were seen between the groups, motivational enhancement treatment appeared to foster longer-term motivation and engagement and thus promote treatment continuation.

Carter and colleagues (2011) investigated long-term outcomes of specialized psychotherapies in women with broadly defined anorexia nervosa who had participated (an average of 6.7 years prior to Carter et al.'s analysis) in a randomized, controlled trial comparing conventional CBT and a modified form of IPT in which therapists were constrained from discussing nutrition, weight, and shape issues, as well as a control condition (specialist supportive clinical management). No differences were seen in outcomes among the three groups. Only 43 of the original sample of 56 patients participated in this follow-up study, leaving the study underpowered.

Several studies have examined the impact of exercise or strength training on patients with eating disorders. In a nonrandomized study, Calogero and Pedrotty (2004) compared 127 women in a residential treatment center who participated in an exercise program plus treatment as usual with 127 nonparticipants who received treatment as usual only. Women in the exercise group who had anorexia nervosa gained more than a third as much weight and demonstrated significantly reduced obligatory attitudes toward exercise compared with those in the comparison group. The authors acknowledged that these differences may reflect initial selection biases.

In a small study, Chantler and colleagues (2006) randomly assigned 14 hospitalized adolescent females to an 8-week program of light resistance training or treatment as usual, with all participants receiving the same caloric intake. The training group showed increased knee and elbow strength. However, another small (n=22) study by del Valle and colleagues (2010) found few benefits for a low- to moderate-intensity strength training program (two sessions/week for 3 months) when combined with treatment as usual (conventional psychotherapy and refeeding) compared with treatment as usual alone, even though the intervention was well tolerated and did not cause significant weight loss and no deleterious effects were seen.

Results of small randomized trials involving treatment approaches that include mindfulness training along with CBT and other therapeutic approaches have been reported. Courbasson and colleagues (2011) randomly assigned 25 outpatients with comorbid mixed eating disorders and substance abuse disorders to a 1-year program of either dialectical behavior therapy (DBT) or treatment as usual. Those patients receiving DBT showed so much greater retention (80% vs. 20% at posttreatment) that the protocol was terminated early. The authors suggest that DBT may be effective at keeping such patients in treatment. A review of eight studies of variable quality that used mindfulness training for the treatment of patients with eating disorders suggests that available evidence supports the value of such interventions (Wanden-Berghe et al. 2011).

Other therapies for anorexia nervosa and related conditions that have been studied include spirituality focused group therapy, eye movement desensitization and reprocessing (EMDR), yoga, and body awareness therapy. Available studies on these therapies, as described below, have design limitations.

In one randomized, controlled study conducted at a treatment center that provides Christian therapy, 122 female inpatients with mixed eating disorder diagnoses were randomly assigned to treatment as usual plus either spirituality focused group therapy or cognitive and emotional group therapy. The spirituality group was reported to have a faster therapeutic response (Richards et al. 2006). The authors noted several limitations to the study, including small sample size, small magnitude of effect, and uncertain generalizability beyond the unique study setting (a facility known for promoting spirituality in treatment). As for many psychotherapy research studies, another limitation is possible expectancy bias from both therapists and patients.

In another study, 86 women in a residential treatment program were randomly assigned to treatment as usual plus EMDR or treatment as usual only. Those receiving the addition of EMDR reported less distress related to negative body image memories and less body dissatisfaction at 3, 6, and 12 months compared with the treatment-as-usual group, but no other differences in body image measures or other clinical outcomes were seen (Bloomgarden and Calogero 2008). Limitations acknowledged by the authors include contamination effects and lack of blinding. In addition, the control group did not receive an active psychotherapy.

In a pilot study by Carei et al. (2010), 54 adolescent outpatients with mixed eating disorders were randomly assigned to treatment as usual with or without eight sessions of yoga. Although both groups maintained BMI levels and reported reduced anxiety and depression scores over time, those in the yoga group demonstrated greater sustained reduction in eating disorder symptoms and decreased food preoccupation. Limitations of this pilot study include small sample size, anticipation effects from the use of repeated measures, and uncertain generalizability to inpatient or community samples.

In a pilot study by Catalan-Matamoros and colleagues (2011), 28 outpatients with mixed eating disorders who had been symptomatic for less than 5 years were randomly assigned to treatment as usual with or without five sessions of basic body awareness therapy. Those patients in the body awareness therapy group showed modest but

consistent improvements in measures of body dissatisfaction compared with those who received treatment as usual alone. The authors acknowledged that this small study had high dropout rates and was unblinded.

In actual practice, clinicians who treat patients with eating disorders, including anorexia nervosa, use a wide array of psychosocial interventions. Tobin and colleagues (2007) surveyed 265 clinicians, who were recruited online and at professional meetings, about the treatment modalities they use. Only 6% of respondents reported they adhered closely to treatment manuals, and 98% indicated they used both behavioral and dynamically informed interventions. Factor analysis suggested theoretically linked dimensions of treatment but also dimensions that are common across models. The authors concluded that overlapping of treatment modalities is a common practice, and more studies are needed to assess what clinicians actually do.

FAMILY THERAPY

The practice guideline strongly recommends family treatment for children and adolescents with eating disorders and suggests that family assessment and involvement may be useful for older patients as well. Family therapy of various types for anorexia nervosa continues to be a focus of considerable research. Results continue to provide support for the value of family therapy, but the overall quality of the evidence remains poor.

In a Cochrane review, Fisher and colleagues (2010) evaluated the efficacy of family therapy compared with standard and other treatments. Thirteen trials were included in the analysis. The authors concluded that there is some evidence to suggest that family therapy may be more effective than treatment as usual in the short run, but they cautioned that the few available studies are small and have potential biases.

In a review of family therapy for adolescents with anorexia nervosa, Gardner and Wilkinson (2011) identified six randomized, controlled trials, the large majority with small sample sizes, and concluded that these studies were on the whole weak. In one of the stronger studies (Lock et al. 2010), 121 patients with anorexia nervosa ages 12–18 years were randomly assigned to 24 outpatient hours of family-based therapy or to adolescent-focused individual therapy delivered over 12 months. At the end of treatment no group differences in full remission were seen, but there were more patients in partial remission in the family-based therapy group, and at 6- and 12-month follow-up there were greater rates of full remission in this group.

In an earlier study of family-based therapy by Lock and colleagues (2005), 86 adolescents were randomly assigned to receive family-based therapy either short term (10 sessions over 6 months) or long term (20 sessions over 12 months). There were no differences in outcome. However, patients with obsessive-compulsive personality disorder and patients from non-intact families received greater benefit from the longer-term protocol. In this study, more dropouts occurred when patients had comorbid psychiatric disorders, were older, were assigned to the longer term protocol, or had problematic family behaviors (Lock et al. 2006).

Ball and Mitchell (2004) randomly assigned 25 adolescents and young adults with anorexia nervosa who were living with their families either to a 12-month program involving 21–25 sessions of CBT or to behavioral family therapy. Sixty percent of the intent-to-treat group and 72% of completers were rated as having "good outcomes," with no differences in outcomes seen between the groups. The majority of patients did not achieve symptomatic recovery.

In a 5-year follow-up of 40 adolescent patients with anorexia nervosa who had participated in a randomized study of two forms of family therapy (conjoint or separated), Eisler and colleagues (2007) found no differences in outcomes. Seventy-two percent of the patients had recovered. However, patients from families with elevated levels of maternal criticism gained less weight and generally did less well with conjoint family therapy. The investigators suggested that for these families, conjoint therapy should be avoided, at least early on in treatment when raised levels of parental criticism are evident.

Finally, Godart and colleagues (2012) randomly assigned 60 female adolescent patients with anorexia nervosa at time of hospital discharge either to 18 months of ambulatory treatment as usual or to treatment as usual augmented with family therapy (1.5 hours every 3–4 weeks) focusing on family dynamic issues and the "here and now" but not on eating behaviors or weight. Fifty-one of the 60 families were intact. Treatment as usual consisted of individual consultations, regular interviews involving the parents, and individual psychotherapy with another therapist if required. As necessary, psychiatrists prescribed medication, offered parental guidance regarding conflicts with daughters, and secured nutritional/dietetic advice for patients gaining insufficient weight. At 18 months, good outcomes were observed in 40% of the group receiving family therapy versus 17.2% of the group receiving treatment as usual.

Parents and other close family members of patients with anorexia nervosa have been found to have high levels of psychological distress, burden, and expressed emotion (EE) (Zabala et al. 2009). Interventions to help these individuals cope with their burdens have been studied. Grover and colleagues (2011) randomly assigned 64 caregivers of individuals with eating disorders, primarily anorexia

nervosa, to a Web-based CBT program designed to help caregivers plus limited clinician-supported guidance by e-mail or phone or to treatment as usual, consisting of usual support from caregiver organizations. At 4- and 6-month follow-up posttreatment, those patients who participated in the Web-based program reported reduced anxiety and depression, and a trend was observed in reduced EE. The same investigator group (Rhodes et al. 2009) also randomly assigned and compared 10 caregivers receiving treatment as usual with 10 who received "carer to carer" (i.e., parent-to-parent) consultations to supplement Maudsley model care. Qualitative analysis showed that those receiving parent-to-parent care felt less alone and more empowered. Further, educational workshops and skills training given to two families together was as effective as individual family therapy (Whitney et al. 2012).

PHARMACOTHERAPY

The practice guideline describes limited evidence for the use of medications to restore weight, prevent relapse, or treat chronic anorexia nervosa.

Evidence for antipsychotic medications, consisting of case series at the time the guideline was developed, now includes some randomized, controlled trials, but the studies have shown mixed results and have methodological limitations, including small sample sizes. In addition, as described in the guideline, these medications have serious potential adverse effects.

A task force on eating disorders of the World Federation of Societies of Biological Psychiatry (Aigner et al. 2011) systematically reviewed all studies for the pharmacological treatment of eating disorders published between 1977 and 2010. The task force concluded that Grade B evidence (i.e., limited positive evidence from controlled studies) supports the use of olanzapine for weight gain. Evidence for other second-generation ("atypical") antipsychotics was determined to be Grade C (positive evidence from uncontrolled studies or case reports/expert opinion).

A review by McKnight and Park (2010) of four randomized, controlled trials and five open-label trials found limited evidence that olanzapine, quetiapine, and risperidone may have positive effects on depression, anxiety, and core eating pathology, but insufficient evidence regarding weight gain.

The olanzapine studies include a randomized, placebo-controlled trial of 34 patients with anorexia nervosa by Bissada and colleagues (2008), which demonstrated benefits for olanzapine in decreasing obsessive symptoms in addition to increasing weight. More recently, Attia and colleagues (2011) randomly assigned 23 outpatients with anorexia nervosa at two different sites either to 8 weeks of olanzapine (2.5 mg/day, up to 10 mg/day as tolerated) or to placebo. Patients receiving olanzapine showed a significantly better gain in BMI. The medication was well tolerated, and no adverse metabolic effects were observed. However, Kafantaris and colleagues (2011) found no differences in percentage change in median body weight, rates of weight gain, or improvement in psychological measures 5 or 10 weeks after a small single-site, randomized, controlled trial of olanzapine versus placebo in 20 adolescent females, 5 of whom did not complete the study. Furthermore, these investigators saw a trend of increasing fasting glucose and insulin levels only in the olanzapine-treated group. Adverse effects were also observed in a study of the metabolic effects of olanzapine by Swenne and Rosling (2011). In this study, 47 adolescents with anorexia nervosa had increased levels of thyroid-stimulating hormone and prolactin, which the investigators attributed to medication effects rather than to weight gain.

Risperidone was studied in a double-blind randomized, controlled trial of 40 hospitalized adolescents with anorexia nervosa (Hagman et al. 2011). The investigators found no advantage for risperidone (average dose 2.5 mg/day, prescribed up to 4 weeks) over placebo for weight restoration.

The practice guideline states that although no specific hormone treatments or vitamin supplements have been shown to be helpful for weight restoration, zinc supplementation may be useful. The Task Force on Eating Disorders of the World Federation of Societies of Biological Psychiatry (Aigner et al. 2011) described the evidence for zinc supplementation as Grade B. In a meta-analysis of four randomized, controlled trials and two cohort studies, Sim and colleagues (2010) concluded that estrogen preparations have uncertain benefits for amenorrhea associated with anorexia nervosa and should therefore be avoided. In contrast, results from a randomized, controlled trial by Misra and colleagues (2011) suggest that physiologic estradiol replacement is useful in teenage (13– to 18-year-old) girls with anorexia nervosa with low bone density. In this study, 96 mature girls with anorexia nervosa (in whom statural growth was almost complete) were randomly assigned either to transdermal 17β estradiol (100-mcg patch applied twice weekly) and cyclic progesterone or to placebo for 18 months, while 14 younger girls with anorexia nervosa were randomly assigned to receive very small incremental doses of oral ethinyl estradiol (3.75 mcg daily in the first 6 months, 7.5 mcg daily in the second 6 months, and 11.25 mcg daily in the final 6 months) or placebo. The rationale was that unlike oral estrogen, which suppresses insulin-like growth factor-1 (IGF-1) (an important bone trophic factor) when used in doses found in birth control pills, replacement doses of transdermal estradiol and very low incremental oral estrogen doses that mimic the early

pubertal rise in estrogen do not suppress IGF-1. Girls with anorexia nervosa randomly assigned to receive this form of physiologic estrogen replacement had a 2.6% increase in spine bone density in this study, compared with only 0.3% in girls randomly assigned to receive placebo. This intervention also prevented the decrease in bone density at the hip observed in girls randomly assigned to receive to placebo.

The practice guideline states that the limited available evidence on the use of antidepressants for weight gain suggests that they confer no benefit. This position is supported by a Cochrane review by Claudino and colleagues (2006) that identified four randomized, controlled trials. The studies lacked quality information, and the authors concluded that there is no evidence to support the use of antidepressants for weight, eating disorder core pathology, or associated pathology. Following publication of this review, Walsh and colleagues (2006) reported that in a two-site study, the addition of fluoxetine to CBT following weight restoration for patients with anorexia nervosa showed no benefit for fluoxetine over placebo. In this study the best predictors of weight maintenance following discharge for anorexia nervosa were the level of weight restoration at the conclusion of acute treatment and the avoidance of weight loss immediately following intensive treatment (Kaplan et al. 2009).

OTHER SOMATIC TREATMENTS

Janas-Kozik and colleagues (2011) randomly assigned 24 adolescent girls with anorexia nervosa with restrictor subtype and depressive symptoms to receive additional bright light therapy for 6 weeks. The intervention group had greater improvement in depression, but no difference in BMI was found at 6 weeks. In a randomized, controlled trial of "warming therapy" involving 21 female patients with anorexia nervosa, wearing a heating vest for 3 hours per day for 21 days offered no advantage compared with wearing the vest but with the heating function turned off (Birmingham et al. 2004).

OSTEOPENIA AND OSTEOPOROSIS

To treat physiological complications of malnutrition from semistarvation, including osteopenia and osteoporosis, the guideline recommends weight gain through nutritional rehabilitation—namely, sufficient intake of dietary protein, carbohydrates, fats, calcium, and vitamin D. Vescovi and colleagues (2008) recommended the same in a review of 26 randomized, controlled trials, cross-sectional studies, and case series of pharmacological and nonpharmacological interventions to treat bone mineral density or bone turnover in women with functional hypothalamic amenorrhea. In another systematic review of treatment for bone loss, Mehler and MacKenzie (2009) found that no good evidence exists to guide medical interventions once loss has occurred. The authors concluded that early detection and weight restoration are therefore of utmost importance.

As described earlier in this watch, Misra and colleagues (2011) found beneficial effects of physiologic estrogen replacement on bone density in adolescent girls with anorexia nervosa. This finding is in contrast to previous studies that reported no beneficial effects of estrogen when given orally as a birth control pill (Strokosch et al. 2006).

The guideline does not recommend the use of bisphosphonates such as alendronate. Golden and colleagues (2005) conducted a randomized, placebo-controlled trial of alendronate for osteopenia in 32 adolescent females with anorexia nervosa. At 1-year follow-up, patients treated with alendronate had increased bone mineral density of the lumbar spine and femoral neck. However, body weight was the most important determinant of bone mineral density. The authors concluded that further research is needed on the efficacy and long-term safety of alendronate.

Risedronate, another bisphosphonate, was studied in a trial by Miller and colleagues (2011), in which 77 women with anorexia nervosa were randomly assigned to receive risedronate 35 mg weekly, low-dose testosterone, both, or placebo for 12 months. Compared with placebo, risedronate increased bone mineral density in the posteroanterior spine 3%, the lateral spine 4%, and the hip 2%; testosterone did not increase bone mineral density but increased lean body mass. Few side effects were seen with either therapy. Further studies are needed to weigh the benefits and harms of using risedronate clinically.

BULIMIA NERVOSA

As for studies about treatments for anorexia nervosa, recent studies about treatments for bulimia nervosa were primarily short term and focused on symptom relief rather than recovery. As described in a randomized, controlled trial of CBT by McIntosh and colleagues (2011) that is cited in the discussion below, "a substantial group remains

unwell in the long term. Definition of recovery impacts markedly on recovery rates" (p. 32).

CHOICE OF SETTING

The practice guideline recommends outpatient treatment of bulimia nervosa, except when there are complicating factors (e.g., serious general medical problems, suicidal behavior, psychosis) or severe disabling symptoms that do not respond to outpatient treatment. Zeeck and colleagues (2009) compared two options for such patients: inpatient and day clinic treatment. In this German study, 55 patients with severe bulimia nervosa were randomly assigned to one of these two settings. At 3 months posttreatment, both settings reduced general and specific pathology. The authors noted that more deterioration in bulimic symptoms occurred following inpatient than day clinic treatment but described the results overall as comparable.

In a Korean study by Kong (2005), 43 adolescent patients with a mixture of eating disorder symptoms were randomly assigned to day treatment based on a University of Toronto model (as described, for example, by Olmsted et al. 2003) or to a traditional outpatient program that included CBT, IPT, and/or medication. Patients assigned to the day treatment group showed greater improvement with regard to BMI and binge eating and purging, as well as improved scores on the Eating Disorder Inventory–2, the Beck Depression Inventory, and the Rosenberg Self-Esteem Scale.

NUTRITIONAL REHABILITATION

Similar to recommendations for patients with anorexia nervosa, the guideline recommends that normalization of nutrition and eating habits is a central goal in the treatment of patients with bulimia nervosa. A study by Burton and Stice (2006) suggests that healthy dieting and modest weight loss may not be incompatible with this goal. In this study, 85 women with full and subthreshold bulimia nervosa were randomly assigned to a 6-session healthy dieting intervention or a wait-list control condition. At 3-month follow-up, the intervention group showed modest weight loss and significant and persistent improvement in bulimic symptoms. While these findings are preliminary and require replication and extension, they suggest that contrary to popular belief controlled dieting behaviors do not necessarily maintain bulimia nervosa.

PSYCHOSOCIAL INTERVENTIONS

The guideline recommends CBT as the most effective and best-studied intervention for patients with bulimia nervosa. IPT is recommended for patients who do not respond to CBT. Studies have continued to demonstrate effectiveness for a variety of CBT- and IPT-oriented interventions in both individual and group settings. In addition, studies continue to investigate "self-care" psychosocial programs delivered online or via CD-ROM.

In an update of a previous Cochrane review, Hay and colleagues (2009) identified 48 studies of CBT for the treatment of bulimia nervosa. The studies included 3,054 participants. The review supported the efficacy of both CBT and a manual-based CBT designed specifically for patients with bulimia nervosa. Other psychotherapies, particularly IPT in the longer term, were also found to be efficacious. Self-help approaches that used highly structured CBT treatment manuals were described as promising. Exposure and response prevention did not enhance the efficacy of CBT, and the review found that psychotherapy alone is unlikely to reduce or change body weight in people with bulimia nervosa or similar eating disorders. The authors concluded that there is a small body of evidence for the efficacy of CBT in bulimia nervosa and similar syndromes, but the quality of trials is highly variable and sample sizes are often small.

Studies of psychotherapy for bulimia nervosa published since the 2006 practice guideline include those discussed below. Some of these studies were included in the 2009 Cochrane review by Hay and colleagues. As noted in that review, more and larger trials are still needed of all psychotherapies.

In a study conducted at two sites by Agras and colleagues (2000, referenced in the guideline), 219 patients with bulimia nervosa were randomly assigned to receive CBT or a version of IPT in which no attention was paid at any stage of treatment to eating habits or attitudes toward weight and shape. The IPT also did not contain any of the specific behavioral or cognitive procedures that characterize CBT, and there was no self-monitoring. All patients did better with CBT than with IPT. Subsequent analyses of the study data have found that among patients who received IPT, blacks did better than whites (Chui et al. 2007), and early change in the frequency of purging was the best predictor of response at 8 months (Fairburn et al. 2004).

Several studies have examined the potential value of including motivational enhancement strategies in treatment. Results have been mixed. In a two-phase study, Katzman and colleagues (2010) randomly assigned 225 patients with bulimia nervosa or EDNOS to receive either CBT or motivational enhancement (phase 1), then randomly assigned patients to 12 weeks of group or individual CBT (phase 2). At 1- and 2.5-year follow-up, patients across all interventions had improved significantly, with only minor differences among groups.

Geller and colleagues (2011) assessed 181 outpatients with eating disorders for motivation pretreatment and then randomly assigned them to five sessions of preparatory readiness and motivation therapy or to a wait-list control. At 6-week and 3-month follow-up, both the intervention group and the control group showed improvements in readiness for change, depression, drive for thinness, and bulimia symptoms. Those patients receiving readiness and motivation therapy were found to have less ambivalence toward treatment.

To examine the potential utility of a common behavioral intervention for bulimia nervosa, McIntosh and colleagues (2011) randomly assigned 135 patients with bulimia nervosa who had received eight sessions of CBT to either relaxation training or one of two types of exposure with response prevention: one type focused on pre-binge cues, and the other focused on pre-purge cues. At 5 years, those patients treated with either form of exposure with response prevention were more likely to be abstinent (43% who received the intervention focused on pre-binge cues, whereas 54% who received the intervention focused on pre-purge cues; the difference was not statistically significant) than those treated with relaxation training (27%).

Several studies have examined other factors affecting course and outcome of treatment for bulimia nervosa. Mitchell and colleagues (2004) found that simply telling patients with bulimia nervosa who have achieved abstinence after a course of CBT to return for additional sessions if they fear relapse was not effective for preventing relapse. In this multicenter trial, patients were randomly assigned to follow-up only or to a crisis intervention model. In the follow-up only group, none of the 30 individuals who had relapsed during the study period returned for additional treatment visits. The investigators suggested that planned visits or phone calls should be considered as alternative relapse prevention strategies.

Rowe and colleagues (2008) compared course and outcome in 134 females with bulimia nervosa who received CBT. Patients included 59 with bulimia nervosa alone, 38 with bulimia nervosa plus borderline personality disorder, and 37 with bulimia nervosa plus other personality disorders. No differences in eating-disorder symptomatology or general psychopathology were seen among the groups at 3-year follow-up.

Studies have examined the use of telemedicine and the Internet as routes for administration of psychotherapy for bulimia nervosa. In a randomized, controlled trial involving 128 females with bulimia nervosa, treatment with CBT delivered face-to-face or via telemedicine for 20 weeks was similarly effective (Mitchell et al. 2008), and telemedicine was more cost-effective (Crow et al. 2009). In this study, patients rated therapeutic factors more highly than did therapists and accepted telemedicine CBT more easily than face-to-face CBT (Ertelt et al. 2011).

In a study of Internet-based CBT plus e-mail support, Sanchez-Ortiz and colleagues (2011) randomly assigned 76 female students with bulimia nervosa or EDNOS to an intervention group or to a wait-list group, who received the intervention after 3 months' delay. At 3- and 6-month follow-up, those students getting immediate treatment had better outcomes than those assigned to the wait list followed by treatment, suggesting the importance of providing services as soon as possible when problems are identified.

SELF-HELP PROGRAMS

As described in the guideline, a variety of self-help programs have been studied and shown to be effective for bulimia nervosa. Studies continue to support the usefulness of self-help programs as well as identify limitations.

One such program is "guided self-help," a CBT-based approach in which patients do much of the treatment on their own, using a workbook, while also receiving some counseling and support from a mental health professional. Several randomized, controlled trials have shown the value of guided self-help and its superiority to wait-list control conditions, including a study by Traviss and colleagues (2011) of 81 patients with bulimia nervosa or binge-eating disorder. The authors found that guided self-help was significantly more effective than being on the waiting list in reducing psychopathology of eating disorders, laxative abuse, exercise behaviors, and global distress, and gains were maintained 3 and 6 months after the intervention. In another study of a CBT-based self-care intervention delivered by CD-ROM, Schmidt and colleagues (2008) randomly assigned 97 patients either to the intervention without support followed by 3 months of a flexible number of therapist sessions or to a 3-month wait-list condition followed by 15 sessions of therapist-delivered CBT. At 3 and 7 months posttreatment, the authors found no significant differences between the two groups in binge eating or vomiting frequency. In an earlier study, Schmidt and colleagues (2006) randomly assigned 61 patients with bulimia nervosa or binge-eating disorder to 14 sessions of guided self-help with or without personalized feedback that was delivered in various ways. At 6 months following the intervention, those patients receiving the added feedback reported better positive outcomes with regard to self-induced vomiting and dietary restriction.

Some of the studies described above were included in a 2006 Cochrane review by Perkins and colleagues, who concluded that pure self-help and guided self-help have some value for both bulimia nervosa and binge-eating disorder.

FAMILY THERAPY

Studies continue to demonstrate the value of family therapy for patients with bulimia nervosa, particularly for adolescents, yet findings are less strong than for adolescent patients with anorexia nervosa, and there are fewer studies. Le Grange and colleagues (2007) randomly assigned 80 adolescents with full or partial bulimia nervosa to family-based treatment or to individual supportive psychotherapy. Each group received 20 visits over 6 months. At 6-month post-treatment follow-up, 29% of adolescents receiving family-based treatment, compared with 10% of those receiving individual supportive therapy, were abstinent from binge and purge episodes. Other outcome measures similarly favored family-based treatment. Notably, the supportive psychotherapy employed in this study was expressly nondirective and contained no putative active therapeutic components, such as stimulus control or problem-solving techniques, or instruction or implicit advice on changes in diet and eating patterns. The authors found that lower eating concerns were the best predictor of outcome and concluded that family-based treatment may be most effective in patients who have relatively low levels of eating-disorder psychopathology (Le Grange et al. 2008).

Finally, in a randomized, controlled trial of 85 adolescents with bulimia nervosa, Schmidt and colleagues (2007) found slight advantages for guided self-care over family therapy, including more rapid reduction of bingeing, lower cost, and greater acceptability among adolescents.

PHARMACOTHERAPY

In their systematic review for the World Federation of Societies of Biological Psychiatry, Aigner and colleagues (2011) identified 36 randomized, controlled trials of medications for the treatment of bulimia nervosa. They reported that for tricyclic antidepressants, Grade A evidence exists with a moderate risk-benefit ratio. For fluoxetine, Grade A evidence exists with a good risk-benefit ratio, and for topiramate, there is Grade A evidence with a moderate risk-benefit ratio. These findings and recommendations are consistent with the 2006 APA guideline, which recommends antidepressants, particularly the selective serotonin reuptake inhibitors, as one effective component of the initial treatment program for most patients with bulimia nervosa.

Other pharmaceutical agents, including oxcarbazepine, aripiprazole, and baclofen, have been reported to be effective for bulimia nervosa, but the results were from small case series or studies sponsored by the drug manufacturer. Citalopram was studied by Leombruni and colleagues (2006) in a small single-blind 12-week randomized, controlled trial. In this study, 37 patients with bulimia nervosa received fluoxetine (20–60 mg/day) or citalopram (20–40 mg/day). Both groups improved with respect to eating pathology. Patients receiving fluoxetine reported greater reductions in introjected anger, whereas those receiving citalopram reported greater reduction in depressive feelings.

OTHER SOMATIC TREATMENTS

At the time of guideline publication, repetitive transcranial magnetic stimulation (rTMS) had been studied in case reports for the treatment of bulimia nervosa when co-occurring with major depressive disorder. In a small trial, Walpoth and colleagues (2008) randomly assigned 14 women with bulimia nervosa to receive 3 weeks of either active rTMS or sham rTMS, after a 1-week lead-in period in which all 14 women received sham treatment. All patients improved, and no advantage was seen for the active treatment over sham rTMS. Further study of this treatment approach is needed.

COMBINING PSYCHOTHERAPY AND PHARMACOTHERAPY

The practice guideline recommends with moderate confidence the combination of antidepressant medication and CBT for bulimia nervosa. Combination treatment continues to be studied, including in a large randomized, controlled trial of stepped care. In this study, Mitchell and colleagues (2011) randomly assigned 293 patients with bulimia nervosa at four centers to either 1) 20 sessions of CBT alone over 18 weeks, with the addition of fluoxetine if nonresponse was predicted after six sessions, or 2) stepped care that started with therapist-supervised self-help and was followed by fluoxetine if nonresponse was predicted after six sessions, which in turn was followed, if necessary, by CBT. At the end of treatment no differences were found between groups in inducing recovery (no binge eating or compensatory behaviors for 28 days) or remission (no longer meeting DSM-IV criteria). However, at the end of the 1-year follow-up, the stepped-care arm was significantly superior to the CBT arm in terms of reducing binge eating and all compensatory behaviors (vomiting, laxative abuse, diuretic abuse, and excessive exercise).

INTERVENTIONS TO IMPROVE MOTHERING SKILLS

As noted in the guideline, women with eating disorders who have babies or young children may need guidance, assistance, and monitoring of their mothering skills to minimize the risk of their children developing eating problems or eating disorders. Researchers continue to study interventions to improve the mothering skills of

these patients. Stein and colleagues (2006) randomly assigned 80 mothers with bulimia nervosa or similar eating disorders to either supportive counseling or a video-feedback treatment focusing on the mothers' interactions with their infants. The video-feedback treatment produced improvement in these interactions and in infant autonomy, suggesting the value of attending to mother-infant interactions in these patients.

BINGE-EATING DISORDER

Since publication of the 2006 guideline, multiple studies have assessed treatments for binge-eating disorder, which is currently categorized as an EDNOS. Many of the studies described above involved patients with binge-eating disorder in addition to bulimia nervosa. These "transdiagnostic" studies will not be reviewed again here. Instead, the discussion below is specifically limited to studies of binge-eating disorder.

Studies of treatments for binge-eating disorder are inherently limited by the fact that symptoms of binge eating are highly labile and placebo response rates are high in numerous studies. As a result, conclusions about effectiveness must be drawn cautiously.

PSYCHOSOCIAL TREATMENTS

The results and conclusions of recent studies and reviews have been in general agreement with the 2006 guideline, which gives a strong recommendation for individual and group CBT for binge-eating disorders as well as guided self-help programs. The guideline states that IPT and DBT may also be considered.

In a meta-analysis of 38 randomized, controlled trials with 1,973 participants specifically addressing binge-eating disorder using psychotherapy and structured self-help, both based on cognitive-behavioral interventions, Vocks and colleagues (2010) found both interventions to have large effects on the reduction of binge eating. Uncontrolled studies on weight-loss treatments demonstrated moderate reductions of binge eating. Combination treatments did not result in higher effects compared with single-treatment regimens. Except for weight-loss treatment, none of the interventions resulted in a considerable weight reduction. These reviewers concluded that psychotherapy and structured self-help, both based on cognitive-behavioral interventions, should be recommended as the first-line treatments for binge-eating disorder. Other investigators have concluded that guided self-help is not only effective (Striegel-Moore et al. 2010) but also cost-effective (Lynch et al. 2010).

In a randomized, controlled trial involving 205 male and female patients with binge-eating disorders, Wilson and colleagues (2010) found that individuals who received 20 sessions of IPT or 10 sessions of CBT administered via guided self-help over a 6-month course of treatment had substantial reductions in binge eating compared with individuals who received a behavioral weight loss treatment. However, as demonstrated in a randomized, controlled trial in which 125 patients received group-administered CBT, behavioral weight loss treatment, or a sequence of the two, Grilo and colleagues (2011) found that whereas CBT-based approaches may be more effective for binge eating per se, behavioral weight loss treatment programs appear to be more effective for weight loss in obese binge eaters. Notably, outcomes for these studies were limited to 1-2 years following treatment.

In a study of 259 adults diagnosed with binge-eating disorder who were randomly assigned to 20 weeks of therapist-led, therapist-assisted, or self-help group treatment or a wait-list condition, Peterson and colleagues (2009) found that even though at end of treatment the therapist-led (51.7%) and the therapist-assisted (33.3%) conditions had higher binge-eating abstinence rates than the self-help (17.9%) and wait-list (10.1%) conditions, no between-group differences in abstinence rates were observed at 6- or 12-month follow-up.

Safer and colleagues (2010) conducted a trial in which 101 men and women with binge-eating disorder were randomly assigned to 20 group sessions of DBT specifically designed for binge-eating disorder or to an active comparison group therapy. The group that received DBT had a significantly lower dropout rate (4% vs. 33.3%). Although posttreatment binge-eating abstinence and reductions in binge-eating frequency were achieved more quickly in the DBT group, these differences did not persist over the 3-, 6-, and 12-month follow-up assessments (e.g., 12-month follow-up abstinence rates were 64% for the DBT group vs. 56% for the active comparison group). The lack of differential findings over follow-up suggests that the hypothesized specific effects of the DBT designed for binge-eating disorder do not show long-term impact beyond those attributable to nonspecific common therapeutic factors.

Other studies have shown that CBT-oriented treatments for binge-eating disorder are effective through in-

dividual coaching, via e-mail, and via the Internet (Carrard et al. 2011; Robinson and Serfaty 2008).

In a study of group psychodynamic-IPT by Tasca and colleagues (2006), 135 individuals with binge-eating disorder (123 women, 12 men) were randomly assigned to receive this intervention, group CBT, or a wait-list control condition. After 16 sessions and at 12 months posttreatment, patients in both treatment groups had reduced days binged compared with individuals in the wait-list condition. No significant effects on BMI were observed, but in obese patients both therapies were associated with weight loss. One goal of the study was to compare outcomes between the two treatments, and some differences were found. In the psychodynamic-IPT group, significantly lower depression scores were observed compared with the control condition group at posttreatment, whereas scores in the CBT group and the control condition group were not significantly different. In addition, significant improvements in self-esteem were observed in the psychodynamic-IPT group at 6 months posttreatment, but not in the CBT group. Improvement in susceptibility to hunger was observed in the CBT group at posttreatment, but not in the psychodynamic-IPT group. A second goal of the study was to explore the relationship between women patients' scores on a level of attachment scale and their treatment responses and outcomes. For women who completed group psychodynamic-IPT ($n=33$), higher attachment anxiety was related to improvements in days binged by posttreatment. In contrast, for women who completed group CBT ($n=33$), lower attachment anxiety was associated with improvements in days binged by posttreatment.

PHARMACOTHERAPY

As noted earlier in this watch, sibutramine was withdrawn from the market in 2010 because of safety concerns. With respect to other medications for the treatment of binge-eating disorder, the recommendations of the 2006 guideline remain current, despite recent publication of randomized, controlled trials.

The Task Force on Eating Disorders of the World Federation of Societies of Biological Psychiatry (Aigner et al. 2011) identified 26 randomized, controlled trials of pharmacological treatments for binge-eating disorder. The task force concluded that Grade A evidence supports the use of imipramine (with moderate risk-benefit ratio), sertraline and citalopram/escitalopram (all with good risk-benefit ratios), and topiramate (with moderate risk-benefit ratio). The task force found that Grade D evidence exists for fluvoxamine and fluoxetine (i.e., inconsistent results). In their 2010 meta-analysis, Vocks and colleagues assessed essentially the same literature. The authors combined effect sizes for available randomized, controlled trials, primarily concerning antidepressants, and found overall medium effect sizes for reduction of binge eating.

Randomized, controlled trials not included in the 2011 review by the World Federation of Societies of Biological Psychiatry have failed to provide support for the utility of other medications for the treatment of binge-eating disorder, including acamprosate (McElroy et al. 2011) and lamotrigine (Guerdjikova et al. 2009).

COMBINING PSYCHOTHERAPY AND PHARMACOTHERAPY

The guideline states that for most patients, adding antidepressant medication to a behavioral weight control and/or CBT regimen does not have a significant effect on binge suppression when compared with medication alone. In a 2007 publication, Devlin and colleagues reported findings of a 2-year follow-up on 116 individuals who were studied in a randomized trial, cited in the guideline (Devlin et al. 2005), of group behavioral therapy when combined with fluoxetine, individual CBT, or placebo. Across treatment groups, there was overall improvement in binge-eating frequency and in binge-eating abstinence, with greater improvements in patients who received CBT but no significant change in weight. The authors concluded that short-term treatment may confer long-term benefits and that not all treatments are equivalent in the benefits they confer.

EATING DISORDERS IN MIDDLE AGE AND LATER LIFE

An expanding number of reports and case studies describe eating disorder in the later life of adults (Mangweth-Matzek et al. 2006; Gadalla 2008; Zerbe 2008, pp. 192–220; Patrick and Stahl 2009; Scholtz et al. 2010; Lapid et al. 2010, 2011). However, research in this area remains limited. Some such cases appear to be new onset, but the majority seem to come to psychiatric or medical attention only after many years of patient suffering. Both biological and psychosocial factors likely play a role in the etiology of late-life eating disorders. For example, subclinical and

overt anorexia nervosa and bulimia nervosa may reflect difficulties with body image and self-image as the baby-boomer generation ages. Individuals may also seek care or take it more seriously after age 40 because they are confronted with mortality and other existential issues in these decades. Patient education and therapeutic approaches must be modified to address the medical, psychological, and social needs of this age group that are different from those of younger adults and adolescents.

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