ANOREXIA NERVOSA AND BULIMIA NERVOSA:
AN OVERVIEW

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ABSTRACT

Anorexia nervosa and bulimia nervosa are dangerous mental illnesses with the highest lifetime mortality rate among all psychiatric disorders and generally involve serious comorbidities such as a substance use disorder. These eating disorders are very difficult to treat with a common incidence of relapse. Medical complications of anorexia nervosa and bulimia nervosa affect essentially every organ system and behavioral disorders and suicidal ideation are relatively common. This course reviews current research studies as well as nursing care strategies and treatment plan goals to support the patient with an anorexia nervosa and bulimia disorder during recovery.

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Statement of Learning Need

Eating disorders are difficult to treat, which require nurses to be informed of new research studies and findings, as well as best practice treatment and therapy guidelines in order to support the patient to achieve recovery and an improved quality of life.

Course Purpose

To provide professional nurses with information about the causes, complications, and treatment of anorexia nervosa and bulimia nervosa.
**Target Audience**

Advanced Practice Registered Nurses and Registered Nurses

(Interdisciplinary Health Team Members, including Vocational Nurses and Medical Assistants may obtain a *Certificate of Completion*)

**Course Author & Planning Team Conflict of Interest Disclosures**

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Please take time to complete a self-assessment of knowledge, on page 4, sample questions *before* reading the article.

Opportunity to complete a self-assessment of knowledge learned will be provided at the end of the course.
1. Anorexia nervosa is primarily characterized by
   a. persistent energy intake restriction.
   b. binging and purging.
   c. over exercising.
   d. a substance use disorder.

2. Bulimia nervosa is primarily characterized by
   a. over exercising.
   b. recurrent episodes of binge eating.
   c. a major psychiatric comorbidity.
   d. persistent energy intake restriction.

3. True or false: People who have anorexia nervosa or bulimia nervosa often have a high level of anxiety.
   a. True.
   b. False.

4. Which of the following is a common sign of anorexia nervosa?
   a. Orthostatic hypotension.
   b. Torsades de pointes.
   c. Bradycardia.
   d. Cardiomyopathy.

5. Which of the following is common sign of bulimia nervosa?
   a. Hyperglycemia.
   b. Hypocalcemia.
   c. Hypernatremia.
   d. Hypokalemia.
Introduction

Anorexia nervosa and bulimia nervosa are eating disorders characterized by abnormal eating behaviors and a constant and intense preoccupied focus on food and body weight. The etiology of anorexia nervosa and bulimia nervosa is multifactorial and represents a complex interplay of biological, genetic, environmental, and psychological influences.

Anorexia nervosa and bulimia nervosa are dangerous mental illnesses. They have the highest, lifetime mortality rate among all psychiatric disorders and serious comorbidities such as major depression and a substance use disorder are common in people who have anorexia nervosa or bulimia nervosa. Anorexia nervosa and bulimia nervosa are the most prevalent in adolescent females, but males and adults are affected as well. These eating disorders are very difficult to treat and relapses are common. Medical complications of anorexia nervosa and bulimia nervosa affect essentially every organ system and behavioral disorders and suicidal ideation are relatively common.

Epidemiological Characteristics Of Anorexia Nervosa And Bulimia Nervosa

The 12-month prevalence of anorexia nervosa in young females has been estimated to be 0.4%, and the lifetime prevalence of anorexia nervosa for women has been estimated to 0.8%. Anorexia nervosa has traditionally been thought to be a psychiatric disorder that affects young women far more often than males, and the literature confirms this perception. Women account for 90% of patients diagnosed with anorexia nervosa and the clinical prevalence of anorexia nervosa has been described as 10:1 for females to males, respectively. However, Zhang (2014) estimates that 3 in 10 cases of anorexia nervosa occur in males and that anorexia nervosa in
males is underdiagnosed and underresearched, a perception shared by other researchers and supported by Hudson, et al., (2007) and Sabel, et al., (2014). Although the onset of anorexia nervosa typically occurs in the teenage years, this eating disorder also affects the middle-aged. The incidence of anorexia nervosa in children and adolescents appears to be increasing.

The 12-month prevalence of bulimia nervosa in young females has been estimated to be 1%-1.5%. Bulimia nervosa is much more common in females than in males but how much more is not clear. Some sources indicate a 10:1 female to male ratio while others suggest that the female to male ratio is much lower and that many more men are affected by bulimia nervosa than was previously thought.

**Diagnostic Criteria Of Anorexia Nervosa And Bulimia Nervosa**

There are three criterion that are considered diagnostic of anorexia nervosa.4

1. Persistent energy intake restriction (Criterion A)
2. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain (Criterion B)
3. A disturbance in self-perceived weight or shape (Criterion C)
The energy restriction characteristic of anorexia nervosa causes a significantly low body weight, defined as “... less than minimally normal or, for children and adolescents, less that that minimally expected.” The intense fear of gaining weight or becoming fat and the persistent behavior that interferes with weight gain will continue even when the patient has a significantly low body weight, and the disturbance in self-perceived weight or shape has a profound influence on the patient’s self-esteem and self-evaluation.

Anorexia nervosa is divided into two subtypes.4

- **Binge eating/purging type:**
  Within the prior three months the patient has engaged in recurrent episodes of binge eating or purging behaviors such as the use of laxatives or self-induced vomiting.

- **Restricting type:**
  Within the prior three months the patient has lost weight by dieting, excessive exercise, or fasting. Someone who has the restricting subtype of anorexia nervosa does not engage in binging or purging.

If the patient has been diagnosed as having anorexia nervosa and the subtype has been established, the next step is to determine if the patient is in partial or full remission and to determine the level of severity. The Diagnostic and Statistical Manual of Mental Disorder, 5th edition (DSM-V) defines partial and full remission as below.4
• Partial remission:
  Low body weight has not been present for a sustained period, but the patient still has either an intense fear of gaining weight or becoming fat and has behavior that interferes with weight gain or he/she still has a disturbed perception of body weight or shape.

• Full remission:
  None of the three diagnostic criteria of anorexia nervosa are present.

The level of severity is based on the patient’s body mass index (BMI), it ranges from mild to extreme, and "... level of severity may be increased to reflect clinical symptoms, the degree of functional disability, and the need for supervision."⁴

<table>
<thead>
<tr>
<th>Level of Severity</th>
<th>BMI Range</th>
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<tbody>
<tr>
<td>Mild</td>
<td>&gt;17 kg/m²</td>
</tr>
<tr>
<td>Moderate</td>
<td>16-16.99 kg/m²</td>
</tr>
<tr>
<td>Severe</td>
<td>16-5-15.99 kg/m²</td>
</tr>
<tr>
<td>Extreme</td>
<td>&lt;15 kg/m²</td>
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Learning Break:
An adult female who is 64 inches tall and weighs 90 pounds would have an estimated BMI of 15.4.
Bulimia Nervosa

There are five criterion that are considered diagnostic of bulimia nervosa.4

1. Recurrent episodes of binge eating (Criterion A).
2. Recurrent inappropriate compensatory behaviors in order to prevent weight gain (Criterion B).
3. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months (Criterion C).
4. Self-evaluation is unduly influenced by body shape and weight (Criterion D).
5. The disturbance does not occur exclusively during episodes of anorexia nervosa.

Binge eating has two defining characteristics: 1) Within a certain period of time, typically defined as two hours or less, the patient eats “... an amount of food that is definitely larger than what most individuals would eat in a similar time period under similar circumstances;”4 and, 2) The patient feels that he/she has no control over eating during the episode. The compensatory behaviors of Criterion B might include excessive exercising, fasting, dieting, misuse of diuretics, laxatives, or other medications, and self-induced vomiting.

If the patient has been diagnosed as having bulimia nervosa it should be determined if the patient is in partial or full remission and the level of severity should be established. The Diagnostic and Statistical Manual of Mental Disorder, 5th edition (DSM-V) defines partial and full remission as below:4
• **Partial remission:**
  
  Some but not all of the diagnostic criteria have not been observed for a sustained period of time.

• **Full remission:**
  
  None of the diagnostic criteria have been observed for a sustained period of time.

The level of severity ranges from mild to extreme and it is based on “. . . the frequency of the inappropriate compensatory behaviors. The level of severity may be increased to reflect other symptoms and the degree of functional disability.”⁴

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**Table 2: Level of Severity – Bulimia Nervosa**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mild:</strong></td>
<td>An average of 1–3 episodes of inappropriate compensatory behaviors per week.</td>
</tr>
<tr>
<td><strong>Moderate:</strong></td>
<td>Average of 4–7 episodes of inappropriate compensatory behaviors per week.</td>
</tr>
<tr>
<td><strong>Severe:</strong></td>
<td>Average of 8–13 episodes of inappropriate compensatory behaviors per week.</td>
</tr>
<tr>
<td><strong>Extreme:</strong></td>
<td>An average of 14 or more episodes of inappropriate compensatory behaviors per week.</td>
</tr>
</tbody>
</table>
People who have bulimia nervosa are usually of normal weight or overweight.  

**Etiology Of Anorexia Nervosa And Bulimia Nervosa**

The etiology of anorexia nervosa and the etiology of bulimia nervosa are unknown.\textsuperscript{13,14} These eating disorders are multifactorial in origin, with biological, environmental, psychosocial, psychological, and cultural factors, each contributing and interacting to the development and maintenance of the disorder.

**Anorexia Nervosa**

*Genetics*

There is strong evidence supporting a genetic factor in the development of anorexia nervosa.\textsuperscript{13,14} Studies of twins have shown that genetic factors may contribute 40%-85% of the susceptibility to anorexia nervosa\textsuperscript{15,16} and Campbell and Peebles (2014) note that: “Evidence continues to increase that EDs (eating disorders) are heritable, with relatives of ED patients having 7 to 12 times greater risk of developing an ED.”\textsuperscript{14} Small sample sizes and short-term follow-up limit the application of the genetic studies\textsuperscript{17} and specific genes associated with anorexia nervosa have not been identified.\textsuperscript{13}

Learning Break:

Binge eating is characteristic of bulimia nervosa but not exclusive to this eating disorder. *Binge eating disorder* is defined by DSM-V with Criterion A and B of bulimia nervosa but people who have binge eating disorder do not engage in regular inappropriate compensatory behaviors.\textsuperscript{4}
Neurotransmitters

Serotonin is involved in appetite and mood regulation, dopamine is involved in reward-motivation behavior, and research has shown that people who have anorexia nervosa have alterations and disturbances in the serotonergic and dopaminergic systems. These changes may precede anorexia nervosa or be a result of the disorder, and at this time it is not clear if neurotransmitter abnormalities are a cause or a consequence.

Personality Characteristics

Personality characteristics are considered to be important factors in the development of anorexia nervosa and other eating disorders but as with other etiologic factors, it is not clear if specific personality characteristics precede or follow the disorder, whether they are a cause or a consequence of anorexia nervosa. Personality characteristics that are associated with anorexia nervosa include, but are not limited to, anxiety, emotional instability, harm avoidance, inflexibility, neuroticism, obsessive-compulsiveness, perfectionism, persistence, and reward insensitivity.

Sexual Abuse

There is conflicting evidence for an association between childhood sexual abuse and anorexia. Castellini, et al., (2013) note that a history of childhood sexual abuse has been found to be a risk factor the development of eating disorders and other researchers have confirmed this, particularly for anorexia nervosa. However, not all of the evidence supports an association between childhood sexual abuse and anorexia nervosa, and Rikani, et al., (2013) write that “... childhood sexual abuse (CSA) as a risk factor for eating disorders has been a source of debate among clinicians and researchers. While some studies showed strong relationship between CSA
and eating disorders, some other studies strongly refuse to accept this relationship.”\textsuperscript{17}

\textit{Cultural Factors}

Anorexia nervosa was long considered to be a psychological disorder that essentially only affected Caucasian women in affluent Western societies,\textsuperscript{25,26} and it was thought to be an inevitable effect of cultural emphasis on a specific body type. But there is clearly an increasing incidence of anorexia nervosa in non-Western cultures and societies and in non-Caucasian Americans.\textsuperscript{25-27} At times this may represent a cultural clash or an acculturation difficulty but there is evidence suggesting that although the onset, behaviors, and root causes of anorexia nervosa may be culturally influenced, the disorder itself is not inextricably bound to Western cultures or values.\textsuperscript{27,28}

\textbf{Bulimia Nervosa}

\textit{Genetics}

Bulimia nervosa has been described as highly heritable\textsuperscript{29} and studies of twins have shown heritability estimates of 28\%-83\%.\textsuperscript{30}

\textit{Neurotransmitters}

Human and animal experiments suggest that the dopaminergic, glutamatergic, opioid, and serotonergic systems are involved in bulimia nervosa,\textsuperscript{31} perhaps initiating, self-reinforcing, or sustaining the behaviors associated with bulimia nervosa. Whether the observed changes in these neurotransmitter systems that are part of the brain’s reward system are a cause or a result of bulimia nervosa is not clear.\textsuperscript{32}
Personality Characteristics

Personality characteristics strongly associated with bulimia nervosa include anxiety, harm avoidance, impulsivity, low self-esteem, negative emotionality, perfectionism, neuroticism, obsessive-compulsiveness, sensation and novelty seeking.\textsuperscript{13, 33, 34}

Sexual Abuse

Caslini, \textit{et al.}, (2015) performed a systematic review and meta-analysis of the published literature to estimate the association between various types of childhood abuse (including CSA) and eating disorders. The authors wrote that they found “... a consistent and positive association between CSA and both BN (bulimia nervosa) and BED (binge eating disorder) ...”\textsuperscript{35}

Cultural Factors

As with anorexia nervosa, bulimia nervosa was long thought to be an eating disorder that primarily affected young Caucasian females in Western societies. This may have been true or a simply a result of study selection bias, but it is clear that bulimia nervosa affects American minority groups\textsuperscript{36} and people in Asia, Africa, and the Middle East,\textsuperscript{26} and some researchers have found that bulimia nervosa was more common in American minority groups than in Caucasians.\textsuperscript{36}

The suggestion is often made that the increase of eating disorders in non-American, non-Westernized cultures can be explained by the influence of Western culture, but this influence may be less important as a causative factor for eating disorders than industrialization, modernization, and urbanization.\textsuperscript{26}
Signs, Symptoms, and Medical Complications
Of Anorexia Nervosa and Bulimia Nervosa

Anorexia Nervosa

The most striking aspects of anorexia nervosa are the patient’s attitudes and their behaviors regarding food, distorted body image and weight loss. People who have anorexia nervosa have an intense fear of gaining weight and becoming fat. This fear can be experienced at the level of terror for many patients as they enter treatment and many people have panic episodes prior to each meal.

Behaviors regarding food are striking. Food intake is severely restricted and the patient will have many stylized and ritualized actions surrounding what they eat, how much they eat, how they eat, and when they eat. They have foods they will eat and foods they will not eat; they know exactly how many calories are contained in everything they eat and they precisely count their daily calorie intake; they weigh themselves several times a day and spend a large amount of time looking in the mirror; they often over-exercise; and, their mood and outlook are profoundly influenced by their weight and body image. A great majority of time is spent thinking about eating and their weight, and the eating behaviors, binging, and purging (if the latter two are part of the clinical picture) are done secretly.

Self-worth is measured against external standards such as the numbers on the scale, and perfectionism reinforces shame or guilt about perceived abnormal body image and lack of self-control, leading to intense self-loathing. As the sense of being short of the ideal body weight and self-image intensifies, more meticulous attention is devoted to the one area perceived to be successful - control of eating. The patient becomes determined to be
“perfect” at controlling food intake as a substitute for his/her self-perceived personal deficiencies and this leads to intense levels of preoccupation and obsession with food, weight, exercise, and self denial.

Distorted thoughts and perceptions of body image are obsessive and begin to occupy every area of functioning. Many patients keep journals filled with lamentations of hatred of perceived body flaws and detailed plans to account for each and every calorie to be consumed for the day. Self-assessment and re-assessment become ritualistic. When unable to meet self-expectation, punitive eating behaviors are employed, perhaps by cutting calories for the next day.

Not only is there visual distortion when looking in the mirror or when inspecting and palpating the body parts, but there are also mental distortions and gross overestimation of body weight and size. This is one of the reasons to make exceptions to blind weights. Not knowing the numbers can lead to magnification of the weight. On the other hand, knowing that weight has exceeded desired point causes fears of continued explosive weight gain.

An egocentric interpretation of impersonal events or over-interpretation of events related to the self is common. An example is “I heard people laughing behind me in the checkout line at the store. I know they were laughing because I gained two pounds last week.” Extreme sensitivity to the reactions of others leads to distorted perceptions that people are continually appraising his/her body and this paranoid thinking can lead to social withdrawal and isolation.
Body image distortion is quite noticeable; a person who has anorexia nervosa sees himself/herself as overweight and fat and will focus on certain body parts that need to be improved. Despite being very thin, almost emaciated, a person who has anorexia nervosa sees himself/herself as fat. Weight loss is the most noticeable feature of anorexia nervosa and is often the reason why people who have anorexia nervosa are brought to the attention of healthcare providers and therapists.

Anorexia Nervosa Signs and Symptoms

Cardiac

Bradycardia is a very common finding in patients who have anorexia nervosa. Hypotension, heart failure, left ventricular hypertrophy, and mitral valve prolapse have also been reported as complications of anorexia nervosa.

The QTc prolongation is often mentioned as a complication of anorexia nervosa, and QTc prolongation is a significant risk factor for torsades de pointes. Anorexia nervosa is the psychiatric disorder with the highest mortality rate and there has been speculation that cardiac arrhythmias caused by QTc prolongation are a prominent contributing cause of mortality from anorexia nervosa. However, some researchers have found an increased incidence of QTc prolongation in this patient population and some have not, and a definitive cause and effect relationship between QTc
prolongation and sudden cardiac death in this patient population has not been established.\textsuperscript{39,40}

\textit{Dental}

Patients who self-induce vomiting will often have dental enamel erosion.\textsuperscript{44,45}

\textit{Dermatologic}

Acne, dry skin, thinning of the skin and a growth of fine, downy hair are often noted in people who have anorexia nervosa.\textsuperscript{10,39}

\textit{Electrolytes}

Electrolyte disorders that may be seen in patients who have anorexia nervosa include hypocalcemia, hypokalemia, hypomagnesemia, hyponatremia, and hypophosphatemia.\textsuperscript{10}

\textit{Endocrine}

Hypoglycemia should be considered.\textsuperscript{10,39} Additionally, Amenorrhea is common in anorexic patients.

\textit{Ears, Nose and Throat}

A patient who has anorexia nervosa and who purges by way of self-induced vomiting is at risk for subconjunctival hemorrhage and epistaxis.

\textit{Gastrointestinal}

Abdominal distention, constipation, gastric distension, early satiety, elevation of liver transaminases, gastric motility disorders, nausea, and slow gastric emptying may occur.\textsuperscript{46,47}
Hematologic

Anemia, leucopenia, and thrombocytopenia are reported to be common in patients who have anorexia nervosa.⁴⁸

Osteopenia and Osteoporosis

Osteopenia and osteoporosis are very common and serious complications of anorexia nervosa¹⁰,⁴⁹ and they affect women and men who have this eating disorder. The incidence of osteopenia or osteoporosis in women who have anorexia nervosa has been reported to be as high as 85%⁵⁰ and the lifetime prevalence of fractures has been reported to be almost 60% higher for patients with anorexia nervosa when compared to controls.⁵¹ The seriousness of this complication is made worse because the bone loss is often rapid and permanent.⁵²

Bulimia Nervosa

Cardiac

Hypotension, orthostatic hypotension, tachycardia are common signs of bulimia nervosa.⁵³ Hypokalemia can cause QTc prolongation, a common electrocardiographic abnormality in patients who have bulimia nervosa.⁵⁴ Ipecac syrup was used as an emetic and was sold as an over-the-counter product but the standard, concentrated formula is no longer available in the United States.

Patients with bulimia nervosa often used ipecac to induce vomiting and one of its ingredients, the alkaloid emetine, is directly toxic to the myocardium.
**Dermatologic**

Dry skin, pruritus, and nail fragility may occur. Repeated digital self-induced vomiting can produce calluses on the dorsal aspect of the fingers and/or hand, a finding called Russell’s sign.

**Dental**

Erosion of tooth enamel, dental caries, gum disease, periodontal disease, and xerostomia are significant findings. Dental erosion has been reported as early as six months after someone who has bulimia nervosa begins self-induced vomiting. Gingivitis and periodontal disease are possible complications, as well.

**Electrolytes**

Persistent vomiting can cause dehydration, hypokalemia and a metabolic alkalosis. Hypokalemia is a common finding in patients who have this eating disorder, and hypokalemia in an otherwise healthy young adult is a very specific indicator of bulimia nervosa. Hypomagnesemia, hyponatremia, and hypophosphatemia have been reported, as well.

**Ears, Nose and Throat**

The repeated stress of self-induced vomiting can cause subconjunctival hemorrhage and epistaxis. Hypertrophy of the parotid gland (sialadenosis) is noted in 10%-50% of all patients who have bulimia nervosa; the pathogenesis of this finding in not known. Barrett’s esophagus is a pre-cancerous condition of the esophagus. Gastro-esophageal reflux (GERD) is the most important risk factor for Barrett’s esophagus, and patients who self-induce vomiting expose the esophagus to acidic stomach contents.
There have been reports of an increased prevalence of Barrett’s esophagus in patients who have bulimia nervosa\textsuperscript{59} but the association has not been conclusively proved.\textsuperscript{60} Cough and sore throat is common.

\textit{Gastrointestinal}

Abdominal pain, bleeding, constipation, diarrhea, dysphagia, and malabsorption, and Mallory-Weiss tear may be seen.\textsuperscript{53,61} Esophageal rupture caused by self-induced vomiting in bulimic patients is called Boerhaave’s syndrome. It is very serious and associated with a high mortality rate but fortunately it is a rare complication of bulimia nervosa.\textsuperscript{61} Patients who have Boerhaave’s syndrome may present with chest pain, shortness of breath and significant pain during swallowing and yawning.\textsuperscript{55,61} Chronic stimulation of the colon by stimulant laxatives can cause the \textit{cathartic colon syndrome}, characterized by loss of colonic peristalsis and slowed or absent stool passage.\textsuperscript{61}

\begin{mdframed}
\textbf{Learning Break:}
People who have bulimia nervosa and people who have anorexia nervosa and that purge may use laxatives to lose weight. However, calorie absorption occurs in the small intestine and laxatives stimulate stooling by their action in the large intestine. It has been estimated that absorption of only 10\%-12\% of ingested calories will be prevented by the use of laxatives.\textsuperscript{62}
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\textbf{Psychiatric Comorbidities, Substance Use And Suicide}

People who have anorexia nervosa or bulimia nervosa often have psychiatric comorbidities.\textsuperscript{63} Ulfvebrand, \textit{et al.}, (2015) reviewed the histories and medical records of 7,156 patients that had been diagnosed as having an eating disorder.\textsuperscript{63} Seventy-one percent of the patients had at least one
psychiatric disorder. Examples included: 25% of the patients with anorexia and 35.8% of the patients with bulimia nervosa had major depressive disorder; and, 27.9% of the patients with anorexia nervosa and 31.9% of the patients with bulimia nervosa had generalized anxiety disorder.

Suicidal ideation, suicidal planning and suicide attempt/attempts are quite common in people who have an eating disorder. Soukas, et al., (2014) noted that people who have an eating disorder were five times more likely than the general population to attempt suicide. Suicide is a common cause of death in people who have anorexia nervosa, and Keshaviah, et al., (2014) reported that people with anorexia nervosa were more than five times as likely to die prematurely than the general population.

Bulimia nervosa is also strongly associated with suicidal ideation and suicidal behavior. Crow, et al., (2014) reported that 53% of the adolescents and 44.4% of adults who had bulimia nervosa had suicidal ideation. Suicidal behavior is more prevalent in people who have bulimia nervosa and repeatedly purge or have comorbidities of borderline personality disorder, bipolar disorder, major depression, or obsessive-compulsive disorder.

The prevalence of substance use disorders is consistently higher in people who have an eating disorder, and this is especially worrisome because eating disorders and substance use are each associated with a high risk of premature death.

**Treatment Of Eating Disorders**

Eating disorders are very difficult to treat and relapses and failures of therapies are unfortunately common. The medical, psychological, and social aspects of the disease must be addressed. Successful treatment of an
eating disorder also depends on recognizing the prominent psychological features of eating disorders, including those outlined below.

**Coping Strategy**

An eating disorder is a coping strategy, maladaptive and potentially harmful, but a coping strategy nonetheless. If someone who has an eating disorder is not challenged to find better ways to cope or encouraged to use healthier coping skills they will continue to justify their negative patterns as being acceptable.

**Denial**

Treatment will not be successful without motivation, motivation will be lacking if the patient is in denial, and denial is common with patients who have an eating disorder. Both the patient and his/her family may be in denial and minimize the severity of illness or overestimate their ability to treat the problem on their own.

**Environment**

People who have an eating disorder are often seeking acceptance and they have very low self-esteem. If they are part of a group that values weight loss and being thin it can be easy to justify restricting, purging, and other harmful eating behaviors because these are the group norms and the belief that these behaviors are desirable and harmless will be reinforced.

Additionally, people with eating disorders have a need for attention. If they are competing for attention in an environment of like-minded people, this is another reinforcement that will encourage them to continue their abnormal eating behaviors.
Isolation and Secrecy

People suffering with an eating disorder often isolate themselves. Isolation skews the sense of reality and reinforces maladaptive behaviors.

People who have an eating disorder are often very secretive about their food-related and weight-related behaviors, making it difficult to assess the severity of the illness. Table 3 below illustrates the basic therapeutic approach for the treatment of someone who has anorexia nervosa or bulimia nervosa. The order in which these interventions are used will vary depending on the patient’s needs; many of these apply specifically to patients who have anorexia nervosa.

Table 3: Therapeutic Approach for Treating Anorexia Nervosa/Bulimia Nervosa

| Medical stabilization, if needed |
| Assessment for medical complications |
| Psychiatric evaluation |
| Nutritional rehabilitation |
| Avoiding the re-feeding syndrome |
| Psychotherapy |
| Family therapy |
| Pharmacotherapy |
**Assessment For Medical Complications**

An assessment for medical complications should include at minimum a complete blood count and measurement of serum electrolytes, including calcium, magnesium, phosphorus, blood urea nitrogen (BUN), creatinine, glucose, transaminases; and, a 12-lead electrocardiogram (ECG) and dental examination.

**Psychiatric Evaluation**

A complete psychiatric evaluation should be performed with particular attention to the possibility of psychiatric comorbidities and a substance use disorder.

**Nutritional Rehabilitation**

Nutritional rehabilitation will restore the patient’s weight to a healthy level and, except for bone loss, can reverse the medical complications of weight loss caused by an eating disorder.\(^78,79\) Nutritional rehabilitation involves:

- Assessing the patient’s nutritional status and his/her motivation to change
- Determining goal weight and optimal rate of weight gain
- Determining the optimal daily calorie intake
- Supervising the patient’s eating behavior
- Integrating nutritional information and cognitive therapy into the nutritional rehabilitation

The patient’s eating habits and his/her motivation to change will in large part determine the approach to nutritional rehabilitation. The amount of weight that the patient needs to gain will depend on current weight, the desired
weight, and the clinical setting, i.e., inpatient or outpatient. The goal for patients who are hospitalized is typically 2 to 3 pounds weight gain a week and 0.5 to 1 pound weight gain a week for outpatients. Daily calorie intake is typically 1500-1800 kcal/day but this can be adjusted for the patient’s weight and the clinical setting; the less the patient weighs the lower the calorie intake should be.

A specialized diet is not needed but because many patients who have anorexia nervosa have some degree of mineral and vitamin deficiency a multivitamin-mineral supplement should be given daily. Patients who have difficulty with solid foods can have their diets supplemented with liquid nutrition, but enteral nutrition via a nasogastric tube or total parenteral nutrition are rarely needed.

Food and behavior are inextricably linked in people who have an eating disorder, and patients may need observation and supervision during and after meals to ensure that they eat properly, do not practice abnormal eating behaviors such as avoiding certain foods and fluid loading to induce calorie free satiety, and do not indulge in post-meal compensatory behaviors like as excessive exercising or self-induced vomiting.

**Avoiding the Re-Feeding Syndrome**

Weight recovery (defined as attaining 95% of the median BMI) is one of the primary goals of treating a patient who has anorexia nervosa, but establishing the goal weight can cause the re-feeding syndrome. The re-feeding syndrome is defined as the clinical complications caused by feeding someone who is severely malnourished. The re-feeding syndrome can cause serious electrolyte disturbances, abnormal glucose metabolism, and cardiac, gastrointestinal, hepatic, neurologic, and pulmonary complications.
Severe cases can cause death. Table 4 lists the potential complications of the re-feeding syndrome.80-86

Table 4: Complications of the Re-feeding Syndrome

<table>
<thead>
<tr>
<th>Complication</th>
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</thead>
<tbody>
<tr>
<td>Cardiac arrest</td>
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<tr>
<td>Cardiac arrhythmias</td>
</tr>
<tr>
<td>Coma</td>
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<tr>
<td>Congestive heart failure</td>
</tr>
<tr>
<td>Delirium</td>
</tr>
<tr>
<td>Diarrhea</td>
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<tr>
<td>Fluid imbalances</td>
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<tr>
<td>Hemolytic anemia</td>
</tr>
<tr>
<td>Hypomagnesemia</td>
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<tr>
<td>Hypophosphatemia</td>
</tr>
<tr>
<td>Hypokalemia</td>
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<tr>
<td>Increased heart rate</td>
</tr>
<tr>
<td>Muscle weakness</td>
</tr>
<tr>
<td>QT prolongation</td>
</tr>
<tr>
<td>Paresthesias</td>
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<tr>
<td>Peripheral edema</td>
</tr>
<tr>
<td>Respiratory muscle dysfunction</td>
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<tr>
<td>Rhabdomyolysis</td>
</tr>
<tr>
<td>Seizures</td>
</tr>
<tr>
<td>Serum transaminase elevations</td>
</tr>
<tr>
<td>Thiamine deficiency</td>
</tr>
<tr>
<td>Vomiting</td>
</tr>
</tbody>
</table>
The incidence of re-feeding syndrome is not known. Ornstein, *et al.*, (2003) found that of 69 adolescents who had anorexia nervosa, 6% developed moderately severe re-feeding syndrome and 22% developed minor re-feeding syndrome; Hofer, *et al.*, (2014) studied 65 patients who had anorexia and reported a 10.5% and 2.3% incidence of minor and major complications from the re-feeding syndrome.

The re-feeding syndrome usually begins several days after the beginning of nutritional rehabilitation and the greatest risk period is the first two weeks of nutritional rehabilitation and weight gain. Risk factors for the re-feeding syndrome is listed in Table 5. Hypophosphatemia is considered to be the hallmark of the re-feeding syndrome; the most consistent marker of the re-feeding syndrome; and, low phosphorus levels are the basis of the pathogenesis of this disorder.

**Table 5: Risk Factors for Re-feeding Syndrome**

<table>
<thead>
<tr>
<th>Risk Factor</th>
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<tr>
<td><strong>BMI &lt;16 kg/m²</strong></td>
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<tr>
<td><strong>Body weight &lt;70% of ideal</strong></td>
</tr>
<tr>
<td><strong>Little or no nutrient intake for &gt;10 days prior to the beginning of nutritional rehabilitation</strong></td>
</tr>
<tr>
<td><strong>Low phosphate, magnesium, or potassium level</strong></td>
</tr>
<tr>
<td><strong>Weight loss of &gt;15% in the previous 3-6 months</strong></td>
</tr>
</tbody>
</table>

During periods of starvation insulin levels decrease and the patient loses body stores of magnesium, phosphorus, and potassium. The loss of
phosphorus is particularly dangerous because phosphorus is needed for production of adenosine triphosphate (ATP) and 2,3-diphosphoglycerate (2,3-DPG), the latter being a component of hemoglobin that helps control the release of oxygen from hemoglobin. When re-feeding begins, the increased production of insulin and increased metabolic activity causes phosphorus (and magnesium and potassium) to move into the cells and also depletion of the remaining phosphorus stores, and the lack of ATP and the tissue hypoxia that result are the basis of much of the clinical presentation of the re-feeding syndrome.

Fluid retention caused by reabsorption of sodium by the kidneys, increased blood volume that occurs after nutritional rehabilitation begins, and decreased myocardial mass caused by persistent starvation are additional factors that contribute to development of the re-feeding syndrome and are contributing causes of congestive heart failure and arrhythmias.

The re-feeding syndrome can be avoided by carefully limiting caloric and fluid intake during nutritional rehabilitation. These are the accepted principles for prevention of the re-feeding syndrome. However, the details of this approach such as the daily caloric intake limit, how quickly to increase intake, and the best clinical setting for the prevention of the re-feeding syndrome are not clear; Stranjord, et al.,

Learning Break:
A heart rate that is within normal limits or tachycardia has been noted to be a sign of the re-feeding syndrome. Many patients who have anorexia nervosa are bradycardic and an increased pulse rate indicates that the heart is working harder to compensate for tissue hypoxia, increased blood volume, and fluid retention.
(2015) wrote that: “Limited information is available on the optimal approach to re-feeding.”

**Psychotherapy**

Psychotherapy is one of the mainstays of treatment for eating disorders. Cognitive behavioral therapy and interpersonal psychotherapy are the established treatments for bulimia nervosa. These approaches are also widely used to treat patients who have anorexia nervosa but their efficacy for this purpose is less certain. Maudsley family-based therapy is the most established therapy for adolescents who have anorexia nervosa.

**Cognitive Behavioral Therapy**

Cognitive behavioral therapy is a problem and action-focused type of psychotherapy that works to change distorted thought processes. Maladaptive behaviors are considered to be the crux, and examining and challenging how people think during therapy will change how they act. Cognitive behavioral therapy is contraindicated if the anorexic patient is medically unstable, has a psychosis, or has suicidal behavior or ideation; and it is also contraindicated if the bulimic patient is medically unstable, has a psychosis, major depression, a substance abuse disorder, suicidal behavior or ideation, or a significant life crisis.

**Interpersonal Psychotherapy**

Interpersonal psychotherapy focuses on interpersonal issues that facilitate and maintain eating disorders.
Maudsley Family-based Therapy

Maudsley family-based therapy is a structured approach to treat anorexia nervosa that involves ongoing, committed involvement of the family as authority figures responsible for the adolescents eating behavior.

Family Therapy

Family therapy is one of the cornerstones of treatment for eating disorders. Family therapy for patients who have anorexia nervosa has been shown to improve clinical outcomes such as weight gain, decreased need for hospitalization, and lower rates of relapse. There has been far less research on the use of family therapy for the treatment of bulimia nervosa and the evidence for its effectiveness in this patient population is conflicting. Fosberg and Lock (2015) outlined five basic principles of family therapy as a treatment for eating disorders. These principles would be adapted to fit the needs of patients who have either anorexia nervosa or bulimia nervosa.

Agnosticism

The goals of agnosticism are to decrease parental guilt, decrease blame, and to focus on behaviors that maintain the eating disorder. One intervention based on this principle is to emphasize evidence of successful outcome through disruption of symptoms rather than insight on cause

Symptom Focus

The goal of symptom focus is to disrupt behaviors that maintain the eating disorder. An intervention based on this principle is to review weight gain and the frequency of binging and purging behaviors.
**Consultative Therapeutic Stance**

The goals of the consultative therapeutic stance are to increase parental involvement and parental self-efficacy; the therapist works as a consultant for the parents. An intervention based on this principle would be to encourage parents to work through solutions to current challenges.

**Parental Empowerment**

The goals of parental empowerment are to establish and reinforce the parents as authority figures with the child and to increase parental self-efficacy. An intervention based on this principle is to have the parents become responsible for disrupting eating disorder symptoms and meal management.

**Externalization of Illness**

The goals of externalization are to separate the illness from the patient, decrease familial criticism, and to have the patient align and identify with the healthy parts of his/her personality. An intervention based on this principle and these goals would be to use a Venn diagram to illustrate the healthy behaviors and characteristics of the patient, the characteristics of the eating disorder, and the ways in which they overlap.

**Pharmacotherapy**

Pharmacotherapy is considered to be an adjunctive treatment for anorexia nervosa, used in conjunction with nutritional rehabilitation and psychotherapy. Some individuals may benefit from psychotropic medications, but the second-generation antipsychotics, selective serotonin re-uptake inhibitors (SSRIs), and tricyclic antidepressants (TCAs) have been
shown to have no effect or a weak and limited effect as treatment for anorexia nervosa. Because of the risk for seizures from bupropion and cardiotoxicity from the TCAs these drugs should not be used to treat patients who have anorexia nervosa.

The SSRIs have been shown to be modestly effective for treating bulimia nervosa and fluoxetine has U.S. Food and Drug Administration approval for the treatment of binge eating and vomiting in patients who have moderate to severe bulimia nervosa. If fluoxetine is not effective then another SSRI such as citalopram, fluvoxamine, or sertraline can be tried, and if those are not effective the third-line choice would be a TCA, topiramate, trazodone, or a monoamine oxidase inhibitor. Psychotherapy alone appears to be superior to pharmacotherapy alone for treating bulimia nervosa.

Nursing Interventions

Eating disorders are the psychiatric disorders that require a uniquely holistic nursing approach.

Physiological Interventions

Urgent interventions include correcting nutritional and electrolyte imbalance, which can result in death. Additionally, the nursing approach needs to include the following interventions:

- Attempting to obtain accurate dietary pattern, as a baseline for dietician to develop a stepwise progressive increase in diet
- Frequent thorough head-to-toe physical assessments to detect developing complications early
- Enteral nutrition for acute failure to eat or gain weight
An interesting phenomenon that develops is that the teen actually loses the ability to interpret their body’s natural hunger, satiety, thirst, and fatigue cues through long-term overriding of these cues. An effective strategy is to have an individualized meal plan developed with a dietitian that considers preferred foods as much as possible. This meal plan is structured as a method to “eat by the clock” and relieves the patient of trying to interpret or override these cues, because the meal plan is designed to prevent any lengthy lapse of time between meals that would lead to hunger pangs. Usually it involves 3 meals and 3 snacks.

**Psychosocial Interventions**

Care planning requires the nurse to recognize that the dynamic focus of the patient with anorexia is on control. A first step in the creation of a therapeutic alliance between the nurse and patient with an eating disorder is to formulate a *nurse-patient contract*. This facilitates engagement and a willingness to adhere to the treatment plan because a contract is a form of agreement by the patient that helps him/her maintain a feeling of control. This is a process that involves:

- Mutually developed goals including the use of behavioral contracts
- Assisting the patient to adopt a realistic view of his/her body
- Self esteem building
- Assisting to develop coping strategies, challenging distorted thoughts, and supporting self expression both verbally and nonverbally
- Medication teaching as needed
Behavioral Interventions

- Direct supervision of eating meals and behaviors with food such as excessive condiment use and deliberate tampering to make food taste offensive, hiding food, condensing, over- or under-serving, hoarding.

- Consistent expectations among staff are essential. It is best to have only the dietitian and attending physician take control of the meal plan. This can prevent staff splitting and the arduous meal negotiations the patient is likely to attempt due to desperation to avoid eating.

  All contracted expectations must be enforced 100% of the time, exactly as prescribed. This actually can build trust and security, as the patient knows what to expect.

- Post-prandial bathroom restriction and supervision (purging).
- Control access to drinking water.
- Blind weights in gowns.
- If indicated, activity restriction to conserve energy.

Nursing Diagnoses

The following are nursing diagnoses identifying patient care problems that may be expected to be part of the patient care plan with treatment goals.

- Alteration in nutrition:
  Less/more than required
• Alteration in thought process:
  Anxiety
  Body image disturbance
• Alteration in thought process:
  Impaired social interaction
• Ineffective individual coping:
  Powerlessness
• Risk for (cardiac output, respiratory pattern problems, fluid volume deficit, injury, fall risk, constipation, etc.)
• Risk of harm to self
• Self-Esteem deficit

Summary

Anorexia nervosa and bulimia nervosa are eating disorders that can cause serious complications and death. They are caused by an incompletely understood interplay of biological, genetic, environmental, psychological influences. Successful treatment requires a considerable commitment and effort from the patient and the medical and psychiatric professionals as the often long-standing and abnormal eating patterns and beliefs about eating, food, and weight can be very difficult to reverse.

The primary issues of care are: 1) Avoidance and treatment of medical complications; 2) Restoring body weight to a normal level; and, 3) Helping the patient change his/her attitudes and feelings about body weight or body image, as well as about eating and food. Treatment is multi-disciplinary and primarily involves nutritional rehabilitation, psychotherapy, and family therapy.
Online Resources:

The following websites provide information about eating disorders, contact information for support groups and eating disorder specialists, and educational resources for patients, family members, and medical professionals.


Please take time to help NurseCe4Less.com course planners evaluate the nursing knowledge needs met by completing the self-assessment of Knowledge Questions after reading the article, and providing feedback in the online course evaluation.

Completing the study questions is optional and is NOT a course requirement.
1. Anorexia nervosa is primarily characterized by
   a. persistent energy intake restriction.
   b. binging and purging.
   c. over exercising.
   d. a substance use disorder.

2. Bulimia nervosa is primarily characterized by
   a. over exercising.
   b. recurrent episodes of binge eating.
   c. a major psychiatric co-morbidity.
   d. persistent energy intake restriction.

3. True or false: People who have anorexia nervosa or bulimia nervosa often have a high level of anxiety.
   a. True.
   b. False.

4. Which of the following is a common sign of anorexia nervosa?
   a. Orthostatic hypotension.
   b. Torsades de pointes.
   c. Bradycardia.
   d. Cardiomyopathy.

5. Which of the following is common sign of bulimia nervosa?
   a. Hyperglycemia.
   b. Hypocalcemia.
   c. Hypernatremia.
   d. Hypokalemia.
6. Which of the following ECG changes is common to anorexia nervosa and bulimia nervosa?
   a. QTc prolongation.
   b. ST segment elevation.
   c. Inverted T waves.
   d. Prolonged PR interval.

7. Which of the following is a common complication of anorexia nervosa?
   a. Pulmonary embolism
   b. Osteopenia.
   c. Acute renal failure.
   d. Left ventricular hypertrophy.

8. Which of the following is a common complication of bulimia nervosa?
   a. Liver damage.
   b. Respiratory failure.
   c. Dental erosion
   d. Muscle weakness.

9. Which of these are primary therapies for anorexia nervosa and bulimia nervosa?
   a. SSRIs and physical therapy.
   b. Group therapy and deep brain stimulation.
   c. Exercise therapy and occupational therapy.
   d. Psychotherapy and family therapy.

10. True or false: Pharmacotherapy is very successful in treating anorexia nervosa.
    a. True.
    b. False.
Correct Answers:
1. A
2. B
3. A
4. C
5. D
6. A
7. B
8. C
9. D
10. B

References Section

The reference section of in-text citations include published works intended as helpful material for further reading. Unpublished works and personal communications are not included in this section, although may appear within the study text.


syndrome?source=search_result&search=Refeeding&selectedTitle=1%7E45.


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