeutic measures may be undertaken in a further effort to engage and help motivate them or, failing that, as compassionate care. This difficult-to-treat subgroup may represent an as-yet poorly understood group of patients with malignant, chronic anorexia nervosa. Efforts to understand the unique plight of such patients may sometimes lead to engagement in the therapeutic alliance, thereby allowing the nutritional protocol to be initiated (125, 141, 142, 169, 170). With patients who have difficulty talking about their problems, clinicians have reported a variety of nonverbal therapeutic methods, such as creative arts and movement therapy programs, to be useful (171), but these methods have not been formally studied. At various stages of recovery, occupational therapy programs may also enhance self-concept and self-efficacy (172, 173), but again these programs have not been formally studied.

c) Medications

Although psychotropic medications should not be used as the sole or primary treatment for anorexia nervosa, they have been used as an adjunct treatment when nutritional rehabilitation programs alone are ineffective in restoring patients' normal weight or when patients demonstrate significant comorbid psychopathology such as disabling obsessive-compulsive, depressive, or anxiety symptoms. However, because anorexia nervosa symptoms and associated features such as depression may remit with weight gain, decisions concerning the use of medications should be deferred if possible until patients' weight has been restored. The decisions about whether to use psychotropic medications and which medications to choose will be determined by the remaining symptom picture (e.g., antidepressants are usually considered for those with persistent depression, anxiety, or obsessive-compulsive symptoms and for bulimic symptoms in weight-restored patients; second-generation antipsychotics are usually considered for those with severe, unremitting resistance to gaining weight, severe obsessional thinking, and denial that assumes delusional proportions). Many patients with anorexia nervosa are extremely reluctant to take medications and often refuse those that they know to specifically affect weight. These issues must be discussed sympathetically and comprehensively with patients and, for children and adolescents, with their families.

(i) Antidepressants

The efficacy of SSRI antidepressants for anorexia nervosa appears to vary with the phase of treatment. On the basis of several studies, fluoxetine does not appear to confer significant benefits during weight restoration (174, 175), nor did citalopram increase the rate of weight gain in a small study (176). In contrast, in weight-restored patients, fluoxetine in dosages of up to 60 mg/day may decrease relapse episodes and has been associated with better maintenance of weight and fewer symptoms of depression (177). However, for weight-restored patients with anorexia nervosa who are receiving CBT to help prevent relapse, adding fluoxetine to their treatment does not further decrease the risk of relapse (138).

Although higher dosages of fluoxetine have been found to impair appetite and cause weight loss in normal-weight and obese patients, this effect has not been reported in anorexia nervosa patients treated with lower dosages. Many clinicians report that malnourished depressed patients are less responsive to the beneficial effects of tricyclics, SSRIs, and other antidepressant medications than normal-weight depressed patients. These findings are consistent with those showing that SSRIs are not as effective for depression, when patients without an eating disorder undergo dietary restrictions (178, 179).

Malnourished patients are also much more prone to the side effects of medications. For example, the use of tricyclic antidepressants may be associated with greater risk of hypotension, increased cardiac conduction times, and arrhythmia, particularly in purging patients whose hydration may be inadequate and whose cardiac status may be nutritionally compromised. Given

the availability of other antidepressant treatments, tricyclic antidepressants should be avoided, particularly in underweight patients and in patients who are at risk for suicide. In patients for whom there is a concern regarding potential cardiovascular effects of medication, medical specialty consultation can help evaluate the patient's status and advise on the use of medication. With all antidepressants, strategies to manage side effects include limiting the use of medications to patients with persistent depression, anxiety, or obsessive-compulsive symptoms; using low initial doses in underweight patients; and remaining vigilant about early manifestations of side effects.

Several other antidepressants have also been associated with significant side effects that are of relevance to the treatment of anorexia nervosa patients. Bupropion has been associated with an increased likelihood of seizures in patients with bulimia nervosa (180, 181); although the reason for this is unknown, it is suspected that patients with anorexia nervosa, binge-purge type, may also be at increased risk for seizures. Thus, this medication is not recommended for patients with anorexia nervosa, particularly those who purge. Mirtazapine, an antidepressant associated with weight gain, has also been associated with neutropenia. In addition, the only published case report of using mirtazapine to treat anorexia nervosa described a patient also taking fluvoxamine who developed the serotonin syndrome (182). Thus, mirtazapine may not be suitable for use in underweight anorexia nervosa patients.

Clinicians must attend to the black box warnings concerning antidepressants and conduct appropriate informed consent with patients and families if antidepressants are to be prescribed (183–189).

(ii) Antipsychotics

It has been suggested that antipsychotic medications, particularly second-generation antipsychotics, can be potentially useful during the weight-restoration phase or in treatment of other associated symptoms of anorexia nervosa, such as marked obsessionality, anxiety, limited insight, and psychotic-like thinking. Although no controlled studies have been reported in patients with anorexia nervosa, controlled trials of olanzapine and risperidone are under way. Evidence from case reports, case series, and open-label uncontrolled trials suggests that the second-generation antipsychotic olanzapine may promote weight gain in adults and in adolescent patients (190–193) and that olanzapine (190–194) and quetiapine may improve other associated symptoms (195–197). A small open-label study of low-dose haloperidol also showed improved insight and weight gain in severely ill patients (198). The quality of the available evidence on using antipsychotic medications is also limited by the fact that studies rarely include male patients and have included only small numbers of adolescents; in addition, only case reports are available regarding prepubertal children. If antipsychotic medications are used, the possibility of extrapyramidal symptoms, especially in debilitated patients, should be considered and routinely assessed. Also, appropriate attention must be given to the potential adverse impact of these medications on insulin sensitivity, lipid metabolism, and length of QTc interval.

(iii) Other medications and somatic treatments

Other somatic treatments, ranging from vitamin and hormone treatments to ECT, have been tried in uncontrolled studies. None has been shown to have specific value in the treatment of anorexia nervosa symptoms (199).

Other medications have been used to address associated features of anorexia nervosa. For example, antianxiety agents have been used selectively before meals to reduce anticipatory anxiety concerning eating (200, 201), and pro-motility agents, such as metoclopramide, are commonly offered for the bloating and abdominal pains that result from gastroparesis and that contribute to the premature satiety seen in some patients. However, before prescribing metoclopramide, clinicians should consider the fact that extrapyramidal symptoms are more likely to be seen in underweight anorexia nervosa patients.

In anorexia nervosa patients with prolonged amenorrhea, hormone replacement therapy (HRT) is frequently prescribed to improve patients' bone mineral density. However, no good supporting evidence exists to demonstrate the efficacy of this treatment (202, 203). In women with anorexia nervosa, the evidence supporting the use of HRT is marginal at best. HRT has not been demonstrated to increase bone mineral density over and above standard treatment in adults (204) or in adolescents (203). Only in a subset of very-low-weight women (<70% average body weight) did it prevent further bone loss (204). Estrogen can cause the fusion of the epiphyses and should not be administered to girls before their growth is completed (3). HRT usually induces monthly menstrual bleeding, obscuring the major sign that indicates weight normalization in women. This, in turn, may cause the patient to misunderstand that her body is functioning normally and therefore contribute to denial of the need to gain more weight. Clinicians stress that efforts should be made to allow patients to increase their weight and achieve resumption of normal menses before they are offered estrogen (205). There is no indication for the use of biphosphonates such as alendronate in patients with anorexia nervosa. In fact, long-term use of alendronate may oversuppress bone turnover (206). Thus, the recommended treatment for low bone mineral density includes weight gain and calcium with vitamin D supplementation (207).

3. Choice of specific treatments for bulimia nervosa

The aims of treatment for patients with bulimia nervosa are to 1) reduce and, where possible, eliminate binge eating and purging; 2) treat physical complications of bulimia nervosa; 3) enhance the patient's motivation to cooperate in the restoration of healthy eating patterns and participate in treatment; 4) provide education regarding healthy nutrition and eating patterns; 5) help the patient reassess and change core dysfunctional thoughts, attitudes, motives, conflicts, and feelings related to the eating disorder; 6) treat associated psychiatric conditions, including deficits in mood and impulse regulation, self-esteem, and behavior; 7) enlist family support and provide family counseling and therapy where appropriate; and 8) prevent relapse.

a) Nutritional rehabilitation and counseling

Bulimia nervosa is associated with nutritional chaos characterized by alternating cycles of dietary restriction, bingeing, and purging. A primary focus for nutritional rehabilitation is to help patients develop a structured meal plan that will allow them to reduce the episodes of dietary restriction and the urge to binge and purge. Nutritional intake should be sufficient to promote satiety. Because most bulimia nervosa patients who have been studied are of normal weight, nutritional restoration will not be a central focus of treatment. However, normal body weight (or normal BMI) does not ensure normal body composition, nor does it ensure that nutritional intake is appropriate. In addition, even if their weight is within statistically normal ranges, many patients with bulimia nervosa weigh less than their appropriate biologically determined set points (or ranges) and may have to gain some weight to achieve physiological and emotional stability. Although many patients with bulimia nervosa report irregular menses, improvement in menstrual function has not been systematically assessed in the available outcome studies. Thus, even among patients of normal weight, nutritional counseling may be a useful adjunct to other treatment modalities in reducing behaviors related to the eating disorder, minimizing food restrictions, increasing the variety of foods eaten, and encouraging healthy but not compulsive exercise patterns (208). Those patients for whom some weight gain is indicated similarly require the establishment of a pattern of regular, non-binge meals, with attention on increasing their caloric intake and expanding macronutrient selection. Patients with bulimia nervosa who are overweight or obese have not been well studied.

b) Psychosocial interventions

The goals of psychosocial interventions for patients with bulimia nervosa vary and can include the following: reducing or eliminating binge eating and purging behaviors; improving attitudes

related to the eating disorder; minimizing food restriction; increasing the variety of foods eaten; encouraging healthy but not compulsive exercise patterns; treating co-occurring conditions and clinical features associated with eating disorders; and addressing themes that may underlie eating disorder behaviors such as developmental issues, identity formation, body image concerns, self-esteem in areas outside of those related to weight and shape, sexual and aggressive difficulties, affect regulation, sex role expectations, family dysfunction, coping styles, and problem solving. Consequently, psychosocial interventions should be chosen on the basis of a comprehensive evaluation of the individual patient and take into consideration the patient's cognitive and psychological development, psychodynamic issues, cognitive style, comorbid psychopathology, and preferences as well as age and family situation.

With respect to short-term interventions for treating acute episodes of bulimia nervosa in adults, the available evidence indicates that CBT is the most efficacious. CBT may effect improvements in psychological functioning of bulimia nervosa patients as well as ameliorate binge eating and purging symptoms. For example, studies have shown that bulimia nervosa patients who improved with CBT also showed improvements in self-directedness and harm avoidance (209, 210). Among patients who do not initially respond to CBT, a small number do respond to IPT or fluoxetine (211) or other modes of treatment such as family and group psychotherapies. Some controlled trials (212) have also shown the effectiveness of IPT as an initial therapy. Behavioral techniques, such as planned meals and self-monitoring, may also be helpful for managing initial symptoms and interrupting binge-purge behaviors (213, 214). It should be pointed out that these study results may not be generalizable to typical clinical situations. For example, to maximize the "clean" experimental nature of some of the CBT/IPT controlled studies mentioned above, the CBT intentionally avoided dealing with interpersonal issues and the IPT intentionally avoided talking about eating issues, which is quite different than how these therapies are conducted in clinical practice (215). It is also possible that the narrow inclusion criteria of some studies limit the generalizability of the study results (216).

Some clinical reports indicate that psychodynamic and psychoanalytic approaches in individual or group format are useful once bingeing and purging symptoms improve (217–219). These approaches address developmental issues; identity formation; body image concerns; self-esteem; conflicts surrounding sexuality, anger, or aggression; affect regulation; gender role expectations; interpersonal conflicts; family dysfunction; coping styles; and problem solving. In a recent naturalistic study of treatment as practiced by experienced clinicians in the community, both CBT and psychodynamic psychotherapy led to decreased rates of bingeing and purging similar to those seen in controlled trials (roughly 50%). However, although CBT has been reported to be associated with a more rapid remission of eating symptoms, some therapists note that more integrative treatments that include psychodynamic approaches are useful in targeting both eating symptoms and broader personality, comorbidity, and quality-of-life issues (153).

Some bulimia nervosa patients, particularly those with concurrent personality pathology or other co-occurring disorders, may require substantially longer treatment. In one study, the clinicians reported that their average CBT treatment for bulimia nervosa lasted 69 sessions (81). However, just how closely these clinicians adhered to formal CBT methods is unknown. Also unknown is how the length and characteristics of the treatments varied according to other clinical dimensions of these patients. Exactly what is required over the long run to best help patients resolve lingering preoccupations with body image and the more subtle but impairing psychological dimensions that may be associated with eating disorders requires additional study. These concerns are often approached in practice through a variety of longer-term psychotherapies.

Family therapy should be considered whenever possible, especially for adolescents still living with parents or for older patients with ongoing conflicted interactions with parents. Patients with marital discord may benefit from couples therapy.

A variety of self-help and professionally guided self-help programs have been effective for a small number of patients with bulimia nervosa (220–222) and have been piloted in some

stepped-care approaches. Several innovative online programs are currently being studied (5). Support groups and 12-step programs such as Overeaters Anonymous may be helpful as adjuncts to initial treatment of bulimia nervosa and for subsequent relapse prevention but are not recommended as the sole initial treatment approach for bulimia nervosa (168, 223). As noted above, these support organizations emphasize in their literature that their programs are not substitutes for professional treatment and specifically recommend that members seek appropriate medical and nutritional guidance. However, clinicians should remain cognizant of the idiosyncratic recommendations made in some self-help groups.

Patients with bulimia nervosa occasionally have difficulties with certain elements of psychotherapy similar to what was discussed above for patients with anorexia nervosa. Possible adverse effects of psychotherapeutic and psychosocial interventions, steps that clinicians might take to minimize negative therapeutic reactions, and issues concerning countertransference (as discussed in Section II.B.2.b) apply to the treatment of patients with bulimia nervosa.

c) Medications

Antidepressants are effective as one component of an initial treatment program for most bulimia nervosa patients. Although various classes of antidepressant medications can reduce symptoms of binge eating and purging, SSRIs have the most evidence for efficacy and the fewest difficulties with adverse effects (224–226). To date, the only medication approved by the FDA for the treatment of bulimia nervosa is fluoxetine. The only other SSRI shown to be effective is sertraline, which was studied in a small randomized controlled trial (227). Available studies also suggest that antidepressants may be helpful for patients with substantial symptoms of depression or anxiety, obsessions, or certain impulse disorder symptoms or for patients who have not responded or had a suboptimal response to previous attempts at appropriate psychosocial therapy (228, 229). Dosages of SSRIs that are higher than those used for depression (e.g., fluoxetine 60 mg/day) are more effective in treating bulimic symptoms (224, 226, 230), but high dropout rates may also be seen in patients using these drugs (226). A small open trial demonstrated the safety and effectiveness of 60 mg/day of fluoxetine for treating bulimia nervosa in adolescents (225). Thus, many clinicians initiate fluoxetine treatment for bulimia nervosa at the higher dosage, titrating downward if necessary to manage side effects. Tricyclic and MAOI antidepressants are rarely used to treat bulimia nervosa, but if they are used, the dosages are similar to those used to treat depression (231).

Often, several different antidepressants may have to be tried sequentially to identify the specific medication with the optimum effect in a particular patient. In the bulimia nervosa patient whose symptoms do not respond to medication, it is important to assess whether the patient has taken the medication shortly before vomiting. Correlations between serum levels and response have not been identified; however, if serum levels of the medication are available, they may help determine whether presumably effective levels of the drug have actually been achieved. Treatment adherence will also enhance the patient's response to treatment, and subtle interpersonal and psychodynamic factors in the physician-patient relationship may contribute to treatment resistance if left unaddressed (232).

As in most clinical situations, careful education of the patient regarding possible side effects of medications and their symptomatic management (e.g., stool softeners for constipation) is important. Side effects vary widely across studies depending on the type of antidepressant medication used. In the multicenter fluoxetine trials (224, 230), sexual side effects were common, and at the dosage of 60 mg/day, insomnia, nausea, and asthenia were seen in 25%–33% of patients. For the tricyclic antidepressants, common side effects include sedation, constipation, dry mouth, and, with amitriptyline, weight gain (233–238).

The toxicity and potential lethality of tricyclic antidepressant overdosage also dictate caution in prescribing this class of drug for patients who are at risk for suicide. Practitioners should also avoid prescribing MAOIs to patients with chaotic binge eating and purging behaviors. The risk of spontaneous hypertensive crises in patients with bulimia nervosa taking MAOIs is not

insignificant (239). This risk and the importance of eating a tyramine-free diet while taking MAOIs should be discussed with patients for whom this type of medication is contemplated.

There are few reports on the use of antidepressant medications in the maintenance phase of treating bulimia nervosa patients. Although there are data indicating that fluoxetine can be effective in preventing relapse in these patients (226), other data suggest that high rates of relapse occur while antidepressants are being taken and possibly higher rates are seen when the medication is withdrawn (240). In the absence of more systematic data, most clinicians recommend continuing antidepressant therapy for a minimum of 9 months and probably for 1 year in most patients with bulimia nervosa.

Clinicians must attend to the black box warnings concerning antidepressants and conduct appropriate informed consent with patients and families if these medications are to be prescribed (183–189).

For patients with bulimia nervosa who require mood stabilizers, the use of lithium carbonate is problematic, because lithium levels may shift markedly with rapid volume changes. Lithium is not effective in the treatment of bulimia nervosa (241). Both lithium carbonate and valproic acid frequently lead to undesirable weight gains that may limit their acceptability to bulimia nervosa patients. Selecting a mood stabilizer that avoids these problems may result in better patient adherence and medication effectiveness. Topiramate is not an effective mood stabilizer but may be potentially useful for bulimia nervosa and binge eating disorder (242, 243). However, in contrast to the low rates of adverse effects observed in clinical trials with topiramate, practitioners have reported several patients experiencing adverse effects with the drug, such as word-finding difficulties and paresthesias in a sizable minority of patients, although these may have been related to excessively rapid rates of dosage increases (242, 243). Also of note, patients receiving topiramate for bulimia nervosa lost an average of 1.8 kilograms, so this medication may be problematic for normal- to lower-weight individuals (243). No data are available regarding the use of these medications for treating bulimia nervosa or binge eating in children or adolescents, but safety and tolerability data have been reported for children and adolescents with other disorders for which lithium (244), valproic acid (245), and topiramate (246) have been prescribed.

Several case reports indicate that methylphenidate may be helpful for bulimia nervosa patients with concurrent ADHD (247–249). In these situations, particular attention should be given to a range of potential adverse effects, including abuse.

d) Combinations of psychosocial interventions and medications

Although not all psychotherapies have been well studied, there is general consensus among clinicians regarding the efficacy of a combined psychotherapeutic/medication approach; such an approach is worth considering when initiating treatment. In some research, the combination of antidepressant therapy and CBT has resulted in the highest remission rates of bulimia nervosa (250–252). Other studies suggest that target symptoms such as binge eating and purging and attitudes related to the eating disorder generally respond better to CBT than to pharmacotherapy (253–255), with at least two studies (251, 254) showing that the combination of CBT and medication is superior to either alone. Two of the studies suggested a greater improvement in mood and anxiety variables when antidepressant therapy is added to CBT (251, 253, 256). Of note, some experienced clinicians do not find rigidly defined and doctrinally practiced CBT to be as useful as methods that integrate CBT with other psychotherapeutic techniques. This may be due to several factors, including clinician inexperience or discomfort with the methods of CBT or differences among patients seen in the community and those who have participated as research subjects in these studies (81, 153).

e) Other treatments

Bright light therapy has been shown to reduce binge frequency in several controlled trials (257–259). Case reports suggest that repeated transcranial magnetic stimulation may be effective in

treating patients with major depression and bulimia nervosa (260, 261). One controlled trial (719) showed odansetron, a peripheral 5-hydroxytryptamine type-3 (5-HT_3) receptor antagonist that reduces vagus nerve activity, to be effective in decreasing symptoms of bulimia nervosa, and its use may be considered in unusual circumstances.

4. Eating disorder not otherwise specified

The eating disorder not otherwise specified (EDNOS) category is a conceptually problematic one and comprises a clinically heterogeneous group of diagnoses (262, 263). This "everything else" category currently consists largely of individuals with subsyndromal anorexia nervosa or bulimia nervosa who do not meet DSM-IV-TR criteria of being 15% below expected weight or who binge and purge slightly less than twice per week. Such individuals merit treatment similar to that of full-syndrome patients. In addition, the EDNOS category lumps together normal-weight patients who purge, individuals who chew and spit out their food without swallowing it to prevent weight gain, and patients with binge eating disorder. Also perhaps suitable for this "other" category are individuals who experience psychiatric impairment related to the abuse of diet pills and diuretics (264), individuals who are obsessively preoccupied with liposuction (265) to deal with issues of shape and weight, and certain new-onset postgastrectomy eating disorder patients (266). The EDNOS diagnosis covers a wide spectrum, so no easily generalizable comments can be made for the entire group regarding course or prognosis (267). In addition, over time, considerable movement occurs from one eating disorder diagnostic category to another, including EDNOS (263).

Binge eating disorder is the most discrete and well-studied EDNOS subgroup. Although binge eating disorder is currently not an approved DSM-IV-TR diagnosis, research criteria listed in DSM-IV-TR consist of disturbances in one or more of the following spheres: behavioral (e.g., binge eating), somatic (obesity is common, although not required), and psychological (e.g., body image dissatisfaction, low self-esteem, depression). Empirically supported strategies for the treatment of binge eating disorder include nutritional counseling and dietary management; individual or group behavioral, cognitive behavioral, dialectical behavioral, psychodynamic, or interpersonal psychotherapy; and medications. In reviewing the available information on treating binge eating disorder, it is important to consider the focus of treatment. Most programs using nutritional rehabilitation and counseling focus on weight loss as the primary outcome, whereas studies of psychotherapy and medication generally consider reduction of binge eating as the primary outcome measure, with weight loss as a secondary outcome. Clinical consensus suggests that psychodynamic psychotherapy may also be helpful to reduce binge eating in some patients.

a) Nutritional rehabilitation and counseling: effect of diet programs on weight and binge eating symptoms

The literature on treating binge eating disorder suggests that 1) behavioral weight control programs incorporating low- or very-low-calorie diets may help patients lose weight and usually reduce symptoms of binge eating; 2) at least some degree of weight gain often follows weight loss; 3) weight gain after weight loss may be accompanied by a return of binge eating patterns; and 4) various combinations of diets, behavior therapies, non-weight-directed psychosocial treatments, and even some "nondiet/health at every size" psychotherapy approaches may be of benefit in reducing binge eating and promoting weight loss or stabilization in various circumstances (268).

Some believe that patients with a history of repeated weight loss followed by weight gain ("yo-yo" dieting) or patients with an early onset of binge eating might benefit from following programs that focus on decreasing binge eating rather than losing weight (269, 270). However, at this point, there is little empirical evidence to suggest that obese binge eaters who are primarily seeking weight loss should receive different treatment than obese individuals who do not binge eat.

b) Other psychosocial treatments: effects on binge eating disorder

CBT is the most widely studied treatment for binge eating disorder, and there is substantial evidence supporting its efficacy for behavioral and psychological symptoms, whether it is delivered in the individual or group format. IPT and dialectical behavior therapy have also been shown to be effective for behavioral and psychological symptoms and can be considered as alternative therapies. There is less consensus regarding the long-term effects of treatment; however, some studies suggest that most patients continue to show behavioral and psychological improvement at 1-year follow-up (271, 272). There is a substantial body of evidence supporting the efficacy of self-help and guided self-help CBT treatment programs (273–277) and their use as an initial low-burden step in a sequenced treatment program.

Because severe dieting may disinhibit eating and lead to compensatory overeating and binge eating (278), and because chronic calorie restriction can also increase symptoms of depression, anxiety, and irritability (279), alternative therapies have been developed that use a "nondiet" approach and focus on self-acceptance, improved body image, better nutrition and health, and increased physical movement (280–282). Addiction-based 12-step approaches, self-help organizations, and treatment programs based on the Alcoholics Anonymous model have been tried, but no systematic outcome studies of these programs are available.

In sum, there appear to be several good psychotherapeutic options for treating binge eating disorder when a reduction in binge eating is the primary goal. Weight loss, particularly in the long term, is a much more elusive goal, not only for obese patients with binge eating disorder but for obese patients in general. However, several studies suggest that at least for some patients at certain stages of recovery, behavioral weight control may be a useful treatment component. Also, because studies have found that binge eating may begin before obesity or dieting (283), specific approaches are needed for nonobese patients struggling with binge eating symptoms. The optimal sequencing of treatments—that is, whether the treatment of binge eating should precede or occur concurrently with weight control treatment—has yet to be definitively determined.

c) Medications

There is substantial evidence to suggest that treatment with antidepressant medications, particularly SSRI antidepressants, is associated with at least a short-term reduction in binge eating, in most cases without substantial weight loss. The dosage of medication is typically at the high end of the recommended range. The appetite-suppressant medication sibutramine also appears to be effective in suppressing binge eating, at least in the short term, and is additionally associated with significant weight loss (284). Heart rate and blood pressure need to be monitored closely in patients taking sibutramine, and the medication should be discontinued if there are significant elevations in these parameters, although these side effects seem to be uncommon (285). Finally, the anticonvulsant medication topiramate appears to be effective in reducing binge eating and promoting weight loss in the short (286) and long (287) term, although side effects such as cognitive problems, paresthesias, and somnolence may limit its clinical utility for some individuals. The anticonvulsant zonisamide may produce similar effects (288). Dexfenfluramine, although effective for reducing binge eating (289), has been removed from the market because of increased risk of primary pulmonary hypertension and heart valve abnormalities. Patients who report having used fenfluramine and phentermine in the past should be screened for potential cardiac and pulmonary complications.

It is important to note that in several studies, the placebo response rate has been reported to be quite high. The clinical implications of this finding are that controlled studies are extremely important, as a positive response in an open study may be nonspecific, and short-term beneficial responses to treatment should be viewed cautiously, given that a transient "honeymoon" effect of initiating treatment is common.

d) Combined psychosocial and medication treatment strategies

There have been few studies of combined treatment for binge eating disorder, so the clinical recommendations are preliminary. Overall, it appears that for most patients, the addition of antidepressant medication to behavioral weight control and/or CBT does not significantly augment binge suppression but may confer additional benefits in weight reduction (290–294). One study reported that the addition of the weight-loss medication orlistat to a guided self-help CBT program yielded additional weight loss (295). Another study found that fluoxetine in the setting of group behavioral treatment did not augment binge cessation or weight loss but did reduce depressive symptoms (294). Thus, the addition of medication to psychotherapy for binge eating disorder is not, in most cases, associated with additional benefit on the core symptom of binge eating, perhaps because psychosocial treatments are quite effective for this symptom. However, medication augmentation may have additional benefits.

e) Treatment strategies for night eating syndrome

The phenomenon of wakeful nighttime eating, variously characterized as night eating syndrome, nocturnal eating/drinking syndrome, or nocturnal sleep-related eating disorders, is currently an area of active research (296). Although formal agreed-upon definitions for these syndromes do not yet exist, the construct of night eating syndrome, first described by Stunkard et al. (297), generally includes morning anorexia, evening hyperphagia, and insomnia. In contrast, the construct of nocturnal eating/drinking syndrome emphasizes a sleep disorder with recurrent awakenings often accompanied by eating or drinking, and the construct of nocturnal sleep-related eating disorders adds to this a reduced level of awareness or recall of nocturnal eating episodes. Sleep-related eating disorders, including somnambulism, have reportedly been induced by risperidone, olanzapine, and bupropion, among other medications (298–300). The literature does not, at this point, support the recommendation of particular treatments for these disorders. However, there is preliminary evidence supporting the utility of progressive muscle relaxation (301) and sertraline (302, 303). Further studies of the phenomenology and treatment of these disorders are needed.

III. CLINICAL FEATURES INFLUENCING THE TREATMENT PLAN

A. CHRONICITY OF EATING DISORDERS

In some patients with eating disorders, the illness course becomes chronic, lasting for a decade or more. The care of chronically ill patients is challenging, and modifications in treatment goals may be needed for these patients to benefit. For example, the goals of psychological interventions may be to make small, progressive gains and achieve fewer relapses. Throughout the outpatient care of such patients, communication among professionals is especially important. In addition, more frequent outpatient contact and other supports may sometimes help prevent hospitalizations.

Among patients with a chronic course of anorexia nervosa, many are unable to maintain a healthy weight and experience chronic depression, obsessionality, and social withdrawal. Treatment may require consultation with other specialists; repeated hospitalizations, partial hospitalizations, or residential care; individual or group therapy; other social therapies; trials of various medications; and, occasionally, ECT for patients with severe or treatment-resistant de-

pression. During hospitalizations, expectations for weight gain may be more modest; achieving a safe weight compatible with the patient's life rather than a healthy weight may be all that is possible. The focus of treatment may be on addressing quality-of-life issues (rather than on weight changes or more normal eating habits) and providing compassionate care, with the recognition that patients can realistically achieve only limited goals (125, 304, 305).

Even for patients who have been ill for 20–30 years, there is some evidence that significant benefits can still be derived from treatment. Here too the clinician's approach may need to be modified by relying more on the emotional resources of the patient and much less on the resources of the family. Therapy may need to focus on patients' recognition that their eating disorder has cost them decades of their lives; their therapists may then help them use their energy to improve the remainder of their lives. Some older patients maintain accurate images of their body and recognize that they are too thin but still need significant help with actually gaining the needed weight or relinquishing a strongly established habit of binge eating or purging. The family work often revolves around helping the family adjust to the positive changes that occur with symptom and behavioral changes in the patient (306).

B. OTHER PSYCHIATRIC FACTORS

1. Substance use disorders

Substance use disorders are common among both women and men with eating disorders (106, 307, 308). Among individuals with bulimia nervosa, 22.9% meet criteria for alcohol abuse (309). Alcohol and other substance use disorders appear to be less common among patients with the restricting type of anorexia nervosa than among those with the binge eating/purging type (310, 311). Binge eating disorder is also associated with high rates of lifetime co-occurring substance abuse, which is more prevalent in male (57%) than in female (28%) patients (313). Patients with co-occurring substance abuse and anorexia or bulimia nervosa appear to have more severe problems with impulsivity in general, including greater risk of shoplifting, suicidal behaviors, self-injurious behaviors, and laxative abuse (83, 314–316). The relation between bulimia nervosa and alcohol abuse/dependence may be indirect and may be influenced by associations with major depression and posttraumatic stress disorder (PTSD) (317).

Available data indicate that patients with eating disorders who have a history of prior but currently inactive substance use disorder respond to standard therapies in the same manner as those without such a history (318–320) and do not appear to experience exacerbation of their substance use after their eating disorder is successfully treated (319). Furthermore, co-occurring alcohol abuse increases the risk of mortality in anorexia nervosa (321). The presence of an active substance use disorder does have implications for the treatment of eating disorders. Patients with co-occurring eating and substance use disorders require longer inpatient stays and are less adherent with treatment after hospitalization than those with substance use disorders alone (322). In everyday clinical practice, substance use shows a strong association with length of treatment required for remission (81). A study of 70 patients with co-occurring eating disorders and substance abuse found that the associated axis III medical disorders reflected complications of both eating and substance use disorders. Where treatment staff are skilled in treating both disorders, concurrent treatment should be attempted.

2. Mood and anxiety disorders

A high percentage of treatment-seeking patients with eating disorders report a lifetime history of major depression (313, 323–327). Nutritional insufficiency and weight loss often predispose these patients to symptoms of depression (279). Depressed individuals with an eating disorder experience higher levels of anxiety, guilt, and obsessionality but lower levels of social withdrawal and lack of interest than depressed individuals without eating disorders (328). The presence of

co-occurring depression at initial presentation has minimal or no predictive value for treatment outcome (329). Although antidepressant medications may be relatively ineffective in treating depressive symptoms before a patient has gained weight (174) and are typically not helpful in weight restoration (see Section II.B.2.c.1.), their use has sometimes been associated with reduced symptoms of depression and anxiety during the weight restoration phase (176). In addition, the experience of many clinicians suggests that severe depression can impair a patient's ability to become meaningfully involved in psychotherapy and may dictate the need for medication treatment for the mood symptoms from the beginning of treatment.

Lifetime prevalence rates for anxiety disorders also appear to be higher for patients with anorexia or bulimia nervosa. In a controlled study with a large sample, 71% of women with anorexia or bulimia nervosa had at least one anxiety disorder, a rate significantly higher than that found in the control group (330), although rates for specific anxiety disorders varied (331). Social phobia and obsessive-compulsive disorder (OCD) are the anxiety disorders most commonly described in patients with anorexia nervosa. For those with bulimia nervosa, co-occurring presentations of social phobia, OCD, PTSD, or simple phobia are most often described (332, 333). Patients with binge eating disorder also have high rates of lifetime anxiety disorders (29%), with simple phobia and panic disorder being the most commonly described (334–340). Overanxious disorders of childhood are also common in conjunction with anorexia and bulimia nervosa, and anxiety disorders often precede the onset of these eating disorders (82, 341). Youngsters with anorexia nervosa may have co-occurring OCD more frequently than adults with anorexia nervosa (342). Although there is no clear evidence that co-occurring anxiety disorders significantly affect eating disorder treatment outcome, such comorbid problems should be addressed in treatment planning.

Available data on the extent of PTSD among patients with eating disorders suggest an association between childhood trauma and bulimia nervosa (333, 343–346). Although specific causal links have not been demonstrated and the mechanisms of association and potential transmission remain unclear, it is thought that early trauma may sensitize some individuals to later traumatic experiences and an array of impulsive behaviors, including eating disorder symptoms. The lifetime rate of PTSD among women with bulimia nervosa reported in studies has varied between 6% and 45% (330, 332, 346, 347). Clinical consensus suggests that the extent of trauma history and the possible presence of PTSD should be taken into consideration in treatment planning.

3. Personality disorders

Temperament, genetics, family pathologies, and other dimensions of personality appear to be involved in the occurrence and manifestations of eating disorders (348–350). In all cases, personality types and the extent of personality pathology have implications for treatment (79, 351, 352). As with mood and anxiety disorders, the presence of comorbid personality pathology (whether or not it is severe enough to meet DSM criteria for a personality disorder) is the norm rather than the exception (353). Patients with eating disorders should routinely be assessed for concurrent personality disorders. The reported prevalence of personality disorders has varied widely across eating disorders and studies. Individuals with anorexia nervosa tend to have higher rates of Cluster C personality disorders, particularly obsessive-compulsive, perfectionistic, and avoidant and histrionic traits, whereas normal-weight patients with bulimia nervosa are more likely to display features of Cluster B disorders, particularly impulsive, affective, and narcissistic traits (354–361). The presence of borderline personality disorder seems to be associated with a greater disturbance in eating attitudes, a history of more frequent hospitalizations, and the presence of other problems such as suicidal behaviors and self-injurious behaviors (356, 360). The presence of borderline personality disorder is also associated with poorer treatment outcome and higher levels of psychopathology at follow-up (362, 363). The improvement of axis I eating disorder symptoms may produce concurrent improvement in traits associated with these personality disturbances (364). Although this approach has not yet been systematically studied, clinical con-

sensus strongly suggests that the presence of a co-occurring personality disorder, particularly borderline personality disorder, dictates the need for longer-term therapy that focuses on the underlying personality structure, coping strategies, and interpersonal relationships in addition to the symptoms of the eating disorder. Recent naturalistic research documents the generally poorer outcome and longer treatment required for bulimia nervosa patients with borderline, avoidant, or more broadly emotionally dysregulated personality pathology, although many such patients do improve substantially with longer-term treatment (365).

C. CONCURRENT GENERAL MEDICAL CONDITIONS

1. Type 1 diabetes

Eating disorders may be more common among patients with type 1 or type 2 diabetes than among nondiabetic patients (366, 367), but this contention is not strongly supported by research (368). It has been suggested that type 1 diabetic patients are more likely to have anorexia nervosa or bulimia nervosa (368a) and type 2 diabetic patients are more likely to have binge eating disorder (367). Although patients with both an eating disorder and diabetes are more likely to be female, males with both disorders are also commonly found, particularly among type 2 diabetic patients. The presentation of eating disorders in the context of diabetes may be substantially more complex than that seen with an eating disorder alone. In addition, these concurrent diagnoses may present as numerous general medical crises before the presence of the eating disorder is diagnosed and treated, particularly among patients with type 1 diabetes. Evidence suggests that rates of diabetic complications are higher when insulin-dependent diabetes mellitus co-occurs with bulimia nervosa or EDNOS (369). Mortality rates are much higher with combined anorexia nervosa and type 1 diabetes than with either condition alone (370). Patients with uncontrolled diabetes who also have bulimia nervosa may require a period of inpatient treatment for stabilization of both illnesses (371, 372). Treatment of these concurrent disorders may also require more interaction with general medical specialists. Lengthy inpatient treatment for adult diabetic patients with eating disorders (primarily bulimia nervosa) is promising but has been studied in only a few patients (373).

Diabetic patients with eating disorders often underdose their insulin to lose weight. Throughout the studies undertaken to date, insulin omission has been found to be common (374). It has been suggested that insulin omission be considered a specific type of purging behavior in the next DSM revision.

2. Pregnancy

Eating disorders may begin de novo during pregnancy, but many patients become pregnant even while they are actively symptomatic with an eating disorder. Behaviors associated with eating disorders, including inadequate nutritional intake, binge eating, purging by various means, and the use or misuse of some teratogenic medications (e.g., lithium, benzodiazepines, divalproex, diet pills), can all result in fetal or maternal complications (375). The care of a pregnant patient with an eating disorder is difficult and usually requires the collaboration of a psychiatrist and an obstetrician who specializes in high-risk pregnancies (376–379).

In a recent study of 49 nulliparous women previously diagnosed with an eating disorder (24 with anorexia nervosa, 20 with bulimia nervosa, 5 with EDNOS), 22% had a verified relapse of eating disorder during pregnancy. Compared with a control group, women with past or current eating disorders were at increased risk of hyperemesis, infants with significantly lower birth weight, smaller head circumference (including microcephaly), and small-for-gestational-age infants (380). Women with active symptoms of anorexia or bulimia nervosa are at higher risk for Cesarean section and postpartum depression (381). Yet another study linked the presence of an eating disorder before pregnancy or an eating disorder (or dieting or fasting) during the

first trimester with an increased risk to the infant, including a greater risk of low birth weight, preterm delivery, a small-for-gestational-age size, and neural tube defects (382).

Data on the impact of pregnancy on eating disorder symptoms are conflicting. One study has shown that among treated bulimia nervosa patients, childbirth is not associated with increased symptoms (383). Another study found that anorexia and bulimia nervosa patients had a decreased severity of eating disorder symptoms during pregnancy and that patients with bulimia nervosa, but not patients with anorexia nervosa, maintained this improvement through 9 months postpartum (384).

Prepregnancy counseling of eating disorder patients and their families should be detailed and cautionary. Although some patients may be able to eat normally and decrease binge eating and purging during their pregnancy, it is best for the eating disorder to be treated before the pregnancy if possible. Although women with a lifetime history of anorexia nervosa may not have reduced fertility, they do appear to be at risk for a greater number of birth complications than comparison subjects and of giving birth to babies of lower birth weight, whether or not the anorexia nervosa is active at the time of pregnancy (312). Mothers with eating disorders may have more difficulties than others in feeding their babies and young children than mothers without eating disorders and may need additional guidance, assistance, and monitoring of their mothering (385–388). In one study, primiparous mothers with an episode of eating disorder during the first postpartum year often expressed negative emotions toward their infants during meals, the infants' emotional tone was more negative, and the infants' mealtimes were more conflictual than those of control infants (388).

Active bulimia nervosa may be associated with polycystic ovaries or other follicular abnormalities. In a study of eight women with bulimia nervosa, six of the seven women with active bulimic symptoms showed polycystic ovaries; at follow-up, the five who continued to have bulimic symptoms all had polycystic ovaries, whereas normal ovaries were seen in the three whose bulimia nervosa had remitted (389).

Some patients with an eating disorder may present to fertility clinics and request medications to facilitate conception. Although little is known about the consequences of fertility drugs in patients with anorexia nervosa, the simultaneous multiple pregnancies that often occur with these drugs may be even more difficult for patients with an eating disorder to contend with than for women without an eating disorder.

D. DEMOGRAPHIC VARIABLES

1. Male gender

Although eating disorders are more prevalent in women, males with eating disorders are not rare, and case series often report on hundreds of male patients (390, 391). The stereotype that eating disorders are female illnesses may limit a full understanding of the scope and nature of problems faced by male patients with eating disorders.

There continues to be a paucity of information regarding males with eating disorders (392). However, more males may be seeking treatment (393). The most common form of eating disorders among males may be EDNOS (394).

In community samples, males with eating disorders have more psychiatric comorbidity and psychosocial morbidity than females with eating disorders (395). Studies of national samples of girls and boys exposed to physical and sexual abuse have shown that although binge and purge behaviors were nearly twice as prevalent among girls (13%) as boys (7%), boys who had experienced both physical and sexual abuse were nearly twice as likely as girls to report these behaviors (odds ratios 8.25 and 4.28, respectively) (396). Especially in the bulimia nervosa and binge eating disorder subgroups, males with eating disorders who present to tertiary care cen-

ters may have greater rates of co-occurring substance use disorders and more frequently have a history of having premorbid obesity or being overweight (397). As in women, there is a higher risk of osteoporosis in men with eating disorders (398, 399).

Although many similarities exist between males and females with different types of eating disorders, notable differences have been reported. Females with anorexia or bulimia nervosa score higher on the Drive for Thinness subscale than do males, and this appears to be a real difference; females also score higher on the body dissatisfaction subscale than do males, but this may result from a failure of these scales to address the specific ways in which males are dissatisfied with their bodies (e.g., males seem to be more concerned with upper torso and muscular development than are females). Studies of binge eating disorder patients demonstrate that women have greater body image dissatisfaction and are more likely to cope with negative affect by binge eating, whereas men have higher rates of drug and alcohol use disorder histories (400).

Body dysmorphic disorder (BDD), a severe form of body image disturbance seemingly related to OCD, is common among patients with anorexia nervosa (401) and appears to be increasing in prevalence. Although BDD is nearly as common in men as in women, the focus of body preoccupations may differ by gender (402, 403). Muscle dysmorphia, a distressing or impairing preoccupation with the idea that one's body is not sufficiently lean and muscular, is a form of BDD that occurs primarily in men, often involves abnormal eating behavior, and appears to overlap in other ways with eating disorders. The relation of BDD to eating disorders other than anorexia nervosa is poorly understood (404). In one small inpatient study, anorexia nervosa patients with BDD were found to have significantly poorer functioning, more episodes of psychiatric hospitalization, and three times the rate of lifetime suicide attempts compared with anorexia nervosa patients without BDD (401).

Although a patient's gender per se does not appear to influence the outcome of treatment, some aspects of treatment may need to be modified on the basis of gender. For example, with regard to personality traits, males with eating disorders have somewhat less perfectionism, harm avoidance and reward dependence behaviors, and cooperativeness than females (405). Open-blind studies suggest that bringing testosterone levels to within normal ranges in males during nutritional rehabilitation for anorexia nervosa may be helpful in increasing lean muscle mass, but definitive studies on this have not been completed.

Although studies in clinical samples have suggested that a higher prevalence of homosexuality may exist among males with eating disorders (390), this finding has not yet been confirmed epidemiologically. Nevertheless, because issues concerning sexual orientation are not uncommon among males with eating disorders seen in clinical settings, these issues should be considered in treatment (390).

Where possible, therapy groups restricted to male patients may address some of these patients' specific needs and help them deal with potential stigmatization of male patients by female patients in treatment. Male patients with anorexia nervosa may require higher energy intakes (up to 4,000–4,500 kcal/day) during nutritional rehabilitation because they normally have higher lean body mass and lower fat mass compared with female patients. Further, because they are generally taller and larger framed to begin with, males with anorexia nervosa often require much larger weight gains to return to a healthy weight (391, 399).

2. Age

Although most eating disorders start while patients are in their teens and 20s, earlier and later onsets have been observed as well. Among the youngest patients with early onset (i.e., ages 7–12 years), obsessional behavior and depression are common (406). Children often present with physical symptoms such as having nausea, experiencing abdominal pain, feeling full, or being unable to swallow (all conditions requiring evaluation to investigate a variety of potential etiologies) (407). Their weight loss can be rapid and dramatic. Similarly, their lack of expected weight gain is problematic. Food avoidance for primarily psychological reasons that results in

weight loss (food avoidance emotional disorder [FAED]) has been delineated and differentiated from anorexia nervosa in young children. These young patients know that they are underweight, would like to be heavier, may not know why this goal is hard to achieve, and usually show more generalized anxiety unrelated to food. A small number of FAED patients go on to develop eating disorders, but direct continuity between the two types of disorders has not been demonstrated (408). Other syndromes to be considered are selective eating disorder, functional dysphasia, and pervasive refusal syndrome (407).

Children with early-onset anorexia nervosa may have delayed growth (3, 97, 98, 409–412) and be especially prone to osteopenia and osteoporosis (413, 414). In a few cases, exacerbations of anorexia nervosa and OCD-like symptoms have been associated with pediatric infection-triggered autoimmune neuropsychiatric disorders (415), but further research is needed to determine the nature of this association (416). Bulimia nervosa is rarely seen in children under age 12 years (417–420).

With respect to middle-aged patients, case reports and clinical consensus now suggest that as the baby boomer generation grows older, body image concerns and eating disorders are becoming more prevalent. One case report from an established residential program noted a shift in the age of its patients and reported treating more middle-aged women than a decade ago (417–420).

At the other end of the age spectrum, incidence rates for anorexia nervosa among women over age 50 years are low, accounting for <1% of patients with newly diagnosed anorexia nervosa (421). Anorexia nervosa has been reported in elderly patients in their 70s and 80s; these are generally women in whom the illness has been present for 40 or 50 years. In many cases, the illness started after age 25 (so-called anorexia tardive). In some case reports, adverse life events such as deaths, a marital crisis, or a divorce have been found to trigger these older-onset syndromes. The fear of aging has also been described as a major precipitating factor in some patients (142, 422). Rates of co-occurring depression have been reported to be higher among these patients in some studies but not in others (423). Regardless of the age at onset, concerns about comorbid medical conditions, especially osteopenia and osteoporosis, take on greater significance with older patients.

3. Cultural factors

Specific pressures and values concerning weight and shape vary among different cultures. The quest for beauty and acceptance in accordance with the stereotypes women perceive in contemporary media is leading increasing numbers of women around the world to develop attitudes and eating behaviors associated with eating disorders. Despite initially higher prevalence rates of this phenomenon in Western and postindustrial societies, disordered eating behaviors now appear to be globally distributed (424–427).

Popkin and Gordon-Larsen (428) have described a phenomenon called the "nutritional transition" in economically emerging countries. In some Asian and Middle Eastern countries, the decrease in activity levels and increase in access to high-fat, high-calorie foods have occurred much more rapidly than in the United States; likewise, this trend has led to a faster rate of increase in the number of individuals becoming overweight or obese than that seen in the United States. Consequently, the pressure to lose weight or remain slender may ultimately affect an even wider group of people more quickly in these regions than it has in the United States. Emerging population data suggest that transnational migration and modernization may increase the risk of disordered eating and body dissatisfaction across diverse ethnic and social contexts (427, 429–432).

Clinicians should engage female patients from non-Western cultures in informed and sensitive discussions regarding their struggles, experiences, and personal perceptions about what it means to be attractive and satisfied with their bodies (433). Clinicians should be sensitive to and inquire about how weight and shape concerns are experienced by patients, especially those who are from minority populations or non-Western or other cultural backgrounds or are transitioning and assimilating into Western societies. Transcultural differences in the meanings of

terms and concepts are considerable (434). It is not uncommon to find Asian patients with atypical behaviors, such as denying a fear of weight gain, appraising their bodies as malnourished, denying distorted perceptions of their bodies, and specifically denying a drive for thinness (435). (Atypical patients who specifically deny a drive for thinness are also seen among North American and European populations [436].)

Although little information exists on cross-cultural differences among males with regard to eating disorders, male patients with anorexia nervosa, bulimia nervosa, and binge eating disorder have been described in non-Western populations. Some population differences across cultures among males have been found with regard to attitudes about eating, body shape, and weight (437, 438).

4. Eating disorders in athletes

The risk for eating disorders is greater among competitive athletes than in the general age-matched population (439–441). Female athletes in competitive sports that emphasize a thin body or appearance, such as gymnastics, figure skating, and distance running, are especially at risk, as are female ballet dancers. Male athletes in sports such as bodybuilding and wrestling are also at greater risk. Certain antecedent factors such as cultural preoccupation with thinness, performance anxiety, and athlete self-appraisal may predispose a female athlete to body dissatisfaction, which may mediate the development of eating disorder symptoms (442). Parents and coaches of young athletes may support distorted shape and eating attitudes in the service of guiding the athlete to be more competitive. Although competitive college athletes appear to be at greater risk for eating disorders than nonathlete peers, this has not been demonstrated among high school athletes (443). Girls as young as age 5 years who participate in aesthetic sports, such as ballet or figure skating, have exhibited greater weight concerns than girls who participate in nonaesthetic sports or who do not participate in sports (444). Participation in sports may protect some young athletes from developing eating disorders if, for example, they approach their sports in a sensible way and derive appropriate pride and self-esteem from their achievements (443, 445).

Physicians working with adolescent and young adult athletes, particularly competitive athletes participating in the at-risk sports mentioned above, must be alert to early symptoms of eating disorders. Simple screening questions about weight, possible dissatisfaction with appearance, amenorrhea, and nutritional intake on the day before a physical evaluation may help identify an athlete who is developing an eating disorder. Early general medical and psychiatric intervention is key to prompt recovery from the disorder.

Extreme exercise appears to be a risk factor for developing anorexia nervosa, especially when combined with dieting (446–448). A "female athlete triad" has been identified, consisting of disordered eating (including the full spectrum of eating-related problems from simple dieting to clinical eating disorders), amenorrhea, and osteoporosis (449). The exact relation between the triad and clinical eating disorders is not fully understood, but athletes with the triad would meet diagnostic criteria for EDNOS. The prevalence of the triad among collegiate athletes has been studied; menstrual irregularity has been found in nearly one-third of female athletes not using oral contraceptives, and athletes participating in aesthetic sports (e.g., gymnastics) have higher scores on the 26-item Eating Attitudes Test (31, 32) than athletes in endurance or team sports (450). Similarly, an "overtraining syndrome," described as a state of exhaustion, depression, and irritability in which athletes continue to train but their performance diminishes, has been observed (451, 452). Both the female athlete triad and the overtraining syndrome parallel the "activity anorexia" syndrome that has been observed in animal models (453, 454).

5. Eating disorders in high school and college students

Eating disorders are common among female high school and college students. From a primary prevention perspective, health professionals may be called on to provide information and education about eating disorders in classrooms, athletic programs, and other extracurricular ven-

ues. However, the efficacy of such educational programs in reducing eating disorders is still uncertain (455, 456). Health professionals who serve as trainers, coordinators, and professional supports for peer counseling efforts conducted at school, in dormitories, and through other campus institutions may help in early intervention. Through student health and psychological services, health professionals may serve as initial screeners and diagnosticians and help manage the treatment of students with eating disorders of varying levels of severity (457).

Psychiatrists may be occasionally called on as clinicians and agents of the school administration to offer guidance in the management of impaired students with serious eating disorders. In such situations, the suggested guidelines for levels of care described in Table 8 should be followed. According to the guidelines, students must be treatable as outpatients to stay in school. It is advisable that students be required to take a leave of absence if they are severely ill (457, 458). Students should be directed to inpatient hospital care if their weight is considerably below an expected healthy weight and they meet the other indications for hospitalization listed in Table 8.

For students with serious eating disorders who remain in school, it is useful for the psychiatrist and other health care professionals to work with the school's administration toward developing policies and programs that make student attendance contingent on participation in a suitable treatment program. When the psychiatrist and other health care professionals serve as "dual agents" for the school and whenever information must be shared among health care professionals, appropriate consents must be obtained and the requirements of the Health Insurance Portability and Accountability Act followed. For severely ill students, the clinical team must include a general medical clinician who can gauge patients' physical safety and monitor their weight, vital signs, and laboratory indicators. For the student to be permitted to continue in school, these clinicians may require a minimum weight and other physical, behavioral, or laboratory target measures to ensure basic medical safety. An explicit policy should be developed specifying that clinicians have the final say regarding the student's participation in physically demanding activities (e.g., organized athletics). Restrictions must be based on actual medical concerns. Procedures should be in compliance with the school's policies regarding management of students with psychiatric disabilities and the Americans With Disabilities Act (458).

6. Identification of risk and protective factors

Many efforts have been made to understand how eating disorders develop. Overall, our understanding of risk and vulnerability still outweighs our knowledge of protective factors and resilience. Temperamental factors, eating dysregulation, attachment issues, deficient self-regulation, childhood abuse in the case of bulimia nervosa, and sociocultural ideals of health and beauty may all contribute to risk and pathogenesis (367, 459, 460). High rates of childhood anxiety disorders precede eating disorders, especially overanxious disorder and OCD for anorexia nervosa and overanxious disorder and social phobia for bulimia nervosa; this could be of potential clinical relevance, especially when treating children and adolescents (341). A history of childhood obsessive-compulsive traits—notably perfectionism, rigidity, and rule-bound behavior—may also be associated with an increased risk for the development of an eating disorder (461). Richly documented clinical histories of patients with anorexia nervosa followed over 30 years from infancy to early midlife suggest several potential risk factors related to early perceived body image distortions, body regulatory problems, and academic and interpersonal problems (146).

Because it is well known that the risk of eating disorders is transmitted in families, it is important to offer particular help to patients with eating disorders who are themselves mothers. Attention should be paid to their mothering skills and attachment styles and to their offspring to minimize the risk of eating disorders being transmitted (386–388, 462, 463).

In some patients, increasingly compulsive exercise may precipitate anorexia and bulimia nervosa (447, 464). Female athletes in certain physical activities such as ballet and gymnastics are especially vulnerable (465). Unlike habitual runners, ballet dancers exhibit eating pathology similar to that of individuals with eating disorders (466). Male bodybuilders are also at risk,

although the symptom picture often differs because bodybuilders may emphasize a wish to "get bigger" and may also abuse anabolic steroids to reach their goal (467, 468). This has been called the "Adonis complex" (469, 470).

Programs have been designed to influence these risk factors and thus prevent eating disorders. A recent meta-analysis (471) of prevention programs suggests that programs vary significantly in their impact, ranging from an absence of any effect to a reduction in current and future eating pathology. Some effects persist as long as 2 years and are superior to minimal-intervention control conditions. Larger effects occur for selected (versus universal), interactive (versus didactic), and multisession (versus single-session) programs; programs offered solely to female patients and to participants over age 15 years; programs without psychoeducational content; and trials that use validated measures. Several of these programs have resulted in enhanced knowledge about eating disorders and healthy eating. A few have resulted in improved attitudes toward size, shape, eating, and weight, and some have addressed self-esteem and "weightism" and stressed normal/healthy attitudes and behaviors. Other approaches have resulted in modest changes in eating- and weight-related behaviors (472–474), but these changes are not always sustained (455, 456, 475). Because some studies even suggest that certain preventive efforts actually increase the likelihood that maladaptive eating behaviors would be attempted, particularly among adolescents (455), caution is recommended in selecting target populations for such intervention and proper follow-up is necessary.

PART B
BACKGROUND INFORMATION AND REVIEW OF AVAILABLE EVIDENCE

IV. DISEASE DEFINITION, EPIDEMIOLOGY, AND NATURAL HISTORY

A. DISEASE DEFINITION

The DSM-IV-TR criteria for establishing the diagnosis of anorexia or bulimia nervosa appear in Tables 2 and 3, respectively.

Although DSM-IV-TR criteria allow clinicians to diagnose patients with a specific eating disorder, eating disorder symptoms frequently occur along a continuum between those of anorexia nervosa and those of bulimia nervosa. Weight preoccupation and excessive self-evaluation of weight and shape are primary symptoms in both disorders, and many patients demonstrate a mixture of both anorexic and bulimic behaviors. For example, 50%–64% of patients with anorexia nervosa develop bulimic symptoms, and some patients who are initially bulimic develop anorexic symptoms (476, 477). Patients with atypical features who deny a fear of weight gain, accurately appraise their bodies as malnourished, and deny distorted perceptions of their body constituted about 20% of the patients admitted to a specialty eating disorder program (478). Denial of a fear of weight gain was found in 28% of anorexia nervosa patients assessed via a structured interview (479).

Anorexia nervosa appears in two subtypes: restricting and binge eating/purging; this classification into subtypes is based on the presence or absence of binge eating or purging symptoms. Patients with anorexia nervosa can alternate between the bulimic and restricting subtypes at different periods of their illness (480–483). Among patients with the binge eating/purging subtype of anorexia nervosa, further distinctions can be made between those who both binge and purge and those who purge but do not objectively binge. Patients with bulimia nervosa can be subclassified into the purging or nonpurging subtype. Patients with the nonpurging subtype use inappropriate methods to compensate for binge eating, including fasting and excessive exercising, as opposed to patients with binge eating disorder, who do not use inappropriate compensatory strategies. Many patients, particularly younger patients, have combinations of eating disorder symptoms that cannot be strictly categorized as anorexia or bulimia nervosa and are technically diagnosed as EDNOS (484). The value of requiring persistent amenorrhea as a criterion for diagnosing anorexia nervosa has been questioned (24).

Patients with anorexia and bulimia nervosa often experience associated psychiatric symptoms and behaviors. Social isolation is common in patients with anorexia nervosa. Depressive, anxious, and obsessional symptoms; perfectionistic traits; rigid cognitive styles; and a lack of interest in sex are often present among patients with the restricting type of anorexia nervosa (363). Early in the course of their illness, patients with anorexia nervosa often have limited recognition of their disorder and experience their symptoms as intrusive repetitive thoughts; sometimes there is a corresponding limited recognition of the disorder by patients' families. Depressive, anxious, and impulsive symptoms, as well as sexual conflicts and disturbances with intimacy, are often associated with bulimia nervosa. Although patients with bulimia nervosa are likely to recognize their disorder, shame or guilt frequently prevents them from seeking treatment for it at an early stage (485). In one subgroup of patients with bulimia nervosa (the "multi-impulsive" bulimic patients), significant degrees of impulsivity have been observed and are manifested as stealing, self-harm behaviors, suicidality, substance use, and sexual promiscuity (486, 487). Patients with anorexia nervosa of the binge eating/purging subtype may also be suicidal and engage in self-harming behaviors.

In the psychodynamic literature, patients with anorexia nervosa have been described as having difficulties with separation and autonomy (often manifested as enmeshed relationships with parents), affect regulation (including the direct expression of anger and aggression), and negotiation of psychosexual development. These deficits may make women who are predisposed to anorexia nervosa more vulnerable to cultural pressures for achieving a stereotypic body image (142, 169, 488, 489).

Psychodynamic issues in bulimic patients have been understood in a number of ways, ranging from viewing bulimic symptoms as manifestations of impulsivity or problems with emotion regulation and dissociative states to viewing them along a spectrum of self-harming behaviors commonly seen in patients with borderline personality organization (363, 490–492).

Some of the clinical features associated with eating disorders may result from malnutrition or semistarvation (493, 494). Studies of volunteers who have submitted to semistarvation experiments and semistarved prisoners of war report the development of food preoccupation, food hoarding, abnormal taste preferences, binge eating, and other disturbances of appetite regulation as well as symptoms of depression, obsessionality, apathy and irritability, and other personality changes (279). In patients with anorexia nervosa, some of these starvation-related phenomena, such as abnormal taste preference, may completely reverse with refeeding, although it may take considerable time after weight restoration for them to abate completely. However, some of these symptoms may reflect both preexisting and enduring traits, such as obsessive-compulsiveness, which are then further exacerbated by semistarvation. Such symptoms, therefore, may be only partially reversed with nutritional rehabilitation (82, 495). Complete psychological assessments may not be possible until some degree of weight restoration is achieved. Although patients with bulimia nervosa may appear to be physically within the stan-

dards of healthy weight, they may also show psychological and biological correlates of semistarvation, such as depression, irritability, and obsessionality, and may be below their personally optimum weight range, even at a weight considered to be "normal" according to population norms (496, 497). Furthermore, even at normal weight, body composition may be abnormal.

Common physical complications of anorexia nervosa are listed in Table 5. Amenorrhea of even a few months may be associated with osteopenia, which may progress to potentially irreversible osteoporosis and a correspondingly higher rate of pathological fractures (498, 499). If fracture risk is substantial, patients should be cautioned to avoid high-impact exercises. Pain in the extremities may signal stress fractures that may not be evident on X-rays but may be detected in abnormal bone scan results. Patients with anorexia nervosa who develop hypoestrogenemic amenorrhea in their teenage years that persists into young adulthood are at greatest risk for osteoporosis because they not only lose bone mass but also fail to form bone at a critical development phase (207). Osteopenia may be present in women who have been recovered from anorexia nervosa for up to 21 years (500). In addition, prepubertal and early pubertal patients are also at risk for permanent growth stunting (501, 502).

Acute complications of anorexia nervosa include dehydration, electrolyte disturbances (with purging), cardiac compromise with various arrhythmias (including conduction defects and ventricular arrhythmias), gastrointestinal motility disturbances, renal problems, infertility, premature births, other perinatal complications, hypothermia, and other evidence of hypometabolism (43). Death from anorexia nervosa is often proximally due to cardiac arrest secondary to arrhythmias (503).

Common physical complications of bulimia nervosa are listed in Table 6. The most serious physical complications occur in patients with chronic, severe patterns of binge eating and purging and are of most concern in very-low-weight patients (504).

Laboratory abnormalities in anorexia nervosa may include leukopenia with relative lymphocytosis, abnormal liver function, hypoglycemia, hypercortisolemia, hypercholesterolemia, hypercarotenemia (the latter two findings attributed to reduced catabolism), low serum zinc levels, electrolyte disturbances, and widespread disturbances in endocrine function. Low potassium levels may result from purging by any of several methods and can lead to potentially fatal cardiac arrhythmias. Sometimes abnormalities in serum chloride or bicarbonate levels precede low potassium levels. Electrolyte abnormalities can occur quickly and require ongoing monitoring in patients with extensive vomiting or laxative and/or diuretic abuse alone or in combination with low weight. In such patients, electrolyte levels should be repeated periodically to assess for abnormalities. Thyroid abnormalities may include low T_4 levels, even though thyroid-stimulating hormone levels are in the normal range; the low T_4 levels reverse with weight restoration and generally should not be treated with hormone replacement therapy (200, 505–507). Normal serum phosphorus values may be misleading because they do not reflect total body phosphorus depletion (which is usually reflected in serum phosphorus only after refeeding has begun). In early malnutrition, when many other laboratory measures may still be within normal limits, serum complement component 3 and 4 and serum transferrin may be abnormally low and serve as indicators of nutritional status (71).

Abnormal findings on magnetic resonance images reflect changes in the brain (508). White matter and cerebrospinal fluid volumes appear to return to the normal range after weight restoration. However, gray matter volume deficits, which correlate with the patient's lowest recorded BMI, may persist even after weight restoration (99, 509, 510). Some patients show persistent deficits in their neuropsychological testing results that have been shown to be associated with poorer outcomes (511).

It is important to consider that laboratory findings in anorexia nervosa may be normal in spite of a patient's profound malnutrition. For example, patients may have low total body potassium levels even when serum electrolytes are normal and thus may be prone to unpredictable cardiac arrhythmias (512).

Laboratory abnormalities in bulimia nervosa may include electrolyte imbalances such as hypokalemia, hypochloremic alkalosis, mild elevations of serum amylase (most often salivary in origin), and hypomagnesemia and hypophosphatemia, especially in patients who abuse laxatives (513–515).

B. EPIDEMIOLOGY

Estimates of the incidence or prevalence of eating disorders vary depending on the sampling and assessment methods, and many gaps exist in our current knowledge base. The reported lifetime prevalence of anorexia nervosa among women has ranged from 0.3% for narrowly defined to 3.7% for more broadly defined anorexia nervosa (25, 516, 517). With regard to bulimia nervosa, estimates of the lifetime prevalence among women have ranged from 1% to 4.2% (516, 518, 519). Some studies suggest that the prevalence of bulimia nervosa in the United States may have decreased slightly in recent years (520), whereas the prevalence of anorexia nervosa may have increased slightly (421, 521). Eating disorders are more commonly seen among girls and women, with estimates of the male-female prevalence ratio ranging from 1:6 to 1:10 (516). The prevalence of anorexia nervosa and bulimia nervosa in American children and younger adolescents is not well documented.

In the United States, eating disorders appear to be about as common in young Hispanic and Native American women as in Caucasian women and less common among African American and Asian women (522–524). Although studies have shown that preadolescent African American girls report a higher drive for thinness than Caucasian girls (525, 526), the drive for thinness increases significantly in Caucasian girls during puberty and remains unchanged in African American girls (527). Disordered eating is prevalent in many other countries. In a Scandinavian study of girls and boys ages 14–15 years, 0.7% of the girls and 0.2% of the boys reported a lifetime prevalence of anorexia nervosa, and 1.2% of the girls and 0.4% of the boys reported a lifetime prevalence of bulimia nervosa (528). Studies in Japan suggest that the prevalence of eating disorders is on the rise there. Recent data indicate that >50% of female college students report a history of significant and persistent dieting, 40% use diet pills or drinks to lose weight, and 18% report a BMI <18.5 kg/m^2 (529). However, the latter finding requires cautious interpretation, because appropriate BMI ranges might vary by ethnic grouping; for example, the normal range of BMI might actually be lower in Asian populations than in North American and European populations (530). Eating disorder concerns and symptoms do appear to be increasing among Chinese women exposed to Western culture and modernization in cities such as Hong Kong (531–533). The prevalence of disturbed eating disorders attitudes, as assessed by surveys, also appears to be high in other non-Western countries such as Iran, nonwhite South Africa, and Fiji (429, 534, 535).

First-degree female relatives of patients with anorexia and bulimia nervosa have higher rates of eating disorders compared with relatives of control subjects (536–539). In addition, relatives of individuals with anorexia and bulimia nervosa have increased rates of eating disorders that do not meet full diagnostic criteria compared with relatives of control subjects (538, 539). Identical twin siblings of patients with anorexia or bulimia nervosa also have higher rates of these disorders, with monozygotic twins having higher concordance than dizygotic twins. Families of patients with bulimia nervosa have been found to have higher rates of substance abuse (particularly alcohol use disorders), affective disorders, and certain personality traits, including elevated levels of perfectionism and an increased sense of ineffectiveness (540, 541). In Fiji, the prevalence of binge eating disorder is comparable to that in the United States (542).

High rates of co-occurring psychiatric illness are found in patients seeking treatment at tertiary-level psychiatric treatment centers. Lifetime co-occurring major depression or dysthymia has been reported in 50%–75% of patients with anorexia (323, 324) and bulimia (324, 331) nervosa. Estimates of the prevalence of bipolar disorder among patients with anorexia or bulimia nervosa are usually around 4%–6% but have been reported to be as high as 13% (325).

The lifetime prevalence of OCD among anorexia nervosa patients has been as high as 25% (82, 323, 543), with OCD frequently predating the onset of anorexia nervosa (341, 461). Obsessive-compulsive symptomatology has been found in a large majority of weight-restored patients with anorexia nervosa treated in tertiary-level care centers (544). OCD is also common among patients with bulimia nervosa (82, 331, 543). Co-occurring anxiety disorders, particularly social phobias, are common among patients with anorexia and bulimia nervosa (82, 310, 323, 331, 543). Substance abuse has been found in as many as 23%–40% of patients with bulimia nervosa. Among patients with anorexia nervosa, estimates of those with substance abuse have ranged from 12% to 18%, with this problem occurring primarily among those with the binge eating/purging subtype (308, 310, 323, 545).

Co-occurring personality disorders are frequently found among patients with eating disorders, with estimates ranging from 42% to 75%. The associations between bulimia nervosa and Cluster B and C disorders (particularly borderline personality disorder and avoidant personality disorder) and between anorexia nervosa and Cluster C disorders (particularly avoidant personality disorder and obsessive-compulsive personality disorder) have been reported (546, 547). Eating disorder patients with personality disorders are more likely than those without personality disorders to also have concurrent mood or substance use disorders (308, 331). Co-occurring personality disorders are significantly more common among patients with the binge eating/purging subtype of anorexia nervosa than among patients with the restricting subtype or in normal-weight patients with bulimia nervosa (349).

Sexual abuse has been reported in 20%–50% of patients with bulimia (346) and anorexia (221, 548) nervosa, although sexual abuse may be more common in patients with bulimia nervosa than in those with the restricting subtype of anorexia nervosa (346, 549). Childhood sexual abuse histories are reported more often in women with all psychiatric disorders, including eating disorders, than in women from the general population (549). Women who have eating disorders in the context of sexual abuse appear to have higher rates of comorbid psychiatric conditions than other women with eating disorders (314, 346). Furthermore, individuals with bulimia nervosa are reported to have experienced higher rates of other types of trauma besides childhood sexual abuse, including adult rape and molestation, aggravated assault, and physical neglect (332, 550, 551).

C. NATURAL HISTORY AND COURSE

1. Anorexia nervosa

Although the overall percentage of individuals who fully recover from anorexia nervosa is modest, it is well established that younger patients who receive prompt and appropriate intervention have a much better full recovery rate. For example, in the study by Strober et al. (19), >70% of adolescents had a full and lasting recovery 5 years after the onset of comprehensive treatment. Although some patients improve symptomatically over time, a substantial proportion continue to have body image disturbances, disordered eating, and other psychiatric difficulties (163, 324, 552). In one 10-year follow-up study, a relapse rate of 42% was seen during the first posthospitalization year for patients with anorexia nervosa (553). A review of a large number of studies of patients who were hospitalized or who received tertiary-level care and were followed up at least 4 years after the onset of illness indicates that "good" outcomes occurred in 44% of the patients (i.e., weight restored to within 15% of recommended weight for height and regular menstruation established), although these criteria are clearly insufficient to consider a patient as recovered or even as having restored weight to an adequate level. Poor outcomes occurred in about 24% (weight never reached within 15% of recommended weight for height; menstruation absent or at best sporadic), and intermediate outcomes occurred in about 28% (163). Approximately 5% of the patients died. Overall, about two-thirds of anorexia nervosa patients continue to have enduring morbid food and weight preoccupation, and up to 40%

have bulimic symptoms. Even among those who have good outcomes as defined by restoration of weight and menses, many have other persistent psychiatric symptoms, including dysthymia, social phobia, obsessive-compulsive symptoms, and substance abuse (323, 554).

Among adolescents with anorexia nervosa, approximately 50%–70% recover, 20% are improved but continue to have residual symptoms, and 10%–20% develop chronic anorexia nervosa (163). In a 10- to 15-year follow-up study of adolescent patients hospitalized for anorexia nervosa—76% of whom met criteria for full recovery—time to recovery was quite protracted, ranging from 57 to 79 months depending on the definition of recovery (19, 478). Anorexia nervosa patients with atypical features, such as denying a fear of gaining weight or denying distorted perceptions of their bodies, had a somewhat better course (478). Although good outcomes were observed in only 35% of 80 patients in Eisler et al.'s 5-year follow-up study (155), outcomes were good in 62% of the 21 patients who had been ill for <3 years and whose illness began before age 19.

Diagnostic migration occurs in patients with anorexia nervosa, reflecting the development of binge eating and/or purging behavior. The most frequent change among diagnostic categories is from anorexia nervosa, restricting type, to anorexia nervosa, binge eating/purging type; most changes occur by the fifth year after the onset of illness (477, 553). In one study, >50% of patients with anorexia nervosa, restricting type (both adolescents and adults) developed bulimic symptomatology over the course of follow-up, and only a small fraction of patients with anorexia nervosa, restricting type remained in that diagnostic subtype (555). Factors leading to the development of bulimic symptoms among patients with anorexia nervosa, restricting type are not well understood, nor is the precise time course of this development.

Mortality rates in eating disorders, specifically anorexia nervosa, are among the highest in the mental disorders. The prognosis of anorexia nervosa does not appear to have improved during the 20th century (163, 556, 557). Harris and Barraclough (558) calculated the standardized mortality ratios (SMRs) for all causes of death in 152 English language reports from a MEDLINE search on the mortality of mental disorder. The highest risk of premature death from natural and unnatural causes was related to eating disorders and substance abuse. Another study analyzing 10 large samples of individuals with eating disorders found strong evidence for an elevated SMR in eight of these samples, with a definitely elevated SMR for anorexia nervosa and no conclusion for bulimia nervosa. Lower weight at presentation was associated with a higher SMR. Mortality also varied with age at presentation, with an SMR of 3.6 for those presenting under age 20 years; 9.9, for ages 20–29 years; and 5.7, for age 30 years or older. Among female patients, the risk of death was 0.59% per year (559).

Deaths among male patients from anorexia nervosa have also been studied. In a recent report, two national registers, the National Patient Register (NPR) and the Causes of Death Register (CODR), were examined in Norway for deaths related to anorexia nervosa that occurred during a 9-year period (1992–2000). The medical record or death certificate listed anorexia nervosa as a diagnosis or cause of death for 66 individuals. Rates of death related to anorexia nervosa were 6.46 and 9.93 per 100,000 deaths for the NPR and the CODR, respectively. A substantial percentage of deaths (43.9%) in both registers occurred at or above age 65 years. For the NPR, the mean age at the time of death was 61 years, and 31% of deaths occurred among men. For the CODR, the mean age at the time of death was 49 years, and 18% of deaths occurred among men (560).

In other analyses, approximately 5.6% of patients diagnosed with anorexia nervosa die per decade of illness (561), and female anorexia nervosa patients are reportedly 12 times more likely to die than women of a similar age in the general population (321). The most common causes of death are suicide and starvation-related effects. The suicide rate among women with anorexia nervosa is up to 57 times higher than that for women of a similar age in the general population (321). Lower weight at presentation, longer duration of illness, and severe alcohol use appear to be associated with higher risk of mortality (321, 562).

Nielsen (563) conducted a literature review of mortality studies in eating disorders and concluded that methodological problems created biases to the eating disorder mortality data. The major problems with these studies were small sample sizes and loss of patients to follow-up.

Mortality and morbidity for anorexia nervosa, bulimia nervosa, and related disorders are likely to be underreported because they go unrecognized by clinicians. Patients' denial of illness may result in their avoidance of treatment at an early phase and the later development of multiple chronic physical problems, with associated morbidity and mortality (321, 563).

A shorter duration of illness and younger age at onset have been associated with a better outcome; lower initial minimum weights, vomiting, binge eating, purgative abuse, chronicity of illness, and obsessive-compulsive personality symptoms are reported to be unfavorable prognostic features (163). However, many of these prognostic indicators have not been consistently replicated and may be more reliable predictors of short-term but not long-term outcomes. In general, adolescents have better outcomes than adults and younger adolescents have better outcomes than older adolescents.

2. Bulimia nervosa

Although the literature on the long-term course and prognosis of bulimia nervosa remains limited, studies over the last decade have begun to clarify these issues. First, studies have shown that in untreated community samples, there are modest degrees of spontaneous improvement over a 1- to 2-year period, with roughly a 25%–30% reduction in binge eating, purging, and laxative abuse (564, 565). The overall short-term success rate for patients receiving psychosocial treatment or medication has been reported to be 50%–70% (324). Relapse rates of 30%–85% have been reported for successfully treated patients at 6 months to 6 years of follow-up (329, 566).

In a 5-year period, most individuals with bulimia nervosa in the community continue to have some form of an eating disorder of clinical severity, with about 33% remitting each year and another 33% relapsing to full diagnostic criteria, which suggests a relatively poor prognosis for this untreated group (567). In a naturalistic longitudinal study of 110 treatment-seeking women with bulimia nervosa, 73% achieved full recovery (no bingeing or purging for at least 8 consecutive weeks) at some point during a median of 7 years of follow-up, and 36% of those relapsed (568). A 6-year follow-up of patients treated for bulimia nervosa found that 60% of the patients were rated as having a good outcome, 29% as having an intermediate outcome, and 10% as having a poor outcome; 1% were reported as having died (569). A review of the treatment literature by this same group (570) found that, over time, social adjustment tended to normalize in some patients but that a fairly large group experienced chronic symptomatology and impairment; there was little crossover to anorexia nervosa or binge eating disorder. The longest follow-up study to date (562), with a mean follow-up of 11.5 years, found that the number of women who continued to meet full diagnostic criteria for bulimia nervosa declined over time. At long-term follow-up, 30% continued to engage in recurrent binge eating and purging behaviors. Subsequent analysis of this data set concluded that although menstrual irregularities were common at follow-up, the baseline presence of illness appeared to have little impact on these patients' later ability to achieve pregnancy (571). The results of this follow-up were interpreted to indicate that treatments with demonstrated efficacy for short-term outcome appeared to improve psychosocial functioning at long-term outcome among women with bulimia nervosa (572). A review of other literature in this area concluded that no consistent evidence exists to support the idea that early intervention implies a better long-term outcome (573).

A variety of factors have been examined as possible predictors of outcome. The available literature suggests that outcomes for patients with illness onset in adolescence are better than for those with later onsets (556). Although the data are highly variable, evidence suggests that comorbidity with OCD may be associated with a longer duration of illness (574) and that comorbidity with personality disorders may alter the natural course of illness (575). Overevaluation of shape and weight and a history of childhood obesity may be negative predictor factors (576), whereas a history of substance use disorders at intake or misuse of laxatives during the follow-up period may predict suicide attempts (577). The overall conclusion is that considerable variability occurs in the natural course of this illness, with persistence of symptoms at long-term follow-up in a significant subgroup of patients.

3. Eating disorders not otherwise specified

EDNOS is a commonly used diagnosis, being given to >50% of patients with eating disorders who present to outpatient treatment settings (263). EDNOS variants consisting of mixtures of anorexia and bulimia nervosa symptoms appear to be particularly common among adolescents. This heterogeneous group of patients consists largely of subsyndromal cases of anorexia or bulimia nervosa (e.g., those who fail to meet one criterion, such as not having 3 months of amenorrhea or having fewer binge eating episodes per week than required for a strictly defined diagnosis) as well as the substantial group of patients with binge eating disorder.

Because the diagnosis of EDNOS includes individuals with diverse eating disorder presentations, it is predictable that the course of EDNOS will be highly variable. Indeed, an early study of an unselected EDNOS population found a varied course of illness and low rate of recovery over 30 months (267). In addition, in patients with a variety of eating disorders who were followed over time, it appears that considerable movement occurred from one eating disorder diagnostic category to another, including EDNOS (263).

Binge eating disorder occurs in about 2% of community cohorts and is common among patients seeking treatment for obesity at hospital-affiliated weight programs (1.3%–30.1% prevalence), with studies using more rigorous interview-based measures typically reporting lower rates (578, 579). About 33% of these patients are male. Binge eating disorder typically begins in adolescence (at least by retrospective recall) or early adulthood and occurs more frequently in adults than in adolescents, but patients generally do not present for treatment until adulthood. (580). A well-established concomitant feature of binge eating disorder is that obese individuals who binge eat are more likely than those who do not binge eat to display comorbid axis I psychopathology, particularly major depressive disorder, with lifetime rates of 46%–58% (313, 334, 335, 337, 581).

Important observations have been made regarding the course of binge eating disorder. A 5-year community study of young women with binge eating disorder reported that a majority of the women had recovered spontaneously by 5-year follow-up. However, the age of participants in this study was considerably younger than that of most patients presenting for binge eating disorder treatment, making the generalizability of these findings uncertain (567). Another community study that followed patients over a 6-month period reported that about half of patients remaining in the study continued to meet binge eating disorder criteria, whereas symptoms of the other half partially remitted (567, 582). A 6-year study (583) that followed intensively treated binge eating disorder patients found that approximately 57% had a good outcome, 35% an intermediate outcome, and 6% a poor outcome; 1% of the patients had died. Although shorter-term remission is not necessarily maintained on a longer-term basis, clinical samples and shorter-term studies of binge eating disorder treatment have often reported high rates of response to minimal interventions (e.g., placebo) (584). Taken together, these lines of evidence suggest that the course of binge eating disorder is rather unstable over time. Treatment appears to be associated with a fairly positive long-term response, but it is difficult to know how many patients might have recovered without specific treatment.

The presence of binge eating may be predictive of weight gain over time. The aforementioned study of Fairburn et al. (567) reported that the prevalence of obesity in that group of patients had nearly doubled by the end of the follow-up period. Follow-up data from several treatment studies (271, 272, 585, 586) suggest that the persistence of binge eating may be associated with weight gain over time.

D. GENETIC FACTORS

Family and twin studies suggest a strong genetic component in the development of anorexia and bulimia nervosa (587–589), but the specifics of exactly what vulnerabilities are transferred and the mechanisms whereby they contribute to the pathogenesis of eating disorders need to

be identified. The evidence also suggests that anorexia and bulimia nervosa may share genetic transmission with anxiety disorders and major depression (590, 591).

Further investigation of genetic contributions to vulnerability for eating disorders has occurred with two types of analyses: linkage studies and association studies for polymorphisms of specific genes. Evidence from a large international, multisite study suggests the presence of an anorexia nervosa susceptibility locus on chromosome 1p (592) and a susceptibility locus for bulimia nervosa on chromosome 10p (593). In affected sibling pairs who ranked high for "drive for thinness" and "obsessionality" traits, suggestive linkages were found on chromosomes 1, 2, and 13 (594). Association studies for polymorphisms of specific genes with specific behavioral covariates have produced many contradictory findings. For example, four studies were positive for a polymorphism of −1438 G/A in the promoter *5HT2A* gene, and three studies were negative for this polymorphism (reviewed by Hinney et al. [595]). A meta-analysis of all the association studies of the *5HT2A* gene in anorexia nervosa showed a persistent significant effect of the −1438 allele (596).

Preliminary evidence suggests that the norepinephrine transporter gene (*NET*) and monoamine oxidase A gene (*MAOA*) contribute to the increased risk for anorexia nervosa, restricting type. A serotonin transporter gene (*SERT*), known to be associated with anxiety, is preferentially transmitted to children with anorexia nervosa when the more active *MAOA* variant is also transmitted (597). The findings regarding these three genes (*MAOA*, *SERT*, and *NET*) in relation to susceptibility to anorexia nervosa require replication. Other studies suggest significant associations between anorexia nervosa and the serotonin gene *HTR1D* and the opioid gene *OPRD1* (598).

V. REVIEW AND SYNTHESIS OF AVAILABLE EVIDENCE

In the following sections, the available data on the efficacy of treatments for eating disorders are reviewed. For several reasons, interpreting the meanings and significance of these studies for patients seen in clinical practice is often difficult. Most studies have consisted of 6- to 12-week trials designed to evaluate the short-term efficacy of treatments. Unfortunately, few data exist on the long-term efficacy of treatment for patients with eating disorders, who often have a chronic course and variable long-term prognosis. Many studies also inadequately characterize the phase of illness when patients were first treated (e.g., early or late), which may have an impact on outcomes. Particularly for studies of psychosocial therapies that may consist of multiple elements, the precise interventional elements responsible for treatment effects may be difficult to identify. Furthermore, in comparing the effects of psychosocial treatments among studies, important variations may exist in the nature of the treatments delivered to patients. In addition, most studies have examined the efficacy of treatments only on eating disorder symptoms, with few reporting the efficacy on associated features and comorbid conditions such as the persistent mood, anxiety, and personality disorders that are common in "real world" populations.

A variety of outcome measures are used in trials for patients with eating disorders. Outcome measures used in studies of patients with anorexia nervosa often include the amount of weight gained within specified time intervals or the proportion of patients achieving a specified percentage of expected body weight, as well as whether those with secondary amenorrhea experience a return of menses. Measures of the severity or frequency of eating disorder behaviors have also been reported. In studies of bulimia nervosa, outcome measures include reductions in the frequency or severity of eating disorder behaviors such as binge eating, vomiting, and laxative use and the proportion of patients achieving remission from or a specific reduction in eating disorder behaviors.

A. TREATMENT OF ANOREXIA NERVOSA

1. Nutritional rehabilitation

With regard to approaches to promoting weight gain, the evidence does not show that giving a patient a warming treatment or growth hormone injections significantly increases weight gain or decreases the length of hospitalization. In a randomized controlled trial by Birmingham et al. (599), 10 female patients with anorexia nervosa received a warming therapy, consisting of a heating vest set at medium heat for 3 hours/day for 21 days, and a control group of 11 patients received the vest when it was not turned on. Among the 18 patients who completed the study, there was no difference in change in BMI; the study authors concluded that warming did not increase the rate of weight gain. In a double-blind study by Hill et al. (600), 15 inpatients with anorexia nervosa, ages 12–18 years, were randomly assigned to receive recombinant human growth hormone (0.05 mg/kg, s.c.) or an equivalent volume of placebo daily for 28 days. At the end of the study, the growth hormone and placebo groups did not differ significantly in admission weight, BMI, or daily caloric intake.

For weight maintenance, Kaye et al. (601) found that weight-restored patients with anorexia nervosa often require 200–400 calories more than sex-, age-, weight-, and height-matched control subjects to maintain weight. The energy wasting of malnourished anorexia nervosa patients results in higher than normal resting energy expenditure (REE; measured in kilocalories per kilogram per day) (602), resulting in resistance to weight gain. In malnourished anorexia nervosa patients, a high REE has been independently linked to anxiety level; abdominal pain and vomiting; physical activity, including exercise, fidgeting, and other non-exercise-related energy expenditure; and cigarette smoking (603, 604). Of note, REE measured as kilocalories per day is lower in patients with anorexia nervosa and returns to normal with refeeding (604). These different measurement and reporting techniques may be the source of some confusion among study results, and reports concerning REE must be read carefully to fully understand exactly what is being measured (602).

Research that addresses the optimal length of hospitalization or the optimal setting for weight restoration is sparse. There is no available evidence to show that brief stays for anorexia nervosa are associated with good long-term outcomes. Several studies have reported that hospitalized patients who are discharged at a weight lower than their target weight subsequently relapse and are rehospitalized at higher rates than those who achieve their target weight before discharge (605). Baran et al. (606) assessed weight, height, eating disorder symptoms, and severity of depressive and anxiety symptoms in 22 women with anorexia nervosa at hospital admission and at follow-up occurring a mean of 29 months after patient discharge. The patients who were discharged while severely underweight reported significantly higher rates of rehospitalization and endorsed more symptoms than those who had achieved normal weight before discharge. Commerford et al. (607) had similar observations in their 5-year follow-up study (by telephone interview) of 31 patients with anorexia nervosa and bulimia nervosa who met specific criteria for discharge. That group reported that patients being discharged while at a low weight was associated with brief lengths of stay and that the closer patients were to a healthy weight at the time of discharge from the hospital, the lower their risk of relapse.

In a study by Watson et al. (103) of 397 patients admitted to an inpatient service over a 7-year period, patients who were admitted involuntarily showed the same short-term rates of weight gain as those who were admitted voluntarily. Moreover, most of those who were involuntarily treated later affirmed the need for and exhibited a better attitude toward the treatment process.

In ambulatory settings, most programs find weight gain goals of 0.5–1 lb/week to be realistic, although gains of up to 2 lb/week have been reported in a partial hospitalization step-down program in which patients previously treated as inpatients are treated 12 hours/day, 7 days/week (113). The opinion of the clinicians running this program is that it would not be as effective for never-hospitalized patients.

2. Psychosocial treatments

Although psychosocial interventions, including psychoeducation, individual therapy, family therapy, and (in some settings) group therapy, are considered to be the mainstay of effective treatment for anorexia nervosa, supporting evidence is sparse. Instead, this perspective is derived primarily from considerable clinical experience (608) and patient reports. In a review of 23 studies reporting surveys of people who have had an eating disorder to determine which treatments patients find helpful, support, understanding, and empathic relationships were rated as critically important, psychological approaches were rated as the most helpful, and medical interventions focused exclusively on weight were viewed as not helpful (609).

The concept of "readiness for change," which is widely used in the treatment of substance use disorders (610), has garnered increasing interest and use with patients with anorexia nervosa to improve their motivation for treatment and potentially improve treatment efficacy. The Anorexia Nervosa Stages of Change Questionnaire, developed with a population of patients age 14 years and older, has been designed to be specific for anorexia nervosa. It is reliable and valid (611, 612) but has not yet been used to study treatment effectiveness at various stages. The Readiness and Motivation Interview, which was developed as an assessment tool for adult patients (613), has been shown to predict clinical outcomes, such as the decision to enroll in treatment, dropping out from intensive residential treatment, posttreatment symptom change, and relapse (613–615); however, it has not yet been evaluated to determine its effectiveness in helping patients move from precontemplation stages to higher stages of readiness for treatment. After a quantitative and qualitative analysis of results from a survey of 278 patients with anorexia nervosa, Jordan et al. (616) attempted to develop a staging measure associated with recovery from anorexia nervosa; they concluded that the most meaningful measure was one that measured progress in readiness to stop restricting, bingeing, and purging behaviors. The development and use of validated tools that assess readiness are important because clinicians have been shown to be poor at estimating patients' readiness for change (617) and consequently are ill-equipped to make treatment recommendations tailored to patients' readiness status.

a) Structured inpatient and partial hospitalization programs

Most inpatient programs use one of many behaviorally formulated interventions, individual and family psychotherapy, empathic nursing approaches, nutritional counseling, and several group therapies designed to improve the patient's knowledge about and attitude toward eating, exercise, and body image (618, 619). These behavioral programs implement a variety of strategies derived from social learning theory that include reinforcement and contingency management (e.g., empathic praise, exercise-related limits and rewards, bed rest, privileges linked to achieving weight goals and desired behaviors). Behavioral programs have been shown to produce good short-term therapeutic effects (620). One review comparing behavioral psychotherapy programs with medication treatment alone found that behavior therapy resulted in more consistent weight gain among patients with anorexia nervosa as well as shorter hospital stays (620). Studies of consecutively admitted inpatients with anorexia nervosa (621, 622) found that "lenient" behavioral programs that use initial bed rest and the warning of returning the patient to bed if weight gain does not continue are as effective as, and in some situations possibly more effective than, "strict" programs in which meal-by-meal caloric intake or daily weight is tied precisely to a schedule of privileges (e.g., time out of bed, time off the unit, permission to exercise or receive visitors). Some evidence suggests that the use of a supervised graded exercise program, such as nonaerobic yoga, may be of benefit in the inpatient treatment of anorexia nervosa (623–625).

Although there is debate about the value of supplemental feedings and formula feedings during the early weight-gain phase in anorexia nervosa, emerging evidence suggests that this strategy may sometimes be helpful. In a short-term study of 100 adolescent Caucasian female patients, one center reported that over a comparable period of time, patients voluntarily treated during hospitalization with supplemental nocturnal nasogastric refeeding had greater and more

rapid weight gain than patients treated with traditional oral refeeding alone (121). Other centers have reported similar experiences (626). High-calorie supplements have also been shown to lead to more rapid weight gain (627). However, further study is needed to assess the short- and long-term effectiveness of this approach (121, 628).

Adolescents with anorexia nervosa may have the best outcomes after structured inpatient or partial hospitalization treatment. For example, one study in Norway (629) found that among 55 patients who had received systematic (usually inpatient) treatment based on close cooperation among parents and the pediatric and child and adolescent psychiatry departments, outcome after 3–14 years was good. No patient had died and 82% of the patients had no eating disorder; however, 41% had other axis I diagnoses (most commonly depression or anxiety disorders).

Among adults with anorexia nervosa who receive inpatient treatment, outcome is not usually as favorable. For example, in another report from Norway of 24 adult patients, 42% of patients had improved by the 1-year follow-up, whereas the outcome was poor in 58% (630).

Attempts have been made to determine factors that predict relapse after hospitalization, but identifying such features with certainty has proved challenging. Strober et al. (19) were unable to clearly identify factors associated with posthospitalization relapse among adolescents. One study (631) found that a young age (<15 years), markedly abnormal eating attitudes at admission, and a low rate of weight gain during hospitalization predicted readmission.

b) Individual psychotherapy

During the acute phase of treatment, the efficacy of specific psychotherapeutic interventions for facilitating weight gain remains uncertain. A randomized controlled trial by McIntosh et al. (7) of 56 acutely ill adult women with anorexia nervosa treated as outpatients showed that 20 weekly sessions of nonspecific clinical management (a manual-based therapy delivered by individuals knowledgeable about the treatment of eating disorders and consisting of advice, support, and education) were as effective as or more effective than 20 weekly sessions of CBT or IPT. Of the 56 women, 70% either did not complete treatment or made small or no gains; only about 10% had a very good outcome and 20% improved considerably by the end of these treatments.

With regard to psychotherapy after weight gain, in the first clear demonstration of the efficacy of CBT, 33 adult patients with anorexia nervosa were randomly assigned after weight gain to 1 year of outpatient CBT or nutritional counseling (136). The group receiving nutritional counseling relapsed significantly earlier and at a higher rate than the group receiving CBT, and modified Morgan Russell criteria for "good outcome" were met by significantly more of the patients receiving CBT (44%) than those receiving nutritional counseling (7%).

In another study of outpatient treatment by Dare et al. (85), 84 adult outpatients with anorexia nervosa were randomized to one of four treatments: 1 year of focal psychoanalytic psychotherapy, 7 months of cognitive-analytic therapy, 1 year of family therapy, or low-contact, routine treatment as usual. At 1-year follow-up, only modest symptomatic improvement was seen in the whole group of patients, and several patients remained significantly undernourished. Although improvements were quite modest for all groups, psychoanalytic psychotherapy and family therapy were superior to the control treatment; cognitive-analytic therapy (which was shorter in duration) tended to show benefits over the control treatment as well.

In practice, individual psychotherapies, family therapies, nutritional counseling, and group therapies are often combined during hospital treatment and in comprehensive follow-up care. As of yet, no systematic data have been published regarding outcomes of using these combined approaches, which experienced clinicians often view as superior to a single-therapy approach.

c) Family psychotherapy

Evidence suggests that family therapy is frequently useful for reducing symptoms and dealing with family relational problems that may contribute to an eating disorder's persistence, particularly in adolescents. Russell et al. (154) demonstrated family therapy to be superior to indi-

vidual therapy in adolescents with anorexia nervosa for <3 years. Follow-up studies showed that this superiority was maintained 5 years later (155). In an outpatient study by Eisler et al. (86), 40 adolescent patients were randomly assigned to conjoint family therapy or separated family therapy. Both therapies were found to be equally effective on global measures of outcome, but symptomatic change was more marked in the separated family group, but only if the parents were highly critical of the patient, whereas psychological change was more prominent in those receiving conjoint family therapy.

In a randomized inpatient trial, Geist et al. (130) compared the effects of two family-oriented treatments, family therapy and family group psychoeducation, on 25 girls with newly diagnosed anorexia, restrictive type. At 4 months, significant improvement in weight was noted in both groups compared with baseline—77.7% versus 89.1% for family therapy and 77.2% versus 90.4% for family group psychoeducation—with no significant difference between the two groups. In all patients, no significant changes were noted on any self-report measures of specific or nonspecific eating disorder psychopathology. This study was uncontrolled, so it is also difficult to determine the specific results of the treatments in the context of other treatments received by the patients. However, the study results suggest that family therapy and family psychoeducation may be equally helpful with respect to weight gain in the course of IPT in patients with anorexia nervosa.

In a randomized study of 37 adolescents with anorexia nervosa by Robin et al. (126), behavioral family systems therapy (BFST), in which eating and distorted beliefs are targeted during family therapy, was compared with ego-oriented individual therapy (EOIT). At the end of treatment and at 1-year follow-up, groups receiving either treatment had significant weight gain, resumed menstruation, and showed improvements in eating attitudes, depression, and eating-related family conflict. BFST produced a quicker response initially, but by 1-year follow-up, the outcome in the two groups was similar. This study was uncontrolled, and the loss of participants at follow-up could have biased the results. However, the study suggests that both BFST and EOIT may be helpful.

Systematic studies of the Maudsley model of family therapy that are currently under way are receiving considerable interest (87). In these interventions, families are "put in charge" of their children's eating. Lock et al. (87, 129) found that short-term family therapy was as helpful as longer-term family therapy and that, overall, adolescents with anorexia nervosa did well. The results suggested that those who had high levels of OCD symptoms or a nonintact family tended to need longer courses of more intense therapy. A multisite study of this approach is currently being conducted.

For adults, family therapy is less promising. Russell et al. (154) found that individual therapy tended to be superior to family therapy by the end of active treatment but that this difference disappeared at follow-up. Dare et al. (85) observed that specific treatments, including family therapy, were superior to generic treatments and treatments rendered by inexperienced clinicians. Family therapy was no less effective than the other types of therapy, but, as mentioned above, in this study results were modest for all active treatments.

d) Psychosocial interventions based on addiction models

Some programs attempt to blend features of addiction models, such as the 12 steps, with medical model programs that use cognitive-behavioral approaches (632). However, no systematic data exist regarding the effectiveness of these approaches for patients with anorexia nervosa.

e) Support groups

Expert opinion suggests that benefits are likely to accrue from support groups; however, at present no data are available that systematically assess the contribution of support groups led by professionals or advocacy organizations that provide patients and their families with mutual support, advice, and education about eating disorders.

3. Medications

a) Antidepressants

Studies of the effectiveness of antidepressants on weight restoration are limited. In two studies (174, 175), the addition of fluoxetine to the nutritional and psychosocial treatment of hospitalized, malnourished patients with anorexia nervosa did not appear to provide any advantage with respect to either the amount or the speed of weight recovery. Attia et al. (174) conducted a randomized, placebo-controlled, double-blind study of fluoxetine at a target daily dose of 60 mg in 31 women with anorexia nervosa receiving treatment for their eating disorder on a clinical research unit. At 7 weeks, there were no significant differences in body weight or measures of eating behavior or psychological state between patients receiving fluoxetine and those receiving placebo. Similar results were reported in a 6-week open-label trial by Strober et al. (175), in which the response to fluoxetine in adolescents hospitalized for the treatment of anorexia nervosa was investigated. Patients were drawn from consecutive admissions to a specialty treatment service and received fluoxetine as an add-on to their multidisciplinary treatment regimen at 3 weeks to 1 month after intake. Analyses of global clinical severity ratings of eating behaviors and weight phobia failed to show any beneficial or detrimental effect of fluoxetine in the patients when compared with matched historical case-control subjects. An uncontrolled trial by Gwirtsman et al. (633) of six patients with chronic, refractory anorexia nervosa treated with fluoxetine reported positive results, including weight restoration. Overall, however, the little evidence that is available does not support the use of antidepressant medications for weight restoration in severely malnourished patients with anorexia nervosa who are being treated in well-structured hospital-based eating disorder programs.

After patients have gained weight and when the psychological effects of malnutrition are resolving, preliminary evidence suggests that SSRI antidepressants may be helpful with weight maintenance. In a double-blind, placebo-controlled trial by Kaye et al. (177), 35 patients with restricting-type anorexia nervosa were randomly assigned to receive fluoxetine (n = 16; average 40 mg/day) or placebo (n = 19) after they had gained weight in an inpatient hospital program and were discharged; they were then observed as outpatients for 1 year. The dropout rate from the trial was much higher in the placebo (84%) than in the fluoxetine (37%) group. Patients continuing to take fluoxetine for 1 year had a reduced rate of relapse, as determined by a significant increase in weight and a reduction in symptoms. They also showed a reduction in depression, anxiety, and obsessions and compulsions. However, these study results are problematic because some patients' weight had not been restored when the study started and the study design was complex, with many exceptions and multiple raters. In contrast, preliminary analysis of data from a 5-year two-site study funded by the National Institute of Mental Health on relapse prevention for anorexia nervosa involving 93 patients ages 16 years and older did not favor fluoxetine when CBT was administered (138). After weight restoration to at least 90% of ideal body weight, all patients received CBT and were also randomized to either fluoxetine 60 mg/day or placebo. The survival analysis showed no difference between those receiving CBT plus medication and those receiving CBT alone with respect to time to relapse (138).

In an open outpatient study by Bergh et al. (634), underweight adolescent patients with anorexia nervosa treated with psychotherapy plus citalopram did worse (losing several kilograms) than did patients treated with psychotherapy alone (losing about 0.2 kg during the period of observation). Another study by Fassino et al. (176) compared 52 adult female patients with anorexia nervosa, restricting type, who received citalopram (n = 26) or were assigned to a waiting-list control group (n = 26). The randomization method in this study was not clearly defined. After 13 patients dropped out, 19 and 20 patients remained in the citalopram and control groups, respectively. Although no differences were found in weight gain between the groups, after 3 months of treatment, those receiving citalopram showed modest advantages regarding symptoms of depression, obsessive-compulsive symptoms, impulsiveness, and trait anger, as assessed by rating scales.

Data on the efficacy of tricyclic antidepressants are even more limited. In a study by Halmi et al. (635), 72 patients with anorexia nervosa were randomly assigned to receive cyproheptadine hydrochloride, a weight-inducing drug; amitriptyline hydrochloride, a tricyclic antidepressant; or placebo, using a double-blind method. Lower-weight patients with the restricting subtype of anorexia who were receiving intensive inpatient treatment seemed to benefit more, albeit to a modest degree, from either amitriptyline or cyproheptadine, compared with patients who were receiving placebo. In another double-blind, controlled study by Lacey and Crisp (636) of 16 patients with anorexia nervosa, no significant beneficial effect was observed from adding clomipramine to the usual treatment (although dosages of only 50 mg/day were used).

b) Antipsychotics

Small open-label studies in adults suggest that low doses of second-generation antipsychotic medications such as olanzapine may improve weight gain and psychological indicators, but controlled studies are needed to confirm this. Barbarich et al. (190) reported that 17 hospitalized patients with anorexia nervosa given open-label treatment with olanzapine for up to 6 weeks had a significant reduction in depression, anxiety, and core eating disorder symptoms and a significant increase in weight. Malina et al. (191) retrospectively questioned 18 patients with anorexia nervosa about their response to open treatment with olanzapine; the patients reported a significant reduction in anxiety, difficulty eating, and core eating disorder symptoms after taking olanzapine. Powers et al. (192) reported that of 14 patients with anorexia nervosa who completed a 10-week open-label study of olanzapine at 10 mg/day in an outpatient setting, 10 gained an average of 8.75 pounds, with 3 of those attaining their healthy body weight, and 4 lost a mean of 2.25 pounds. The patients also received weekly drug monitoring sessions and weekly group medication adherence sessions in which psychoeducation was provided.

The second-generation antipsychotic quetiapine, examined in an open-label study, had only a small benefit in terms of weight gain but some benefit in eating disorders–related preoccupation and depression (195, 196, 637).

In an open trial, 13 severely ill outpatients with anorexia nervosa, restricting type received low-dose (1–2 mg) haloperidol in addition to standard treatment and were reported to benefit (significant weight gain and improved insight) (198). Another study suggested no significant benefit for pimozide (638).

Although these pilot studies of antipsychotic medications are promising and suggest that these medications may be useful during the weight restoration phase, no controlled studies have been reported. In addition, few of the available studies have included male patients, only limited numbers of adolescents have been studied, and only case reports are available regarding prepubertal children. Again, controlled studies are needed.

c) Other medications and somatic treatments

Few controlled studies have been published on the use of other psychotropic medications for the treatment of anorexia nervosa. In one study (639), the use of lithium carbonate resulted in no substantial benefit. Uncontrolled studies of other somatic treatments, including vitamins, hormone treatments, and ECT, have also demonstrated no specific benefit (199).

In addressing associated features of anorexia nervosa, other medications have been used with apparent benefit, although evidence for their effect is limited. For example, antianxiety agents have been used selectively before meals to reduce anticipatory anxiety concerning eating (200, 201).

Although supplemental estrogen-progestins, calcium, and vitamin D are often prescribed in routine practice in an effort to minimize or ameliorate osteopenia or osteoporosis (203), they have not been shown to meaningfully prevent or reverse skeletal deterioration. Rather, nutritional rehabilitation during the period of bone growth is the only practical intervention shown to potentially reverse bone loss (413, 502, 640). The only controlled trial to date that has examined the effects of estrogen administration on adult women with anorexia nervosa ($n=44$)

showed that estrogen-treated patients had no significant change in bone mass density compared with control patients (204). However, the six estrogen-treated patients whose initial body weight was <70% of their healthy weight had a 4.0% increase in mean bone density, whereas the 10 subjects of comparable body weight not treated with estrogen had a further 20.1% decrease in bone density. This finding suggests that hormone replacement therapy may help a subset of low-weight women with anorexia nervosa. At the same time, artificially inducing menses carries the risk of supporting or reinforcing a patient's denial that she does not need to gain weight.

Experimental approaches to bone revitalization using recombinant human insulin-like growth factor, bone growth factors (641), and biphosphonates (642) have also been attempted, but these approaches cannot be recommended for routine practice. Studies concerning these agents and other investigative treatments are now under way.

B. TREATMENT OF BULIMIA NERVOSA

1. Psychosocial treatments

a) Individual psychotherapy

CBT specifically directed at the eating disorder symptoms and underlying cognitions in patients with bulimia nervosa is the psychosocial intervention that has been most intensively studied in adults and for which there is the most evidence of efficacy (209, 212, 643–654). Although there has been considerable variation in the way in which CBT has been implemented, several controlled trials used short-term, time-limited interventions, such as 20 individual psychotherapy sessions over 16 weeks, with two scheduled visits per week for the first 4 weeks (212, 643, 644, 653, 655–662). Significant decrements in binge eating, vomiting, and laxative abuse have been documented among some patients receiving CBT; however, the percentage of patients who achieve full abstinence from bingeing/purging behavior is variable and often includes only a small number of patients (212, 643, 646, 648–655, 663–668). Among studies with control arms, CBT has been shown to be superior to waiting list (663–665, 667), minimal intervention (668), nutritional counseling alone (652), or nondirective control (666) conditions. In most of the published CBT trials, significant improvements in either self-reported (665, 669) or clinician-rated (670) mood have been reported. To date, there are no published treatment trials of adolescents with bulimia nervosa, although two studies are nearing completion (unpublished study of U. Schmidt et al. in London and unpublished study of D. le Grange et al. in the United States). Case series concerning CBT treatment for adolescents with bulimia nervosa are now available or in press (671, 672).

In practice, many other types of individual psychotherapy are used in the treatment of bulimia nervosa, such as interpersonal, psychodynamically oriented, or psychoanalytic approaches. Clinical experience and naturalistic survey research suggest that these approaches can help in the treatment of the co-occurring mood, anxiety, personality, interpersonal, and trauma- or abuse-related disorders that frequently accompany bulimia nervosa (153, 673). Evidence for the efficacy of these treatments for bulimia nervosa comes mainly from case reports and case series. Some modes of therapy, including the interpersonal and psychodynamic approaches, have been studied in randomized trials as comparison treatments for CBT or in separate trials (212, 643, 645, 674). In general, these and other studies have shown IPT to be helpful as an acute treatment. However, one trial examined the efficacy of IPT in patients who did not respond to CBT and found a low response rate coupled with a high dropout rate (211).

Although the specific forms of focused psychodynamic psychotherapy that have been studied in direct comparison with CBT have generally not been as effective as CBT in short-term trials (656, 657), it must be understood that in these studies the therapists were proscribed from undertaking any discussion of the patients' symptoms in the 20 sessions of psychodynamic treatment they provided.

The behavioral technique of exposure (e.g., to bingeing foods) plus response prevention (e.g., inhibiting vomiting after eating) has also been considered as treatment for bulimia nervosa. However, data on the efficacy of this approach are conflicting, as studies have reported enhanced (675), not significantly altered (676), and reduced (655) responses to CBT when this type of behavioral therapy was used as an adjunct. On the basis of results from a large clinical trial, and given the trial's logistical complexity, exposure treatment does not appear to have additive benefits over a solid core of CBT (648, 649), a finding supported by a recent authoritative meta-analysis (651).

Few studies have directly compared the effectiveness of various types of individual psychotherapy in the treatment of bulimia nervosa. One study by Fairburn et al. (643) that compared CBT, IPT, and behavior therapy showed that all three treatments were effective in reducing binge eating symptoms by the end of treatment but that CBT was most effective in improving disturbed attitudes toward shape and weight and restrictive dieting . However, at long-term follow-up (mean of 5.8 years), the study found equal efficacy for IPT and CBT on eating variables, attitudes about shape and weight, and restrictive dieting (659), which suggests that the IPT patients had "caught up" in terms of benefits over time. A second multicenter study that compared CBT with IPT suggested that CBT worked more rapidly (653) and showed greater efficacy than IPT at the end of 20 weeks of treatment (212). However, at 1-year follow-up, no significant difference was noted between the two treatment groups (212).

Another trial reported the efficacy of dialectical behavior therapy (677), and an ongoing multicenter study (678) has reported similar findings. In a 6-week controlled study involving 50 patients assigned to guided affective imagery therapy or a control group, those receiving the active treatment showed substantially more improvement in binge eating and purging behaviors and eating disorder–related attitudes (679).

b) Group psychotherapy

Group psychotherapy approaches have also been used to treat bulimia nervosa. Many clinicians favor a combination of individual and group psychotherapy. Psychodynamic and cognitive-behavioral approaches may also be combined. Group therapy may help patients to more effectively deal with the shame surrounding their disease as well as provide additional peer-based feedback and support. A meta-analysis of 40 group treatment studies suggested moderate efficacy for group therapy, with those studies that provided 1-year follow-up data reporting that improvement was typically maintained (680). There is some evidence that group treatment programs that include dietary counseling and management as part of the program are more effective than those that do not (208) and that more frequent visits (e.g., sessions several times a week) throughout treatment (646) or early in treatment (644, 646) result in improved outcome.

A direct comparison of group and individual CBT failed to find evidence of substantially different outcomes, with patients in both treatments doing equally well at follow-up (681). However, in a meta-analysis, the data showed clear advantages of delivering CBT in an individual versus a group format (216).

c) Family and marital therapy

Family therapy has been reported to be helpful in the treatment of bulimia nervosa in a large case series of adults (682), but more systematic studies are not available. A systematic study of family therapy for adolescents with bulimia nervosa is currently under way (89), but no results have been reported yet.

Family therapy should be considered whenever possible, especially for adolescents who still live with their parents, older patients with ongoing conflicted interactions with parents, or patients with marital discord. For women with eating disorders who are mothers, parenting help and interventions aimed at assessing and, if necessary, aiding their children should be included (386–388).

d) Support groups/12-step programs

Some patients have found Overeaters Anonymous and similar groups to be helpful as adjuncts to initial treatments or for prevention of subsequent relapses (223, 683), but no data from short- or long-term outcome studies of these programs have been reported.

e) Self-help approaches

A growing body of literature has suggested that CBT can be administered successfully through self-help or guided self-help manuals, at times in association with pharmacotherapy (220, 222, 651, 684–689). A review of self-help treatments with or without guidance by a professional has recently been published (690). Although such techniques are not yet sufficiently developed to recommend their acceptance as a primary treatment strategy, developments in this area may prove of great importance in providing treatment to patients who otherwise might not have access to adequate care. Clinicians unfamiliar with the CBT approach may benefit from acquainting themselves with these CBT treatment manuals and obtaining specialized training in CBT to further help their bulimia nervosa patients (656, 691–696).

2. Medications

a) Antidepressants

Early observations that individuals with bulimia nervosa exhibit an elevated lifetime prevalence of mood disorders, together with an elevated prevalence of mood disorders in their first-degree relatives, prompted initial trials of antidepressants for the acute treatment of bulimia nervosa (233). In these trials, antidepressants appeared to be effective for bulimia nervosa regardless of whether or not the patient was clinically depressed. Subsequent randomized trials confirmed that nondepressed patients responded to these medications and that the baseline presence of depression was not a predictor of medication response (234, 235, 697, 698). Although wide variability exists across studies, reductions in binge eating and vomiting rates in the range of 50%–75% have been achieved with active medication (181, 224, 230, 241, 699–714).

Specific antidepressant agents that have demonstrated efficacy among patients with bulimia nervosa in double-blind, placebo-controlled studies include trazodone (708); tricyclic compounds such as imipramine (233, 236), desipramine (234, 237, 238, 240), and amitriptyline (for mood but not eating variables) (235); the SSRIs fluoxetine (224, 230, 698, 703) and sertraline (227) but not fluvoxamine (715); and several MAOIs, including phenelzine (697) and isocarboxazid (716) but not moclobemide (717). Treatment with bupropion was also efficacious (181), but its use is not recommended because of the association between bupropion treatment and seizures in purging bulimic patients. The results of one study (709) suggest that patients with atypical depression and bulimia nervosa may preferentially respond to phenelzine in comparison with imipramine. However, because MAOIs are potentially dangerous in patients with chaotic eating and purging habits, they should be used cautiously in bulimia nervosa patients.

Dosages of tricyclic and MAOI antidepressants for treating patients with bulimia nervosa parallel those used to treat patients with depression, although fluoxetine at dosages higher than those used for depression may be more effective for bulimic symptoms (e.g., 60–80 mg/day). The first multicenter fluoxetine study (230) demonstrated that 60 mg/day was clearly superior to 20 mg/day on most variables, and in a second study (224) all subjects receiving active medication started with 60 mg/day. A third trial used 60 mg/day as a maintenance therapy, but the dropout rate from the study was very high (226). The medication was surprisingly well tolerated at this dosage, and many clinicians initiate treatment for bulimia nervosa with fluoxetine at a higher dosage, titrating downward if necessary to manage side effects.

Three trials have examined the effectiveness of antidepressant maintenance therapy. One trial with fluvoxamine (701) demonstrated an attenuated relapse rate versus placebo in patients with bulimia nervosa who were on a maintenance regimen of the medication after leaving an inpa-

tient treatment program. However, in the continuation arm of a clinical trial with desipramine (240), 29% of the patients entering that phase experienced a relapse within 4 months. A 1-year maintenance trial using fluoxetine or placebo found evidence for a lower relapse rate on active drug, but the dropout rate was quite high in both treatment arms (226). An open-label trial found evidence that fluoxetine could be effective in adolescents (225).

Two studies have examined the efficacy of medication in patients who did not respond to IPT and/or CBT (211, 250). The results were somewhat inconsistent in that one study found medication to be quite useful, whereas the other found low rates of response and high dropout rates.

b) Other medications

A number of other medications have been used experimentally for bulimia nervosa without evidence of efficacy, including fenfluramine (700) and lithium carbonate (241). Fenfluramine has now been taken off the market because of links between its use (mainly in combination with phentermine) and cardiac valvular abnormalities. Lithium may occasionally be used concurrently for the treatment of co-occurring conditions. The opiate antagonist naltrexone has been studied in three randomized trials at dosages used for treating narcotic addiction and preventing relapse among alcohol-dependent patients (50–120 mg/day). The results consistently show that the medication is not superior to placebo in reducing bulimic symptoms (699, 704, 707). In a small double-blind, crossover study involving higher dosages (e.g., 200–300 mg/day), naltrexone did appear to have some efficacy. Further studies using these dosage ranges are needed. However, there have been mixed reports concerning the risk of hepatotoxicity with the use of high dosages of naltrexone (705, 706, 718).

Other agents that have been shown to be efficacious in treating bulimia nervosa symptoms in randomized trials are topiramate, an anti-epileptic agent (242, 243), and ondansetron, an antinausea drug that decreases afferent vagal neurotransmission through its action as a 5-HT_3 antagonist (719); however, odansetron requires multiple daily administrations and is quite expensive. In a randomized controlled trial, carbamazepine showed efficacy in only one patient, and that patient had a history of bipolar disorder (720).

3. Combinations of psychosocial and medication treatments

The relative efficacy of psychotherapy, medication, or both in the treatment of bulimia nervosa has been examined in six studies. In the first study (253), intensive group cognitive psychotherapy (45 hours of therapy over 10 weeks) was superior to imipramine alone in reducing binge eating/purging and depressive symptoms. Imipramine plus intensive group CBT did not improve the outcome on eating variables but did improve depression and anxiety variables. In the second study (254), patients in group CBT improved more than those receiving desipramine alone. Some advantage was also seen for combination therapy on some variables, such as dietary restraint. The results of the third study (255), which compared fluoxetine treatment, CBT, and combination therapy, favored CBT alone and suggested little benefit for combination therapy. These results, however, are difficult to interpret because of the high attrition rate (50% by the 1-month follow-up). In the fourth study (251), CBT was superior to supportive psychotherapy, and active medication (consisting of desipramine followed by fluoxetine if abstinence from binge eating and purging was not achieved) was superior to placebo in reducing eating disorder behaviors. The combination of CBT and active medication resulted in the highest abstinence rates. The use of sequential medication in this study addressed a limitation of earlier studies in that when one antidepressant fails, a clinician typically tries other agents that often result in better antidepressant efficacy than the first medication alone. In the fifth study (702), no advantage was found for the use of fluoxetine over placebo in an inpatient setting, although both groups improved significantly. In the sixth study (721), combination treatment with desipramine and CBT was terminated prematurely because of a high dropout rate. A recent review concluded that the combination treatment was superior on some variables (711).

In general, studies show the importance of achieving abstinence from binge eating and vomiting regardless of the interventions used in the treatment of bulimia nervosa, and they confirm that longer-term outcome is better when abstinence is achieved after short-term interventions (722).

C. TREATMENT OF BINGE EATING DISORDER

1. Nutritional rehabilitation and counseling: effect of diet programs on weight and binge eating symptoms

Some studies of treatments for binge eating disorder have prioritized weight loss as the primary goal, whereas others have prioritized cessation of binge eating. Both types of studies will be addressed below.

a) Weight loss

In patients with binge eating disorder, very-low-calorie diets alone have been associated with substantial initial weight losses, with >33% of these patients maintaining their weight loss 1 year after treatment (723–726). In some studies using low-calorie diets, either significant weight loss did not occur (727) or weight was partially regained during the first year (290, 728). The pattern of weight regain after initial weight loss is common in all general medical and psychological treatments for obesity and not only for obesity associated with binge eating disorder. In one study, the presence of subthreshold or full syndrome binge eating disorder at baseline did not appear to adversely affect weight loss in programs using behavioral weight control, a low-calorie diet, and aerobic and strength training (729). Likewise, in a study using telephone- and mail-based behavioral weight control for obesity, binge eating status at baseline was not associated with outcome (730). Treatments with psychotherapies that do not specifically address weight control, such as CBT, IPT, and dialectical behavior therapy, ordinarily do not yield significant weight reduction (see below), but adding exercise and 6-month biweekly maintenance to CBT may improve weight loss in patients with binge eating disorder (731).

b) Binge eating symptoms

Binge eating is substantially reduced in programs using very-low-calorie diets, but a small number of individuals may experience a reemergence of binge eating when regular meals are reintroduced (585, 723, 724, 726). Among individuals who do not manifest binge eating prior to treatment, behavioral weight control with a low-calorie diet does not appear to promote the emergence of binge eating (732). There is as yet little evidence regarding patient characteristics (e.g., age at onset of binge eating, magnitude and frequency of weight fluctuation) that predict differential response to programs that prioritize weight versus those that prioritize binge cessation.

2. Other psychosocial treatments: effects on binge eating disorder

CBT, behavior therapy, dialectical behavior therapy, and IPT have all been associated with binge frequency reduction rates of 67% or more and significant abstinence rates during active treatment (272, 276, 733–739). Deterioration during the follow-up period has been observed with all three forms of psychotherapy; however, in some cases, maintenance of change at 1-year follow-up has been substantial (271, 272, 731). Several studies have examined various treatments intended to augment standard CBT. The addition of exercise appears to augment both binge and weight reduction (731), whereas spouse involvement in treatment does not significantly improve outcome (88). One group reported promising effects on binge eating with a novel virtual reality modification of standard treatment (739, 740).

Nondiet approaches that focus on self-acceptance and healthy lifestyle rather than weight loss per se may reduce binge eating, depression, anxiety, bulimia, the drive for thinness, body dissatisfaction, total and LDL cholesterol, and systolic blood pressure while increasing moder-

ate physical activity levels (741, 742). One study failed to find a difference between dieting and nondieting approaches in reducing binge eating and weight. In an expected observation, however, even the dieting treatment did not yield significant weight loss in this study, calling into question the integrity of the treatments (742, 743).

Self-help programs using self-guided, professionally designed manuals have been effective in reducing the symptoms of binge eating disorder in the short run for some patients and may have long-term benefit (273–277). One recent study found that guided self-help CBT was superior to guided self-help behavioral weight loss treatment for binge remission (46% vs. 18%, respectively), although neither treatment produced significant weight loss (277).

3. Medications

A variety of SSRIs (citalopram, fluoxetine, fluvoxamine, and sertraline) (744–747) and tricyclic antidepressants (desipramine and imipramine) (699, 748) have been found to be associated with significantly greater decreases in binge frequency than placebo. Fluvoxamine was not superior to placebo in a controlled study, in part due to a high placebo response (749). A retrospective chart review study of the serotonin-norepinephrine reuptake inhibitor venlafaxine in obese patients with binge eating disorder reported beneficial effects on eating, weight, and mood (750). As is the case for bulimia nervosa, in most studies using SSRIs for binge eating disorder, the dosages used have been at or near the high end of the recommended dosage range. Where follow-up data were reported, it appears that patients tend to relapse after medication is discontinued (289, 748); however, most medication studies to date do not report follow-up data. For the most part, treatment with antidepressants has not been demonstrated to yield clinically significant weight loss in this population, although one study reported an estimated weight loss of 5.6 kg with sertraline treatment compared with 2.4 kg in the placebo group (747). It should be noted that the treatment of other psychiatric disorders (e.g., depression) with SSRIs has at times been associated with weight gain, particularly in the long term (751).

The appetite-suppressant medication sibutramine has also shown promise in the treatment of binge eating disorder. In a randomized controlled trial (284), sibutramine was shown to have significant beneficial effects on binge eating and weight loss, with remission rates of 40% and 27% in the sibutramine and placebo groups, respectively, and a weight decrease of 7.4 kg versus a weight increase of 1.4 kg in these groups, respectively. A laboratory feeding study reported that subjects with binge eating disorder treated with sibutramine versus placebo for 4 weeks in a crossover design consumed less in a laboratory binge meal and lost more weight (3.2 vs. 0.5 kg) after sibutramine than after placebo treatment (752). Although the appetite-suppressant medications fenfluramine and dexfenfluramine have also been found to significantly reduce binge frequency (289), their use has been associated with serious adverse events, including a 23-fold increase in the risk of developing primary pulmonary hypertension when used for >3 months (753). Studies have suggested that patients taking the combination of fenfluramine and phentermine may be at greater risk of heart valve deformation and pulmonary hypertension; as a result, fenfluramine has been withdrawn from the market (753–756).

Most recently, the anticonvulsants topiramate and zonisamide have been studied in patients with binge eating disorder. Two open studies, one a retrospective review of patients with affective disorders and co-occurring binge eating disorder (757) and the other an open-label prospective study (758), as well as one randomized, double-blind, placebo-controlled study (286), found topiramate to be effective for both binge suppression and weight loss. The latter study reported remission in 64% of the topiramate group versus 30% of the placebo group, with weight loss of 5.9 and 1.2 kg in the topiramate and placebo groups, respectively. A 1-year open-label extension of this study (287) found that these effects were largely maintained over the study period; however, only a small number of the patients (10 of 61) remained in the study for the full year, and adverse effects, including paresthesias, dry mouth, cognitive problems, headache, dizziness, somnolence, fatigue, and dyspepsia, led to discontinuation in about 33%

of patients. An open-label study of the anticonvulsant zonisamide (288) suggests that it may have similar effects, both in clinical response and in adverse events.

Finally, naltrexone has been associated with a decrease in binge frequency similar to that reported with antidepressant medications, although the response rate did not differ from that of placebo (699). This observation underscores the fact that high placebo response rates are found in many studies of binge eating disorder, so caution is required in evaluating the claims of effective treatments, particularly those using a waiting-list control condition (289, 699, 749).

4. Combined psychosocial and medication treatment strategies

In some studies, coadministration of medication with psychotherapy or dietary counseling has been found to be associated with significantly more weight loss than has psychotherapy or dietary counseling alone (290–292). A recent study found that in patients receiving guided self-help CBT for binge eating disorder, the addition of orlistat yielded significantly higher rates of binge remission after active treatment but not at 3-month follow-up and significantly greater weight loss both after treatment and at 3-month follow-up compared with placebo (295). However, other studies suggest that concomitant administration of SSRI antidepressants adds little benefit in binge reduction or weight loss for patients treated with CBT for binge eating disorder (293, 294, 759). One recent study in which subjects with binge eating disorder received individual CBT plus fluoxetine, individual CBT plus placebo, fluoxetine, or placebo found that individual CBT but not fluoxetine demonstrated efficacy for reducing binge eating but not weight (293). A similar study, in which subjects with binge eating disorder were randomized to receive the same four treatments as adjuncts to group behavioral treatment, found that adjunctive individual CBT, but not fluoxetine, resulted in significant additional binge reduction, whereas fluoxetine appeared to augment the reduction in depressive symptoms. Although neither adjunctive treatment contributed significantly to weight loss, the 54 subjects who achieved binge remission lost an average of 6.2 kg, whereas the 62 subjects who did not achieve remission gained 0.7 kg (294).

5. Treatment strategies for night eating syndrome

There are few available studies of treatments for night eating syndrome. One open-label study of sertraline at dosages of up to 200 mg/day for night eating syndrome found improvements in both the number of awakenings and the nocturnal ingestions, with full remission in 29% of subjects (302). A subsequent double-blind study of sertraline for night eating syndrome reported that in a group of 24 patients, 75% of those treated with sertraline versus 25% of those who received placebo were considered to have responded to the treatment. Response was sustained during the 6-month open-label follow-up period (760). A small case series of four patients, two with night eating syndrome and two with the related condition of nocturnal sleep-related eating disorder, reported that topiramate treatment was helpful (761). Abbreviated progressive muscle relaxation training may be useful in treating night eating syndrome (301). Finally, other treatments reported to be helpful in sleep-related eating disorder are carbidopa/L-dopa, bromocriptine, codeine, and clonazepam (762, 763).

PART C
FUTURE RESEARCH NEEDS

Future research needs for eating disorders have been described by various authors (6, 764, 765). With respect to interventions, studies are needed on the following:

1. Primary prevention programs are needed in schools and through the media. Studies are required to clarify the benefits versus potential risks of such programs.
2. Targeted prevention through screenings and risk-factor early intervention programs could be beneficial. Studies are needed to better delineate the value of working with children and adolescents regarded to be at greatest risk for developing eating disorders.
3. Improved evidence is needed regarding the choice of treatment setting, selection of specific treatments, and likely length and intensity of treatments to achieve optimal outcomes (immediate and long-term follow-up) based on clearly defined clinical indicators and a more precise delineation of the stages of these disorders.
4. Newer medications affecting hunger, satiety, and energy expenditure as well as commonly associated psychiatric symptoms and conditions need to be developed and tested.
5. Adequate methods for treating osteopenia, osteoporosis, and other long-term medical sequelae of anorexia nervosa are needed.
6. The development and testing of various individually administered and "bundled" individual and group psychotherapies, including CBT, IPT, psychodynamic therapy, psychoanalytic therapy, and family therapy, as well as nutritional therapies and other psychosocial therapies (creative arts, 12-step models, professional- or layperson-led support groups, and self-help groups for patients and families), would be helpful. For anorexia nervosa, specific treatments for younger patients, who are likely to be more treatment responsive, may differ from those for older, more chronically ill patients, given that other illness characteristics and treatment responses are likely to vary between these groups. Furthermore, given the difficulties of recruiting and retaining patients with anorexia nervosa into controlled treatment studies and high dropout rates, large multisite, adequately powered studies are required.
7. For bulimia nervosa, the field requires well-conducted studies that examine "transtheoretical" and other treatment approaches, particularly those involving psychodynamically informed therapies, and studies of longer-term results of psychotherapies. Better studies are needed for psychotherapeutically treating the clinically complex patients with multiple comorbid conditions often seen in practice.
8. For binge eating disorder found in combination with obesity, studies are needed of the optimal sequencing of treatments (i.e., whether the treatment of binge eating should precede or occur concurrently with weight control treatment) and the long-term benefits of treatment with respect to both the eating disorder and weight-related symptoms. Studies are also needed comparing traditional behavioral weight loss with nondiet approaches in obese patients with and without binge eating disorder and examining both behavioral and weight-related outcomes.
9. Development and testing of better treatments are required for night eating and nocturnal eating syndromes.
10. Further development and testing of professionally designed self-administered treatments by manuals and computer-based treatment programs would be useful.
11. Further development and testing of Web-, telephone-, and other distance-based therapies for eating disorders are needed.
12. Research into the modifications of treatment required by the presence of various co-occurring conditions would be beneficial.
13. The impact of commonly used "alternative" and "complementary" therapies on the course of illness should be investigated.
14. More data are needed from treatment outcome studies related to various systems or settings of care, including fee-for-service, HMO, and other managed care payment models; limitations of hospital or other intensive treatment resources due to managed care and other resource constraints; treatment in eating disorder specialty units versus general psychiatry treatment units; and impact of staff composition, professional background of

clinicians, system or setting characteristics, and roles of primary care versus mental health professionals in treating eating disorders.

15. Further delineation of proper education and training required for psychiatrists and other health care professionals to better treat patients with eating disorders and the development of specialized institution-based and distance-based training programs to disseminate training for the necessary clinical competencies are required.

In studying treatment outcomes and developing new approaches to treatment, it is important to have a clear understanding of the underlying causes and the factors that influence the course of eating disorders. Also, greater knowledge of eating disorder diagnoses and the epidemiology of these disorders will help in identifying subgroups of patients who may be more likely to respond to particular treatments. Areas of specific concern include the following:

1. **Diagnostic studies:** Further delineating and defining diagnostic categories for eating disorders, based on advances in pathophysiological classification, developmental sciences, personality disorders and relational (interpersonal) disorders, and cultural issues, all areas of focus for DSM-V. In this regard, many of the issues mentioned below are highly relevant.

2. **Risk factors:**
   a. Genetic and other biological risk factors that contribute to the risk for and nature of eating disorders. Careful and appropriate phenotyping is required for the genetic analysis of eating disorders. Specific behavioral features that may indicate a particular phenotype and that merit attention include perfectionism, obsessive symptoms associated with symmetry, and compulsions associated with ordering and hoarding, among others.
   b. Further clarification of risk factors, morbidity, course, and prognosis for the range of eating disorders, including anorexia nervosa, bulimia nervosa, binge eating disorder, night eating and nocturnal eating syndromes, and other syndromes now encompassed under EDNOS
   c. Gender-related, developmental, psychological, familial, social, and cultural risk factors that contribute to the appearance and course of specific eating disorders

3. **Biological correlates:**
   a. More neuroimaging studies to better delineate structure-function relations associated with predisposing vulnerabilities, nutritional changes associated with eating disorders, and changes resulting from specific treatments and in recovery
   b. Animal and human studies of regulatory mechanisms governing food ingestion versus energy expenditure
   c. Linkages between physiological and psychological processes of puberty and the onset of typical eating disorders
   d. Effects of exercise, including the role of extreme exercise, and food restriction in precipitating and maintaining eating disorders; conversely, the possible protective effect of contemporary women's athletics on girls' eating and weight attitudes

4. **Clinical studies:** The impact of various comorbid conditions (including mood, anxiety, substance use, obsessive-compulsive, and personality disorders; cognitive impairments; and other commonly encountered concurrent disorders) on course and treatment response
5. **Family studies:** Includes factors associated with the onset and maintenance of eating disorders and the impact of eating disorders on other family members

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American College of Physicians
American Group Psychotherapy Association
American Psychiatric Nurses Association
Association for Academic Psychiatry
Eating Disorders Research Society
National Association of Anorexia Nervosa and Associated Disorders
National Eating Disorders Association
National Institute of Mental Health
The Society for Adolescent Medicine

REFERENCES

The following coding system is used to indicate the nature of the supporting evidence in the summary recommendations and references:

[A] *Double-blind, randomized clinical trial.* A study of an intervention in which subjects are prospectively followed over time; there are treatment and control groups; subjects are randomly assigned to the two groups; both the subjects and the investigators are blind to the assignments.

[A–] *Randomized clinical trial.* Same as above but not double-blind.

[B] *Clinical trial.* A prospective study in which an intervention is made and the results of that intervention are tracked longitudinally; study does not meet standards for a randomized clinical trial.

[C] *Cohort or longitudinal study.* A study in which subjects are prospectively followed over time without any specific intervention.

[D] *Control study.* A study in which a group of patients and a group of control subjects are identified in the present and information about them is pursued retrospectively or backward in time.

[E] *Review with secondary data analysis.* A structured analytic review of existing data, e.g., a meta-analysis or a decision analysis.

[F] *Review.* A qualitative review and discussion of previously published literature without a quantitative synthesis of the data.

[G] *Other.* Textbooks, expert opinion, case reports, and other reports not included above.

1. National Institute for Clinical Excellence: Eating Disorders: Core Interventions in the Treatment and Management of Anorexia Nervosa, Bulimia Nervosa and Related Eating Disorders: Clinical Guideline 9. London, National Institute for Clinical Excellence, 2004. http://www.nice.org.uk/pdf/ cg009niceguidance.pdf [G]
2. Beumont P, Hay P, Beumont D, Birmingham L, Derham H, Jordan A, Kohn M, McDermott B, Marks P, Mitchell J, Paxton S, Surgenor L, Thornton C, Wakefield A, Weigall S: Australian and New Zealand clinical practice guidelines for the treatment of anorexia nervosa. Aust N Z J Psychiatry 2004; 38:659–670 [G]
3. Golden NH, Katzman DK, Kreipe RE, Stevens SL, Sawyer SM, Rees J, Nicholls D, Rome ES: Eating disorders in adolescents: position paper of the Society for Adolescent Medicine. J Adolesc Health 2003; 33:496–503 [G]
4. Pritchard BJ, Bergin JL, Wade TD: A case series evaluation of guided self-help for bulimia nervosa using a cognitive manual. Int J Eat Disord 2004; 36:144–156 [B]
5. Myers TC, Swan-Kremeier L, Wonderlich S, Lancaster K, Mitchell JE: The use of alternative delivery systems and new technologies in the treatment of patients with eating disorders. Int J Eat Disord 2004; 36:123–143 [F]
6. Yager J: Future directions in the management of eating disorders, in Clinical Handbook of Eating Disorders: An Integrated Approach. Edited by Brewerton TD. New York, Marcel Dekker, 2004, pp 547–568 [G]
7. McIntosh VV, Jordan J, Carter FA, Luty SE, McKenzie JM, Bulik CM, Framptom CMA, Joyce PR: Three psychotherapies for anorexia nervosa: a randomized controlled trial. Am J Psychiatry 2005; 162:741–747 [A–]
8. Song S: Starvation on the Web. Time, Jul 18, 2005, p 57 [G]
9. Wilson JL, Peebles R: Hardy KK, Mulvihill LC, Kretzschmar AY, Litt I: Pro-eating disorder website usage and health outcomes in an eating disordered population. Poster presented at the annual meeting of the Pediatric Academic Societies, Washington, DC, May 14–17, 2005 [G]

10. Yager J: Clinical computing: monitoring patients with eating disorders by using e-mail as an adjunct to clinical activities. Psychiatr Serv 2003; 54:1586–1588 [G]
11. Serpell L, Treasure J, Teasdale J, Sullivan V: Anorexia nervosa: friend or foe? Int J Eat Disord 1999; 25:177–186 [G]
12. Serpell L, Treasure J: Bulimia nervosa: friend or foe? the pros and cons of bulimia nervosa. Int J Eat Disord 2002; 32:164–170 [G]
13. Kaplan AS, Garfinkel PE: Difficulties in treating patients with eating disorders: a review of patient and clinician variables. Can J Psychiatry 1999; 44:665–670 [G]
14. Feld R, Woodside DB, Kaplan AS, Olmsted MP, Carter JC: Pretreatment motivational enhancement therapy for eating disorders: a pilot study. Int J Eat Disord 2001; 29:393–400 [B]
15. Treasure J, Bauer B: Assessment and motivation, in Handbook of Eating Disorders. Edited by Treasure J, Schmidt U, van Furth E. West Sussex, UK, Wiley, 2003, pp 219–232 [G]
16. Geller J, Williams K, Srikameswaran S: Clinician stance in the treatment of chronic eating disorders. Eur Eating Disorders Rev 2001; 9:1–9 [G]
17. Vitousek K, Watson S, Wilson GT: Enhancing motivation for change in treatment-resistant eating disorders. Clin Psychol Rev 1998; 18:391–420 [G]
18. Vitousek K, Gray J: Eating disorders, in Oxford Textbook of Psychotherapy. Edited by Gabbard GO, Beck UJS, Holmes J. Oxford, UK, Oxford University Press, 2005, pp 177–202 [G]
19. Strober M, Freeman R, Morrell W: The long-term course of severe anorexia nervosa in adolescents: survival analysis of recovery, relapse, and outcome predictors over 10–15 years in a prospective study. Int J Eat Disord 1997; 22:339–360 [C]
20. Rome ES: Eating disorders. Obstet Gynecol Clin North Am 2003; 30:353–377, vii [G]
21. Kreipe RE, Yussman SM: The role of the primary care practitioner in the treatment of eating disorders. Adolesc Med 2003; 14:133–147 [G]
22. Fisher M, Golden NH, Katzman DK, Kreipe RE, Rees J, Schebendach J, Sigman G, Ammerman S, Hoberman HM: Eating disorders in adolescents: a background paper. J Adolesc Health 1995; 16:420–437 [F]
23. Kaplan AS: Medical and nutritional assessment, in Medical Issues and the Eating Disorders: The Interface. Edited by Kaplan AS, Garfinkel PE. New York, Brunner/Mazel, 1993, pp 1–16 [G]
24. Watson TL, Andersen AE: A critical examination of the amenorrhea and weight criteria for diagnosing anorexia nervosa. Acta Psychiatr Scand 2003; 108:175–182 [D]
25. Garfinkel PE, Lin E, Goering P, Spegg C, Goldbloom D, Kennedy S, Kaplan AS, Woodside DB: Should amenorrhoea be necessary for the diagnosis of anorexia nervosa? evidence from a Canadian community sample. Br J Psychiatry 1996; 168:500–506 [G]
26. Fairburn CG, Cooper Z: The Eating Disorder Examination (12th Edition), in Binge Eating: Nature, Assessment and Treatment. Edited by Fairburn CG, Wilson GT. New York, Guilford, 1993, pp 317–360 [G]
27. Mazure CM, Halmi KA, Sunday SR, Romano SJ, Einhorn AM: The Yale-Brown-Cornell Eating Disorder Scale: development, use, reliability and validity. J Psychiatr Res 1994; 28:425–445 [G]
28. Sunday SR, Halmi KA, Einhorn A: The Yale-Brown-Cornell Eating Disorder Scale: a new scale to assess eating disorder symptomatology. Int J Eat Disord 1995; 18:237–245 [G]
29. Johnson C: Diagnostic Survey for Eating Disorders (DSED), in The Etiology and Treatment of Bulimia Nervosa: A Biopsychosocial Perspective. Edited by Johnson C, Connors M. New York, Basic Books, 1987, pp 174–194 [G]
30. Thelen MH, Mintz LB, Vander Wal JS: The Bulimia Test, Revised: validation with DSM-IV criteria for bulimia nervosa. Psychol Assess 1996; 8:219–221 [G]
31. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE: The Eating Attitudes Test: psychometric features and clinical correlates. Psychol Med 1982; 12:871–878 [G]

32. Garner DM: Psychoeducational principles in treatment, in Handbook of Treatment for Eating Disorders, 2nd ed. Edited by Garner DM, Garfinkel PE. New York, Guilford, 1997, pp 145–177 [G]
33. Fairburn CG, Beglin SJ: Assessment of eating disorders: interview or self-report questionnaire? Int J Eat Disord 1994; 16:363–370 [G]
34. Garner DM, Olmstead MJ, Polivy J: Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. Int J Eat Disord 1983; 2:15–34 [G]
35. Garner DM: The Eating Disorders Inventory–2: Professional Manual. Odessa, FL, Psychological Assessment Resources, 1991 [G]
36. Garner DM: The Eating Disorders Inventory–2 (EDI-2), in Outcomes Assessments in Clinical Practice. Edited by Sederer LI, Dicky B. Baltimore, Williams & Wilkins, 1996, pp 92–96 [G]
37. Mitchell JE, Hatsukami D, Eckert E, Pyle RL: The Eating Disorders Questionnaire. Psychopharmacol Bull 1985; 21:1025–1043 [G]
38. Yanovski SZ: Binge eating disorder: current knowledge and future directions. Obes Res 1993; 1:306–320 [F]
39. Nangle DW, Johnson WG, Carr-Nangle RE, Engler LB: Binge eating disorder and the proposed DSM-IV criteria: psychometric analysis of the Questionnaire on Eating and Weight Patterns. Int J Eat Disord 1994; 16:147–157 [G]
40. Birmingham CL, Beumont PJV: Medical Management of Eating Disorders: A Practical Handbook for Healthcare Professionals. Cambridge, UK, Cambridge University Press, 2004 [G]
41. Mehler PS, Andersen AE: Eating Disorders: A Guide to Medical Care and Complications. Baltimore, Johns Hopkins University Press, 1999 [G]
42. Powers PS, Bannon YS: Medical comorbidity of anorexia nervosa, bulimia nervosa, and binge eating disorder, in Clinical Handbook of Eating Disorders: An Integrated Approach. Edited by Brewerton TD. New York, Marcel Dekker, 2004, pp 231–256 [G]
43. Miller KK, Grinspoon SK, Ciampa J, Hier J, Herzog D, Klibanski A: Medical findings in outpatients with anorexia nervosa. Arch Intern Med 2005; 165:561–566 [G]
44. Faine MP: Recognition and management of eating disorders in the dental office. Dent Clin North Am 2003; 47:395–410 [F]
45. Powers PS: Initial assessment and early treatment options for anorexia nervosa and bulimia nervosa. Psychiatr Clin North Am 1996; 19:639–655 [F]
46. Hebebrand J, Himmelmann GW, Heseker H, Schafer H, Remschmidt H: Use of percentiles for the body mass index in anorexia nervosa: diagnostic, epidemiological, and therapeutic considerations. Int J Eat Disord 1996; 19:359–369 [D]
47. Yates A, Edman J, Aruguete M: Ethnic differences in BMI and body/self-dissatisfaction among whites, Asian subgroups, Pacific Islanders, and African-Americans. J Adolesc Health 2004; 34:300–307 [G]
48. Lear SA, Toma M, Birmingham CL, Frohlich JJ: Modification of the relationship between simple anthropometric indices and risk factors by ethnic background. Metabolism 2003; 52:1295–1301 [C]
49. Yeung LP, Wong AC, Wang X, Birmingham CL, Lewicka S, Chanoine JP: Different relationship between anthropometric markers and umbilical cord plasma leptin in Asian and Caucasian neonates. Pediatr Res 2003; 53:1019–1024 [G]
50. Lear SA, Chen MM, Frohlich JJ, Birmingham CL: The relationship between waist circumference and metabolic risk factors: cohorts of European and Chinese descent. Metabolism 2002; 51:1427–1432 [D]
51. Chanoine JP, Yeung LP, Wong AC, Birmingham CL: Immunoreactive ghrelin in human cord blood: relation to anthropometry, leptin, and growth hormone. J Pediatr Gastroenterol Nutr 2002; 35:282–286 [G]

52. Birmingham CL: Book review: Report of the Task Force on the Treatment of Obesity. Health Services and Promotion Branch, Department of National Health and Welfare, Ottawa. Can Med Assoc J 1992; 146:1389 [G]
53. Mehler PS: Diagnosis and care of patients with anorexia nervosa in primary care settings. Ann Intern Med 2001; 134:1048–1059 [G]
54. Cooke RA, Chambers JB, Singh R, Todd GJ, Smeeton NC, Treasure J, Treasure T: QT interval in anorexia nervosa. Br Heart J 1994; 72:69–73 [C]
55. Mont L, Castro J, Herreros B, Pare C, Azqueta M, Magrina J, Puig J, Toro J, Brugada J: Reversibility of cardiac abnormalities in adolescents with anorexia nervosa after weight recovery. J Am Acad Child Adolesc Psychiatry 2003; 42:808–813 [C]
56. Franzoni F, Mataloni E, Femia R, Galetta F: Effect of oral potassium supplementation on QT dispersion in anorexia nervosa. Acta Paediatr 2002; 91:653–656 [A]
57. Powers PS, Schocken DD, Feld J, Holloway JD, Boyd FR: Cardiac function during weight restoration in anorexia nervosa. Int J Eat Disord 1991; 10:521 [C]
58. Frolich J, von Gontard A, Lehmkuhl G, Pfeiffer E, Lehmkuhl U: Pericardial effusions in anorexia nervosa. Eur Child Adolesc Psychiatry 2001; 10:54–57 [G]
59. Prousky JE: Pellagra may be a rare secondary complication of anorexia nervosa: a systematic review of the literature. Altern Med Rev 2003; 8:180–185 [F]
60. Winston AP, Jamieson CP, Madira W, Gatward NM, Palmer RL: Prevalence of thiamin deficiency in anorexia nervosa. Int J Eat Disord 2000; 28:451–454 [D]
61. Waldholtz BD: Gastrointestinal complaints and function in patients with eating disorders, in Eating Disorders: A Guide to Medical Care and Complications. Edited by Mehler PS, Andersen AE. Baltimore, Johns Hopkins University Press, 1999, pp 86–99 [G]
62. Brown RF, Bartrop R, Beumont P, Birmingham CL: Bacterial infections in anorexia nervosa: delayed recognition increases complications. Int J Eat Disord 2005; 37:261–265 [D]
63. Strumia R: Dermatologic signs in patients with eating disorders. Am J Clin Dermatol 2005; 6:165–173 [G]
64. Glorio R, Allevato M, De Pablo A, Abbruzzese M, Carmona L, Savarin M, Ibarra M, Busso C, Mordoh A, Llopis C, Haas R, Bello M, Woscoff A: Prevalence of cutaneous manifestations in 200 patients with eating disorders. Int J Dermatol 2000; 39:348–353 [C]
65. Birmingham CL, Tan AO: Respiratory muscle weakness and anorexia nervosa. Int J Eat Disord 2003; 33:230–233 [G]
66. Frank GK, Kaye WH, Greer P, Meltzer CC, Price JC: Regional cerebral blood flow after recovery from bulimia nervosa. Psychiatry Res 2000; 100:31–39 [D]
67. Doraiswamy PM, Krishnan KR, Figiel GS, Husain MM, Boyko OB, Rockwell WJ, Ellinwood EH Jr: A brain magnetic resonance imaging study of pituitary gland morphology in anorexia nervosa and bulimia. Biol Psychiatry 1990; 28:110–116 [D]
68. Hoffman GW, Ellinwood EH Jr, Rockwell WJ, Herfkens RJ, Nishita JK, Guthrie LF: Brain T1 measured by magnetic resonance imaging in bulimia. Biol Psychiatry 1990; 27:116–119 [G]
69. Hoffman GW, Ellinwood EH Jr, Rockwell WJ, Herfkens RJ, Nishita JK, Guthrie LF: Cerebral atrophy in bulimia. Biol Psychiatry 1989; 25:894–902 [G]
70. Andersen AE, Woodward PJ, LaFrance N: Bone mineral density of eating disorder subgroups. Int J Eat Disord 1995; 18:335–342 [D]
71. Nova E, Lopez-Vidriero I, Varela P, Toro O, Casas JJ, Marcos AA: Indicators of nutritional status in restricting-type anorexia nervosa patients: a 1-year follow-up study. Clin Nutr 2004; 23:1353–1359 [C]
72. Wyatt RJ, Farrell M, Berry PL, Forristal J, Maloney MJ, West CD: Reduced alternative complement pathway control protein levels in anorexia nervosa: response to parenteral alimentation. Am J Clin Nutr 1982; 35:973–980 [C]
73. Birmingham CL, Puddicombe D, Hlynsky J: Hypomagnesemia during refeeding in anorexia nervosa. Eat Weight Disord 2004; 9:236–237 [C]

74. Birmingham CL, Alothman AF, Goldner EM: Anorexia nervosa: refeeding and hypophosphatemia. Int J Eat Disord 1996; 20:211–213 [G]
75. Boag F, Weerakoon J, Ginsburg J, Havard CW, Dandona P: Diminished creatinine clearance in anorexia nervosa: reversal with weight gain. J Clin Pathol 1985; 38:60–63 [C]
76. Duncan A, Phillips IJ: Evaluation of thin-layer chromatography methods for laxative detection. Ann Clin Biochem 2001; 38:64–66 [G]
77. Turner J, Batik M, Palmer LJ, Forbes D, McDermott BM: Detection and importance of laxative use in adolescents with anorexia nervosa. J Am Acad Child Adolesc Psychiatry 2000; 39:378–385 [G]
78. Wildman P, Lilenfeld LR, Marcus MD: Axis I comorbidity onset and parasuicide in women with eating disorders. Int J Eat Disord 2004; 35:190–197 [D]
79. Casper RC, Hedeker D, McClough JF: Personality dimensions in eating disorders and their relevance for subtyping. J Am Acad Child Adolesc Psychiatry 1992; 31:830–840 [D]
80. Hudson JI, Hudson RA, Pope HG Jr: Psychiatric comorbidity and eating disorders, in AED Review of Eating Disorders, Part 1. Edited by Wonderlich S, Mitchell J, de Zwann M, Steiger H. Oxford, UK, Radcliffe, 2005 [G]
81. Thompson-Brenner H, Westen D: A naturalistic study of psychotherapy for bulimia nervosa, part 1: comorbidity and treatment outcomes. J Nerv Ment Dis 2005; 193:573–584 [G]
82. Kaye WH, Bulik CM, Thornton L, Barbarich N, Masters K: Comorbidity of anxiety disorders with anorexia and bulimia nervosa. Am J Psychiatry 2004; 161:2215–2221 [C]
83. Levitt JL, Sansone RA, Cohn L: Self-Harm Behavior and Eating Disorders: Dynamics, Assessment and Treatment. New York, Brunner-Routledge, 2004 [G]
84. American Psychiatric Association: Practice guideline for the assessment and treatment of patients with suicidal behaviors. Am J Psychiatry 2003; 160(11 suppl):1–60 [G]
85. Dare C, Eisler I, Russell G, Treasure J, Dodge L: Psychological therapies for adults with anorexia nervosa: randomised controlled trial of out-patient treatments. Br J Psychiatry 2001; 178:216–221 [A–]
86. Eisler I, Dare C, Hodes M, Russell G, Dodge E, Le GD: Family therapy for adolescent anorexia nervosa: the results of a controlled comparison of two family interventions. J Child Psychol Psychiatry 2000; 41:727–736 [A–]
87. Lock J: Treating adolescents with eating disorders in the family context: empirical and theoretical considerations. Child Adolesc Psychiatr Clin N Am 2002; 11:331–342 [G]
88. Gorin AA, Le GD, Stone AA: Effectiveness of spouse involvement in cognitive behavioral therapy for binge eating disorder. Int J Eat Disord 2003; 33:421–433 [A–]
89. le Grange D, Lock J, Dymek M: Family-based therapy for adolescents with bulimia nervosa. Am J Psychother 2003; 57:237–251 [G]
89a. Minuchin S, Rosman BL, Baker L: Psychosomatic Families: Anorexia Nervosa in Context. Cambridge, MA, Harvard University Press, 1978 [G]
90. Michel DM, Willard SG: An overview of family evaluation and therapy for anorexia nervosa, bulimia nervosa, and binge eating disorder, in Clinical Handbook of Eating Disorders: An Integrated Approach. Edited by Brewerton TD. New York, Marcel Dekker, 2004, pp 425–448 [G]
91. Bussolotti D, Fernandez-Aranda F, Solano R, Jimenez-Murcia S, Turon V, Vallejo J: Marital status and eating disorders: an analysis of its relevance. J Psychosom Res 2002; 53:1139–1145 [C]
92. Lock J, Le Grande D, Agras WS, Dare C: Treatment Manual for Anorexia Nervosa: A Family Based Approach. New York, Guilford, 2002 [G]
93. le Grange D, Binford R, Loeb KL: Manualized family-based treatment for anorexia nervosa: a case series. J Am Acad Child Adolesc Psychiatry 2005; 44:41–46 [G]
94. Golden NH, Jacobson MS, Schebendach J, Solanto MV, Hertz SM, Shenker IR: Resumption of menses in anorexia nervosa. Arch Pediatr Adolesc Med 1997; 151:16–21 [C]

95. Frisch RE, McArthur JW: Difference between postpartum and nutritional amenorrhea. Science 1979; 203:921–923 [F]
96. Frisch RE, McArthur JW: Menstrual cycles: fatness as a determinant of minimum weight for height necessary for their maintenance or onset. Science 1974; 185:949–951 [F]
97. Katzman DK, Zipursky RB: Adolescents with anorexia nervosa: the impact of the disorder on bones and brains. Ann N Y Acad Sci 1997; 817:127–137 [F]
98. Katzman DK, Zipursky RB, Lambe EK, Mikulis DJ: A longitudinal magnetic resonance imaging study of brain changes in adolescents with anorexia nervosa. Arch Pediatr Adolesc Med 1997; 151:793–797 [C]
99. Lambe EK, Katzman DK, Mikulis DJ, Kennedy SH, Zipursky RB: Cerebral gray matter volume deficits after weight recovery from anorexia nervosa. Arch Gen Psychiatry 1997; 54:537–542 [C]
100. La Via M, Kaye WH, Andersen A, Bowers W, Brandt HA, Brewerton TD, Costin C, Hill L, Lilenfeld L, McGilley B, Powers PS, Pryor T, Yager J, Zucker ML: Anorexia nervosa: criteria for levels of care. Paper presented at the annual meeting of the Eating Disorders Research Society, Cambridge, Mass, November 5–7, 1998 [G]
101. Olmsted MP, Kaplan AS, Rockert W: Relative efficacy of a 4-day versus a 5-day day hospital program. Int J Eat Disord 2003; 34:441–449 [C]
102. Appelbaum PS, Rumpf T: Civil commitment of the anorexic patient. Gen Hosp Psychiatry 1998; 20:225–230 [G]
103. Watson TL, Bowers WA, Andersen AE: Involuntary treatment of eating disorders. Am J Psychiatry 2000; 157:1806–1810 [D]
104. Maxmen JS, Siberfarb PM, Ferrell RB: Anorexia nervosa: practical initial management in a general hospital. JAMA 1974; 229:801–803 [G]
105. Palmer RL, Treasure J: Providing specialised services for anorexia nervosa. Br J Psychiatry 1999; 175:306–309 [D]
106. Kaye WH, Kaplan AS, Zucker ML: Treating eating-disorder patients in a managed care environment: contemporary American issues and Canadian response. Psychiatr Clin North Am 1996; 19:793–810 [F]
107. Kaplan AS, Olmsted MP: Partial hospitalization, in Handbook of Treatment for Eating Disorders, 2nd ed. Edited by Garner DM, Garfinkel PE. New York, Guilford, 1997, pp 354–360 [G]
108. Andersen AE: Practical Comprehensive Treatment of Anorexia Nervosa and Bulimia. Baltimore, Johns Hopkins University Press, 1985 [G]
109. Owen W, Halmi KA: Medical evaluation and management of anorexia nervosa, in Treatment of Psychiatric Disorders: A Task Force Report of the American Psychiatric Association, vol. 1. Washington, DC, American Psychiatric Association, 1989, pp 517–519 [G]
110. Golden NH, Meyer W: Nutritional rehabilitation of anorexia nervosa: goals and dangers. Int J Adolesc Med Health 2004; 16:131–144 [F]
111. Kaye WH, Gwirtsman HE, Obarzanek E, George DT: Relative importance of calorie intake needed to gain weight and level of physical activity in anorexia nervosa. Am J Clin Nutr 1988; 47:989–994 [C]
112. Reiff DW, Reiff KKL: Set Point in Eating Disorders: Nutrition Therapy in the Recovery Process. Gaithersburg, MD, Aspen, 1992 [G]
113. Guarda AS, Heinberg LJ: Effective weight gain in step down partial hospitalization program for eating disorders. Paper presented at the annual meeting of the Academy for Eating Disorders, San Diego, June 11–12, 1999 [G]
114. Okamoto A, Yamashita T, Nagoshi Y, Masui Y, Wada Y, Kashima A, Arii I, Nakamura M, Fukui K: A behavior therapy program combined with liquid nutrition designed for anorexia nervosa. Psychiatry Clin Neurosci 2002; 56:515–520 [A]

115. Piran N, Kaplan AS: A Day Hospital Group Treatment Program for Anorexia Nervosa and Bulimia Nervosa. Brunner/Mazel Eating Disorders Monograph Series, No. 3. New York, Brunner-Routledge, 1990 [G]
116. Hsu LK: Eating Disorders. New York, Guilford Press, 1990 [G]
117. Miller SP, Redlich AD, Steiner H: The stress response in anorexia nervosa. Child Psychiatry Hum Dev 2003; 33:295–306 [D]
118. Kohn MR, Golden NH, Shenker IR: Cardiac arrest and delirium: presentations of the refeeding syndrome in severely malnourished adolescents with anorexia nervosa. J Adolesc Health 1998; 22:239–243 [G]
119. Solomon SM, Kirby DF: The refeeding syndrome: a review. JPEN J Parenter Enteral Nutr 1990; 14:90–97 [F]
120. Ornstein RM, Golden NH, Jacobson MS, Shenker IR: Hypophosphatemia during nutritional rehabilitation in anorexia nervosa: implications for refeeding and monitoring. J Adolesc Health 2003; 32:83–88 [G]
121. Robb AS, Silber TJ, Orrell-Valente JK, Valadez-Meltzer A, Ellis N, Dadson MJ, Chatoor I: Supplemental nocturnal nasogastric refeeding for better short-term outcome in hospitalized adolescent girls with anorexia nervosa. Am J Psychiatry 2002; 159:1347–1353 [B]
122. Beumont P, Carney T: Can psychiatric terminology be translated into legal regulation? the anorexia nervosa example. Aust N Z J Psychiatry 2004; 38:819–829 [G]
123. Russell GF: Involuntary treatment in anorexia nervosa. Psychiatr Clin North Am 2001; 24:337–349 [G]
124. Goldner E: Treatment refusal in anorexia nervosa. Int J Eat Disord 1989; 8:297–306 [F]
125. Strober M: Managing the chronic, treatment-resistant patient with anorexia nervosa. Int J Eat Disord 2004; 36:245–255 [G]
126. Robin AL, Siegel PT, Moye AW, Gilroy M, Dennis AB, Sikand A: A controlled comparison of family versus individual therapy for adolescents with anorexia nervosa. J Am Acad Child Adolesc Psychiatry 1999; 38:1482–1489 [A–]
127. Danziger Y, Carel CA, Tyano S, Mimouni M: Is psychotherapy mandatory during the acute refeeding period in the treatment of anorexia nervosa? J Adolesc Health Care 1989; 10:328–331 [B]
128. McDermott C, Agras WS, Crow SJ, Halmi K, Mitchell JE, Bryson S: Participant recruitment for an anorexia nervosa treatment study. Int J Eat Disord 2004; 35:33–41 [G]
129. Lock J, Agras WS, Bryson S, Kraemer HC: A comparison of short- and long-term family therapy for adolescent anorexia nervosa. J Am Acad Child Adolesc Psychiatry 2005; 44:632–639 [A–]
130. Geist R, Heinmaa M, Stephens D, Davis R, Katzman DK: Comparison of family therapy and family group psychoeducation in adolescents with anorexia nervosa. Can J Psychiatry 2000; 45:173–178 [A–]
131. Fennig S, Fennig S, Roe D: Physical recovery in anorexia nervosa: is this the sole purpose of a child and adolescent medical-psychiatric unit? Gen Hosp Psychiatry 2002; 24:87–92 [G]
132. Lowe B, Zipfel S, Buchholz C, Dupont Y, Reas DL, Herzog W: Long-term outcome of anorexia nervosa in a prospective 21-year follow-up study. Psychol Med 2001; 31:881–890 [C]
133. Steinhausen HC, Seidel R, Winkler MC: Evaluation of treatment and intermediate and long-term outcome of adolescent eating disorders. Psychol Med 2000; 30:1089–1098 [C]
134. Fassino S, Piero A, Levi M, Gramaglia C, Amianto F, Leombruni P, Abbate DG: Psychological treatment of eating disorders: a review of the literature. Panminerva Med 2004; 46:189–198 [F]
135. Gowers S, Bryant-Waugh R: Management of child and adolescent eating disorders: the current evidence base and future directions. J Child Psychol Psychiatry 2004; 45:63–83 [F]
136. Pike KM, Walsh BT, Vitousek K, Wilson GT, Bauer J: Cognitive behavior therapy in the posthospitalization treatment of anorexia nervosa. Am J Psychiatry 2003; 160:2046–2049 [A–]

137. Fernandez-Aranda F, Bel M, Jimenez S, Vinuales M, Turon J, Vallejo J: Outpatient group therapy for anorexia nervosa: a preliminary study. Eat Weight Disord 1998; 3:1–6 [B]
138. Walsh BT, Kaplan AS, Attia E, Carter J, Devlin MJ, Olmsted M, Pike KM, Woodside B, Parides M: Fluoxetine vs placebo to prevent relapse in anorexia nervosa: primary outcome of drug on time to relapse in 93 weight restored subjects. Paper presented at the 11th annual meeting of the Eating Disorders Research Society, Toronto, Canada, September 29–October 1, 2005 [A]
139. Garner DM: Individual psychotherapy for anorexia nervosa. J Psychiatr Res 1985; 19:423–433 [F]
140. Hall A, Crisp AH: Brief psychotherapy in the treatment of anorexia nervosa: outcome at one year. Br J Psychiatry 1987; 151:185–191 [A–]
141. Zerbe KJ: The Body Betrayed: Women, Eating Disorders, and Treatment. Washington, DC, American Psychiatric Press, 1993 [G]
142. Zerbe KJ: Whose body is it anyway? understanding and treating psychosomatic aspects of eating disorders. Bull Menninger Clin 1993; 57:161–177 [F]
143. Schwartz HJ: Bulimia: Psychoanalytic Treatment and Theory. Madison, CT, International Universities Press, 1990 [G]
144. Zerbe KJ, Marsh SR, Coyne L: Comorbidity in an inpatient eating disordered population: clinical characteristics and treatment implications. Psychiatr Hosp 1993; 24:3–8 [D]
145. Wilson CP, Mintz IL (eds): Psychosomatic Symptoms: Psychoanalytic Treatment of the Underlying Personality Disorder. Northvale, NJ, Jason Aronson, 1989 [F]
146. Brody S: The Development of Anorexia Nervosa: The Hunger Artists. Madison, CT, International Universities Press, 2002 [F]
147. Bloom C, Gitter A, Gutwill S: Eating Problems: A Feminist Psychoanalytic Treatment Model. New York, Basic Books, 1994 [G]
148. Dare C, Crowther C: Living dangerously: psychoanalytic psychotherapy of anorexia nervosa, in Handbook of Eating Disorders: Theory, Treatment, and Research. Edited by Szmukler G, Dare C, Treasure J. London, Wiley, 1995, pp 293–308 [G]
149. Bruch H, Czyewski DSM: Conversations With Anorexics. New York, Basic Books, 1988 [G]
150. Crisp AH: Anorexia: Let Me Be. East Sussex, UK, Lawrence Erlbaum Associates, 1995 [G]
151. Reindl SM: Sensing the Self: Women's Recovery From Bulimia. Cambridge, MA, Harvard University Press, 2001 [F]
152. Steiner H: Defense styles in eating disorders. Int J Eat Disord 1990; 9:141–151 [D]
153. Thompson-Brenner H, Westen D: A naturalistic study of psychotherapy for bulimia nervosa, part 2: therapeutic interventions and outcome in the community. J Nerv Ment Dis 2005; 193:585–595 [G]
154. Russell GF, Szmukler GI, Dare C, Eisler I: An evaluation of family therapy in anorexia nervosa and bulimia nervosa. Arch Gen Psychiatry 1987; 44:1047–1056 [A]
155. Eisler I, Dare C, Russell GF, Szmukler G, le Grange D, Dodge E: Family and individual therapy in anorexia nervosa: a 5-year follow-up. Arch Gen Psychiatry 1997; 54:1025–1030 [B]
156. Zerbe KJ: Knowable secrets: transference and countertransference manifestations in eating disordered patients, in Treating Eating Disorders: Ethical, Legal, and Personal Issues. Edited by Vandereycken W, Beumont PJV. New York, New York University Press, 1998, pp 30–55 [G]
157. Zunino N, Agoos E, Davis WN: The impact of therapist gender on the treatment of bulimic women. Int J Eat Disord 1991; 10:253–263 [E]
158. Zerbe KJ: Integrating feminist and psychodynamic principles in the treatment of an eating disorder patient: implications for using countertransference responses. Bull Menninger Clin 1995; 59:160–176 [G]
159. Yager J: Management of patients with intractable eating disorders, in Eating Disorders and Obesity: A Comprehensive Handbook, 2nd ed. Edited by Fairburn CG, Brownell KD. New York, Guilford, 2002, pp 345–349 [G]

160. Andersen AE, Corson PW: Characteristics of an ideal psychotherapist for eating-disordered patients. Psychiatr Clin North Am 2001; 24:351–358, xii [G]
161. Betan E, Heim AK, Zittel CC, Westen D: Countertransference phenomena and personality pathology in clinical practice: an empirical investigation. Am J Psychiatry 2005; 162:890–898 [G]
162. Bradley R, Heim AK, Westen D: Transference patterns in the psychotherapy of personality disorders: empirical investigation. Br J Psychiatry 2005; 186:342–349 [C]
163. Steinhausen HC: The outcome of anorexia nervosa in the 20th century. Am J Psychiatry 2002; 159:1284–1293 [E]
164. Katzman MA, Waller G: Implications of therapist gender in the treatment of eating disorders: daring to ask the question, in The Burden of the Therapist. Edited by Vandereycken W. London, Athelone Press, 1998, pp 56–79 [G]
165. Waller G, Katzman MA: Female or male therapist for women with eating disorders? a pilot study of expert opinions. Int J Eat Disord 1997; 22:111–114 [G]
166. Kaplan AS, Fallon P: Therapeutic boundaries in the treatment of patients with eating disorders. Paper presented at the 4th London International Conference on Eating Disorders, April 20–22, 1999 [G]
167. Johnson CL, Sansone RA: Integrating the twelve-step approach with traditional psychotherapy for the treatment of eating disorders. Int J Eat Disord 1993; 14:121–134 [G]
168. Yager J, Landsverk J, Edelstein CK: Help seeking and satisfaction with care in 641 women with eating disorders, I: patterns of utilization, attributed change, and perceived efficacy of treatment. J Nerv Ment Dis 1989; 177:632–637 [G]
169. Zerbe KJ: Feminist psychodynamic psychotherapy of eating disorders: theoretic integration informing clinical practice. Psychiatr Clin North Am 1996; 19:811–827 [F]
170. Dare C: The starving and the greedy. J Child Psychotherapy 1993; 19:3–22 [F]
171. Hornyak LM, Baker EK: Experiential Therapies for Eating Disorders. New York, Guilford Press, 1989 [G]
172. Breden AK: Occupational therapy and the treatment of eating disorders. Occupational Therapy in Health Care 1992; 8:49–68 [G]
173. Lim PY: Occupational therapy with eating disorders: a study on treatment approaches. Br J Occupational Therapy 1994; 57:309–314 [G]
174. Attia E, Haiman C, Walsh BT, Flater SR: Does fluoxetine augment the inpatient treatment of anorexia nervosa? Am J Psychiatry 1998; 155:548–551 [A]
175. Strober M, Pataki C, Freeman R, DeAntonio M: No effect of adjunctive fluoxetine on eating behavior or weight phobia during the inpatient treatment of anorexia nervosa: an historical case-control study. J Child Adolesc Psychopharmacol 1999; 9:195–201 [D]
176. Fassino S, Leombruni P, Daga G, Brustolin A, Migliaretti G, Cavallo F, Rovera G: Efficacy of citalopram in anorexia nervosa: a pilot study. Eur Neuropsychopharmacol 2002; 12:453–459 [A–]
177. Kaye WH, Nagata T, Weltzin TE, Hsu LK, Sokol MS, McConaha C, Plotnicov KH, Weise J, Deep D: Double-blind placebo-controlled administration of fluoxetine in restricting- and restricting-purging-type anorexia nervosa. Biol Psychiatry 2001; 49:644–652 [A]
178. Delgado PL, Moreno FA, Onate L, Gelenberg AJ: Sequential catecholamine and serotonin depletion in mirtazapine-treated depressed patients. Int J Neuropsychopharmacol 2002; 5:63–66 [B]
179. Delgado PL, Miller HL, Salomon RM, Licinio J, Krystal JH, Moreno FA, Heninger GR, Charney DS: Tryptophan-depletion challenge in depressed patients treated with desipramine or fluoxetine: implications for the role of serotonin in the mechanism of antidepressant action. Biol Psychiatry 1999; 46:212–220 [B]
180. Medical Economics: 2005 Physicians' Desk Reference, 59th ed. Montvale, NJ, Thompson Healthcare, 2004 [G]

181. Horne RL, Ferguson JM, Pope HG Jr, Hudson JI, Lineberry CG, Ascher J, Cato A: Treatment of bulimia with bupropion: a multicenter controlled trial. J Clin Psychiatry 1988; 49:262–266 [A]
182. Demers JC, Malone M: Serotonin syndrome induced by fluvoxamine and mirtazapine. Ann Pharmacother 2001; 35:1217–1220 [G]
183. Brent DA: Antidepressants and pediatric depression: the risk of doing nothing. N Engl J Med 2004; 351:1598–1601 [G]
184. Newman TB: A black-box warning for antidepressants in children? N Engl J Med 2004; 351:1595–1598 [G]
185. Lock J, Walker LR, Rickert VI, Katzman DK: Suicidality in adolescents being treated with antidepressant medications and the black box label: position paper of the Society for Adolescent Medicine. J Adolesc Health 2005; 36:92–93 [G]
186. Katzman DK, Walker LR, Rickert VI, Lock J: The authors reply. J Adolesc Health 2005; 36:454–456 [G]
187. U.S. Food and Drug Administration: FDA launches a multi-pronged strategy to strengthen safeguards for children treatment with antidepressant medications, 2004. http://www.fda.gov/ bbs/topics/news/2004/NEW01124.html. Accessed November 11, 2004 [G]
188. Sarles RM: Joint meeting of the Psychopharmacologic Drugs Advisory Committee and the Pediatric Advisory Committee. Academy of Child and Adolescent Psychiatry, 2004. http://www.aacap.org/Announcements/AACAP_Comment.htm [G]
189. American Psychiatric Association, American Academy of Child and Adolescent Psychiatry: Physicians Med Guide: the use of medication in treating child and adolescent depression: information for physicians. 2004. http://www.parentsmedguide.org/physiciansmedguide.htm#17 [G]
190. Barbarich NC, McConaha CW, Gaskill J, La VM, Frank GK, Achenbach S, Plotnicov KH, Kaye WH: An open trial of olanzapine in anorexia nervosa. J Clin Psychiatry 2004; 65:1480–1482 [B]
191. Malina A, Gaskill J, McConaha C, Frank GK, Lavia M, Scholar L, Kaye WH: Olanzapine treatment of anorexia nervosa: a retrospective study. Int J Eat Disord 2003; 33:234–237 [G]
192. Powers PS, Santana CA, Bannon YS: Olanzapine in the treatment of anorexia nervosa: an open label trial. Int J Eat Disord 2002; 32:146–154 [B]
193. Mehler C, Wewetzer C, Schulze U, Warnke A, Theisen F, Dittmann RW: Olanzapine in children and adolescents with chronic anorexia nervosa: a study of five cases. Eur Child Adolesc Psychiatry 2001; 10:151–157 [G]
194. Mondraty N, Birmingham CL, Touyz S, Sundakov V, Chapman L, Beumont P: Randomized controlled trial of olanzapine in the treatment of cognitions in anorexia nervosa. Australas Psychiatry 2005; 13:72–75 [A]
195. Kaye WH: Atypicals in the treatment of anorexia nervosa. Paper presented at the Broadening the Horizon of Atypical Antipsychotic Applications symposium, New York, 2004. http://www.medscape.com/viewprogram/3137 [G]
196. Bosanac P, Norman T, Burrows G, Beumont P: Serotonergic and dopaminergic systems in anorexia nervosa: a role for atypical antipsychotics? Aust N Z J Psychiatry 2005; 39:146–153 [F]
197. Powers PP: Quetiapine in the treatment of anorexia nervosa: a pilot study. Int J Eat Disord (in press) [B]
198. Cassano GB, Miniati M, Pini S, Rotondo A, Banti S, Borri C, Camilleri V, Mauri M: Six-month open trial of haloperidol as an adjunctive treatment for anorexia nervosa: a preliminary report. Int J Eat Disord 2003; 33:172–177 [B]
199. Garfinkel PE, Garner DM: Anorexia Nervosa: A Multidimensional Perspective. New York, Brunner/Mazel, 1982 [G]

200. Garfinkel PE, Garner DM: The Role of Drug Treatments for Eating Disorders. New York, Brunner/Mazel, 1987 [G]
201. Wells LA, Logan KM: Pharmacologic treatment of eating disorders: review of selected literature and recommendations. Psychosomatics 1987; 28:470–479 [F]
202. Robinson E, Bachrach LK, Katzman DK: Use of hormone replacement therapy to reduce the risk of osteopenia in adolescent girls with anorexia nervosa. J Adolesc Health 2000; 26:343–348 [G]
203. Golden NH, Lanzkowsky L, Schebendach J, Palestro CJ, Jacobson MS, Shenker IR: The effect of estrogen-progestin treatment on bone mineral density in anorexia nervosa. J Pediatr Adolesc Gynecol 2002; 15:135–143 [C]
204. Klibanski A, Biller BM, Schoenfeld DA, Herzog DB, Saxe VC: The effects of estrogen administration on trabecular bone loss in young women with anorexia nervosa. J Clin Endocrinol Metab 1995; 80:898–904 [B]
205. Emans SJ, Goldstein DP: Pediatric and Adolescent Gynecology, 3rd ed. Boston, Little, Brown, 1990 [G]
206. Odvina CV, Zerwekh JE, Rao DS, Maalouf N, Gottschalk FA, Pak CY: Severely suppressed bone turnover: a potential complication of alendronate therapy. J Clin Endocrinol Metab 2005; 90:1294–1301 [G]
207. Golden NH: Osteopenia and osteoporosis in anorexia nervosa. Adolesc Med 2003; 14:97–108 [G]
208. Laessle RG, Zoettle C, Pirke KM: Meta-analysis of treatment studies for bulimia. Int J Eat Disord 1987; 6:647–654 [E]
209. Anderson CB, Joyce PR, Carter FA, McIntosh VV, Bulik CM: The effect of cognitive-behavioral therapy for bulimia nervosa on temperament and character as measured by the temperament and character inventory. Compr Psychiatry 2002; 43:182–188 [G]
210. Bulik CM, Sullivan PF, Carter FA, McIntosh VV, Joyce PR: Predictors of rapid and sustained response to cognitive-behavioral therapy for bulimia nervosa. Int J Eat Disord 1999; 26:137–144 [G]
211. Mitchell JE, Halmi K, Wilson GT, Agras WS, Kraemer H, Crow S: A randomized secondary treatment study of women with bulimia nervosa who fail to respond to CBT. Int J Eat Disord 2002; 32:271–281 [A]
212. Agras WS, Walsh T, Fairburn CG, Wilson GT, Kraemer HC: A multicenter comparison of cognitive-behavioral therapy and interpersonal psychotherapy for bulimia nervosa. Arch Gen Psychiatry 2000; 57:459–466 [A–]
213. Rock CL, Curran-Celentano J: Nutritional management of eating disorders. Psychiatr Clin North Am 1996; 19:701–713 [G]
214. Thackwray DE, Smith MC, Bodfish JW, Meyers AW: A comparison of behavioral and cognitive-behavioral interventions for bulimia nervosa. J Consult Clin Psychol 1993; 61:639–645 [A–]
215. Westen D, Novotny CM, Thompson-Brenner H: The empirical status of empirically supported psychotherapies: assumptions, findings, and reporting in controlled clinical trials. Psychol Bull 2004; 130:631–663 [G]
216. Thompson-Brenner H, Glass S, Westen D: A multidimensional meta-analysis of psychotherapy for bulimia nervosa. Clinical Psychology: Science and Practice 2003; 10:269–287 [E]
217. Farrell E: Lost for Words: The Psychoanalysis of Anorexia and Bulimia. New York, Other Press, 2000 [G]
218. Petrucelli J, Stuart C: Hungers and Compulsions: The Psychodynamic Treatment of Eating Disorders and Addictions. Northvale, NJ, Jason Aronson, 2001 [G]
219. Zerbe KJ: The crucial role of psychodynamic understanding in the treatment of eating disorders. Psychiatr Clin North Am 2001; 24:305–313 [G]

220. Carter JC, Olmsted MP, Kaplan AS, McCabe RE, Mills JS, Aime A: Self-help for bulimia nervosa: a randomized controlled trial. Am J Psychiatry 2003; 160:973–978 [A–]
221. Schmidt U, Tiller J, Treasure J: Self-treatment of bulimia nervosa: a pilot study. Int J Eat Disord 1993; 13:273–277 [B]
222. Thiels C, Schmidt U, Treasure J, Garthe R, Troop N: Guided self-change for bulimia nervosa incorporating use of a self-care manual. Am J Psychiatry 1998; 155:947–953 [A–]
223. Rorty M, Yager J, Rossotto E: Why and how do women recover from bulimia nervosa? the subjective appraisals of forty women recovered for a year or more. Int J Eat Disord 1993; 14:249–260 [D]
224. Goldstein DJ, Wilson MG, Thompson VL, Potvin JH, Rampey AH Jr: Long-term fluoxetine treatment of bulimia nervosa: Fluoxetine Bulimia Nervosa Research Group. Br J Psychiatry 1995; 166:660–666 [A]
225. Kotler LA, Devlin MJ, Davies M, Walsh BT: An open trial of fluoxetine for adolescents with bulimia nervosa. J Child Adolesc Psychopharmacol 2003; 13:329–335 [G]
226. Romano SJ, Halmi KA, Sarkar NP, Koke SC, Lee JS: A placebo-controlled study of fluoxetine in continued treatment of bulimia nervosa after successful acute fluoxetine treatment. Am J Psychiatry 2002; 159:96–102 [A]
227. Milano W, Petrella C, Sabatino C, Capasso A: Treatment of bulimia nervosa with sertraline: a randomized controlled trial. Adv Ther 2004; 21:232–237 [A]
228. Mitchell JE, Peterson CB, Myers T, Wonderlich S: Combining pharmacotherapy and psychotherapy in the treatment of patients with eating disorders. Psychiatr Clin North Am 2001; 24:315–323 [F]
229. Pederson KJ, Roerig JL, Mitchell JE: Towards the pharmacotherapy of eating disorders. Expert Opin Pharmacother 2003; 4:1659–1678 [F]
230. Fluoxetine Bulimia Nervosa Collaborative Study Group: Fluoxetine in the treatment of bulimia nervosa: a multicenter, placebo-controlled, double-blind trial. Arch Gen Psychiatry 1992; 49:139–147 [A]
231. Bacaltchuk J, Hay P: Antidepressants versus placebo for people with bulimia nervosa. Cochrane Database Syst Rev 2003; CD003391 [E]
232. Raymond NC, Mitchell JE, Fallon P, Katzman MA: A collaborative approach to the use of medication, in Feminist Perspectives on Eating Disorders. Edited by Fallon P, Katzman MA, Wooley SC. New York, Guilford Press, 1994, pp 231–250 [G]
233. Pope HG Jr, Hudson JI, Jonas JM, Yurgelun-Todd D: Bulimia treated with imipramine: a placebo-controlled, double-blind study. Am J Psychiatry 1983; 140:554–558 [A]
234. Hughes PL, Wells LA, Cunningham CJ, Ilstrup DM: Treating bulimia with desipramine: a double-blind, placebo-controlled study. Arch Gen Psychiatry 1986; 43:182–186 [A]
235. Mitchell JE, Groat R: A placebo-controlled, double-blind trial of amitriptyline in bulimia. J Clin Psychopharmacol 1984; 4:186–193 [A]
236. Agras WS, Dorian B, Kirkley BG, Arnow B, Bachman J: Imipramine in the treatment of bulimia: a double-blind controlled study. Int J Eat Disord 1987; 6:29–38 [A]
237. Barlow J, Blouin J, Blouin A, Perez E: Treatment of bulimia with desipramine: a double-blind crossover study. Can J Psychiatry 1988; 33:129–133 [A]
238. Blouin AG, Blouin JH, Perez EL, Bushnik T, Zuro C, Mulder E: Treatment of bulimia with fenfluramine and desipramine. J Clin Psychopharmacol 1988; 8:261–269 [A]
239. Fallon BA, Walsh BT, Sadik C, Saoud JB, Lukasik V: Outcome and clinical course in inpatient bulimic women: a 2- to 9-year follow-up study. J Clin Psychiatry 1991; 52:272–278 [C]
240. Walsh BT, Hadigan CM, Devlin MJ, Gladis M, Roose SP: Long-term outcome of antidepressant treatment for bulimia nervosa. Am J Psychiatry 1991; 148:1206–1212 [A]
241. Hsu LK, Clement L, Santhouse R, Ju ES: Treatment of bulimia nervosa with lithium carbonate: a controlled study. J Nerv Ment Dis 1991; 179:351–355 [A]

242. Hedges DW, Reimherr FW, Hoopes SP, Rosenthal NR, Kamin M, Karim R, Capece JA: Treatment of bulimia nervosa with topiramate in a randomized, double-blind, placebo-controlled trial, part 2: improvement in psychiatric measures. J Clin Psychiatry 2003; 64:1449–1454 [A]
243. Hoopes SP, Reimherr FW, Hedges DW, Rosenthal NR, Kamin M, Karim R, Capece JA, Karvois D: Treatment of bulimia nervosa with topiramate in a randomized, double-blind, placebo-controlled trial, part 1: improvement in binge and purge measures. J Clin Psychiatry 2003; 64:1335–1341 [A]
244. Findling RL, McNamara NK, Youngstrom EA, Stansbrey R, Gracious BL, Reed MD, Calabrese JR: Double-blind 18-month trial of lithium versus divalproex maintenance treatment in pediatric bipolar disorder. J Am Acad Child Adolesc Psychiatry 2005; 44:409–417 [A]
245. Rana M, Khanzode L, Karnik N, Saxena K, Chang K, Steiner H: Divalproex sodium in the treatment of pediatric psychiatric disorders. Expert Rev Neurother 2005; 5:165–176 [G]
246. French JA, Kanner AM, Bautista J, Abou-Khalil B, Browne T, Harden CL, Theodore WH, Bazil C, Stern J, Schachter SC, Bergen D, Hirtz D, Montouris GD, Nespeca M, Gidal B, Marks WJ Jr, Turk WR, Fischer JH, Bourgeois B, Wilner A, Faught RE Jr, Sachdeo RC, Beydoun A, Glauser TA: Efficacy and tolerability of the new antiepileptic drugs, I: treatment of new onset epilepsy. Report of the Therapeutics and Technology Assessment Subcommittee and Quality Standards Subcommittee of the American Academy of Neurology and the American Epilepsy Society. Neurology 2004; 62:1252–1260 [G]
247. Drimmer EJ: Stimulant treatment of bulimia nervosa with and without attention-deficit disorder: three case reports. Nutrition 2003; 19:76–77 [G]
248. Schweickert LA, Strober M, Moskowitz A: Efficacy of methylphenidate in bulimia nervosa comorbid with attention-deficit hyperactivity disorder: a case report. Int J Eat Disord 1997; 21:299–301 [G]
249. Sokol MS, Gray NS, Goldstein A, Kaye WH: Methylphenidate treatment for bulimia nervosa associated with a cluster B personality disorder. Int J Eat Disord 1999; 25:233–237 [G]
250. Walsh BT, Agras WS, Devlin MJ, Fairburn CG, Wilson GT, Kahn C, Chally MK: Fluoxetine for bulimia nervosa following poor response to psychotherapy. Am J Psychiatry 2000; 157:1332–1334 [A]
251. Walsh BT, Wilson GT, Loeb KL, Devlin MJ, Pike KM, Roose SP, Fleiss J, Waternaux C: Medication and psychotherapy in the treatment of bulimia nervosa. Am J Psychiatry 1997; 154:523–531 [G]
252. Agras WS: Pharmacotherapy of bulimia nervosa and binge eating disorder: longer-term outcomes. Psychopharmacol Bull 1997; 33:433–436 [F]
253. Mitchell JE, Pyle RL, Eckert ED, Hatsukami D, Pomeroy C, Zimmerman R: A comparison study of antidepressants and structured intensive group psychotherapy in the treatment of bulimia nervosa. Arch Gen Psychiatry 1990; 47:149–157 [A–]
254. Agras WS, Rossiter EM, Arnow B, Schneider JA, Telch CF, Raeburn SD, Bruce B, Perl M, Koran LM: Pharmacologic and cognitive-behavioral treatment for bulimia nervosa: a controlled comparison. Am J Psychiatry 1992; 149:82–87 [A–]
255. Goldbloom DS, Olmsted M, Davis R, Clewes J, Heinmaa M, Rockert W, Shaw B: A randomized controlled trial of fluoxetine and cognitive behavioral therapy for bulimia nervosa: short-term outcome. Behav Res Ther 1997; 35:803–811 [A–]
256. Nakash-Eisikovits O, Dierberger A, Westen D: A multidimensional meta-analysis of pharmacotherapy for bulimia nervosa: summarizing the range of outcomes in controlled clinical trials. Harv Rev Psychiatry 2002; 10:193–211 [E]

257. Braun DL, Sunday SR, Fornari VM, Halmi KA: Bright light therapy decreases winter binge frequency in women with bulimia nervosa: a double-blind, placebo-controlled study. Compr Psychiatry 1999; 40:442–448 [A]
258. Blouin AG, Blouin JH, Iversen H, Carter J, Goldstein C, Goldfield G, Perez E: Light therapy in bulimia nervosa: a double-blind, placebo-controlled study. Psychiatry Res 1996; 60:1–9 [A]
259. Lam RW, Goldner EM, Solyom L, Remick RA: A controlled study of light therapy for bulimia nervosa. Am J Psychiatry 1994; 151:744–750 [B]
260. Hausmann A, Mangweth B, Walpoth M, Hoertnagel C, Kramer-Reinstadler K, Rupp CI, Hinterhuber H: Repetitive transcranial magnetic stimulation (rTMS) in the double-blind treatment of a depressed patient suffering from bulimia nervosa: a case report. Int J Neuropsychopharmacol 2004; 7:371–373 [G]
261. Brewerton TD, Nihad Z, Malloy M, Risch SC, George MS: Transcranial magnetic stimulation (TMS) in a woman with major depression and bulimia nervosa. Eighth Annual New York International Conference on Eating Disorders. New York, April 24–26, Abstract #195, 1998 [G]
262. Norring C, Palmer RL: EDNOS: Eating Disorders Not Otherwise Specified. Scientific and Clinical Perspectives on the Other Eating Disorders. New York, Brunner-Routledge, 2005 [G]
263. Fairburn CG, Bohn K: Eating disorder NOS (EDNOS): an example of the troublesome "not otherwise specified" (NOS) category in DSM-IV. Behav Res Ther 2005; 43:691–701 [G]
264. Roerig JL, Mitchell JE, de Zwaan M, Wonderlich SA, Kamran S, Engbloom S, Burgard M, Lancaster K: The eating disorders medicine cabinet revisited: a clinician's guide to appetite suppressants and diuretics. Int J Eat Disord 2003; 33:443–457 [G]
265. Willard SG, McDermott BE, Woodhouse LM: Lipoplasty in the bulimic patient. Plast Reconstr Surg 1996; 98:276–278 [G]
266. Segal A, Kinoshita KD, Larino MA: Post-surgical refusal to eat: anorexia nervosa, bulimia nervosa or a new eating disorder? a case series. Obes Surg 2004; 14:353–360 [G]
267. Herzog DB, Hopkins JD, Burns CD: A follow-up study of 33 subdiagnostic eating disordered women. Int J Eat Disord 1993; 14:261–267 [C]
268. Wonderlich SA, de Zwaan M, Mitchell JE, Peterson C, Crow S: Psychological and dietary treatments of binge eating disorder: conceptual implications. Int J Eat Disord 2003; 34(suppl):S58-S73 [F]
269. Grilo CM: Treatment of obesity: an integrative model, in Body Image, Eating Disorders, and Obesity: An Integrative Guide for Assessment and Treatment. Edited by Thompson JK. Washington, DC, American Psychological Association, 1996, pp 389–424 [G]
270. Marcus MD: Obese patients with binge-eating disorder, in The Management of Eating Disorders and Obesity. Edited by Goldstein DJ. Totowa, NJ, Humana Press, 1999, pp 125–138 [G]
271. Agras WS, Telch CF, Arnow B, Eldredge K, Marnell M: One-year follow-up of cognitive-behavioral therapy for obese individuals with binge eating disorder. J Consult Clin Psychol 1997; 65:343–347 [C]
272. Wilfley DE, Welch RR, Stein RI, Spurrell EB, Cohen LR, Saelens BE, Dounchis JZ, Frank MA, Wiseman CV, Matt GE: A randomized comparison of group cognitive-behavioral therapy and group interpersonal psychotherapy for the treatment of overweight individuals with binge-eating disorder. Arch Gen Psychiatry 2002; 59:713–721 [B]
273. Carter JC, Fairburn CG: Cognitive-behavioral self-help for binge eating disorder: a controlled effectiveness study. J Consult Clin Psychol 1998; 66:616–623 [A–]
274. Ghaderi A, Scott B: Pure and guided self-help for full and sub-threshold bulimia nervosa and binge eating disorder. Br J Clin Psychol 2003; 42:257–269 [B]
275. Loeb KL, Wilson GT, Gilbert JS, Labouvie E: Guided and unguided self-help for binge eating. Behav Res Ther 2000; 38:259–272 [B]

276. Peterson CB, Mitchell JE, Engbloom S, Nugent S, Mussell MP, Miller JP: Group cognitive-behavioral treatment of binge eating disorder: a comparison of therapist-led versus self-help formats. Int J Eat Disord 1998; 24:125–136 [B]
277. Grilo CM, Masheb RM: A randomized controlled comparison of guided self-help cognitive behavioral therapy and behavioral weight loss for binge eating disorder. Behav Res Ther 2005; 43:1509–1525 [A–]
278. Polivy J, Herman CP: Dieting and binging: a causal analysis. Am Psychol 1985; 40:193–201 [F]
279. Keys A, Brozek J, Henschel A, Mickelsen O, Taylor HL: The Biology of Human Starvation. Minneapolis, University of Minnesota Press, 1950 [G]
280. Carrier KM, Steinhardt MA, Bowman S: Rethinking traditional weight management programs: a 3-year follow-up evaluation of a new approach. J Psychol 1993; 128:517–535 [D]
281. Ciliska D: Beyond Dieting: Psychoeducational Interventions for Chronically Obese Women. New York, Brunner/Mazel, 1990 [G]
282. Kaplan AS, Ciliska D: The relationship between eating disorders and obesity: psychopathologic and treatment considerations. Psychiatr Ann 1999; 29:197–202 [B]
283. Stice E, Presnell K, Spangler D: Risk factors for binge eating onset in adolescent girls: a 2-year prospective investigation. Health Psychol 2002; 21:131–138 [C]
284. Appolinario JC, Bacaltchuk J, Sichieri R, Claudino AM, Godoy-Matos A, Morgan C, Zanella MT, Coutinho W: A randomized, double-blind, placebo-controlled study of sibutramine in the treatment of binge-eating disorder. Arch Gen Psychiatry 2003; 60:1109–1116 [A]
285. Jordan J, Scholze J, Matiba B, Wirth A, Hauner H, Sharma AM: Influence of sibutramine on blood pressure: evidence from placebo-controlled trials. Int J Obes (Lond) 2005; 29:509–516 [E]
286. McElroy SL, Arnold LM, Shapira NA, Keck PE Jr, Rosenthal NR, Karim MR, Kamin M, Hudson JI: Topiramate in the treatment of binge eating disorder associated with obesity: a randomized, placebo-controlled trial. Am J Psychiatry 2003; 160:255–261 [A]
287. McElroy SL, Shapira NA, Arnold LM, Keck PE, Rosenthal NR, Wu SC, Capece JA, Fazzio L, Hudson JI: Topiramate in the long-term treatment of binge-eating disorder associated with obesity. J Clin Psychiatry 2004; 65:1463–1469 [B]
288. McElroy SL, Kotwal R, Hudson JI, Nelson EB, Keck PE: Zonisamide in the treatment of binge-eating disorder: an open-label, prospective trial. J Clin Psychiatry 2004; 65:50–56 [B]
289. Stunkard A, Berkowitz R, Tanrikut C, Reiss E, Young L: D-Fenfluramine treatment of binge eating disorder. Am J Psychiatry 1996; 153:1455–1459 [A]
290. Agras WS, Telch CF, Arnow B, Eldredge K, Wilfley DE, Raeburn SD, Henderson S, Marnell M: Weight loss cognitive-behavioral and desipramine treatments in binge-eating disorder: an addictive design. Behav Ther 1994; 25:225–238 [A–]
291. Marcus MD, Wing RR, Ewing L, Kern E, McDermott M, Gooding W: A double-blind, placebo-controlled trial of fluoxetine plus behavior modification in the treatment of obese binge-eaters and non-binge-eaters. Am J Psychiatry 1990; 147:876–881 [A]
292. Laederach-Hofmann K, Graf C, Horber F, Lippuner K, Lederer S, Michel R, Schneider M: Imipramine and diet counseling with psychological support in the treatment of obese binge eaters: a randomized, placebo-controlled double-blind study. Int J Eat Disord 1999; 26:231–244 [A]
293. Grilo CM, Masheb RM, Wilson GT: Efficacy of cognitive behavioral therapy and fluoxetine for the treatment of binge eating disorder: a randomized double-blind placebo-controlled comparison. Biol Psychiatry 2005; 57:301–309 [A]
294. Devlin MJ, Goldfein JA, Petkova E, Jiang H, Raizman PS, Wolk S, Mayer L, Carino J, Bellace D, Kamenetz C, Dobrow I, Walsh BT: Cognitive behavioral therapy and fluoxetine as adjuncts to group behavioral therapy for binge eating disorder. Obes Res 2005; 13:1077–1088 [A]

295. Grilo CM, Masheb RM, Salant SL: Cognitive behavioral therapy guided self-help and orlistat for the treatment of binge eating disorder: a randomized, double-blind, placebo-controlled trial. Biol Psychiatry 2005; 57:1193–1201 [A]
296. de Zwaan J, Burgard MA, Schenck CH, Mitchell JE: Night time eating: a review of the literature. Eur Eating Disorders Rev 2003; 11:7–24 [F]
297. Stunkard AJ, Grace WJ, Wolff HG: The night-eating syndrome: a pattern of food intake among certain obese patients. Am J Med 1955; 19:78–86 [G]
298. Lu ML, Shen WW: Sleep-related eating disorder induced by risperidone. J Clin Psychiatry 2004; 65:273–274 [G]
299. Khazaal Y, Krenz S, Zullino DF: Bupropion-induced somnambulism. Addict Biol 2003; 8:359–362 [G]
300. Paquet V, Strul J, Servais L, Pelc I, Fossion P: Sleep-related eating disorder induced by olanzapine. J Clin Psychiatry 2002; 63:597 [G]
301. Pawlow LA, O'Neil PM, Malcolm RJ: Night eating syndrome: effects of brief relaxation training on stress, mood, hunger, and eating patterns. Int J Obes Relat Metab Disord 2003; 27:970–978 [A–]
302. O'Reardon JP, Stunkard AJ, Allison KC: Clinical trial of sertraline in the treatment of night eating syndrome. Int J Eat Disord 2004; 35:16–26 [B]
303. O'Reardon J, Allison K, Martino N, Stunkard A: A randomized, placebo-controlled trial of sertraline in the treatment of night eating syndrome. Obes Res 2004; 12:A64 [A]
304. Yager J: Patients with chronic, recalcitrant eating disorders, in Special Problems in Managing Eating Disorders. Edited by Yager J, Gwirtsman HE, Edelstein CK. Washington, DC, American Psychiatric Press, 1992, pp 205–231 [G]
305. Kerr A, Lesaca M, Kaplan AS: Continuing care groups for chronic anorexia nervosa, in Group Psychotherapy for Eating Disorders. Edited by Harper-Giuffre H, MacKenzie KR. Washington, DC, American Psychiatric Press, 1992, pp 261–272 [G]
306. Maine M, Kelly J: The Body Myth: Adult Women and the Pressure To Be Perfect. Hoboken, NJ, Wiley, 2005 [G]
307. Tanofsky MB, Wilfley DE, Spurrell EB, Welch R, Brownell KD: Comparison of men and women with binge eating disorder. Int J Eat Disord 1997; 21:49–54 [C]
308. Bulik CM, Klump KL, Thornton L, Kaplan AS, Devlin B, Fichter MM, Halmi KA, Strober M, Woodside DB, Crow S, Mitchell JE, Rotondo A, Mauri M, Cassano GB, Keel PK, Berrettini WH, Kaye WH: Alcohol use disorder comorbidity in eating disorders: a multicenter study. J Clin Psychiatry 2004; 65:1000–1006 [C]
309. Holderness CC, Brooks-Gunn J, Warren MP: Co-morbidity of eating disorders and substance abuse: review of the literature. Int J Eat Disord 1994; 16:1–34 [F]
310. Herzog DB, Keller MB, Sacks NR, Yeh CJ, Lavori PW: Psychiatric comorbidity in treatment-seeking anorexics and bulimics. J Am Acad Child Adolesc Psychiatry 1992; 31:810–818 [D]
311. Bulik CM, Sullivan P, Epstein L, McKee M, Kaye W, Dahl R, Weltzin T: Drug use in women with anorexia and bulimia nervosa. Int J Eat Disord 1992; 11:214–225 [D]
312. Bulik CM, Sullivan PF, Fear JL, Pickering A, Dawn A, McCullin M: Fertility and reproduction in women with anorexia nervosa: a controlled study. J Clin Psychiatry 1999; 60:130–135 [B]
313. Wilfley DE, Friedman MA, Dounchis JZ, Stein RI, Welch RR, Ball SA: Comorbid psychopathology in binge eating disorder: relation to eating disorder severity at baseline and following treatment. J Consult Clin Psychol 2000; 68:641–649 [C]
314. Wonderlich SA, Mitchell JE: Eating disorders and comorbidity: empirical, conceptual, and clinical implications. Psychopharmacol Bull 1997; 33:381–390 [F]
315. Hatsukami D, Mitchell JE, Eckert ED, Pyle R: Characteristics of patients with bulimia only, bulimia with affective disorder, and bulimia with substance abuse problems. Addict Behav 1986; 11:399–406 [D]

316. Solano R, Aitken A, Lopez C, Vallejo J, Fernandez-Aranda F: Self-injurious behaviour in eating disorders. Eur Eating Disorders Rev 2005; 13:3–10 [D]
317. Dansky BS, Brewerton TD, Kilpatrick DG: Comorbidity of bulimia nervosa and alcohol use disorders: results from the National Women's Study. Int J Eat Disord 2000; 27:180–190 [G]
318. Collins S, King M: Ten-year follow-up of 50 patients with bulimia nervosa. Br J Psychiatry 1994; 164:80–87 [C]
319. Mitchell JE, Pyle R, Eckert ED, Hatsukami D: The influence of prior alcohol and drug abuse problems on bulimia nervosa treatment outcome. Addict Behav 1990; 15:169–173 [D]
320. Strasser TJ, Pike KM, Walsh BT: The impact of prior substance abuse on treatment outcome for bulimia nervosa. Addict Behav 1992; 17:387–395 [C]
321. Keel PK, Dorer DJ, Eddy KT, Franko D, Charatan DL, Herzog DB: Predictors of mortality in eating disorders. Arch Gen Psychiatry 2003; 60:179–183 [C]
322. Westermeyer J, Specker S: Social resources and social function in comorbid eating and substance disorder: a matched-pairs study. Am J Addict 1999; 8:332–336 [D]
323. Halmi KA, Eckert E, Marchi P, Sampugnaro V, Apple R, Cohen J: Comorbidity of psychiatric diagnoses in anorexia nervosa. Arch Gen Psychiatry 1991; 48:712–718 [C]
324. Herzog DB, Nussbaum KM, Marmor AK: Comorbidity and outcome in eating disorders. Psychiatr Clin North Am 1996; 19:843–859 [F]
325. Hudson JI, Pope HG Jr, Jonas JM, Yurgelun-Todd D: Phenomenologic relationship of eating disorders to major affective disorder. Psychiatry Res 1983; 9:345–354 [D]
326. Cooper PJ: Eating disorders and their relationship to mood and anxiety disorders, in Eating Disorders and Obesity: A Comprehensive Handbook. Edited by Brownell KD, Fairburn CG. New York, Guilford, 1995, pp 159–164 [G]
327. Edelstein CK, Yager J: Eating disorders and affective disorders, in Special Problems in Managing Eating Disorders. Edited by Yager J, Gwirtsman HE, Edelstein CK. Washington, DC, American Psychiatric Press, 1992, pp 15–50 [G]
328. Cooper PJ, Fairburn CG: The depressive symptoms of bulimia nervosa. Br J Psychiatry 1986; 148:268–274 [G]
329. Keel PK, Mitchell JE: Outcome in bulimia nervosa. Am J Psychiatry 1997; 154:313–321 [F]
330. Godart NT, Flament MF, Curt F, Perdereau F, Lang F, Venisse JL, Halfon O, Bizouard P, Loas G, Corcos M, Jeammet P, Fermanian J: Anxiety disorders in subjects seeking treatment for eating disorders: a DSM-IV controlled study. Psychiatry Res 2003; 117:245–258 [D]
331. Braun DL, Sunday SR, Halmi KA: Psychiatric comorbidity in patients with eating disorders. Psychol Med 1994; 24:859–867 [C]
332. Dansky BS, Brewerton TD, Kilpatrick DG, O'Neil PM: The National Women's Study: relationship of victimization and posttraumatic stress disorder to bulimia nervosa. Int J Eat Disord 1997; 21:213–228 [D]
333. Brewerton TD: Eating disorders, victimization and comorbidity: principles of treatment, in Clinical Handbook of Eating Disorders: An Integrated Approach. Edited by Brewerton TD. New York, Marcel Dekker, 2004, pp 509–546 [G]
334. Telch CF, Stice E: Psychiatric comorbidity in women with binge eating disorder: prevalence rates from a non-treatment-seeking sample. J Consult Clin Psychol 1998; 66:768–776 [D]
335. Yanovski SZ, Nelson JE, Dubbert BK, Spitzer RL: Association of binge eating disorder and psychiatric comorbidity in obese subjects. Am J Psychiatry 1993; 150:1472–1479 [D]
336. Brody ML, Walsh BT, Devlin MJ: Binge eating disorder: reliability and validity of a new diagnostic category. J Consult Clin Psychol 1994; 62:381–386 [G]
337. Mussell MP, Mitchell JE, de Zwaan M, Crosby RD, Seim HC, Crow SJ: Clinical characteristics associated with binge eating in obese females: a descriptive study. Int J Obes Relat Metab Disord 1996; 20:324–331 [D]

338. Hudson JI, Pope HG Jr, Wurtman J, Yurgelun-Todd D, Mark S, Rosenthal NE: Bulimia in obese individuals: relationship to normal-weight bulimia. J Nerv Ment Dis 1988; 176:144–152 [D]
339. Marcus MD, Wing RR, Ewing L, Kern E, Gooding W, McDermott M: Psychiatric disorders among obese binge eaters. Int J Eat Disord 1990; 9:69–70 [D]
340. Bulik CM, Sullivan PF, Kendler KS: Medical and psychiatric morbidity in obese women with and without binge eating. Int J Eat Disord 2002; 32:72–78 [D]
341. Bulik CM, Sullivan PF, Fear JL, Joyce PR: Eating disorders and antecedent anxiety disorders: a controlled study. Acta Psychiatr Scand 1997; 96:101–107 [B]
342. Serpell L, Hirani V, Willoughby K, Neiderman M, Lask B: Personality or pathology? Obsessive-compulsive features in children and adolescents with anorexia nervosa [abstract]. Int J Eat Disord 2004; 35:425 [G]
343. Wonderlich SA, Crosby RD, Mitchell JE, Thompson KM, Redlin J, Demuth G, Smyth J, Haseltine B: Eating disturbance and sexual trauma in childhood and adulthood. Int J Eat Disord 2001; 30:401–412 [C]
344. Schoemaker C, Smit F, Bijl RV, Vollebergh WA: Bulimia nervosa following psychological and multiple child abuse: support for the self-medication hypothesis in a population-based cohort study. Int J Eat Disord 2002; 32:381–388 [C]
345. Dohm FA, Striegel-Moore RH, Wilfley DE, Pike KM, Hook J, Fairburn CG: Self-harm and substance use in a community sample of black and white women with binge eating disorder or bulimia nervosa. Int J Eat Disord 2002; 32:389–400 [C]
346. Wonderlich SA, Brewerton TD, Jocic Z, Dansky BS, Abbott DW: Relationship of childhood sexual abuse and eating disorders. J Am Acad Child Adolesc Psychiatry 1997; 36:1107–1115 [F]
347. Connors ME, Morse W: Sexual abuse and eating disorders: a review. Int J Eat Disord 1993; 13:1–11 [F]
348. Goldner EM, Srikameswaran S, Schroeder ML, Livesley WJ, Birmingham CL: Dimensional assessment of personality pathology in patients with eating disorders. Psychiatry Res 1999; 85:151–159 [D]
349. Grilo CM, Sanislow CA, Skodol AE, Gunderson JG, Stout RL, Shea MT, Zanarini MC, Bender DS, Morey LC, Dyck IR, McGlashan TH: Do eating disorders co-occur with personality disorders? comparison groups matter. Int J Eat Disord 2003; 33:155–164 [C]
350. Diaz-Marsa M, Carrasco JL, Saiz J: A study of temperament and personality in anorexia and bulimia nervosa. J Personal Disord 2000; 14:352–359 [D]
351. Casper RC, Troiani M: Family functioning in anorexia nervosa differs by subtype. Int J Eat Disord 2001; 30:338–342 [D]
352. Fahy TA, Eisler I, Russell GF: Personality disorder and treatment response in bulimia nervosa. Br J Psychiatry 1993; 162:765–770 [B]
353. Westen D, Thompson-Brenner H, Peart J: Personality and eating disorders, in Annual Review of Eating Disorders, Part 2. Edited by Wonderlich S, Mitchell J, de Zwaan M, Steiger H. Oxford, UK, Radcliffe (in press) [F]
354. Herzog DB, Keller MB, Lavori PW, Kenny GM, Sacks NR: The prevalence of personality disorders in 210 women with eating disorders. J Clin Psychiatry 1992; 53:147–152 [G]
355. Bulik CM, Sullivan PF, Joyce PR, Carter FA: Temperament, character, and personality disorder in bulimia nervosa. J Nerv Ment Dis 1995; 183:593–598 [B]
356. Johnson C, Tobin D, Enright A: Prevalence and clinical characteristics of borderline patients in an eating-disordered population. J Clin Psychiatry 1989; 50:9–15 [D]
357. Vitousek K, Manke F: Personality variables and disorders in anorexia nervosa and bulimia nervosa. J Abnorm Psychol 1994; 103:137–147 [G]
358. Wonderlich SA: Personality and eating disorders, in Eating Disorders and Obesity: A Comprehensive Textbook. Edited by Brownell KD, Fairburn CG. New York, Guilford, 1995, pp 171–176 [G]

359. Wonderlich SA, Mitchell JE: Eating disorders and personality disorders, in Special Problems in Managing Eating Disorders. Edited by Yager J, Gwirtsman HE, Edelstein CK. Washington, DC, American Psychiatric Press, 1992, pp 51–86 [G]
360. Wonderlich SA, Swift WJ: Borderline versus other personality disorders in the eating disorders: clinical description. Int J Eat Disord 1990; 9:629–638 [G]
361. Sansone RA, Levitt JL, Sansone LA: The prevalence of personality disorders among those with eating disorders. Eating Disorders: The Journal of Treatment and Prevention 2005; 13:7–21 [E]
362. Johnson C, Tobin DL, Dennis A: Differences in treatment outcome between borderline and non-borderline bulimics at one-year follow-up. Int J Eat Disord 1990; 9:617–627 [B]
363. Westen D, Harnden-Fischer J: Personality profiles in eating disorders: rethinking the distinction between axis I and axis II. Am J Psychiatry 2001; 158:547–562 [G]
364. Ames-Frankel J, Devlin MJ, Walsh BT, Strasser TJ, Sadik C, Oldham JM, Roose SP: Personality disorder diagnoses in patients with bulimia nervosa: clinical correlates and changes with treatment. J Clin Psychiatry 1992; 53:90–96 [C]
365. Thompson-Brenner H, Westen D: Personality subtypes in eating disorders: validation of a classification in a naturalistic sample. Br J Psychiatry 2005; 186:516–524 [G]
366. Affenito SG, Adams CH: Are eating disorders more prevalent in females with type 1 diabetes mellitus when the impact of insulin omission is considered? Nutr Rev 2001; 59:179–182 [C]
367. Herpertz S, Albus C, Wagener R, Kocnar M, Wagner R, Henning A, Best F, Foerster H, Schulze SB, Thomas W, Kohle K, Mann K, Senf W: Comorbidity of diabetes and eating disorders: does diabetes control reflect disturbed eating behavior? Diabetes Care 1998; 21:1110–1116 [C]
368. Crow SJ, Keel PK, Kendall D: Eating disorders and insulin-dependent diabetes mellitus. Psychosomatics 1998; 39:233–243 [F]
368a. Verrotti A, Catino M, De Luca FA, Morgese G, Chiarelli F: Eating disorders in adolescents with type 1 diabetes mellitus. Acta Diabetol 1999; 36:21–25 [F]
369. Rydall AC, Rodin GM, Olmsted MP, Devenyi RG, Daneman D: Disordered eating behavior and microvascular complications in young women with insulin-dependent diabetes mellitus. N Engl J Med 1997; 336:1849–1854 [C]
370. Nielsen S, Emborg C, Molbak AG: Mortality in concurrent type 1 diabetes and anorexia nervosa. Diabetes Care 2002; 25:309–312 [G]
371. Rodin G, Daneman D, DeGroot J: The interaction of chronic medical illness and eating disorders, in Medical Issues and the Eating Disorders: The Interface. Brunner/Mazel Eating Disorders Monograph Series, No. 7. Edited by Kaplan AS, Garfinkel PE. New York, Brunner/Mazel, 1993, pp 176–192 [G]
372. Yager J, Young RT: Eating disorders and diabetes mellitus, in Special Problems in Managing Eating Disorders. Edited by Yager J, Gwirtsman HE, Edelstein CK. Washington, DC, American Psychiatric Press, 1992, pp 185–203 [G]
373. Takii M, Uchigata Y, Komaki G, Nozaki T, Kawai H, Iwamoto Y, Kubo C: An integrated inpatient therapy for type 1 diabetic females with bulimia nervosa: a 3-year follow-up study. J Psychosom Res 2003; 55:349–356 [B]
374. Herpertz S, Albus C, Kielmann R, Hagemann-Patt H, Lichtblau K, Kohle K, Mann K, Senf W: Comorbidity of diabetes mellitus and eating disorders: a follow-up study. J Psychosom Res 2001; 51:673–678 [G]
375. Powers PS: Management of patients with comorbid medical conditions, in Handbook of Treatment for Eating Disorders. Edited by Garner DM, Garfinkel PE. New York, Guilford, 1997, pp 424–436 [G]
376. Brinch M, Isager T, Tolstrup K: Anorexia nervosa and motherhood: reproduction pattern and mothering behavior of 50 women. Acta Psychiatr Scand 1988; 77:611–617 [C]

377. Rand CWS, Willis DC, Koldau JM: Pregnancy after anorexia nervosa. Int J Eat Disord 1987; 6:671–674 [G]
378. Stewart DE, Raskin J, Garfinkel PE, MacDonald OL, Robinson GE: Anorexia nervosa, bulimia, and pregnancy. Am J Obstet Gynecol 1987; 157:1194–1198 [C]
379. Treasure JL, Russell GF: Intrauterine growth and neonatal weight gain in babies of women with anorexia nervosa. Br Med J (Clin Res Ed) 1988; 296:1038 [B]
380. Kouba S, Hallstrom T, Lindholm C, Hirschberg AL: Pregnancy and neonatal outcomes in women with eating disorders. Obstet Gynecol 2005; 105:255–260 [D]
381. Franko DL, Blais MA, Becker AE, Delinsky SS, Greenwood DN, Flores AT, Ekeblad ER, Eddy KT, Herzog DB: Pregnancy complications and neonatal outcomes in women with eating disorders. Am J Psychiatry 2001; 158:1461–1466 [C]
382. Carmichael SL, Shaw GM, Schaffer DM, Laurent C, Selvin S: Dieting behaviors and risk of neural tube defects. Am J Epidemiol 2003; 158:1127–1131 [D]
383. Carter FA, McIntosh VV, Joyce PR, Frampton CM, Bulik CM: Bulimia nervosa, childbirth, and psychopathology. J Psychosom Res 2003; 55:357–361 [C]
384. Blais MA, Becker AE, Burwell RA, Flores AT, Nussbaum KM, Greenwood DN, Ekeblad ER, Herzog DB: Pregnancy: outcome and impact on symptomatology in a cohort of eating-disordered women. Int J Eat Disord 2000; 27:140–149 [C]
385. Sollid CP, Wisborg K, Hjort J, Secher NJ: Eating disorder that was diagnosed before pregnancy and pregnancy outcome. Am J Obstet Gynecol 2004; 190:206–210 [D]
386. Agras WS, Hammer LD, McNicholas F: A prospective study of the influence of eating-disordered mothers on their children. Int J Eat Disord 1999; 25:253–262 [C]
387. Russell GF, Treasure J, Eisler I: Mothers with anorexia nervosa who underfeed their children: their recognition and management. Psychol Med 1998; 28:93–108 [D]
388. Stein A, Woolley H, Cooper SD, Fairburn CG: An observational study of mothers with eating disorders and their infants. J Child Psychol Psychiatry 1994; 35:733–748 [C]
389. Morgan JF, McCluskey SE, Brunton JN, Hubert LJ: Polycystic ovarian morphology and bulimia nervosa: a 9-year follow-up study. Fertil Steril 2002; 77:928–931 [C]
390. Carlat DJ, Camargo CA Jr, Herzog DB: Eating disorders in males: a report on 135 patients. Am J Psychiatry 1997; 154:1127–1132 [G]
391. Andersen AE (ed): Males With Eating Disorders. Brunner/Mazel Eating Disorders Monograph Series, No. 4. Philadelphia, Brunner/Mazel, 1990 [G]
392. Fichter M, Krenn H: Eating disorders in males, in Handbook of Eating Disorders, 2nd ed. Edited by Treasure J, Schmidt U, van Furth E. West Sussex, UK, Wiley, 2003, pp 369–384 [G]
393. Braun DL, Sunday SR, Huang A, Halmi KA: More males seek treatment for eating disorders. Int J Eat Disord 1999; 25:415–424 [C]
394. Striegel-Moore RH, Garvin V, Dohm FA, Rosenheck RA: Eating disorders in a national sample of hospitalized female and male veterans: detection rates and psychiatric comorbidity. Int J Eat Disord 1999; 25:405–414 [D]
395. Woodside DB, Garfinkel PE, Lin E, Goering P, Kaplan AS, Goldbloom DS, Kennedy SH: Comparisons of men with full or partial eating disorders, men without eating disorders, and women with eating disorders in the community. Am J Psychiatry 2001; 158:570–574 [D]
396. Ackard DM, Neumark-Sztainer D, Hannan PJ, French S, Story M: Binge and purge behavior among adolescents: associations with sexual and physical abuse in a nationally representative sample: the Commonwealth Fund survey. Child Abuse Negl 2001; 25:771–785 [G]
397. Fernandez-Aranda F, Aitken A, Badia L, Giménez D, Collier D, Treasure J: Personality and psychopathological traits of males with an eating disorder. Eur Eating Disorders Rev 2004; 12:367–374 [D]
398. Powers PS, Spratt EG: Males and females with eating disorders. J Treatment and Prevention 1994; 2:197–214 [D]

399. Andersen AE: Gender-related aspects of eating disorders: a guide to practice. J Gend Specif Med 1999; 2:47–54 [F]
400. Barry DT, Grilo CM, Masheb RM: Gender differences in patients with binge eating disorder. Int J Eat Disord 2002; 31:63–70 [G]
401. Grant JE, Kim SW, Eckert ED: Body dysmorphic disorder in patients with anorexia nervosa: prevalence, clinical features, and delusionality of body image. Int J Eat Disord 2002; 32:291–300 [G]
402. Phillips KA, Diaz SF: Gender differences in body dysmorphic disorder. J Nerv Ment Dis 1997; 185:570–577 [G]
403. Perugi G, Akiskal HS, Giannotti D, Frare F, Di Vaio S, Cassano GB: Gender-related differences in body dysmorphic disorder (dysmorphophobia). J Nerv Ment Dis 1997; 185:578–582 [G]
404. Grant JE, Phillips KA: Is anorexia nervosa a subtype of body dysmorphic disorder? probably not, but read on. Harv Rev Psychiatry 2004; 12:123–126 [G]
405. Woodside DB, Bulik CM, Thornton L, Klump KL, Tozzi F, Fichter MM, Halmi KA, Kaplan AS, Strober M, Devlin B, Bacanu SA, Ganjei K, Crow S, Mitchell J, Rotondo A, Mauri M, Cassano G, Keel P, Berrettini WH, Kaye WH: Personality in men with eating disorders. J Psychosom Res 2004; 57:273–278 [D]
406. Arnow B, Sanders M, Steiner H: Pre-pubertal vs post-pubertal anorexia nervosa: psychological characteristics. Clin Child Psychol and Psychiatry 1999; 4:403–416 [G]
407. Lask B, Bryant-Waugh R: Childhood Onset Anorexia Nervosa and Related Eating Disorders. Hillsdale, NJ, Lawrence Erlbaum Associates, 1993 [G]
408. Cooper PJ, Watkins B, Bryant-Waugh R, Lask B: The nosological status of early onset anorexia nervosa. Psychol Med 2002; 32:873–880 [D]
409. Golden NH, Kreitzer P, Jacobson MS, Chasalow FI, Schebendach J, Freedman SM, Shenker IR: Disturbances in growth hormone secretion and action in adolescents with anorexia nervosa. J Pediatr 1994; 125:655–660 [D]
410. Nussbaum M, Baird D, Sonnenblick M, Cowan K, Shenker IR: Short stature in anorexia nervosa patients. J Adolesc Health Care 1985; 6:453–455 [D]
411. Pfeiffer RJ, Lucas AR, Ilstrup DM: Effect of anorexia nervosa on linear growth. Clin Pediatr (Phila) 1986; 25:7–12 [G]
412. Misra M, Aggarwal A, Miller KK, Almazan C, Worley M, Soyka LA, Herzog DB, Klibanski A: Effects of anorexia nervosa on clinical, hematologic, biochemical, and bone density parameters in community-dwelling adolescent girls. Pediatrics 2004; 114:1574–1583 [D]
413. Bachrach LK, Guido D, Katzman D, Litt IF, Marcus R: Decreased bone density in adolescent girls with anorexia nervosa. Pediatrics 1990; 86:440–447 [C]
414. Bachrach LK, Katzman DK, Litt IF, Guido D, Marcus R: Recovery from osteopenia in adolescent girls with anorexia nervosa. J Clin Endocrinol Metab 1991; 72:602–606 [B]
415. Sokol MS: Infection-triggered anorexia nervosa in children: clinical description of four cases. J Child Adolesc Psychopharmacol 2000; 10:133–145 [B]
416. Swedo SE, Leonard HL, Rapoport JL: The pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) subgroup: separating fact from fiction. Pediatrics 2004; 113:907–911 [F]
417. Zerbe K: Eating disorders in middle and later life: a neglected problem. Primary Psychiatry 2003; 10:80–83 [F]
418. Zerbe K: Eating disorders in midlife and beyond: transition and transformation at a crucial developmental stage. Psychoanal Psychother 2002; 19:9–19 [G]
419. Zerbe K, Domnitei D: Eating disorders at middle age, parts 1 and 2. Eating Disorders Review 2004; 15:1–2 [F]

420. Forman ME, Davis WN: Characteristics of middle-aged women in inpatient treatment for eating disorders. Eating Disorders: The Journal of Treatment and Prevention 2005; 13:231–243 [B]
421. Lucas AR, Crowson CS, O'Fallon WM, Melton LJ III: The ups and downs of anorexia nervosa. Int J Eat Disord 1999; 26:397–405 [G]
422. Gupta MA: Concerns about aging and a drive for thinness: a factor in the biopsychosocial model of eating disorders? Int J Eat Disord 1995; 18:351–357 [B]
423. Boast N, Coker E, Wakeling A: Anorexia nervosa of late onset. Br J Psychiatry 1992; 160:257–260 [G]
424. Becker AE: New global perspectives on eating disorders. Cult Med Psychiatry 2004; 28:433–437 [G]
425. Hoek HW, van Harten PN, Hermans KM, Katzman MA, Matroos GE, Susser ES: The incidence of anorexia nervosa on Curacao. Am J Psychiatry 2005; 162:748–752 [G]
426. Katzman MA, Hermans KM, Van Hoeken D, Hoek HW: Not your "typical island woman": anorexia nervosa is reported only in subcultures in Curacao. Cult Med Psychiatry 2004; 28:463–492 [G]
427. Nasser M, Katzman MA, Gordon RA (eds): Eating Disorders and Cultures in Transition. New York, Taylor & Francis, 2001 [G]
428. Popkin BM, Gordon-Larsen P: The nutrition transition: worldwide obesity dynamics and their determinants. Int J Obes Relat Metab Disord 2004; 28(suppl 3):S2–S9 [E]
429. Becker AE, Burwell RA, Gilman SE, Herzog DB, Hamburg P: Eating behaviours and attitudes following prolonged exposure to television among ethnic Fijian adolescent girls. Br J Psychiatry 2002; 180:509–514 [C]
430. Becker AE: Eating disorders and social transition. Primary Psychiatry 2003; 10:75–79 [F]
431. Tsai G: Eating disorders in the Far East. Eat Weight Disord 2000; 5:183–197 [E]
432. Gordon RA: Eating Disorders: Anatomy of a Social Epidemic, 2nd ed. Oxford, UK, Blackwell, 2000 [G]
433. Katzman MA, Lee S: Beyond body image: the integration of feminist and transcultural theories in the understanding of self starvation. Int J Eat Disord 1997; 22:385–394 [F]
434. le Grange D, Louw J, Breen A, Katzman MA: The meaning of "self-starvation" in impoverished black adolescents in South Africa. Cult Med Psychiatry 2004; 28:439–461 [G]
435. Lee S, Ho TP, Hsu LK: Fat phobic and non-fat phobic anorexia nervosa: a comparative study of 70 Chinese patients in Hong Kong. Psychol Med 1993; 23:999–1017 [D]
436. Ramacciotti CE, Dell'Osso L, Paoli RA, Ciapparelli A, Coli E, Kaplan AS, Garfinkel PE: Characteristics of eating disorder patients without a drive for thinness. Int J Eat Disord 2002; 32:206–212 [G]
437. Stephens NM, Schumaker JF, Sibiya TE: Eating disorders and dieting behavior among Australian and Swazi university students. J Soc Psychol 1999; 139:153–158 [G]
438. Sjostedt JP, Schumaker JF, Nathawat SS: Eating disorders among Indian and Australian university students. J Soc Psychol 1998; 138:351–357 [G]
439. Johnson C, Powers PS, Dick R: Athletes and eating disorders: the National Collegiate Athletic Association study. Int J Eat Disord 1999; 26:179–188 [G]
440. Sherman RT, Thompson RA: The female athlete triad. J Sch Nurs 2004; 20:197–202 [G]
441. Thompson RA, Sherman RT: Helping Athletes With Eating Disorders. Champaign, IL, Human Kinetics, 1993 [G]
442. Williamson DA, Netemeyer RG, Jackman LP, Anderson DA, Funsch CL, Rabalais JY: Structural equation modeling of risk factors for the development of eating disorder symptoms in female athletes. Int J Eat Disord 1995; 17:387–393 [E]
443. Fulkerson JA, Keel PK, Leon GR, Dorr T: Eating-disordered behaviors and personality characteristics of high school athletes and nonathletes. Int J Eat Disord 1999; 26:73–79 [D]

444. Davison KK, Earnest MB, Birch LL: Participation in aesthetic sports and girls' weight concerns at ages 5 and 7 years. Int J Eat Disord 2002; 31:312–317 [D]
445. Smolak L, Murnen SK, Ruble AE: Female athletes and eating problems: a meta-analysis. Int J Eat Disord 2000; 27:371–380 [E]
446. Davis C, Kennedy SH, Ravelski E, Dionne M: The role of physical activity in the development and maintenance of eating disorders. Psychol Med 1994; 24:957–967 [B]
447. Davis C, Katzman DK, Kirsh C: Compulsive physical activity in adolescents with anorexia nervosa: a psychobehavioral spiral of pathology. J Nerv Ment Dis 1999; 187:336–342 [G]
448. Klein DA, Bennett AS, Schebendach J, Foltin RW, Devlin MJ, Walsh BT: Exercise "addiction" in anorexia nervosa: model development and pilot data. CNS Spectr 2004; 9:531–537 [G]
449. Otis CL, Drinkwater B, Johnson M, Loucks A, Wilmore J: American College of Sports Medicine position stand: the female athlete triad. Med Sci Sports Exerc 1997; 29:i–ix [G]
450. Beals KA, Manore MM: Disorders of the female athlete triad among collegiate athletes. Int J Sport Nutr Exerc Metab 2002; 12:281–293 [G]
451. Raglin JS, Wilson GS: Overtraining in athletes, in Emotions in Sport. Edited by Hanin YL. Champaign, IL, Human Kinetics, 1999, pp 191–207 [G]
452. Yates A: Athletes, eating disorders, and the overtraining syndrome, in Activity Anorexia: Theory, Research, and Treatment. Edited by Epling WF, Pierce WD. Hillsdale, NJ, Lawrence Erlbaum Associates, 1996, pp 179–188 [G]
453. Hebebrand J, Exner C, Hebebrand K, Holtkamp C, Casper RC, Remschmidt H, Herpertz-Dahlmann B, Klingenspor M: Hyperactivity in patients with anorexia nervosa and in semi-starved rats: evidence for a pivotal role of hypoleptinemia. Physiol Behav 2003; 79:25–37 [G]
454. Epling WF, Pierce WD (eds): Activity Anorexia: Theory, Research, and Treatment. Hillsdale, NJ, Lawrence Erlbaum Associates, 1996 [G]
455. Mann T, Nolen-Hoeksema S, Huang K, Burgard D, Wright A, Hanson K: Are two interventions worse than none? joint primary and secondary prevention of eating disorders in college females. Health Psychol 1997; 16:215–225 [B]
456. Shisslak CM, Crago M, Estes LS, Gray N: Content and method of developmentally appropriate prevention programs, in The Developmental Psychopathology of Eating Disorders: Implications for Research, Prevention, and Treatment. Edited by Smolak L, Levine MP, Striegel-Moore R. Mahwah, NJ, Lawrence Erlbaum Associates, 1996, pp 341–363 [E]
457. Glenn AA, Pollard JW, Denovcheck JA, Smith AF: Eating disorders on campus: a procedure for community intervention. J Couns Dev 1986; 65:163–165 [G]
458. Coll KM: Mandatory psychiatric withdrawal from public colleges and universities: a review of potential legal violations and appropriate use. J College Student Psychotherapy 1991; 5:91–98 [E]
459. Steiner H, Kwan W, Shaffer TG, Walker S, Miller S, Sagar A, Lock J: Risk and protective factors for juvenile eating disorders. Eur Child Adolesc Psychiatry 2003; 12(suppl 1):I38–I46 [F]
460. Leonard S, Steiger H, Kao A: Childhood and adulthood abuse in bulimic and nonbulimic women: prevalences and psychological correlates. Int J Eat Disord 2003; 33:397–405 [D]
461. Anderluh MB, Tchanturia K, Rabe-Hesketh S, Treasure J: Childhood obsessive-compulsive personality traits in adult women with eating disorders: defining a broader eating disorder phenotype. Am J Psychiatry 2003; 160:242–247 [D]
462. Scourfield J: Anorexia by proxy: are the children of anorexic mothers an at-risk group? Int J Eat Disord 1995; 18:371–374 [G]
463. Ward A, Ramsay R, Turnbull S, Steele M, Steele H, Treasure J: Attachment in anorexia nervosa: a transgenerational perspective. Br J Med Psychol 2001; 74:497–505 [G]
464. Seigel K, Hetta J: Exercise and eating disorder symptoms among young females. Eat Weight Disord 2001; 6:32–39 [D]

465. Klump KL, Ringham RM, Marcus MD, Kaye WH: A family history/family study approach to examining the nature of eating disorder risk in ballet dancers: evidence for gene-environment combinations? Paper presented at the annual meeting of the Eating Disorders Research Society, Albuquerque, November 29–December 2, 2001 [D]
466. Powers PS, Schocken DD, Boyd FR: Comparison of habitual runners and anorexia nervosa patients. Int J Eat Disord 1998; 23:133–143 [G]
467. Choi PY, Pope HG Jr, Olivardia R: Muscle dysmorphia: a new syndrome in weightlifters. Br J Sports Med 2002; 36:375–376 [G]
468. Pope HG Jr, Gruber AJ, Choi P, Olivardia R, Phillips KA: Muscle dysmorphia: an underrecognized form of body dysmorphic disorder. Psychosomatics 1997; 38:548–557 [G]
469. Morgan JF: From Charles Atlas to Adonis complex: fat is more than a feminist issue. Lancet 2000; 356:1372–1373 [G]
470. Pope HG Jr, Phillips KA, Olivardia R: The Adonis Complex: The Secret Crisis of Male Body Obsession. New York, Free Press, 2000 [G]
471. Stice E, Shaw H: Eating disorder prevention programs: a meta-analytic review. Psychol Bull 2004; 130:206–227 [E]
472. Matusek JA, Wendt SJ, Wiseman CV: Dissonance thin-ideal and didactic healthy behavior eating disorder prevention programs: results from a controlled trial. Int J Eat Disord 2004; 36:376–388 [A–]
473. Elliot DL, Goldberg L, Moe EL, Defrancesco CA, Durham MB, Hix-Small H: Preventing substance use and disordered eating: initial outcomes of the ATHENA (Athletes Targeting Healthy Exercise and Nutrition Alternatives) program. Arch Pediatr Adolesc Med 2004; 158:1043–1049 [A–]
474. Stice E, Trost A, Chase A: Healthy weight control and dissonance-based eating disorder prevention programs: results from a controlled trial. Int J Eat Disord 2003; 33:10–21 [A–]
475. Shisslak CM, Crago M, Neal ME, Swain B: Primary prevention of eating disorders. J Consult Clin Psychol 1987; 55:660–667 [G]
476. Bulik CM, Sullivan PF, Fear J, Pickering A: Predictors of the development of bulimia nervosa in women with anorexia nervosa. J Nerv Ment Dis 1997; 185:704–707 [G]
477. Tozzi F, Thornton LM, Klump KL, Fichter MM, Halmi KA, Kaplan AS, Strober M, Woodside DB, Crow S, Mitchell J, Rotondo A, Mauri M, Cassano G, Keel P, Plotnicov KH, Pollice C, Lilenfeld LR, Berrettini WH, Bulik CM, Kaye WH: Symptom fluctuation in eating disorders: correlates of diagnostic crossover. Am J Psychiatry 2005; 162:732–740 [C]
478. Strober M, Freeman R, Morrell W: Atypical anorexia nervosa: separation from typical cases in course and outcome in a long-term prospective study. Int J Eat Disord 1999; 25:135–142 [C]
479. Wolk SL, Loeb KL, Walsh BT: Assessment of patients with anorexia nervosa: interview versus self-report. Int J Eat Disord 2005; 37:92–99 [G]
480. Beumont PJ, George GC, Smart DE: "Dieters" and "vomiters and purgers" in anorexia nervosa. Psychol Med 1976; 6:617–622 [C]
481. Casper RC, Eckert ED, Halmi KA, Goldberg SC, Davis JM: Bulimia: its incidence and clinical importance in patients with anorexia nervosa. Arch Gen Psychiatry 1980; 37:1030–1035 [C]
482. Garfinkel PE, Moldofsky H, Garner DM: The heterogeneity of anorexia nervosa: bulimia as a distinct subgroup. Arch Gen Psychiatry 1980; 37:1036–1040 [C]
483. Kassett JA, Gwirtsman HE, Kaye WH, Brandt HA, Jimerson DC: Pattern of onset of bulimic symptoms in anorexia nervosa. Am J Psychiatry 1988; 145:1287–1288 [C]
484. Bunnell DW, Shenker IR, Nussbaum MP, Jacobson MS, Cooper P, Phil D: Subclinical versus formal eating disorders: differentiating psychological features. Int J Eat Disord 1990; 9:357–362 [D]
485. Goss K, Gilbert P: Eating disorders, shame and pride: a cognitive-behavioural functional analysis, in Body Shame: Conceptualization, Research, and Treatment. Edited by Gilbert P, Miles J. East Sussex, UK, Brunner/Routledge, 2002, pp 219–255 [G]

486. Favaro A, Ferrara S, Santonastaso P: Impulsive and compulsive self-injurious behavior and eating disorders: an epidemiological study, in Self-Harm Behavior and Eating Disorders: Dynamics, Assessment, and Treatment. Edited by Levitt JL, Sansone RA, Cohn L. New York, Brunner/Routledge, 2004, pp 31–44 [G]
487. Favaro A, Santonastaso P: Different types of self-injurious behavior in bulimia nervosa. Compr Psychiatry 1999; 40:57–60 [G]
488. McDermott BM, Batik M, Roberts L, Gibbon P: Parent and child report of family functioning in a clinical child and adolescent eating disorders sample. Aust N Z J Psychiatry 2002; 36:509–514 [G]
489. Neumark-Sztainer D, Story M, Hannan PJ, Beuhring T, Resnick MD: Disordered eating among adolescents: associations with sexual/physical abuse and other familial/psychosocial factors. Int J Eat Disord 2000; 28:249–258 [C]
490. Klump KL, Bulik CM, Pollice C, Halmi KA, Fichter MM, Berrettini WH, Devlin B, Strober M, Kaplan A, Woodside DB, Treasure J, Shabbout M, Lilenfeld LR, Plotnicov KH, Kaye WH: Temperament and character in women with anorexia nervosa. J Nerv Ment Dis 2000; 188:559–567 [D]
491. Paul T, Schroeter K, Dahme B, Nutzinger DO: Self-injurious behavior in women with eating disorders. Am J Psychiatry 2002; 159:408–411 [G]
492. Brewerton TD, Dansky BS, Kilpatrick DG, O'Neil PM: Bulimia nervosa, PTSD and "forgetting": results from the National Women's Study, in Trauma and Memory. Edited by Williams LM, Banyard VL. Durham, NC, Sage, 1999, pp 127–138 [G]
493. Casper RC, Davis JM: On the course of anorexia nervosa. Am J Psychiatry 1977; 134:974–978 [C]
494. Garfinkel PE, Kaplan AS: Starvation-based perpetuating mechanisms in anorexia nervosa and bulimia. Int J Eat Disord 1985; 4:651–655 [E]
495. Sutandar-Pinnock K, Blake WD, Carter JC, Olmsted MP, Kaplan AS: Perfectionism in anorexia nervosa: a 6- to 24-month follow-up study. Int J Eat Disord 2003; 33:225–229 [C]
496. Fichter MM: Starvation-related endocrine changes, in Psychobiology and Treatment of Anorexia Nervosa and Bulimia (American Psychopathological Association Series). Edited by Halmi KA. Washington, DC, American Psychiatric Association, 1993, pp 193–210 [G]
497. Fichter MM, Pirke KM, Pollinger J, Wolfram G, Brunner E: Disturbances in the hypothalamo-pituitary-adrenal and other neuroendocrine axes in bulimia. Biol Psychiatry 1990; 27:1021–1037 [D]
498. Vestergaard P, Emborg C, Stoving RK, Hagen C, Mosekilde L, Brixen K: Fractures in patients with anorexia nervosa, bulimia nervosa, and other eating disorders: a nationwide register study. Int J Eat Disord 2002; 32:301–308 [C]
499. Rigotti NA, Neer RM, Skates SJ, Herzog DB, Nussbaum SR: The clinical course of osteoporosis in anorexia nervosa: a longitudinal study of cortical bone mass. JAMA 1991; 265:1133–1138 [C]
500. Hartman D, Crisp A, Rooney B, Rackow C, Atkinson R, Patel S: Bone density of women who have recovered from anorexia nervosa. Int J Eat Disord 2000; 28:107–112 [D]
501. Modan-Moses D, Yaroslavsky A, Novikov I, Segev S, Toledano A, Miterany E, Stein D: Stunting of growth as a major feature of anorexia nervosa in male adolescents. Pediatrics 2003; 111:270–276 [C]
502. Lantzouni E, Frank GR, Golden NH, Shenker RI: Reversibility of growth stunting in early onset anorexia nervosa: a prospective study. J Adolesc Health 2002; 31:162–165 [C]
503. Isner JM, Roberts WC, Heymsfield SB, Yager J: Anorexia nervosa and sudden death. Ann Intern Med 1985; 102:49–52 [G]
504. Beumont PJ, Kopec-Schrader EM, Lennerts W: Eating disorder patients at a NSW teaching hospital: a comparison with state-wide data. Aust N Z J Psychiatry 1995; 29:96–103 [G]

505. de Zwaan M, Mitchell JE: Medical complications of anorexia nervosa and bulimia nervosa, in Medical Issues and the Eating Disorders: The Interface. Brunner/Mazel Eating Disorders Monograph Series, No. 7. Edited by Kaplan AS, Garfinkel PE. New York, Brunner/Mazel, 1993, pp 60–100 [G]
506. Halmi KA: Anorexia nervosa and bulimia. Annu Rev Med 1987; 38:373–380 [F]
507. Herzog DB, Copeland PM: Eating disorders. N Engl J Med 1985; 313:295–303 [F]
508. Swayze VW, Andersen AE, Andreasen NC, Arndt S, Sato Y, Ziebell S: Brain tissue volume segmentation in patients with anorexia nervosa before and after weight normalization. Int J Eat Disord 2003; 33:33–44 [D]
509. Katzman DK, Lambe EK, Mikulis DJ, Ridgley JN, Goldbloom DS, Zipursky RB: Cerebral gray matter and white matter volume deficits in adolescent girls with anorexia nervosa. J Pediatr 1996; 129:794–803 [D]
510. Kingston K, Szmukler G, Andrewes D, Tress B, Desmond P: Neuropsychological and structural brain changes in anorexia nervosa before and after refeeding. Psychol Med 1996; 26:15–28 [C]
511. Katzman DK, Christensen B, Young AR, Zipursky RB: Starving the brain: structural abnormalities and cognitive impairment in adolescents with anorexia nervosa. Semin Clin Neuropsychiatry 2001; 6:146–152 [F]
512. Powers PS, Tyson IB, Stevens BA, Heal AV: Total body potassium and serum potassium among eating disorder patients. Int J Eat Disord 1995; 18:269–276 [G]
513. Wolfe BE, Metzger ED, Levine JM, Jimerson DC: Laboratory screening for electrolyte abnormalities and anemia in bulimia nervosa: a controlled study. Int J Eat Disord 2001; 30:288–293 [D]
514. Mitchell JE, Pyle RL, Eckert ED, Hatsukami D, Lentz R: Electrolyte and other physiological abnormalities in patients with bulimia. Psychol Med 1983; 13:273–278 [G]
515. Kaplan AS: Hyperamylasemia and bulimia: a clinical review. Int J Eat Disord 1987; 6:537–543 [G]
516. Hoek HW, van Hoeken D: Review of the prevalence and incidence of eating disorders. Int J Eat Disord 2003; 34:383–396 [F]
517. Walters EE, Kendler KS: Anorexia nervosa and anorexic-like syndromes in a population-based female twin sample. Am J Psychiatry 1995; 152:64–71 [D]
518. Garfinkel PE, Lin E, Goering P, Spegg C, Goldbloom DS, Kennedy S, Kaplan AS, Woodside DB: Bulimia nervosa in a Canadian community sample: prevalence and comparison of subgroups. Am J Psychiatry 1995; 152:1052–1058 [C]
519. Kendler KS, MacLean C, Neale M, Kessler R, Heath A, Eaves L: The genetic epidemiology of bulimia nervosa. Am J Psychiatry 1991; 148:1627–1637 [G]
520. Keel PK, Heatherton TF, Dorer DJ, Joiner TE, Haedt A: How has bulimia nervosa changed over time? results from a cross-sectional and longitudinal study in college students: 1982, 1992, and 2002. Paper presented at the annual meeting of the Eating Disorders Research Society, Amsterdam, October 7–9, 2004 [C]
521. Keel PK, Klump KL: Are eating disorders culture-bound syndromes? implications for conceptualizing their etiology. Psychol Bull 2003; 129:747–769 [E]
522. Striegel-Moore RH, Dohm FA, Kraemer HC, Taylor CB, Daniels S, Crawford PB, Schreiber GB: Eating disorders in white and black women. Am J Psychiatry 2003; 160:1326–1331 [G]
523. Neumark-Sztainer D, Croll J, Story M, Hannan PJ, French SA, Perry C: Ethnic/racial differences in weight-related concerns and behaviors among adolescent girls and boys: findings from Project EAT. J Psychosom Res 2002; 53:963–974 [D]
524. Crago M, Shisslak CM, Estes LS: Eating disturbances among American minority groups: a review. Int J Eat Disord 1996; 19:239–248 [F]
525. Striegel-Moore RH, Schreiber GB, Pike KM, Wilfley DE, Rodin J: Drive for thinness in black and white preadolescent girls. Int J Eat Disord 1995; 18:59–69 [G]

526. Hermes SF, Keel PK: The influence of puberty and ethnicity on awareness and internalization of the thin ideal. Int J Eat Disord 2003; 33:465–467 [G]
527. Striegel-Moore RH, Schreiber GB, Lo A, Crawford P, Obarzanek E, Rodin J: Eating disorder symptoms in a cohort of 11- to 16-year-old black and white girls: the NHLBI Growth and Health Study. Int J Eat Disord 2000; 27:49–66 [C]
528. Kjelsas E, Bjornstrom C, Gotestam KG: Prevalence of eating disorders in female and male adolescents (14-15 years). Eat Behav 2004; 5:13–25 [G]
529. Maekawa H: The factors and process of weight and shape concerns in Japanese female adolescents. Paper presented at the International Conference on Eating Disorders, Orlando, Fla, April 29–May 2, 2004 [G]
530. Bell CA, Adair LS, Popkin BM: Ethnic differences in the association between body mass index and hypertension. Am J Epidemiol 2002; 155:346–353 [C]
531. Lee S, Lee AM: Disordered eating in three communities of China: a comparative study of female high school students in Hong Kong, Shenzhen, and rural Hunan. Int J Eat Disord 2000; 27:317–327 [G]
532. Lee S: Eating disorders are becoming more common in the East too. BMJ 2000; 321:1023 [G]
533. Lai KY: Anorexia nervosa in Chinese adolescents: does culture make a difference? J Adolesc 2000; 23:561–568 [C]
534. Nobakht M, Dezhkam M: An epidemiological study of eating disorders in Iran. Int J Eat Disord 2000; 28:265–271 [G]
535. le Grange D, Telch CF, Tibbs J: Eating attitudes and behaviors in 1,435 South African Caucasian and non-Caucasian college students. Am J Psychiatry 1998; 155:250–254 [G]
536. Mangweth B, Hudson JI, Pope HG, Hausmann A, De Col C, Laird NM, Beibl W, Tsuang MT: Family study of the aggregation of eating disorders and mood disorders. Psychol Med 2003; 33:1319–1323 [D]
537. Strober M, Freeman R, Lampert C, Diamond J, Kaye W: Males with anorexia nervosa: a controlled study of eating disorders in first-degree relatives. Int J Eat Disord 2001; 29:263–269 [D]
538. Lilenfeld LR, Kaye WH, Greeno CG, Merikangas KR, Plotnicov K, Pollice C, Rao R, Strober M, Bulik CM, Nagy L: A controlled family study of anorexia nervosa and bulimia nervosa: psychiatric disorders in first-degree relatives and effects of proband comorbidity. Arch Gen Psychiatry 1998; 55:603–610 [D]
539. Strober M, Freeman R, Lampert C, Diamond J, Kaye W: Controlled family study of anorexia nervosa and bulimia nervosa: evidence of shared liability and transmission of partial syndromes. Am J Psychiatry 2000; 157:393–401 [D]
540. Lilenfeld LR, Kaye WH, Greeno CG, Merikangas KR, Plotnicov K, Pollice C, Rao R, Strober M, Bulik CM, Nagy L: Psychiatric disorders in women with bulimia nervosa and their first-degree relatives: effects of comorbid substance dependence. Int J Eat Disord 1997; 22:253–264 [D]
541. Lilenfeld LR, Stein D, Bulik CM, Strober M, Plotnicov K, Pollice C, Rao R, Merikangas KR, Nagy L, Kaye WH: Personality traits among currently eating disordered, recovered and never ill first-degree female relatives of bulimic and control women. Psychol Med 2000; 30:1399–1410 [D]
542. Becker AE, Burwell RA, Navara K, Gilman SE: Binge eating and binge eating disorder in a small-scale, indigenous society: the view from Fiji. Int J Eat Disord 2003; 34:423–431 [C]
543. Godart NT, Flament MF, Perdereau F, Jeammet P: Comorbidity between eating disorders and anxiety disorders: a review. Int J Eat Disord 2002; 32:253–270 [F]
544. Srinivasagam NM, Kaye WH, Plotnicov KH, Greeno C, Weltzin TE, Rao R: Persistent perfectionism, symmetry, and exactness after long-term recovery from anorexia nervosa. Am J Psychiatry 1995; 152:1630–1634 [C]

545. Franko DL, Dorer DJ, Keel PK, Jackson S, Manzo MP, Herzog DB: How do eating disorders and alcohol use disorder influence each other? Int J Eat Disord 2005; 38:200–207 [C]
546. Ilkjaer K, Kortegaard L, Hoerder K, Joergensen J, Kyvik K, Gillberg C: Personality disorders in a total population twin cohort with eating disorders. Compr Psychiatry 2004; 45:261–267 [D]
547. Skodol AE, Oldham JM, Hyler SE, Kellman HD, Doidge N, Davies M: Comorbidity of DSM-III-R eating disorders and personality disorders. Int J Eat Disord 1993; 14:403–416 [D]
548. Vize CM, Cooper PJ: Sexual abuse in patients with eating disorder, patients with depression, and normal controls: a comparative study. Br J Psychiatry 1995; 167:80–85 [D]
549. Deep AL, Lilenfeld LR, Plotnicov KH, Pollice C, Kaye WH: Sexual abuse in eating disorder subtypes and control women: the role of comorbid substance dependence in bulimia nervosa. Int J Eat Disord 1999; 25:1–10 [D]
550. Brewerton TD: Psychological trauma and eating disorders, in AED Review of Eating Disorders, Part 1. Edited by Wonderlich S, Mitchell J, de Zwann M, Steiger H. Oxford, UK, Radcliffe, 2005, pp 137–154 [F]
551. Johnson JG, Cohen P, Kasen S, Brook JS: Childhood adversities associated with risk for eating disorders or weight problems during adolescence or early adulthood. Am J Psychiatry 2002; 159:394–400 [C]
552. Herpertz-Dahlmann B, Muller B, Herpertz S, Heussen N, Hebebrand J, Remschmidt H: Prospective 10-year follow-up in adolescent anorexia nervosa: course, outcome, psychiatric comorbidity, and psychosocial adaptation. J Child Psychol Psychiatry 2001; 42:603–612 [C]
553. Eckert ED, Halmi KA, Marchi P, Grove W, Crosby R: Ten-year follow-up of anorexia nervosa: clinical course and outcome. Psychol Med 1995; 25:143–156 [B]
554. Bulik CM, Sullivan PF, Fear JL, Pickering A: Outcome of anorexia nervosa: eating attitudes, personality, and parental bonding. Int J Eat Disord 2000; 28:139–147 [D]
555. Eddy KT, Keel PK, Dorer DJ, Delinsky SS, Franko DL, Herzog DB: Longitudinal comparison of anorexia nervosa subtypes. Int J Eat Disord 2002; 31:191–201 [C]
556. Fisher M: The course and outcome of eating disorders in adults and in adolescents: a review. Adolesc Med 2003; 14:149–158 [F]
557. Kreipe RE, Churchill BH, Strauss J: Long-term outcome of adolescents with anorexia nervosa. Arch Pediatr Adolesc Med 1989; 143:1322–1327 [C]
558. Harris EC, Barraclough B: Excess mortality of mental disorder. Br J Psychiatry 1998; 173:11–53 [F]
559. Nielsen S, Moller-Madsen S, Isager T, Jorgensen J, Pagsberg K, Theander S: Standardized mortality in eating disorders: a quantitative summary of previously published and new evidence. J Psychosom Res 1998; 44:413–434 [F]
560. Reas DL, Kjelsas E, Heggestad T, Eriksen L, Nielsen S, Gjertsen F, Gotestam KG: Characteristics of anorexia nervosa-related deaths in Norway (1992–2000): data from the National Patient Register and the Causes of Death Register. Int J Eat Disord 2005; 37:181–187 [G]
561. Sullivan PF: Mortality in anorexia nervosa. Am J Psychiatry 1995; 152:1073–1074 [E]
562. Keel PK, Mitchell JE, Miller KB, Davis TL, Crow SJ: Long-term outcome of bulimia nervosa. Arch Gen Psychiatry 1999; 56:63–69 [C]
563. Nielsen S: Epidemiology and mortality of eating disorders. Psychiatr Clin North Am 2001; 24:201–214, vii–viii [F]
564. Drewnowski A, Yee DK, Krahn DD: Dieting and Bulimia: A Continuum of Behaviors. Washington, DC, American Psychiatric Press, 1989 [G]
565. Yager J, Landsverk J, Edelstein CK: A 20-month follow-up study of 628 women with eating disorders, I: course and severity. Am J Psychiatry 1987; 144:1172–1177 [B]
566. Hsu LK, Sobkiewicz TA: Bulimia nervosa: a four- to six-year follow-up study. Psychol Med 1989; 19:1035–1038 [B]
567. Fairburn CG, Cooper Z, Doll HA, Norman P, O'Connor M: The natural course of bulimia nervosa and binge eating disorder in young women. Arch Gen Psychiatry 2000; 57:659–665 [C]

568. Herzog DB, Dorer DJ, Keel PK, Selwyn SE, Ekeblad ER, Flores AT, Greenwood DN, Burwell RA, Keller MB: Recovery and relapse in anorexia and bulimia nervosa: a 7.5-year follow-up study. J Am Acad Child Adolesc Psychiatry 1999; 38:829–837 [C]
569. Fichter MM, Quadflieg N: Six-year course of bulimia nervosa. Int J Eat Disord 1997; 22:361–384 [C]
570. Quadflieg N, Fichter MM: The course and outcome of bulimia nervosa. Eur Child Adolesc Psychiatry 2003; 12(suppl 1):I99–I109 [C]
571. Crow SJ, Thuras P, Keel PK, Mitchell JE: Long-term menstrual and reproductive function in patients with bulimia nervosa. Am J Psychiatry 2002; 159:1048–1050 [C]
572. Keel PK, Mitchell JE, Davis TL, Crow SJ: Long-term impact of treatment in women diagnosed with bulimia nervosa. Int J Eat Disord 2002; 31:151–158 [C]
573. Reas DL, Schoemaker C, Zipfel S, Williamson DA: Prognostic value of duration of illness and early intervention in bulimia nervosa: a systematic review of the outcome literature. Int J Eat Disord 2001; 30:1–10 [F]
574. Milos G, Spindler A, Ruggiero G, Klaghofer R, Schnyder U: Comorbidity of obsessive-compulsive disorders and duration of eating disorders. Int J Eat Disord 2002; 31:284–289 [G]
575. Grilo CM, Sanislow CA, Shea MT, Skodol AE, Stout RL, Pagano ME, Yen S, McGlashan TH: The natural course of bulimia nervosa and eating disorder not otherwise specified is not influenced by personality disorders. Int J Eat Disord 2003; 34:319–330 [C]
576. Fairburn CG, Stice E, Cooper Z, Doll HA, Norman PA, O'Connor ME: Understanding persistence in bulimia nervosa: a 5-year naturalistic study. J Consult Clin Psychol 2003; 71:103–109 [C]
577. Franko DL, Keel PK, Dorer DJ, Blais MA, Delinsky SS, Eddy KT, Charat V, Renn R, Herzog DB: What predicts suicide attempts in women with eating disorders? Psychol Med 2004; 34:843–853 [C]
578. Spitzer RL, Devlin MJ, Walsh BT, Hasin D: Binge eating disorder: a multisite field trial of the diagnostic criteria. Int J Eat Disord 1992; 11:191–203 [D]
579. Dingemans AE, Bruna MJ, van Furth EF: Binge eating disorder: a review. Int J Obes Relat Metab Disord 2002; 26:299–307 [F]
580. Marcus MD, Kalarchian MA: Binge eating in children and adolescents. Int J Eat Disord 2003; 34(suppl):S47–S57 [F]
581. Specker S, de Zwaan M, Raymond N, Mitchell J: Psychopathology in subgroups of obese women with and without binge eating disorder. Compr Psychiatry 1994; 35:185–190 [D]
582. Cachelin FM, Striegel-Moore RH, Elder KA, Pike KM, Wilfley DE, Fairburn CG: Natural course of a community sample of women with binge eating disorder. Int J Eat Disord 1999; 25:45–54 [C]
583. Fichter MM, Quadflieg N, Gnutzmann A: Binge eating disorder: treatment outcome over a 6-year course. J Psychosom Res 1998; 44:385–405 [C]
584. Stunkard AJ, Allison KC: Binge eating disorder: disorder or marker? Int J Eat Disord 2003; 34(suppl):S107–S116 [F]
585. Raymond NC, de Zwaan M, Mitchell JE, Ackard D, Thuras P: Effect of a very low calorie diet on the diagnostic category of individuals with binge eating disorder. Int J Eat Disord 2002; 31:49–56 [B]
586. Sherwood NE, Jeffery RW, Wing RR: Binge status as a predictor of weight loss treatment outcome. Int J Obes Relat Metab Disord 1999; 23:485–493 [B]
587. Bulik CM, Sullivan PF, Kendler KS: Heritability of binge-eating and broadly defined bulimia nervosa. Biol Psychiatry 1998; 44:1210–1218 [E]
588. Bulik CM, Sullivan PF, Wade TD, Kendler KS: Twin studies of eating disorders: a review. Int J Eat Disord 2000; 27:1–20 [F]
589. Kendler KS: Twin studies of psychiatric illness: an update. Arch Gen Psychiatry 2001; 58:1005–1014 [E]

590. Klump KL, Holly A, Iacono WG, McGue M, Willson LE: Physical similarity and twin resemblance for eating attitudes and behaviors: a test of the equal environments assumption. Behav Genet 2000; 30:51–58 [G]
591. Wade TD, Bulik CM, Neale M, Kendler KS: Anorexia nervosa and major depression: shared genetic and environmental risk factors. Am J Psychiatry 2000; 157:469–471 [D]
592. Grice DE, Halmi KA, Fichter MM, Strober M, Woodside DB, Treasure JT, Kaplan AS, Magistretti PJ, Goldman D, Bulik CM, Kaye WH, Berrettini WH: Evidence for a susceptibility gene for anorexia nervosa on chromosome 1. Am J Hum Genet 2002; 70:787–792 [G]
593. Bulik CM, Devlin B, Bacanu SA, Thornton L, Klump KL, Fichter MM, Halmi KA, Kaplan AS, Strober M, Woodside DB, Bergen AW, Ganjei JK, Crow S, Mitchell J, Rotondo A, Mauri M, Cassano G, Keel P, Berrettini WH, Kaye WH: Significant linkage on chromosome 10p in families with bulimia nervosa. Am J Hum Genet 2003; 72:200–207 [G]
594. Devlin B, Bacanu SA, Klump KL, Bulik CM, Fichter MM, Halmi KA, Kaplan AS, Strober M, Treasure J, Woodside DB, Berrettini WH, Kaye WH: Linkage analysis of anorexia nervosa incorporating behavioral covariates. Hum Mol Genet 2002; 11:689–696 [G]
595. Hinney A, Remschmidt H, Hebebrand J: Candidate gene polymorphisms in eating disorders. Eur J Pharmacol 2000; 410:147–159 [F]
596. Gorwood P, Kipman A, Foulon C: The human genetics of anorexia nervosa. Eur J Pharmacol 2003; 480:163–170 [E]
597. Urwin RE, Nunn KP: Epistatic interaction between the monoamine oxidase A and serotonin transporter genes in anorexia nervosa. Eur J Hum Genet 2005; 13:370–375 [F]
598. Bergen AW, van den Bree MB, Yeager M, Welch R, Ganjei JK, Haque K, Bacanu S, Berrettini WH, Grice DE, Goldman D, Bulik CM, Klump K, Fichter M, Halmi K, Kaplan A, Strober M, Treasure J, Woodside B, Kaye WH: Candidate genes for anorexia nervosa in the 1p33-36 linkage region: serotonin 1D and delta opioid receptor loci exhibit significant association to anorexia nervosa. Mol Psychiatry 2003; 8:397–406 [D]
599. Birmingham CL, Gutierrez E, Jonat L, Beumont P: Randomized controlled trial of warming in anorexia nervosa. Int J Eat Disord 2004; 35:234–238 [A–]
600. Hill K, Bucuvalas J, McClain C, Kryscio R, Martini RT, Alfaro MP, Maloney M: Pilot study of growth hormone administration during the refeeding of malnourished anorexia nervosa patients. J Child Adolesc Psychopharmacol 2000; 10:3–8 [A]
601. Kaye WH, Weltzin TE, Hsu LK, Bulik CM: An open trial of fluoxetine in patients with anorexia nervosa. J Clin Psychiatry 1991; 52:464–471 [G]
602. Winter TA, O'Keefe SJ, Callanan M, Marks T: The effect of severe undernutrition and subsequent refeeding on whole-body metabolism and protein synthesis in human subjects. JPEN J Parenter Enteral Nutr 2005; 29:221–228 [D]
603. Levine JA, Eberhardt NL, Jensen MD: Role of nonexercise activity thermogenesis in resistance to fat gain in humans. Science 1999; 283:212–214 [B]
604. Van Wymelbeke V, Brondel L, Marcel Brun J, Rigaud D: Factors associated with the increase in resting energy expenditure during refeeding in malnourished anorexia nervosa patients. Am J Clin Nutr 2004; 80:1469–1477 [C]
605. Willer MG, Thuras P, Crow SJ: Implications of the changing utilization of hospitalization to treat anorexia nervosa. Am J Psychiatry 2005; 162:2374–2376 [F]
606. Baran SA, Weltzin TE, Kaye WH: Low discharge weight and outcome in anorexia nervosa. Am J Psychiatry 1995; 152:1070–1072 [C]
607. Commerford MC, Licinio J, Halmi KA: Guidelines for Discharging Eating Disorder Patients. Eating Disorders: The Journal of Treatment and Prevention 1997; 5:69–74 [G]
608. Andersen AE: Using medical information psychotherapeutically, in Eating Disorders: A Guide to Medical Care and Complications. Edited by Mehler PS, Andersen AE. Baltimore, Johns Hopkins University Press, 1999, pp 192–201 [G]

609. Bell L: What can we learn from consumer studies and qualitative research in the treatment of eating disorders? Eat Weight Disord 2003; 8:181–187 [F]
610. Prochaska JO, DiClemente CC: Stages of change in the modification of problem behaviors. Prog Behav Modif 1992; 28:183–218 [G]
611. Rieger E, Touyz S, Schotte D, Beumont P, Russell J, Clarke S, Kohn M, Griffiths R: Development of an instrument to assess readiness to recover in anorexia nervosa. Int J Eat Disord 2000; 28:387–396 [G]
612. Rieger E, Touyz SW, Beumont PJ: The Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ): information regarding its psychometric properties. Int J Eat Disord 2002; 32:24–38 [G]
613. Geller J, Cockell SJ, Drab DL: Assessing readiness for change in the eating disorders: the psychometric properties of the Readiness and Motivation Interview. Psychol Assess. 2001; 13:189–198 [G]
614. Geller J, Drab D: The Readiness and Motivation Interview: a symptom-specific measure of readiness for change in the eating disorders. Eur Eating Disorders Rev 1999; 7:259–278 [G]
615. Geller J, Drab-Hudson D, Whisenhunt B, Srikameswaran S: Readiness to change dietary restrictions predicts outcomes in the eating disorders. Eating Disorders: The Journal of Treatment and Prevention 2004; 12:209–224 [C]
616. Jordan PJ, Redding CA, Troop NA, Treasure J, Serpell L: Developing a stage of change measure for assessing recovery from anorexia nervosa. Eat Behav 2003; 3:365–385 [G]
617. Geller J: Estimating readiness for change in anorexia nervosa: comparing clients, clinicians, and research assessors. Int J Eat Disord 2002; 31:251–260 [C]
618. Anzai N, Lindsey-Dudley K, Bidwell RJ: Inpatient and partial hospital treatment for adolescent eating disorders. Child Adolesc Psychiatr Clin N Am 2002; 11:279–309 [G]
619. Wolfe BE, Gimby LB: Caring for the hospitalized patient with an eating disorder. Nurs Clin North Am 2003; 38:75–99 [G]
620. Agras WS: Eating Disorders: Management of Obesity, Bulimia and Anorexia Nervosa. Oxford, UK, Pergamon, 1987 [F]
621. Nusbaum JG, Drever E: Inpatient survey of nursing care measures for treatment of patients with anorexia nervosa. Issues Ment Health Nurs 1990; 11:175–184 [G]
622. Touyz SW, Beumont PJ, Glaun D, Phillips T, Cowie I: A comparison of lenient and strict operant conditioning programmes in refeeding patients with anorexia nervosa. Br J Psychiatry 1984; 144:517–520 [F]
623. Thien V, Thomas A, Markin D, Birmingham CL: Pilot study of a graded exercise program for the treatment of anorexia nervosa. Int J Eat Disord 2000; 28:101–106 [A]
624. Beumont PJ, Arthur B, Russell JD, Touyz SW: Excessive physical activity in dieting disorder patients: proposals for a supervised exercise program. Int J Eat Disord 1994; 15:21–36 [F]
625. Russell JD, Mira M, Allen BJ, Stewart PJ, Vizzard J, Arthur B, Beumont PJ: Effect of refeeding and exercise in restoration of body protein in anorexia nervosa. Basic Life Sci 1993; 60:207–210 [C]
626. Zuercher JNC: Efficacy of voluntary nasogastric tube feeding in female inpatients with anorexia nervosa. JPEN J Parenter Enteral Nutr 2003; 27:268–276 [G]
627. Imbierowicz K, Braks K, Jacoby GE, Geiser F, Conrad R, Schilling G, Liedtke R: High-caloric supplements in anorexia treatment. Int J Eat Disord 2002; 32:135–145 [B]
628. Silber TJ, Robb AS, Orrell-Valente JK, Ellis N, Valadez-Meltzer A, Dadson MJ: Nocturnal nasogastric refeeding for hospitalized adolescent boys with anorexia nervosa. J Dev Behav Pediatr 2004; 25:415–418 [C]
629. Halvorsen I, Andersen A, Heyerdahl S: Good outcome of adolescent onset anorexia nervosa after systematic treatment: intermediate to long-term follow-up of a representative county-sample. Eur Child Adolesc Psychiatry 2004; 13:295–306 [C]

630. Ro O, Martinsen EW, Hoffart A, Rosenvinge JH: Short-term follow-up of adults with long standing anorexia nervosa or non-specified eating disorder after inpatient treatment. Eat Weight Disord 2004; 9:62–68 [C]
631. Castro J, Gila A, Puig J, Rodriguez S, Toro J: Predictors of rehospitalization after total weight recovery in adolescents with anorexia nervosa. Int J Eat Disord 2004; 36:22–30 [C]
632. Johnson CL, Taylor C: Working with difficult-to-treat eating disorders using an integration of twelve-step and traditional psychotherapies. Psychiatr Clin North Am 1996; 19:829–841 [F]
633. Gwirtsman HE, Guze BH, Yager J, Gainsley B: Fluoxetine treatment of anorexia nervosa: an open clinical trial. J Clin Psychiatry 1990; 51:378–382 [G]
634. Bergh C, Eriksson M, Lindberg G, Sodersten P: Selective serotonin reuptake inhibitors in anorexia. Lancet 1996; 348:1459–1460 [B]
635. Halmi KA, Eckert E, LaDu TJ, Cohen J: Anorexia nervosa: treatment efficacy of cyproheptadine and amitriptyline. Arch Gen Psychiatry 1986; 43:177–181 [A]
636. Lacey JH, Crisp AH: Hunger, food intake and weight: the impact of clomipramine on a refeeding anorexia nervosa population. Postgrad Med J 1980; 56(suppl 1):79–85 [A]
637. Powers PS, Bannon Y, Eubanks R: Anorexia nervosa and quetiapine: effect on weight and psychopathology. Paper presented at the 157th annual meeting of the American Psychiatric Association, New York, May 1–6, 2004 [C]
638. Vandereycken W, Pierloot R: Pimozide combined with behavior therapy in the short-term treatment of anorexia nervosa: a double-blind placebo-controlled cross-over study. Acta Psychiatr Scand 1982; 66:445–450 [A]
639. Gross HA, Ebert MH, Faden VB, Goldberg SC, Nee LE, Kaye WH: A double-blind controlled trial of lithium carbonate primary anorexia nervosa. J Clin Psychopharmacol 1981; 1:376–381 [A]
640. Treasure JL, Russell GF, Fogelman I, Murby B: Reversible bone loss in anorexia nervosa. Br Med J (Clin Res Ed) 1987; 295:474–475 [D]
641. Grinspoon S, Thomas L, Miller K, Herzog D, Klibanski A: Effects of recombinant human IGF-I and oral contraceptive administration on bone density in anorexia nervosa. J Clin Endocrinol Metab 2002; 87:2883–2891 [A–]
642. Golden NH, Iglesias EA, Jacobson MS, Carey D, Meyer W, Schebendach J, Hertz S, Shenker IR: Alendronate for the treatment of osteopenia in anorexia nervosa: a randomized, double-blind, placebo-controlled trial. J Clin Endocrinol Metab 2005; 90:3179–3185 [A]
643. Fairburn CG, Jones R, Peveler RC, Hope RA, O'Connor M: Psychotherapy and bulimia nervosa: longer-term effects of interpersonal psychotherapy, behavior therapy, and cognitive behavior therapy. Arch Gen Psychiatry 1993; 50:419–428 [A–]
644. Fairburn CG, Marcus MD, Wilson GT: Cognitive-behavioral therapy for binge eating and bulimia nervosa: a comprehensive treatment manual, in Binge Eating: Nature, Assessment, and Treatment. Edited by Fairburn CG, Wilson GT. New York, Guilford, 1993, pp 361–404 [G]
645. Garner DM, Rockert W, Davis R, Garner MV, Olmsted MP, Eagle M: Comparison of cognitive-behavioral and supportive-expressive therapy for bulimia nervosa. Am J Psychiatry 1993; 150:37–46 [B]
646. Mitchell JE, Pyle RL, Pomeroy C, Zollman M, Crosby R, Seim H, Eckert ED, Zimmerman R: Cognitive-behavioral group psychotherapy of bulimia nervosa: importance of logistical variables. Int J Eat Disord 1993; 14:277–287 [B]
647. Vandereycken W: The addiction model in eating disorders: some critical remarks and a selected bibliography. Int J Eat Disord 1990; 9:95–102 [G]
648. Bulik CM, Sullivan PF, Carter FA, McIntosh VV, Joyce PR: The role of exposure with response prevention in the cognitive-behavioural therapy for bulimia nervosa. Psychol Med 1998; 28:611–623 [A–]
649. Bulik CM, Sullivan PF, Joyce PR, Carter FA, McIntosh VV: Predictors of 1-year treatment outcome in bulimia nervosa. Compr Psychiatry 1998; 39:206–214 [G]

650. Davis R, McVey G, Heinmaa M, Rockert W, Kennedy S: Sequencing of cognitive-behavioral treatments for bulimia nervosa. Int J Eat Disord 1999; 25:361–374 [G]
651. Hay PJ, Bacaltchuk J, Stefano S: Psychotherapy for bulimia nervosa and binging. Cochrane Database Syst Rev 2004; CD000562 [B]
652. Hsu LK, Rand W, Sullivan S, Liu DW, Mulliken B, McDonagh B, Kaye WH: Cognitive therapy, nutritional therapy and their combination in the treatment of bulimia nervosa. Psychol Med 2001; 31:871–879 [A]
653. Wilson GT, Fairburn CC, Agras WS, Walsh BT, Kraemer H: Cognitive-behavioral therapy for bulimia nervosa: time course and mechanisms of change. J Consult Clin Psychol 2002; 70:267–274 [G]
654. Wilson GT, Loeb KL, Walsh BT, Labouvie E, Petkova E, Liu X, Waternaux C: Psychological versus pharmacological treatments of bulimia nervosa: predictors and processes of change. J Consult Clin Psychol 1999; 67:451–459 [C]
655. Agras WS, Schneider JA, Arnow B, Raeburn SD, Telch CF: Cognitive-behavioral and response-prevention treatments for bulimia nervosa. J Consult Clin Psychol 1989; 57:215–221 [A–]
656. Fairburn CG: Cognitive behavioral treatment for bulimia, in Handbook of Psychotherapy for Anorexia Nervosa and Bulimia. Edited by Garner DM, Garfinkel PE. New York, Guilford, 1985, pp 160–192 [G]
657. Fairburn CG, Kirk J, O'Connor M, Cooper PJ: A comparison of two psychological treatments for bulimia nervosa. Behav Res Ther 1985; 24:629–643 [B]
658. Fairburn C: A cognitive behavioural approach to the treatment of bulimia. Psychol Med 1981; 11:707–711 [B]
659. Fairburn CG, Norman PA, Welch SL, O'Connor ME, Doll HA, Peveler RC: A prospective study of outcome in bulimia nervosa and the long-term effects of three psychological treatments. Arch Gen Psychiatry 1995; 52:304–312 [A–]
660. Fairburn CG, Jones R, Peveler RC, Carr SJ, Solomon RA, O'Connor ME, Burton J, Hope RA: Three psychological treatments for bulimia nervosa: a comparative trial. Arch Gen Psychiatry 1991; 48:463–469 [A–]
661. Wilson GT, Eldredge KL, Smith D, Niles B: Cognitive-behavioral treatment with and without response prevention for bulimia. Behav Res Ther 1991; 29:575–583 [A–]
662. Wilson GT, Rossiter E, Kleifield EI, Lindholm L: Cognitive-behavioral treatment of bulimia nervosa: a controlled evaluation. Behav Res Ther 1986; 24:277–288 [B]
663. Lacey JH: Bulimia nervosa, binge eating, and psychogenic vomiting: a controlled treatment study and long term outcome. Br Med J (Clin Res Ed) 1983; 286:1609–1613 [B]
664. Connors ME, Johnson CL, Stuckey MK: Treatment of bulimia with brief psychoeducational group therapy. Am J Psychiatry 1984; 141:1512–1516 [B]
665. Freeman CP, Barry F, Dunkeld-Turnbull J, Henderson A: Controlled trial of psychotherapy for bulimia nervosa. Br Med J (Clin Res Ed) 1988; 296:521–525 [A–]
666. Kirkley BG, Schneider JA, Agras WS, Bachman JA: Comparison of two group treatments for bulimia. J Consult Clin Psychol 1985; 53:43–48 [A–]
667. Lee NF, Rush AJ: Cognitive-behavioral group therapy for bulimia. Int J Eat Disord 1986; 5:599–615 [A–]
668. Ordman AM, Kirschenbaum DS: Cognitive-behavioral therapy for bulimia: an initial outcome study. J Consult Clin Psychol 1985; 53:305–313 [A–]
669. Beck AT, Steer RA, Garbin MG: Psychometric properties of the BDI: twenty-five years of evaluation. Clin Psychol Rev 1988; 8:77–100 [G]
670. Hamilton M: A rating scale for depression. J Neurol Neurosurg Psychiatry 1960; 23:56–62 [D]
671. Lock J: Adjusting cognitive behavior therapy for adolescents with bulimia nervosa: results of a case series. Am J Psychother 2005; 59:267–281[G]

672. Schapman-Williams AM, Lock J, Couturier J: Cognitive-behavioral therapy for adolescents with binge eating syndromes: a case series. Int J Eat Disord (in press) [G]
673. Root MPP: Persistent, disordered eating as a gender-specific, post-traumatic stress response to sexual assault. Psychotherapy 1991; 28:96–102 [G]
674. Laessle RG, Tuschl RJ, Kotthaus BC, Pirke KM: A comparison of the validity of three scales for the assessment of dietary restraint. J Abnorm Psychol 1989; 98:504–507 [E]
675. Leitenberg H, Rosen JC, Gross J, Nudelman S, Vara LS: Exposure plus response-prevention treatment of bulimia nervosa. J Consult Clin Psychol 1988; 56:535–541 [A–]
676. Johnson C: Diagnostic survey for eating disorders in initial consultation for patients with bulimia and anorexia nervosa, in Handbook of Psychotherapy for Anorexia Nervosa and Bulimia. Edited by Garner DM, Garfinkel PE. New York, Guilford, 1985, pp 19–51 [G]
677. Safer DL, Telch CF, Agras WS: Dialectical behavior therapy for bulimia nervosa. Am J Psychiatry 2001; 158:632–634 [A–]
678. Favazza AR, DeRosear L, Conterio K: Self-mutilation and eating disorders. Suicide Life Threat Behav 1989; 19:352–361 [G]
679. Esplen MJ, Garfinkel PE, Olmsted M, Gallop RM, Kennedy S: A randomized controlled trial of guided imagery in bulimia nervosa. Psychol Med 1998; 28:1347–1357 [A–]
680. Oesterheld JR, McKenna MS, Gould NB: Group psychotherapy of bulimia: a critical review. Int J Group Psychother 1987; 37:163–184 [F]
681. Chen E, Touyz SW, Beumont PJ, Fairburn CG, Griffiths R, Butow P, Russell J, Schotte DE, Gertler R, Basten C: Comparison of group and individual cognitive-behavioral therapy for patients with bulimia nervosa. Int J Eat Disord 2003; 33:241–254 [A]
682. Schwartz RC, Barett MJ, Saba G: Family Therapy for Bulimia. New York, Guilford, 1985 [G]
683. Malenbaum R, Herzog D, Eisenthal S, Wyshak G: Overeaters Anonymous. Int J Eat Disord 1988; 7:139–144 [G]
684. Cooper PJ, Coker S, Fleming C: Self-help for bulimia nervosa: a preliminary report. Int J Eat Disord 1994; 16:401–404 [B]
685. Cooper PJ, Coker S, Fleming C: An evaluation of the efficacy of supervised cognitive behavioral self-help bulimia nervosa. J Psychosom Res 1996; 40:281–287 [B]
686. Treasure J, Schmidt U, Troop N, Tiller J, Todd G, Keilen M, Dodge E: Sequential treatment for bulimia nervosa incorporating a self-care manual. Br J Psychiatry 1995; 167:1–5 [B]
687. Treasure J, Schmidt U, Troop N, Tiller J, Todd G, Keilen M, Dodge E: First step in managing bulimia nervosa: controlled trial of therapeutic manual. BMJ 1994; 308:686–689 [B]
688. Thiels C, Schmidt U, Treasure J, Garthe R: Four-year follow-up of guided self-change for bulimia nervosa. Eat Weight Disord 2003; 8:212–217 [G]
689. Mitchell JE, Fletcher L, Hanson K, Mussell MP, Seim H, Crosby R, Al Banna M: The relative efficacy of fluoxetine and manual-based self-help in the treatment of outpatients with bulimia nervosa. J Clin Psychopharmacol 2001; 21:298–304 [A–]
690. Perkins S, Schmidt U: Self-help for eating disorders, in AED Review of Eating Disorders, Part 1. Edited by Wonderlich S, Mitchell JE, de Zwaan M, Steiger H. Oxford, UK, Radcliffe, 2005, pp 87–104 [G]
691. Agras WS: Cognitive Behavior Therapy Treatment Manual for Bulimia Nervosa. Stanford, CA, Stanford University School of Medicine, Department of Psychiatry and Behavioral Sciences, 1991 [G]
692. Agras WS, Apple R: Overcoming Eating Disorders: Therapist's Guide. San Antonio, Psychological Corp (Harcourt), 1998 [G]
693. Apple R, Agras WS: Overcoming Eating Disorders: Client Workbook. San Antionio, Psychological Corp (Harcourt), 1998 [G]
694. Boutacoff LI, Zollman M, Mitchell JE: Healthy Eating: A Meal Planning System: Group Treatment Manual. Minneapolis, University of Minnesota Hospital and Clinic, Department of Psychiatry, 1989 [G]

695. Mitchell JE: Bulimia Nervosa: Individual Treatment Manual. Eating Disorders Program Staff. Minneapolis, University of Minnesota Hospital and Clinic, Department of Psychiatry, 1989 [G]
696. Mitchell JE: Bulimia Nervosa: Group Treatment Manual. Eating Disorders Program Staff. Minneapolis, University of Minnesota Hospital and Clinic, Department of Psychiatry, 1991 [G]
697. Walsh BT, Stewart JW, Roose SP, Gladis M, Glassman AH: Treatment of bulimia with phenelzine: a double-blind, placebo-controlled study. Arch Gen Psychiatry 1984; 41:1105–1109 [A]
698. Goldstein DJ, Wilson MG, Ascroft RC, Al Banna M: Effectiveness of fluoxetine therapy in bulimia nervosa regardless of comorbid depression. Int J Eat Disord 1999; 25:19–27 [G]
699. Alger SA, Schwalberg MD, Bigaouette JM, Michalek AV, Howard LJ: Effect of a tricyclic antidepressant and opiate antagonist on binge-eating behavior in normoweight bulimic and obese, binge-eating subjects. Am J Clin Nutr 1991; 53:865–871 [A]
700. Fahy TA, Eisler I, Russell GF: A placebo-controlled trial of D-fenfluramine in bulimia nervosa. Br J Psychiatry 1993; 162:597–603 [B]
701. Fichter MM, Kruger R, Rief W, Holland R, Dohne J: Fluvoxamine in prevention of relapse in bulimia nervosa: effects on eating-specific psychopathology. J Clin Psychopharmacol 1996; 16:9–18 [A]
702. Fichter MM, Leibl K, Rief W, Brunner E, Schmidt-Auberger S, Engel RR: Fluoxetine versus placebo: a double-blind study with bulimic inpatients undergoing intensive psychotherapy. Pharmacopsychiatry 1991; 24:1–7 [A]
703. Freeman CP, Morris JE, Cheshire KE, Davies M, Hamson M: A double-blind controlled trial of fluoxetine versus placebo for bulimia nervosa, in Proceedings of the Third International Conference on Eating Disorders. New York, 1988 [A]
704. Igoin-Apfelbaum L, Apfelbaum M: Naltrexone and bulimic symptoms. Lancet 1987; 2:1087–1088 [A]
705. Jonas JM, Gold MS: Naltrexone reverses bulimic symptoms. Lancet 1986; 1:807 [G]
706. Jonas JM, Gold MS: Treatment of antidepressant-resistant bulimia with naltrexone. Int J Eat Disord 1986; 16:306–309 [B]
707. Mitchell JE, Christenson G, Jennings J, Huber M, Thomas B, Pomeroy C, Morley J: A placebo-controlled, double-blind crossover study of naltrexone hydrochloride in outpatients with normal weight bulimia. J Clin Psychopharmacol 1989; 9:94–97 [A]
708. Pope HG Jr, Keck PE Jr, McElroy SL, Hudson JI: A placebo-controlled study of trazodone in bulimia nervosa. J Clin Psychopharmacol 1989; 9:254–259 [A]
709. Rothschild R, Quitkin HM, Quitkin FM, Stewart JW, Ocepek-Welikson K, McGrath PJ, Tricamo E: A double-blind placebo-controlled comparison of phenelzine and imipramine in the treatment of bulimia in atypical depressives. Int J Eat Disord 1994; 15:1–9 [A]
710. Sabine EJ, Yonace A, Farrington AJ, Barratt KH, Wakeling A: Bulimia nervosa: a placebo-controlled double-blind therapeutic trial of mianserin. Br J Clin Pharmacol 1983; 15(suppl 2):195S–202S [A]
711. Bacaltchuk J, Hay P, Trefiglio R: Antidepressants versus psychological treatments and their combination for bulimia nervosa. Cochrane Database Syst Rev 2001; CD003385 [E]
712. Bacaltchuk J, Trefiglio RP, Oliveira IR, Hay P, Lima MS, Mari JJ: Combination of antidepressants and psychological treatments for bulimia nervosa: a systematic review. Acta Psychiatr Scand 2000; 101:256–264 [E]
713. Bacaltchuk J, Trefiglio RP, de Oliveira IR, Lima MS, Mari JJ: Antidepressants versus psychotherapy for bulimia nervosa: a systematic review. J Clin Pharm Ther 1999; 24:23–31 [E]
714. Fassino S, Daga GA, Boggio S, Garzaro L, Piero A: Use of reboxetine in bulimia nervosa: a pilot study. J Psychopharmacol 2004; 18:423–428 [C]
715. Schmidt U, Cooper PJ, Essers H, Freeman CP, Holland RL, Palmer RL, Shur E, Russell GF, Bowler C, Coker S, Geddes JR, Mackenzie F, Munro J, Newton R, Tiller J, Tattersall

ML, Vize C, Webster J: Fluvoxamine and graded psychotherapy in the treatment of bulimia nervosa: a randomized, double-blind, placebo-controlled, multicenter study of short-term and long-term pharmacotherapy combined with a stepped care approach to psychotherapy. J Clin Psychopharmacol 2004; 24:549–552 [A]

716. Kennedy SH, Piran N, Warsh JJ, Prendergast P, Mainprize E, Whynot C, Garfinkel PE: A trial of isocarboxazid in the treatment of bulimia nervosa. J Clin Psychopharmacol 1988; 8:391–396 [A]
717. Carruba MO, Cuzzolaro M, Riva L, Bosello O, Liberti S, Castra R, Dalle GR, Santonastaso P, Garosi V, Nisoli E: Efficacy and tolerability of moclobemide in bulimia nervosa: a placebo-controlled trial. Int Clin Psychopharmacol 2001; 16:27–32 [A]
718. Marrazzi MA, Wroblewski JM, Kinzie J, Luby ED: High-dose naltrexone and liver function safety. Am J Addict 1997; 6:21–29 [B]
719. Faris PL, Kim SW, Meller WH, Goodale RL, Oakman SA, Hofbauer RD, Marshall AM, Daughters RS, Banerjee-Stevens D, Eckert ED, Hartman BK: Effect of decreasing afferent vagal activity with ondansetron on symptoms of bulimia nervosa: a randomised, double-blind trial. Lancet 2000; 355:792–797 [A]
720. Kaplan AS, Garfinkel PE, Darby PL, Garner DM: Carbamazepine in the treatment of bulimia. Am J Psychiatry 1983; 140:1225–1226 [A]
721. Leitenberg H, Rosen JC, Wolf J, Vara LS, Detzer MJ, Srebnik D: Comparison of cognitive-behavior therapy and desipramine in the treatment of bulimia nervosa. Behav Res Ther 1994; 32:37–45 [A–]
722. Olmsted MP, Kaplan AS, Rockert W: Rate and prediction of relapse in bulimia nervosa. Am J Psychiatry 1994; 151:738–743 [C]
723. de Zwaan M, Mitchell JE, Mussell MP, Crosby RD: Does CBT improve outcomes in obese binge eaters participating in a very low-calorie diet treatment? Paper presented at the annual meeting of the Eating Disorders Research Society, Pittsburgh, November 15–17, 1996 [B]
724. Telch CF, Agras WS: The effects of a very low calorie diet on binge eating. Behavior Therapy 1993; 24:177–193 [B]
725. Wadden TA, Foster GD, Letizia KA: Response of obese binge eaters to treatment by behavior therapy combined with very low calorie diet. J Consult Clin Psychol 1992; 60:808–811 [A–]
726. Yanovski SZ, Gormally JF, Leser MS, Gwirtsman HE, Yanovski JA: Binge eating disorder affects outcome of comprehensive very-low calorie diet treatment. Obes Res 1994; 2:205–212 [B]
727. Marcus MD, Wing RR: Cognitive treatment of binge eating, V: behavioral weight control in the treatment of binge eating disorder (letter). Ann Behav Med 1995; 17:S090 [A–]
728. Reeves RS, McPherson RS, Nichaman MZ, Harrist RB, Foreyt JP, Goodrick GK: Nutrient intake of obese female binge eaters. J Am Diet Assoc 2001; 101:209–215 [A–]
729. Gladis MM, Wadden TA, Vogt R, Foster G, Kuehnel RH, Bartlett SJ: Behavioral treatment of obese binge eaters: do they need different care? J Psychosom Res 1998; 44:375–384 [B]
730. Linde JA, Jeffery RW, Levy RL, Sherwood NE, Utter J, Pronk NP, Boyle RG: Binge eating disorder, weight control self-efficacy, and depression in overweight men and women. Int J Obes Relat Metab Disord 2004; 28:418–425 [A–]
731. Pendleton VR, Goodrick GK, Poston WS, Reeves RS, Foreyt JP: Exercise augments the effects of cognitive-behavioral therapy in the treatment of binge eating. Int J Eat Disord 2002; 31:172–184 [B]
732. Wadden TA, Foster GD, Sarwer DB, Anderson DA, Gladis M, Sanderson RS, Letchak RV, Berkowitz RI, Phelan S: Dieting and the development of eating disorders in obese women: results of a randomized controlled trial. Am J Clin Nutr 2004; 80:560–568 [A–]
733. Agras WS, Telch CF, Arnow B, Eldredge K, Detzer MJ, Henderson J, Marnell M: Does interpersonal therapy help patients with binge eating disorder who fail to respond to cognitive-behavioral therapy? J Consult Clin Psychol 1995; 63:356–360 [B]

734. Eldredge KL, Agras WS, Arnow B, Telch CF, Bell S, Castonguay L, Marnell M: The effects of extending cognitive-behavioral therapy for binge eating disorder among initial treatment nonresponders. Int J Eat Disord 1999; 21:352 [B]
735. Smith DE, Marcus MD, Kaye W: Cognitive-behavioral treatment of obese binge eaters. Int J Eat Disord 1992; 12:257–262 [B]
736. Telch CF, Agras WS, Rossiter EM, Wilfley D, Kenardy J: Group cognitive-behavioral treatment for the nonpurging bulimic: an initial evaluation. J Consult Clin Psychol 1990; 58:629–635 [B]
737. Wilfley DE, Agras WS, Telch CF, Rossiter EM, Schneider JA, Cole AG, Sifford LA, Raeburn SD: Group cognitive-behavioral therapy and group interpersonal psychotherapy for the nonpurging bulimic individual: a controlled comparison. J Consult Clin Psychol 1993; 61:296–305 [A–]
738. Telch CF, Agras WS, Linehan MM: Dialectical behavior therapy for binge eating disorder. J Consult Clin Psychol 2001; 69:1061–1065 [A–]
739. Riva G, Bacchetta M, Cesa G, Conti S, Molinari E: Six-month follow-up of in-patient experiential cognitive therapy for binge eating disorders. Cyberpsychol Behav 2003; 6:251–258 [A–]
740. Riva G, Bacchetta M, Baruffi M, Molinari E: Virtual-reality-based multidimensional therapy for the treatment of body image disturbances in binge eating disorders: a preliminary controlled study. IEEE Trans Inf Technol Biomed 2002; 6:224–234 [B]
741. Tanco S, Linden W, Earle T: Well-being and morbid obesity in women: a controlled therapy evaluation. Int J Eat Disord 1998; 23:325–339 [A–]
742. Bacon L, Stern JS, Van Loan MD, Keim NL: Size acceptance and intuitive eating improve health for obese, female chronic dieters. J Am Diet Assoc 2005; 105:929–936 [A–]
743. Goodrick GK, Poston WS, Kimball KT, Reeves RS, Foreyt JP: Nondieting versus dieting treatment for overweight binge-eating women. J Consult Clin Psychol 1998; 66:363–368 [A–]
744. McElroy SL, Hudson JI, Malhotra S, Welge JA, Nelson EB, Keck PE Jr: Citalopram in the treatment of binge-eating disorder: a placebo-controlled trial. J Clin Psychiatry 2003; 64:807–813 [A]
745. Arnold LM, McElroy SL, Hudson JI, Welge JA, Bennett AJ, Keck PE: A placebo-controlled, randomized trial of fluoxetine in the treatment of binge-eating disorder. J Clin Psychiatry 2002; 63:1028–1033 [A]
746. Hudson JI, McElroy SL, Raymond NC, Crow S, Keck PE Jr, Carter WP, Mitchell JE, Strakowski SM, Pope HG Jr, Coleman BS, Jonas JM: Fluvoxamine in the treatment of binge-eating disorder: a multicenter placebo-controlled, double-blind trial. Am J Psychiatry 1998; 155:1756–1762 [A]
747. McElroy SL, Casuto LS, Nelson EB, Lake KA, Soutullo CA, Keck PE Jr, Hudson JI: Placebo-controlled trial of sertraline in the treatment of binge eating disorder. Am J Psychiatry 2000; 157:1004–1006 [A]
748. McCann UD, Agras WS: Successful treatment of nonpurging bulimia nervosa with desipramine: a double-blind, placebo-controlled study. Am J Psychiatry 1990; 147:1509–1513 [A]
749. Pearlstein T, Spurell E, Hohlstein LA, Gurney V, Read J, Fuchs C, Keller MB: A double-blind, placebo-controlled trial of fluvoxamine in binge eating disorder: a high placebo response. Arch Women Ment Health 2003; 6:147–151 [A]
750. Malhotra S, King KH, Welge JA, Brusman-Lovins L, McElroy SL: Venlafaxine treatment of binge-eating disorder associated with obesity: a series of 35 patients. J Clin Psychiatry 2002; 63:802–806 [G]
751. Hirschfeld RM: Long-term side effects of SSRIs: sexual dysfunction and weight gain. J Clin Psychiatry 2003; 64(suppl 18):20–24 [F]

752. Mitchell JE, Gosnell BA, Roerig JL, de Zwaan M, Wonderlich SA, Crosby RD, Burgard MA, Wambach BN: Effects of sibutramine on binge eating, hunger, and fullness in a laboratory human feeding paradigm. Obes Res 2003; 11:599–602 [A]
753. Abenhaim L, Moride Y, Brenot F, Rich S, Benichou J, Kurz X, Higenbottam T, Oakley C, Wouters E, Aubier M, Simonneau G, Begaud B: Appetite-suppressant drugs and the risk of primary pulmonary hypertension. International Primary Pulmonary Hypertension Study Group. N Engl J Med 1996; 335:609–616 [D]
754. Connolly HM, Crary JL, McGoon MD, Hensrud DD, Edwards BS, Edwards WD, Schaff HV: Valvular heart disease associated with fenfluramine-phentermine. N Engl J Med 1997; 337:581–588 [C]
755. Graham DJ, Green L: Further cases of valvular heart disease associated with fenfluramine-phentermine. N Engl J Med 1997; 337:635 [G]
756. Mark EJ, Patalas ED, Chang HT, Evans RJ, Kessler SC: Fatal pulmonary hypertension associated with short-term use of fenfluramine and phentermine. N Engl J Med 1997; 337:602–606 [G]
757. Shapira NA, Goldsmith TD, McElroy SL: Treatment of binge-eating disorder with topiramate: a clinical case series. J Clin Psychiatry 2000; 61:368–372 [G]
758. Appolinario JC, Fontenelle LF, Papelbaum M, Bueno JR, Coutinho W: Topiramate use in obese patients with binge eating disorder: an open study. Can J Psychiatry 2002; 47:271–273 [B]
759. Ricca V, Mannucci E, Mezzani B, Moretti S, Di Bernardo M, Bertelli M, Rotella CM, Faravelli C: Fluoxetine and fluvoxamine combined with individual cognitive-behaviour therapy in binge eating disorder: a one-year follow-up study. Psychother Psychosom 2001; 70:298–306 [A–]
760. O'Reardon JO, Allison KC, Martino NS, Lundgren JD, Heo M, Stunkard AJ: A randomized placebo-controlled trial of sertraline in the treatment of the night eating syndrome. Am J Psychiatry (in press) [A]
761. Winkelman JW: Treatment of nocturnal eating syndrome and sleep-related eating disorder with topiramate. Sleep Med 2003; 4:243–246 [G]
762. Schenck CH, Mahowald MW: Combined bupropion-levodopa-trazodone therapy of sleep-related eating and sleep disruption in two adults with chemical dependency. Sleep 2000; 23:587–588 [G]
763. Schenck CH, Hurwitz TD, O'Connor KA, Mahowald MW: Additional categories of sleep-related eating disorders and the current status of treatment. Sleep 1993; 16:457–466 [G]
764. Maj M, Halmi K, Lopez-Ibor JJ, Sartorius N (eds): Eating Disorders: WPA Series Evidence and Experience in Psychiatry, vol 6. West Sussex, UK, Wiley, 2003 [G]
765. Strober M: The future of treatment research in anorexia nervosa. Int J Eat Disord 2005; 37(suppl): S90–S94 [G]