Bulimia nervosa in adults: Clinical features, course of illness, assessment, and diagnosis

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INTRODUCTION

Bulimia nervosa is characterized by recurrent episodes of binge eating and inappropriate compensatory behaviors, as well as frequent comorbid psychopathology [1]. Pooled results from surveys in 14 countries estimate that the lifetime prevalence of bulimia nervosa is 1 percent and the 12-month prevalence is 0.4 percent [2]. In the United States, the estimated lifetime prevalence of bulimia nervosa is 0.3 percent; in females it is 0.5 percent and in males is 0.08 percent [3]. The illness was first distinguished from anorexia nervosa in 1979 [4].

The clinical features, comorbid psychopathology, course of illness, assessment, diagnosis, and differential diagnosis of bulimia nervosa are reviewed here. The epidemiology, neurobiology, medical complications and their management, and treatment of bulimia nervosa are discussed separately.

- (See "Eating disorders: Overview of epidemiology, clinical features, and diagnosis", section on 'Bulimia nervosa'.)
- (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)
- (See "Eating disorders: Overview of prevention and treatment", section on 'Bulimia nervosa'.)
- (See "Bulimia nervosa in adults: Cognitive-behavioral therapy (CBT)".)
- (See "Bulimia nervosa in adults: Pharmacotherapy".)

PATHOGENESIS

The pathogenesis of bulimia nervosa is not known. However, research suggests that behavioral, interpersonal, and biological factors may be involved. Studies of the pathogenesis often use a cross-sectional design, making it unclear whether abnormalities (eg, neuroimaging findings) represent etiologic causes, sequelae, neither, or both causes and sequelae.

Factors that may contribute to the onset of bulimia nervosa include the following:

- Genetic – Multiple genes with small effects may contribute to the illness, and these contributions may increase with age [5]. A national registry study of sisters (n >780,000) found that bulimia nervosa was a heritable trait, such that 41 percent of the variance in bulimia nervosa was due to genetic factors and the remaining 59 percent to was attributable to unique (nonshared) environmental factors [6].

- Childhood adversity – Several studies have found that childhood adversity and maltreatment are risk factors for onset of bulimia nervosa. A national registry study found that a childhood history of parental psychiatric history and family disruption (child not living with both parents/caregivers) were each associated with bulimia nervosa [7]. In addition, a study of a nationally representative sample of women in the United States found that sexual abuse, harsh physical punishment, emotional abuse, emotional neglect, and exposure to intimate partner violence were each associated with a lifetime history of bulimia nervosa [8].

CLINICAL FEATURES

Core features — The core features of bulimia nervosa are [1]:

- Binge eating – Eating an amount of food (eg, >1000 kcal [9]) in a discrete period of time that is definitely larger than most people would eat under similar circumstances; during the episode, patients feel they have no control over their eating. One study of patients (n = 243) with eating disorders found that the average amount of food consumed during a binge eating episode was approximately 2200 kcal [9].

- Inappropriate compensatory behavior to prevent weight gain, such as self-induced vomiting; misuse of medications such as laxatives, diuretics, insulin, or thyroid hormone [10]; fasting; or excessive exercise.

- Binge eating and inappropriate compensatory behaviors occur, on average, at least once a week for three months.

- Excessive concern about body weight and shape.

The prototypic sequence of behavior in bulimia nervosa consists of [11]:

- Caloric restriction
- Binge eating
- Self-induced vomiting

The binge eating episode triggers further caloric restriction, which leads to intense hunger and increases the probability of an additional binge eating episode. This pattern of behavior is known as the Restriction Model [11]. As part of the dietary restraint that occurs between eating binges, patients eat low-calorie food and avoid food that is perceived to be fattening or likely to trigger a binge [1].

Other antecedents to bingeing and purging include dysphoria and interpersonal stressors (Dual Pathway Model) [12-14]. Thus, several treatments target negative affect and stressors as a precipitant for binge-purge behavior [15]. Dysphoria also occurs after a binge, along with remorse and self-loathing.

Associated features — A nationally representative survey in the United States found that bulimia nervosa is more common in females than males by a ratio of 6:1 and the mean age of onset is 20 years [3]. Among individuals with bulimia nervosa, psychosocial impairment (interference with normal daily activities, interpersonal relationships, or fulfilling responsibilities) was observed in 61 percent.

Body weight in bulimia nervosa is usually within or above the normal range [1]. In addition, patients often restrict their diet between binge eating episodes to influence body weight or shape [1].

Neurocognitive functioning is impaired in patients with bulimia nervosa. As an example, patients can manifest deficits in executive functions, which include higher level abilities or processes such as inhibitory control, problem-solving, and planning. A meta-analysis of nine studies compared patients (n = 272) with controls (n = 454) and found that executive functioning was moderately worse in those with bulimia nervosa [16].

One specific domain of executive functioning that is impaired in bulimia nervosa is decision-making. Another meta-analysis of nine studies assessed decision-making in patients (n = 221) and healthy controls (n = 331) using the Iowa Gambling Test, which measures the ability to

make advantageous and disadvantageous choices [17]. Decision-making was moderately worse in patients; however, heterogeneity across studies was moderate.

In addition, emotion dysregulation (eg, negative emotions lead to inability to control behavior) often occurs in those with bulimia nervosa [18,19], and bulimia nervosa is usually accompanied by additional psychopathology. (See 'Comorbidity' below.)

Nonsuicidal self-injury — Impulsive or compulsive nonsuicidal self-injury (eg, skin cutting, picking, or burning with a lit cigarette) is often seen in bulimia nervosa. A meta-analysis of 20 studies (n >2100 patients) found a lifetime history of nonsuicidal self-injury in 33 percent [20]. However, heterogeneity across studies was large.

Information about nonsuicidal self-injury, including its clinical features, assessment, and treatment are discussed separately. (See "Nonsuicidal self-injury in children and adolescents: Clinical features and proposed diagnostic criteria" and "Nonsuicidal self-injury in children and adolescents: Assessment" and "Nonsuicidal self-injury in children and adolescents: Prevention and choosing treatment".)

Other clinical phenomena — Other clinical phenomena may occur in patients with bulimia nervosa, including dissociative symptoms. A meta-analysis of eight studies included 353 patients with bulimia nervosa who were assessed with the Dissociative Experiences Scale, which measures symptoms such as absorption, amnesia, depersonalization, and/or derealization [21]. The mean score was 22; scores greater than 15 are often used as a cutoff for identifying pathological levels of dissociation [22].

COMORBIDITY

Mental disorders — Patients with bulimia nervosa usually have a lifetime history of other psychiatric disorders [1,23,24]. Every mental disorder that is present should be diagnosed because of implications for treatment. Comorbid psychopathology is associated with a poorer prognosis for bulimia nervosa; however, successful treatment of bulimia nervosa often resolves comorbidity such as anxiety and depressive disorders [25,26].

Comorbid psychopathology is frequently found in patients with bulimia nervosa. A nationally representative survey in the United States estimated that 94 percent of patients with bulimia nervosa had a lifetime history of at least one additional psychiatric disorder (aside from personality disorders) and that the mean number of comorbid disorders was two [27]. Among individuals with no history of an eating disorder, only 58 percent met criteria for one or more lifetime psychiatric disorders.

Based upon nationally representative surveys in the United States, lifetime comorbid disorders commonly observed in bulimia nervosa include [27,28]:

- Depressive disorders
  - Unipolar major depression – 76 percent of patients with bulimia nervosa
  - Persistent depressive disorder (dysthymia) – 35 percent
- Anxiety disorders
  - Generalized anxiety disorder – 26 percent
  - Panic disorder – 18 percent
  - Specific phobia – 14 percent
  - Social anxiety disorder (social phobia) – 14 percent
- Substance-related disorders
  - Alcohol use disorder – 61 percent
  - Nicotine use disorder – 43 percent
  - Other drug use disorder – 30 percent
- Posttraumatic stress disorder (PTSD) – 32 percent
- Premenstrual dysphoric disorder – 17 percent

The prevalence of these comorbidities in patients with bulimia nervosa exceeds the rate in the general population [27]. As an example:

- Major depression – The estimated lifetime prevalence of unipolar major depression in the general population is 23 percent and for specific phobia is 13 percent [29].
- Social anxiety – A meta-analysis pooled five studies with a total of 232 bulimia nervosa patients and 799 healthy controls; levels of social anxiety, which were assessed with rating scales, were greater in patients, and the clinical difference was moderate to large [30].
- Tobacco use disorder – Cigarette smoking is more common in bulimia nervosa than the general population. A meta-analysis of 23 studies found that among patients with bulimia nervosa (n >2600), a lifetime history of smoking was present in 39 percent; compared with healthy controls, patients were twice as likely to have ever smoked (odds ratio 2) [31].

The frequency of some comorbid disorders differs between epidemiologic surveys and studies in clinical settings. Studies at academically affiliated eating disorder clinics found that among

282 patients with bulimia nervosa, the lifetime prevalence of unipolar major depression was 72 percent, alcohol use disorder was 46 percent, obsessive-compulsive disorder 40 percent, social anxiety disorder 16 percent, and specific phobia 12 percent [32-34]. Clinical studies have also found that among patients with bulimia nervosa, the lifetime prevalence of PTSD was approximately 15 percent and the prevalence of significant PTSD symptoms not meeting full criteria for the disorder (subthreshold PTSD) exceeded 40 percent [32,35].

A history of childhood maltreatment in patients with bulimia nervosa is associated with comorbid depressive disorders, anxiety disorders, and borderline personality disorder [36].

Personality disorders and traits — Comorbid personality disorders and traits are commonly present in bulimia nervosa [37].

In a nationally representative survey in the United States, lifetime comorbid personality disorders commonly observed in bulimia nervosa included [27]:

- Borderline (48 percent of patients with bulimia nervosa)
- Schizotypal (25 percent)
- Antisocial (11 percent)

Some patients meet criteria for more than one personality disorder, due to the standard clinical practice of making categorical diagnoses. The diagnosis of personality disorders, using either categorical diagnoses or a categorical-dimensional approach that emphasizes impairments in personality functioning and pathological personality traits, is discussed elsewhere, as is the clinical manifestation and management of personality disorders. (See "Overview of personality disorders" and "Dimensional-categorical approach to assessing personality disorder pathology".)

Patients with bulimia nervosa may have comorbid personality pathology that is not severe enough to meet criteria for a personality disorder but nevertheless causes distress and impairs functioning [37]. This psychopathology includes such traits as [38]:

- Impulsivity – Acting without thought of consequences, failing to resist a drive or temptation that is harmful
- Perfectionism – Pursuing unrealistically high standards despite the occurrence of adverse consequences
- Compulsivity – Need for order, symmetry, exactness, and control

- Narcissism – Excessive concern with physical appearance, need for admiration and external validation from others

Multiple traits are often found in the same patient with bulimia nervosa [39]. One model hypothesizes that personality traits form three distinct patterns of comorbid personality pathology in patients with bulimia nervosa, consisting of emotional dysregulation and impulsivity, emotional inhibition and interpersonal avoidance, and perfectionism and achievement [40].

The prognostic significance of comorbid personality pathology is not clear [38,41]. Some studies have found that bulimia nervosa patients with comorbid personality disorders or traits have a worse outcome compared with patients without personality pathology [25,40,42,43], whereas other studies have found no significant difference [44,45].

General medical disorders — Patients with bulimia nervosa are at increased risk for general medical complications and disorders. (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management", section on 'Medical complications of bulimia nervosa'.)

COURSE OF ILLNESS

Although the large majority of patients with bulimia nervosa in follow-up studies are female, outcomes in males may be comparable. As an example, one prospective study followed females (n = 60) and males (n = 60) for an average of eight years; the two groups were matched for age and length of follow-up [46]. Remission in females and males was comparable (50 and 44 percent).

Recovery — It appears that in most patients, bulimia nervosa persists for at least 12 months. One study of a nationally representative sample from the United States found that among individuals with a lifetime history of bulimia nervosa (n = 92), the disorder persisted for at least 12 months in 55 percent [3].

Follow-up studies of patients with bulimia nervosa indicate that approximately 50 to 70 percent eventually improve or recover:

- A prospective observational study of 137 outpatients who were each treated with cognitive-behavioral therapy and then assessed six years later found that improvement or recovery occurred in 52 percent [47].

- A retrospective study included patients who were hospitalized for bulimia nervosa (n = 1351) and assessed them, on average, 11 years later [48]. Improvement or recovery occurred in 47 percent.

- Another retrospective study followed 173 patients for a mean of 12 years and assessed them for remission (absence of eating disorder behaviors for at least six months) or improvement (did not meet criteria for remission and did not meet criteria for an eating disorder) [49]. Improvement or recovery eventually occurred in 70 percent.

- A prospective observational study lasting approximately 22 years assessed patients (n = 76) for recovery, defined as either no symptoms or no binge/purge behaviors for 52 weeks; recovery occurred in 68 percent [50].

The likelihood of recovery from bulimia nervosa declines the longer one remains ill [49-51]. As an example, one study found that if patients did not recover within the first decade of follow-up, they were less likely to recover in the second decade of follow-up [50]. In addition, less severe symptoms of bulimia nervosa may be associated with increased rates of recovery [47], whereas comorbid substance use disorder may be associated with decreased rates of recovery [49].

Relapse — Based upon prospective observational studies, remission of bulimia nervosa is followed by relapse in approximately 20 to 30 percent of patients:

- A study of 68 patients who recovered during a six-year follow-up found that relapse occurred in 17 percent [47].

- In a study of 116 patients who remitted and were then followed for six months, relapse occurred in 28 percent [52].

- A study of patients (n = 76) who were followed for approximately 22 years found that among those who recovered, relapse occurred in 21 percent [50].

Predictors of relapse include more severe symptoms at baseline (prior to treatment and recovery), including greater frequency of binge eating, vomiting, and body avoidance behaviors (eg, patients avoiding wearing tight-fitting clothing or looking in mirrors) [47,52].

Weight — Although bulimia nervosa may include a fear of gaining weight or becoming fat, most patients can expect that over time, their weight will be normal. A 22-year, prospective observational study found that in patients who had recovered during follow-up (n = 52), body mass index was normal in 67 percent [53]. Among the patients who remained ill with bulimia nervosa (n = 13), weight was normal in 74 percent. Patients in the two groups whose body weight was not normal were either overweight or obese.

Mortality

All-cause — Observational studies indicate that bulimia nervosa is associated with increased rates of all-cause mortality.

- **General population** – All-cause mortality is two to eight times greater in patients with bulimia nervosa than the general population [54-56].
- **Clinical settings** – All-cause mortality is elevated in patients with bulimia nervosa:
  - A 27-year study of a national clinical database compared patients with bulimia nervosa (n >4800) who were each matched on age and sex with four control patients who did not have an eating disorder; all-cause mortality was 40 percent greater in patients (hazard ratio 1.4, 95% CI 1.1-1.8) [57].
  - A 12-year registry study followed women hospitalized for bulimia nervosa (n = 818) and women hospitalized for pregnancy-related events such as livebirths and pregnancy terminations (n >415,000) [58]. After adjusting for potential confounding factors (eg, age, comorbid psychopathology, and socioeconomic deprivation), the analyses found that the risk of death was five times greater in those with bulimia nervosa than controls (hazard ratio 5, 95% CI 2-11). However, the risk of death appeared to decline over time and plateau approximately nine years after hospitalization.
  - In addition, one study found that all-cause mortality in bulimia nervosa was approximately three times greater than all-cause mortality for bipolar disorder and depression [55].

Suicide — Bulimia nervosa is often accompanied by suicidality, including suicidal ideation, action to prepare for an attempt, nonfatal attempt or self-harm, or death. Compared with the general population, patients with bulimia nervosa have an elevated rate of suicide attempts and deaths [1,24]. However, a registry study found that the rate of suicide deaths in bulimia nervosa was approximately one-third of that observed in bipolar disorder, depression, and schizophrenia [55].

- **Suicide attempts** – Among patients with bulimia nervosa, suicide attempts occur in approximately 20 to 30 percent. Compared with the general population, individuals with bulimia nervosa are two to six times more likely to attempt suicide:
  - A meta-analysis that included 36 studies of patients with bulimia nervosa (sample size not reported) found that approximately 21 percent attempted suicide [59].

- A retrospective study of patients with bulimia nervosa (n = 494) found a past history of suicide attempts in 22 percent [60].

- In a national registry study that identified individuals with bulimia nervosa (n >3000), suicide attempts occurred in 17 percent [61]. The study compared the rate of attempts in bulimia nervosa with the rate in a general population cohort (n >2,000,000); after adjusting the analyses for comorbid depressive disorders, anxiety disorders, and substance use disorders, the study found that suicide attempts were approximately two times more likely among individuals with bulimia nervosa (odds ratio 1.9, 95% CI 1.7-2.1).

- In a nationally representative sample of adults, the prevalence of ever attempting suicide was greater in those with a lifetime history of bulimia nervosa (n = 92) than those without a history of bulimia nervosa (n >36,000; 31 versus 5 percent) [62]. After adjusting for potential confounding factors (eg, age, sex, and income), the analyses found that suicide attempts were six times more likely to occur in those with a history of bulimia nervosa than those without this history (odds ratio 6, 95% CI 3-12).

Factors that are associated with suicide attempts in bulimia nervosa include psychiatric comorbidity (eg, depression, personality disorders, or substance use disorders), a history of hospitalization, a history of self-mutilating behavior, longer duration of bulimia nervosa, poor impulse regulation, and having a sibling with an eating disorder [60-70].

- **Suicide deaths** – Multiple observational studies indicate that deaths by suicide are approximately four to seven times greater in patients with bulimia nervosa than the general population [55,56]. As an example:

  - A retrospective study of 906 patients with bulimia nervosa (mean duration of follow-up 18 years) found that 1 percent committed suicide, which was seven times the rate in the general population (standardized mortality ratio 7, 95% CI 3-13) [71].

  - A national registry study identified individuals with bulimia nervosa (n >3000) in a general population cohort (n >2,000,000). Death by suicide was four times greater in those with bulimia nervosa than the general population (odds ratio 4). However, after the analyses were adjusted for comorbid psychopathology, the risk of suicide deaths among individuals with bulimia nervosa was attenuated and no longer statistically significant (odds ratio 1.5, 95% CI 0.8-2.7) [61].

LEGAL PROBLEMS

Bulimia nervosa may be associated with an increased risk of legal problems. One study used national registry data covering 20 years to identify female patients with bulimia nervosa (n >5000) within the general population of females (n >957,000) [72]. Convictions for theft, primarily petty theft, were greater in patients than the general population (18 versus 5 percent), as were convictions of other crimes (13 versus 6 percent). After adjustment for comorbid psychopathology and unmeasured familial factors, the risk of being convicted of theft was nearly three times greater in patients and the risk of being convicted for other crimes was one and a half to two times greater in patients. Legal issues may create additional stress that interferes with recovery from bulimia nervosa and increases relapse rates.

ASSESSMENT

The initial clinical evaluation of patients with a possible diagnosis of bulimia nervosa includes a psychiatric and general medical history, mental status and physical examination, and focused laboratory tests [73-76]. The clinical interview may be augmented with a self-report screening measure and a structured interviewing instrument. The initial assessment should address the clinical features, diagnostic criteria, and comorbid psychopathology of bulimia nervosa, and may require multiple interviews [37]. Subsequently, the clinician should monitor the patient's response to treatment and assess the patient for new illnesses.

Establishing rapport with the patient helps elicit information. Patients are often ashamed of the disorder and may attempt to hide it from clinicians [77]. At the beginning of the interview, simple questions about the patient's age, occupation, marital status, and referral source can put the patient at ease. In addition, directed and focused questions about eating disorder psychopathology may be helpful for patients who do not respond to open-ended questions [24]. However, it is important to avoid undermining the interview by asking direct questions prematurely and to allow the patient to describe their illness from their own point of view. Conveying a nonjudgmental and knowledgeable attitude is also helpful. Collateral information should be sought from family members, who may report the presence of vomitus in the house, finding hidden laxatives or diuretics, or the patient regularly departing to the bathroom immediately after meals.

Screening instruments — The diagnostic interview can be facilitated by first administering a self-report screening instrument [78]. Patients who screen positive for an eating disorder should be asked about the diagnostic criteria for bulimia nervosa and anorexia nervosa. Self-report instruments can save interviewer time but are more prone to yielding false positives than clinician-administered instruments. In addition, the psychometric properties (eg, reliability) of screening instruments are frequently not adequate [79].

Among the available self-report measures, we suggest the SCOFF, which is a five-item self-report measure that screens for eating disorders; the SCOFF is discussed separately [80,81]. (See "Eating disorders: Overview of epidemiology, clinical features, and diagnosis", section on 'Screening'.)

An alternative self-report measure is the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (table 1) [82]. Whereas most screening instruments require a follow-up interview to make the diagnosis, the Patient Health Questionnaire both screens for and provides a diagnosis for bulimia nervosa, as well as depressive, anxiety, alcohol, and somatoform disorders. It was specifically designed for use in primary care, is fully self-administered by the patient, has good diagnostic validity overall (sensitivity 75 percent, specificity 90 percent), excellent diagnostic validity for bulimia nervosa (sensitivity 89 percent, specificity 96 percent), and the median clinician time to review the results is one to two minutes.

Clinical interview — The assessment of the psychiatric history and mental status should include questions about [37,83,84]:

- Height and weight.
  - Current – Clinicians should measure weight and height, as well as ask about them, because the patient's self-report is often unreliable. Body mass index (calculator 1) and percent ideal body weight (table 2) should then be determined for comparison to population norms.
  - Lifetime highest and lowest weights at adult height, patterns of weight fluctuation.
  - Desired weight.
- Frequency of self-weighing.
- Food intake patterns when patients are not binge eating.
- Present and past eating disorder symptoms.
  - Dietary restriction.
  - Binge eating behavior, including frequency, types and amounts of food eaten, and whether patients feel they cannot control their eating during binges.
  - Compensatory behaviors such as purging (eg, self-induced vomiting or misuse of laxatives, enemas, diuretics, or diet pills), prolonged fasting, excessive exercise, and chewing and spitting out food.

- Attitudes about body weight and shape, food, and eating.
- Ritualistic eating behaviors (eg, cutting food into extremely small pieces or refusing to mix different types or colors of food on the plate).

- Level of self-esteem and the degree to which it depends upon body weight and shape.
- Current and past suicidal ideation and behavior – Bulimia nervosa is often accompanied by suicidality, including suicidal ideation, action to prepare for an attempt, and nonfatal attempt or self-harm. (See 'Suicide' above.)

  Patients with suicidality should be seen more frequently and perhaps hospitalized, depending upon the estimated level of risk (table 3) [37,85]. A specific suicide plan of high lethality or intent indicates the need for hospitalization. Risk factors, evaluation, and management of suicidality are discussed separately. (See "Suicidal ideation and behavior in adults".)
- Comorbid psychopathology, such as anxiety, depressive, impulse control, alcohol and substance use, and personality disorders. (See 'Mental disorders' above.)
- Psychosocial functioning.
- Prior psychiatric treatment:
  - Psychotherapy
  - Pharmacotherapy
  - Self-help groups
- Family history of eating disorders and other psychopathology.

In discussing onset of bulimia nervosa, the clinician should ask about interpersonal problems at that time [37]. However, family members should not be blamed for causing the illness; there is no evidence that families cause eating disorders.

Structured instruments — Structured, interviewer-administered instruments are available for diagnosing bulimia nervosa and other eating disorders, but are seldom used in routine clinical practice. A structured instrument enables the interviewer to clarify ambiguous or contradictory responses and may help differentiate the diagnosis of bulimia nervosa from anorexia nervosa. However, these instruments are labor intensive and generally reserved for specialized evaluation, treatment, or research settings.

Multiple options are available for clinicians who wish to conduct a structured interview to diagnose patients [86]. In the past, the gold-standard has been the Eating Disorder Examination [87-90]. More recently other measures, such as the Eating Disorder Assessment for the American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5) [91], have gained popularity. Both instruments systematically assess each criterion for every eating disorder. Each instrument has good to excellent reliability and validity, which are mostly a function of interviewer training and experience.

An online, self-report instrument called the Eating Disorder Questionnaire-Online was developed for diagnosing eating disorders, but its psychometric properties are poor [92]. As an example, sensitivity for anorexia nervosa (0.4) was low and for binge eating disorder (0.7) was fair.

Measurement based care — We suggest that clinicians ask patients at each visit how many episodes of binge eating and purging occurred each week since the last visit. Measurement based care can help identify nonresponders and detect residual symptoms. Self-report measures may also be used to assess change in symptoms over time [78]. Commonly used instruments include the Bulimia Test-Revised (36 items) [93], Eating Disorder Inventory-3 (91 items) [94], Body Shape Questionnaire (34 items) [95], Three-Factor Eating Questionnaire (51 items) [96], Eating Disorders Questionnaire (108 items) [97], and the Eating Disorder Examination-Questionnaire (38 items) [98]. In addition, new technologies such as computers and smart phones can be used to assess patients via e-mail and text messaging [99].

DIAGNOSIS

The American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5) and the World Health Organization's International Classification of Diseases-11th Revision (ICD-11) can each be used to diagnose bulimia nervosa. The criteria used by each system closely resemble each other.

Diagnostic and Statistical Manual — A DSM-5 diagnosis of bulimia nervosa requires each of the following criteria (table 4) [1]:

- Episodes of binge eating, which are defined as eating an unusually large amount of food in a discrete period of time (eg, two hours). Patients feel that they cannot control their eating during the episode.
- Inappropriate compensatory behavior to prevent weight gain.

- Binge eating and inappropriate compensatory behaviors occur, on average, at least once a week for three months.
- The patient's self-evaluation is unduly influenced by body shape and weight.
- The disturbance does not occur exclusively during episodes of anorexia nervosa (table 5). (See "Anorexia nervosa in adults: Clinical features, course of illness, assessment, and diagnosis", section on 'Diagnostic and Statistical Manual'.)

The key element of an eating binge is the excessive amount of food that is consumed; objectively, an eating binge is equivalent to at least two meals [100] or approximately 2000 kcal [101]. The clinician should consider the context of a meal in deciding whether the patient is binge eating. As an example, an amount of food that is excessive for a typical meal may be regarded as normal during a celebration or holiday [1]. The episode of bingeing usually continues until the patient is uncomfortable or painfully full.

Binge eating usually occurs during a limited time, such as two hours [1]. However, the episode is not necessarily restricted to one setting; as an example, the patient may begin eating at a restaurant and then continue at home. Snacking on small amounts of food throughout the day is not considered binge eating.

The type of food eaten during an eating binge varies across episodes for a given patient and across patients; although binges often include high-calorie sweets, patients do not appear to crave any specific nutrient [1]. However, patients frequently consume foods that are otherwise avoided.

Loss of control occurs during binge eating episodes, such that patients cannot refrain from eating or stop eating once started; the binge may occur in a dissociative state [1]. However, loss of control is not absolute. Patients are usually ashamed of their behavior, try to conceal it, and will usually stop bingeing if someone unexpectedly enters the room. In addition, binge eating may be planned. Resignation and abandoned efforts to control uncontrolled eating also qualifies as loss of control.

Patients with bulimia nervosa attempt to prevent weight gain through inappropriate compensatory behaviors [1]. Many patients employ multiple methods; the most common is self-induced vomiting, which may become an end in itself and occur after eating only small amounts of food. Vomiting is generally induced by using the fingers or instruments to stimulate the gag reflex; some patients become so adept that they can vomit at will. Ipecac syrup (emetine) is rarely used to induce vomiting; chronic use may cause cardiac and skeletal myopathy.

Other inappropriate compensatory behaviors to prevent weight gain include fasting and misuse of laxatives, diuretics, other medications (eg, thyroid hormone), or enemas [1]. Patients may also exercise to the point that it interferes with important activities or occurs at inappropriate times, in inappropriate settings, or despite injury.

Medical complications of self-induced vomiting or misuse of laxatives, diuretics, or enemas (purging) are discussed separately. (See "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management", section on 'Medical complications of bulimia nervosa'.)

International Classification of Diseases — The diagnostic criteria for bulimia nervosa according to the ICD-11 closely resemble the DSM-5 criteria [1,102]. An ICD-11 diagnosis of bulimia nervosa requires each of the following criteria:

- Episodes of binge eating, which are characterized by eating more food than usual during a discrete period of time. Patients feel that they cannot control their eating during the episodes, which are frequent and recurrent (eg, at least once a week for a month or longer).
- Repeated inappropriate compensatory behavior to prevent weight gain, such as:
  - Self-induced vomiting.
  - Strenuous exercise.
  - Abuse of purgatives (laxatives or enemas).
- Preoccupation with body weight and shape, which strongly influence the patient's self-esteem.
- Patient does not meet criteria anorexia nervosa.

Diagnostic stability — Although patients diagnosed with bulimia nervosa may subsequently develop symptoms that warrant changing the diagnosis to a different eating disorder, diagnostic stability is the rule. As an example:

- A national registry study identified treatment-seeking patients with an initial diagnosis of bulimia nervosa (n = 2225) who were followed for an average of six years. Clinical assessments during follow-up found that the probability of [103]:
  - Remaining ill with and retaining the diagnosis was 44 percent
  - Remitting from bulimia nervosa was 25 percent
  - Changing diagnosis to eating disorder not otherwise specified was 27 percent

- Changing diagnosis to anorexia nervosa was 2 percent
- Changing diagnosis to binge eating disorder was 2 percent

- A prospective observational study followed 128 patients with bulimia nervosa at intake for up to seven years and found that diagnostic crossover to anorexia nervosa occurred in 14 percent [104].

- In a six-year, prospective observational study of 137 patients with bulimia nervosa at intake, diagnostic crossover to anorexia nervosa occurred in 9 percent and was associated with comorbid unipolar depression and substance use disorder [104].

DIFFERENTIAL DIAGNOSIS

Some symptoms of bulimia nervosa (eg, hyperphagia) overlap with symptoms of other psychiatric and medical illnesses [1,101]. However, these other illnesses generally do not include the inappropriate compensatory behaviors to prevent weight gain (self-induced vomiting, misuse of medications, fasting, or excessive exercise) or excessive preoccupation with weight and body shape seen in bulimia nervosa. Some of the illnesses that resemble bulimia nervosa can also occur in conjunction with bulimia nervosa (eg, unipolar major depression and borderline personality disorder). (See 'Comorbidity' above.)

Psychiatric disorders — Anorexia nervosa, binge eating disorder, major depressive disorder, and borderline personality disorder can resemble bulimia nervosa [1]. The greatest amount of overlap exists between anorexia nervosa and bulimia nervosa, and distinguishing the two is critical for treatment. Body weight is usually normal, but may be high in bulimia nervosa, and is low in anorexia nervosa.

Anorexia nervosa — Anorexia nervosa and bulimia nervosa are both marked by overvaluation of body shape and weight [1]. In addition, binge eating and purging (ie, self-induced vomiting or the misuse of laxatives, diuretics, or enemas) occur as part of anorexia nervosa, binge eating/purging type. The key distinguishing feature of anorexia nervosa is an abnormally low body weight, as indicated by a body mass index <18.5 kg/m^2 (calculator 1). By contrast, patients with bulimia nervosa usually maintain a body weight at or above a minimally normal level. Secondarily, the severe weight loss that occurs in anorexia nervosa is accompanied by anatomic and physiologic sequelae that are not found in bulimia nervosa. (See "Anorexia nervosa in adults: Clinical features, course of illness, assessment, and diagnosis", section on 'Diagnosis' and "Anorexia nervosa in adults and adolescents: Medical complications and their

management" and "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

Despite these distinctions, anorexia nervosa and bulimia nervosa are related disorders and many experts acknowledge that the line between the two diagnoses is sometimes not clear [105-108]. In addition, the diagnosis for patients can change from one disorder to the other. An observational study followed 88 patients with anorexia nervosa for up to seven years and found that at some point, 34 percent met criteria for bulimia nervosa [104]. Of the 128 patients with bulimia nervosa at study intake, 14 percent crossed over to a diagnosis of anorexia nervosa. (See 'Diagnostic stability' above.)

Binge eating disorder — Episodes of binge eating occur in both bulimia nervosa and binge eating disorder [1]. The two disorders are distinguished by the inappropriate compensatory behaviors that regularly occur as part of bulimia nervosa but are absent in binge eating disorder. In addition, patients with bulimia nervosa typically restrict their diet between binge eating episodes to influence body weight and shape, whereas patients with binge eating disorder do not. (See "Eating disorders: Overview of epidemiology, clinical features, and diagnosis", section on 'Binge eating disorder'.)

Unipolar major depression — Overeating and suicidal ideation and behavior often occur in major depressive disorder with atypical features as well as bulimia nervosa [1]. However, neither unhealthy compensatory behavior to prevent weight gain nor excessive preoccupation with weight and body shape is present in major depression. (See "Unipolar depression in adults: Assessment and diagnosis".)

Borderline personality disorder — Binge eating is an example of the impulsivity that marks borderline personality disorder; suicidality and disturbed identity are other features that overlap with bulimia nervosa [1]. However, the presence of inappropriate compensatory behavior indicates the diagnosis of bulimia nervosa. In addition, the identity disturbance of patients with bulimia nervosa involves weight and body shape, whereas in borderline personality disorder the disturbance is more likely to involve goals, values, and vocational aspirations. (See "Borderline personality disorder: Epidemiology, pathogenesis, clinical features, course, assessment, and diagnosis", section on 'Diagnosis'.)

General medical disorders — Hyperphagia can occur in medical disorders such as Prader-Willi syndrome and Klein-Levin syndrome [101]. Prader-Willi syndrome is a genetic disorder marked by hyperphagia, obsession with food, and obesity, as well as cognitive impairment (usually intellectual disability) and hypogonadism. Behavioral problems such as tantrums or oppositional behavior can also occur. Klein-Levin syndrome is a self-limited illness that usually

affects adolescent males and is marked by increased appetite as well as hypersomnia and behavioral disturbances. Symptoms remit between episodes. Neither syndrome is accompanied by the inappropriate compensatory behaviors and over-concern with shape and weight seen in bulimia nervosa [1]. (See "Prader-Willi syndrome: Clinical features and diagnosis", section on 'Diagnosis'.)

PREGNANCY

A separate topic discusses pregnancy, birth, and postpartum outcomes in the context of bulimia nervosa; the course of bulimia nervosa during and after pregnancy; and management of bulimia nervosa that is specific to pregnant women. (See "Eating disorders in pregnancy".)

SOCIETY GUIDELINE LINKS

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

INFORMATION FOR PATIENTS

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

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

- Basics topic (see "Patient education: Bulimia nervosa (The Basics)")

SUMMARY

- The core clinical features of bulimia nervosa are binge eating (ie, eating an amount of food that is definitely larger than most people would eat under similar circumstances) and inappropriate compensatory behavior to prevent weight gain. The prototypic sequence of behavior in bulimia nervosa consists of caloric restriction, binge eating, and self-induced vomiting. Body weight is usually within or above the normal range. (See 'Clinical features' above.)

- Patients with bulimia nervosa frequently have a lifetime history of at least one comorbid psychiatric disorder, including unipolar major depression, alcohol use disorder, posttraumatic stress disorder, social anxiety disorder, and/or personality disorders. The prevalence of these comorbidities in patients with bulimia nervosa exceeds the rate in the general population. In addition, patients are at increased risk for general medical complications and disorders. (See 'Comorbidity' above and "Bulimia nervosa and binge eating disorder in adults: Medical complications and their management".)

- In most patients, bulimia nervosa persists for at least 12 months. Long-term follow-up studies indicate that approximately 50 to 70 percent of patients eventually improve or recover; however, the likelihood of recovery declines the longer one remains ill. Among patients who remit, relapse occurs in approximately 20 to 30 percent. Compared with the general population, all-cause mortality is two to eight times greater in patients with bulimia nervosa, and suicide deaths are approximately four to seven times greater in patients. (See 'Course of illness' above.)

- Bulimia nervosa may be associated with an increased risk of legal problems such as petty theft. (See 'Legal problems' above.)

- The diagnostic interview can be facilitated by first administering a self-report screening instrument. We suggest the SCOFF, which is a five-item self-report measure that screens for eating disorders. (See 'Screening instruments' above and "Eating disorders: Overview of epidemiology, clinical features, and diagnosis", section on 'Screening'.)

- The assessment of the patient's psychiatric history and mental status should include questions about height, weight, frequency of self-weighing, meal patterns, present and past eating disorder symptoms (dietary restriction; binge eating; compensatory behaviors such as purging, fasting, and exercise; attitudes about body weight and shape, food, and eating; and ritualistic eating behaviors), suicidality, comorbid psychiatric disorders, psychosocial functioning, and family psychiatric history.

  Clinicians should also assess suicidality, including suicidal ideation, action to prepare for an attempt, and nonfatal attempt or self-harm. Patients with suicidality should be seen

more frequently and perhaps hospitalized, depending upon the estimated level of risk. A specific suicide plan of high lethality or intent indicates the need for hospitalization (table 3). (See 'Clinical interview' above.)

- The diagnosis of bulimia nervosa according to the American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5) is summarized in a table (table 4). The diagnostic criteria of the International Classification of Diseases-11th Revision closely resemble the DSM-5 criteria. (See 'Diagnosis' above.)

- There is substantial overlap between anorexia nervosa and bulimia nervosa; however, body weight is usually low in the former and normal or high in the latter. Other disorders (binge eating disorder, unipolar major depression, and borderline personality disorder) in the differential diagnosis of bulimia nervosa typically do not present with either inappropriate compensatory behavior to prevent weight gain or excessive preoccupation with weight and body shape. (See 'Differential diagnosis' above.)

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