

Anorexia Nervosa: Role of the Primary Care Physician

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Program Audience

Primary care physicians.

Educational Needs Addressed

Anorexia nervosa (AN) is a serious psychiatric disorder distinguished by a refusal to maintain a minimally normal body weight, intense fear of weight gain, and disturbances in the perception of body shape and weight. While physical examination may only reveal emaciation and laboratory tests may not demonstrate abnormalities, AN has severe physical side effects and may be associated with disturbances in multiple organ systems. Patients with AN often deny the severity of their illness and may be unmotivated to pursue treatment. Skilled primary care physicians can thus play a vital role in the diagnosis and treatment of patients with AN.

Educational Objectives

After participating in this CME activity, primary care physicians should be able to

1. Describe the clinical features of AN
2. Describe the medical complications of AN
3. Discuss the therapeutic approaches that have been studied for treatment of AN
4. Describe components of behaviorally oriented treatment for AN

of approximately 5% per decade of illness [1]. Patients with AN demonstrate a refusal to maintain minimally normal body weight (eg, weight < 85% of that expected), an intense fear of weight gain, and a disturbance in the perception of body shape and weight [2]. Current diagnostic criteria also include amenorrhea in postmenarcheal females; however, the value of this criteria has been debated [3].

AN is divided into the restricting and binge-eating/purging subtypes (**Table 1**). Individuals presenting with the restricting subtype accomplish weight loss through dieting, fasting, and/or excessive exercise. The binge-eating/purging subtype classifies individuals who frequently engage in binge-eating and/or purging, which includes self-induced vomiting and/or the misuse of laxatives, diuretics, or enemas [2]. Common psychological symptoms of AN, many of which are characteristic of the semi-starved state, include depressed mood, irritability, social isolation, decreased sexual libido, preoccupation and rituals surrounding food and eating, and disturbances in concentration [4].

Epidemiologic studies report that eating disorders are not randomly distributed in the population and are more prevalent in industrialized, developed countries [4]. In some countries, eating disorders tend to be more common in middle and upper socioeconomic classes; however, this bias may also reflect differences in access to and use of health care services [5]. According to Hoek [5], the average point prevalence of AN using strict diagnostic criteria is 280 per 100,000 young females. The National Comorbidity Replication, a 2005 population-based survey of American households, reported lifetime prevalence estimates of 0.9% among women and 0.3% among men meeting DSM-IV criteria for AN [6] and a cumulative lifetime risk of AN by age 80 of 0.6%. Based on the survey findings, the mean age of onset of AN is approximately 19 years and the mean duration of illness is 1.7 years [6].

Data from 2-stage surveys of the point prevalence of eating disorders, case register studies, and a study of patients of Dutch general practitioners found that over 40% of

Anorexia nervosa (AN) is a serious mental illness characterized by severe malnutrition and high rates of morbidity. It carries with it a mortality rate

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community cases of AN are detected by general practitioners and 79% of these patients are referred for mental health care [5]. Research examining adult health services use in a large health maintenance organization reported that 50% of eating disorder cases were first diagnosed at a primary care visit [7]. Such findings underscore the importance of primary health care providers in identifying eating disorders.

CASE STUDY

Initial Presentation

 A 21-year-old woman presents to her primary care physician while home from college stating that her parents are concerned about her low weight.

Physical Examination

On examination, the patient is 5' 4" and weighs 100 lb (78% of ideal body weight; body mass index [BMI], 17.2 kg/m²). The patient's blood pressure is 90/50 mm Hg and her heart rate is 55 bpm. Physical examination is remarkable only for thinning scalp hair and fine, lanugo-type hair on her arms. The physician also notes the patient's complaints of coldness in the examination room as well as her uncharacteristic low mood. She is amenorrheic. The physician notes that she has lost 23 lb since her last appointment 1 year ago and that she reported regular menses in her previous physicals.

When asked about her weight loss, the patient states that she is unconcerned and suggests the stress of a heavy college workload and recent dedication to "healthy eating" and regular exercise as possible causes. The patient endorses fatigue upon questioning and offers her workload and exercise regime as probable explanations.

• **What are the clinical features of AN?**

Presenting symptoms and signs of AN may vary based on the severity of the illness as well as the methods used to achieve weight loss. It is not uncommon for the physical examination and laboratory values to be unremarkable aside from low weight. Normal findings do not rule out an eating disorder diagnosis, and a thorough examination with specific attention paid to indicators of eating disorders is crucial to their detection in primary care settings. A clinician who suspects that a patient has AN should ask about the patient's weight history, inquiring specifically about highest and lowest adult weights, current method of weight loss and/or dieting behavior, menstrual history, and exercise and eating habits [8]. Some patients with AN may be more willing to endorse physical symptoms such as fatigue as opposed to emotional problems or disordered eating.

Patients with AN may present with amenorrhea and

Table 1. Diagnostic Criteria for Anorexia Nervosa

- A. Refusal to maintain body weight at or above a minimally normal weight for age and height (eg, weight loss leading to maintenance of body weight < 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight < 85% of that expected).
- B. Intense fear of gaining weight or becoming fat, even though underweight.
- C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
- D. In postmenarcheal females, amenorrhea, ie, the absence of at least 3 consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, eg, estrogen, administration.)

Specify type:

Restricting type

During the current episode of AN, the person has not regularly engaged in binge-eating or purging behavior (ie, self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-eating/purging type

During the current episode of AN, the person has regularly engaged in binge-eating or purging behavior (ie, self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

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may complain about constipation, fatigue, abdominal pain, cold intolerance, and/or excess energy. In addition to emaciation, physical examination may be notable for hypotension, hypothermia, dryness of skin, and lanugo [2]. Most individuals are bradycardic, and some may develop peripheral edema, particularly during weight restoration or as a result of termination of laxative or diuretic abuse. Individuals with AN may also exhibit hypertrophy of the salivary glands, specifically the parotid glands. Patients who engage in self-induced vomiting may have dental enamel erosion and scars or calluses on the dorsum of their hand [2].

Denial of illness is common among individuals with AN [9]. As early detection and treatment improve prognosis, it is recommended that clinicians should carefully consider AN as an explanation for low weight. The SCOFF questionnaire (Table 2) addresses core features of both AN and bulimia nervosa and was developed as a screening tool to identify a likely eating disorder prior to rigorous clinical assessment [10]. In a study examining the efficacy of this questionnaire, Morgan and colleagues [10] found 100% sensitivity for AN and bulimia with the threshold set at 1 or more positive

Table 2. SCOFF Questions*

Do you make yourself **S**ick because you feel uncomfortably full?
 Do you worry you have lost **C**ontrol over how much you eat?
 Have you recently lost more than **O**ne stone (14 lb [6.4kg]) in a 3-month period?
 Do you believe yourself to be **F**at when others say you are too thin?
 Would you say that **F**ood dominates your life?

Adapted with permission from Morgan JF, Reid F, Lacey JH. The SCOFF questionnaire: assessment of a new screening tool for eating disorders. *BMJ* 1999;319:1467.

*One point for every “yes;” a score of greater than or equal to 2 indicates a likely case of anorexia nervosa or bulimia

responses to the 5 questions posed. While further research is needed to establish its validity, this questionnaire is easy to administer and may be a useful screening method for eating disorders in primary care settings.

The following questions have also been identified as useful in screening for disordered eating behaviors [11]:

1. How many diets have you been on in the past year?
2. Do you feel you should be dieting?
3. Do you feel dissatisfied with your body size?
4. Do you sometimes use laxatives, diuretics, or diet pills to control your weight?
5. Does your weight affect the way you feel about yourself?

• **What are risk factors for AN?**

Research on risk factors for AN has been limited by the relative rarity of the disorder [12], the absence of reliable pre-morbid data about individuals who develop AN, the difficulty in distinguishing predisposing features from features that develop secondary to the illness [13], the variability in research methods, and the inconsistency in risk factor terminology. A comprehensive review of eating disorder risk factors conducted by Jacobi and colleagues [13] discusses multiple putative eating disorder risk factors; however, these authors conclude that most of these factors are nonspecific and require further study to appraise their predictive power. In addition, this review was unable to identify any risk factors that are specific to AN.

The literature includes several discussions of the possible relationship between specific personality traits and the development of AN; however, none have been conclusively demonstrated [14,15]. Bulik and colleagues [12] conducted a

study that prospectively analyzed data from a Swedish twin registry. In their examination of BMI, gastric problems, excessive exercise, perceived excessive life stress, neuroticism, and extraversion in individuals who later developed AN, only higher neuroticism was found to be strongly predictive of AN [12]. Believed to be a trait with heritable components, high neuroticism is characterized by emotional instability, low self-esteem, and feelings of anxiety, depression, and guilt [12]. While Bulik et al [12] conclude that “anxiety proneness” is a possible “risk pathway” to AN, whether neuroticism is a risk factor of general psychopathology or specifically of AN remains to be determined.

Genetic predisposition has been considered additionally as a risk factor for AN, and the study by Bulik et al [12] reports heritability estimates of 0.56 for narrowly defined AN and 0.31 for more broadly defined AN. AN is believed to be a moderately heritable disorder, but further study is needed in order to identify its specific heritability components.

• **What is the differential diagnosis for this patient?**

To accurately diagnose a patient presenting with low weight and restricted eating, a physician must consider other psychiatric and medical conditions that could cause such symptoms. Psychotic and anxiety disorders can involve food avoidance and distortions about one’s body [14]. Medical conditions including gastrointestinal and endocrine disturbances, infections, and neoplastic processes can also involve weight loss [14]. Notably, patients who do not have eating disorders are generally concerned about their weight loss, whereas patients with AN have body image disturbance and express a reluctance to gain weight [16].

Further Evaluation

 The physician tells the patient that her weight is medically concerning and asks if she has ever made herself vomit or used laxatives. The clinician also asks about the patient’s typical eating pattern and whether she is trying to lose weight. While the patient denies any eating disordered behavior, she appears uncomfortable. The clinician orders an electrocardiogram (ECG) and blood work and schedules a follow-up appointment.

The patient’s ECG reveals bradycardia and laboratory results reveal the following abnormalities: white blood cell count of $2.9 \times 10^3/\mu\text{L}$, hematocrit of 33%, and potassium of 2.9 mEq/L. Anemia and neutropenia are often found in patients with AN, and low potassium is common in the context of purging.

The patient returns for her follow-up appointment. The clinician reports that the patient’s laboratory results are

concerning. The clinician references the patient's low weight and raises the possibility of an AN diagnosis. While the patient continues to deny eating disorder symptoms, the clinician suggests that she meet with a psychologist or other mental health professional. The physician discusses some of the health risks of being underweight and engaging in purging behavior, and a subsequent follow-up appointment is scheduled.

- **What are the medical complications of AN?**

While laboratory values and the physical examination of AN patients may not be significantly abnormal, AN can cause substantial physical damage and has a mortality rate as high as that of any psychiatric illness [1]. In fact, semi-starvation can affect most major organs. Despite their emaciated state, many patients with AN complain of surprisingly few physical ailments. Self-induced vomiting and laxative, enema, and diuretic misuse are often reflected by abnormal laboratory findings. Dehydration is often demonstrated in elevated blood urea nitrogen. Low serum estrogen levels are common in women, whereas decreased serum testosterone may be exhibited in men [2]. Suggested laboratory tests for AN include serum electrolytes, a complete blood count, serum glucose, calcium, magnesium, phosphorus, blood urea nitrogen, creatinine, albumin, and tests of liver function [17]. Estradiol, follicle-stimulating hormone, luteinizing hormone, thyroid-stimulating hormone, and prolactin tests may also be conducted to assess endocrine activity [8].

Decreased oral intake and engagement in various purging behaviors can lead to serious disruptions of fluid homeostasis and potentially fatal electrolyte abnormalities [18]. Hypokalemia, caused by low potassium due to self-induced vomiting and/or laxative or diuretic abuse, is the most common electrolyte disturbance in patients with AN [18]. Hypokalemia can be associated with cardiac arrhythmias, kaliopenic nephropathy, and myopathy [17]. Mild hypokalemia can be treated with oral potassium supplements, and severe hypokalemia is treated by intravenous potassium replacements, possibly along with cardiac monitoring [18]. Hypomagnesemia, hypophosphatemia, and hypovolemia can also occur in patients with AN. Additionally, chronic vomiting and laxative or diuretic abuse cause dehydration, which may activate the renin-angiotensin-aldosterone system, causing hyperaldosteronism as the body attempts to conserve fluids [17]. Hyperaldosteronism can cause reflex edema, often seen when patients decrease or stop abusing diuretics and/or laxatives [18].

Cardiovascular abnormalities seen among AN patients include hypotension and sinus bradycardia as the body tries to adapt to the hypometabolic state of starvation. Restricted

fluid intake and dehydration can also cause orthostatic hypotension, which can be treated with fluid repletion [18]. A significant percentage of deaths in patients with AN is due to cardiac arrest secondary to arrhythmias [19]. Serious cardiac conduction effects such as prolonged QT interval should be carefully monitored, as they may be an indication of risk for sudden death [19]. Weight loss in AN patients can be associated with the development of mitral valve prolapse [20]. Intensive refeeding and ipecac misuse may lead to the development of cardiomyopathy [17].

Additionally, AN is associated with numerous gastrointestinal complications. Malnutrition and purging can lead to gastrointestinal bleeding and esophageal (Mallory-Weiss) tears or rupture (Boerhaave's syndrome) [17]. Exposure to stomach acid as a result of self-induced vomiting can cause esophagitis, erosions, ulcerations, and eventually esophageal strictures (Barrett's esophagus) [18]. Laxative use is one of the main sources of gastrointestinal abnormalities in patients with AN. Chronic laxative use can cause a loss of normal peristaltic function, which can lead to cramping and bouts of diarrhea and/or constipation. Colonoscopic examination can also reveal melanosis coli [18]. Physical examination may reveal salivary gland hypertrophy [17]. Delayed gastric emptying also occurs in AN patients; however, a clear relationship between such delay and patients' complaints of bloating and fullness has not been demonstrated [17].

Dysregulation of the endocrine system is also common in patients with AN. Amenorrhea is currently a diagnostic criterion of AN; however, many question the value of this criterion because little is known about the relationship between loss of menses and weight loss. Amenorrhea can occur prior to weight loss and may not normalize directly following weight gain. Multiple studies have reported that amenorrhea does not distinguish women with AN from women who meet all diagnostic criteria of AN aside from amenorrhea across variables including illness characteristics, psychiatric comorbidity, family history, and descriptive features of the clinical sample [3]. While the precise cause of amenorrhea in patients with AN is unclear, individuals with AN generally have low levels of plasma estradiol, luteinizing hormone, and follicle-stimulating hormone. Thus, the hypothalamic-pituitary-gonadal axis in AN patients is similar to that of premenarcheal girls [18]. In addition, patients with AN often exhibit hypercortisolism [17].

Abnormal thyroid function tests usually indicate physiological adaptation to starvation and not thyroid gland dysfunction. Patients with AN typically have normal thyroxine (T_4), decreased triiodothyronine (T_3), and normal thyroid-stimulating hormone levels. "Low T_3 syndrome" or "sick thyroid syndrome" does not require treatment with thyroid hormone replacement [18]. Additionally, impaired or erratic release of vasopressin is also found in AN patients [18].

Patients with AN frequently exhibit dermatologic and dental manifestations of starvation and purging. These include loss of scalp hair, brittle nails, lanugo (fine, downy hair), and dry skin with yellowish discoloration most likely due to ingestion of high quantities of vegetables containing β -carotene (hypercarotenemia) [18]. Lesions or calluses on the dorsum of the hand may indicate the presence of self-induced vomiting [18]. Also known as Russell's sign, in patients with AN these calluses generally result from frequent contact with incisor teeth while engaging the gag reflex. Frequent exposure to gastric acid erodes the surface of the teeth, termed perimolysis, and can cause extensive decalcification [18].

Abnormalities of bone metabolism are among the most long-lasting effects of AN. Many patients with AN, particularly those with a long course of illness and those with the binge-purge subtype, exhibit low bone mass [21]. Bone loss is generally most severe in patients with chronic AN whose disease began prior to peak bone mass attainment [22]. The precise cause of decreased bone density in patients with AN has not been determined; however, malnutrition, estrogen deficiency, glucocorticoid excess, weight loss, and decreased calcium and vitamin D intake have all been implicated [23]. Osteopenia in patients with AN follows a different pattern from that of postmenopausal women in that it seems to reflect a low turnover state associated with increased bone resorption without concurrent bone formation [18]. However, osteopenia in patients with AN may be as severe as that of postmenopausal women and is associated with increased risk of bone fractures [18].

Resumption of menses may be an important factor in preventing additional cortical bone loss in women with AN. Iketani et al [24] reported that resumption of menses, in addition to weight gain, was essential to normalize decreased bone mineral density. In patients with AN, prevalence rates of 13% to 35% for osteoporosis and 35% to 92% for osteopenia have been reported [25]. Although estrogen deficiency is believed to be an important factor in bone loss in female patients with AN, estrogen replacement therapy has not been found helpful in improving bone density in low-weight individuals [18,26,27]. Deficiencies in zinc and other vitamins and trace minerals have also been found in AN patients. In addition, hypercholesterolemia is somewhat common in these patients [17].

Follow-up

 The patient returns to the physician for her follow-up appointment and reports that she has met with a psychologist. The patient admits that she has been struggling with her eating and is preoccupied with losing weight. She reports that her psychologist diagnosed her with AN and acknowledges that her current amenorrhea is most likely a

result of her poor eating habits. She is uninterested in inpatient treatment because she does not want to withdraw from school. The patient asks for the physician's participation in her outpatient treatment and authorizes the physician to communicate with her psychologist regarding her care.

• What is the role of a primary care physician in the treatment of a patient with AN?

Current treatment standards for AN stress weight restoration; however, treatment intensity and setting vary based on illness severity, patient preference, and available health care reimbursement. Weight restoration can be achieved using a behaviorally oriented treatment approach in an outpatient or inpatient setting. The least restrictive treatment setting with the highest likelihood of effectiveness is commonly regarded as optimal for individuals with AN [14].

Outpatient treatment generally involves a multidisciplinary team led by a medical or psychiatric clinician with experience in the management of AN. The role of the primary care clinician should involve medical monitoring including weight and laboratory assessments. A psychiatrist or other mental health care provider offers psychological support and a nutritionist or dietician may be helpful in providing nutritional counseling [14]. It is important that mental health care professionals working with AN patients understand the disorder's severe health consequences as patients often have poor insight regarding their need for treatment.

A minimally medically acceptable weight (or target weight range) should be established in any treatment plan for AN. Clinicians may refer to calculations of BMI or charts of ideal body weight to determine a medically appropriate weight range for the patient, generally considered a BMI of 20 kg/m² or greater or 90% or more of ideal body weight according to actuarial data such as the 1959 Metropolitan Life standards [28]. The weight at which a patient previously menstruated is sometimes considered a benchmark for healthy weight; however, difficulty in predicting the loss and regain in menses in AN makes menstruation an unpredictable standard of health [8].

Clinicians should weigh patients with AN at every visit, preferably weekly; however, appointment frequency should be determined according to severity of illness. Visit intervals may be varied depending on the patient's compliance with treatment goals. Patients should be weighed in an examination gown and asked to empty their bladder prior to weighing. Underweight patients should be expected to gain at least 1 lb per week in an outpatient setting [19]. While weight restoration is not the sole indicator of effective treatment, and

progress in both behavioral and psychological symptoms is also important, the medical implications of significant underweight necessitate that weight restoration be a primary goal of treatment. In addition, weight restoration has been associated with an improvement in psychological symptoms such as mood and anxiety [29,30].

Refeeding syndrome is a complication of the initial nutritional rehabilitation in patients with moderate to severe AN [19]. Refeeding syndrome is characterized by severe shifts in fluid and electrolyte levels, including significant hypophosphatemia, and various organ system dysfunction resulting in cardiovascular, neurologic, and hematologic complications [31]. Serum electrolyte levels, particularly phosphorus, must be monitored closely during the first 2 to 3 weeks of refeeding when patients are at the greatest risk of developing this syndrome [19].

Ambivalence and resistance toward treatment as well as poor insight regarding the illness are common among patients with AN. Resistant patients may need frequent reminders of the serious medical consequences of AN and the treatment options available to them. Remaining in outpatient treatment is often a key motivator for individuals with AN, as inpatient stays, while sometimes necessary, can be time-consuming, disruptive, and costly. It may be helpful to involve family members or close friends in the patient's care, with the permission of the patient. Communication with the patient, family members, and/or psychologist may elucidate additional motivational factors (eg, maintaining involvement in a sports team, staying in school) that may be helpful tools for the primary care physician.

The treatment team, together with the patient, should determine the criteria that would indicate that more intensive treatment may be necessary. Such criteria might include insufficient weight gain, concerning laboratory values or medical complications, and noncompliance with treatment plan, including appointment attendance [8]. Determining the need for hospitalization is a crucial component of a physician's role in treating a patient with AN.

- **Which treatments for AN are most effective?**

While weight restoration is an essential first step in the treatment of patients with AN, there is no clearly identified treatment approach to best achieve this aim. Clinical trials for this population are few, with studies limited by small sample size and significant drop-out rates.

Evidence-based data supporting a particular therapeutic approach for AN are sparse [14], particularly for adults with AN. Several studies specifically evaluating the possible utility of commonly practiced psychotherapies have not

revealed any superior treatment for underweight patients with AN [32–34]. Cognitive behavioral therapy (CBT) offers significant benefit to patients with bulimia nervosa, and preliminary data suggest it may be helpful for weight-restored patients with AN aiming to prevent relapse [35]. Pike and colleagues [35] found outpatient CBT to be more effective than nutritional counseling at preventing relapse in women aged 18 to 45 years with AN who had completed inpatient weight restoration treatment. CBT helps patients identify distorted thoughts that may perpetuate maladaptive behaviors and work toward identifying more effective thought and behavior patterns.

Treatment for adolescents with AN has revealed more promising findings. Adolescents may have a better prognosis than adults in both inpatient and outpatient treatments, with reported recovery rates of approximately 70% [32]. A family-based outpatient treatment, also known as the "Maudsley method," has been suggested as an effective method of treating younger patients with AN [32,36–38]. The Maudsley method is based on the concept that the eating disorder has arrested the adolescent's normal development and that parents need to temporarily take charge of their child's eating [36]. This approach requires parents to take an uncritical attitude in helping their child, concentrating on the paramount goal of weight restoration. A randomized controlled clinical trial that compared family therapy to individual therapy in weight-restored adolescents found that family therapy was more effective in preventing weight loss in adolescents with a duration of illness of less than 3 years [37]. More recent studies have supported and extended these findings to include impressive weight restoration effects and general psychological improvement associated with similar types of family-based therapy [39,40].

Because pharmacologic treatments are effective in psychiatric disorders such as depression and anxiety, which have symptom overlap with AN, many have posited that antidepressants would be helpful to patients with AN. However, medication trials consistently have had disappointing results in AN. While several controlled trials of antidepressants have been conducted, most have found no benefit of medication compared with placebo in AN patients [41]. In 1 study of hospitalized patients, clomipramine was associated with increased appetite but less weight gain compared with placebo [42]. Two trials reported no benefit of amitriptyline compared with placebo in regard to weight changes or concern for shape and weight [43,44]. While selective serotonin reuptake inhibitors are prescribed widely to patients with AN, research has not provided substantial evidence for the efficacy of this medication. Specifically, Attia and colleagues [30] found that fluoxetine conferred no added benefit compared with placebo for inpatients with AN. The double-blind placebo-controlled trial by Walsh et al [45]

reported no difference between fluoxetine and placebo in time-to-relapse and depression measures.

The considerable side effects of traditional antipsychotic medication and the sparse evidence supporting their clinical advantages have kept these medications from being used in standard care of patients with AN. Specifically, the antipsychotic medications chlorpromazine, pimozide, and sulpiride were studied in double-blind placebo-controlled trials [46–48]. While chlorpromazine demonstrated greater initial weight gain, patients on this medication experienced significant side effects [47]. Pimozide resulted in weight gain, sulpiride had no significant benefit, and neither medication improved patients' attitudes or behaviors [46,48]. Recent reports of the possible utility of olanzapine in patients with AN have led to an interest in further study of this medication [49,50].

- **What more intensive treatment for AN is available?**

For patients who fail to normalize weight and eating behavior using typical outpatient interventions, more intensive treatments may be recommended. The American Psychiatric Association practice guidelines for the treatment of patients with eating disorders suggest that patients who weigh less than 85% of ideal body weight often need highly structured treatment programs to achieve weight gain [51]. Patients at considerably low weight (ie, < 75% of ideal body weight), patients who have experienced rapid weight loss, and/or patients who are exhibiting serious signs of malnutrition may need hospital-based treatments [14].

Structured behaviorally oriented treatment may be offered within several settings, including day, residential, and hospital-based programs. Behavioral programs generally utilize multidisciplinary clinical teams that offer supervised meals and psychological support, frequently assisted by a reinforcement paradigm. Such programs typically include weight gain goals of 2 to 4 lb per week. Length of stay varies according to treatment expectations and each individual's weight gain needs and is often limited by insurance constraints. Treatment in inpatient settings generally involves nursing observation and nutritional rehabilitation as well as a clinical team ideally comprised of psychiatrists, psychologists, social workers, recreational/occupational therapists, and nutritionists. Individual, family, and group therapy is typically offered in these settings, and psychotherapy often employs cognitive behavioral, interpersonal, dialectical-behavioral, and motivational enhancement methods [32]. Inpatient treatment is generally successful in achieving weight gain in patients who stay for the full course of treatment; however, there is a high rate of patients who leave such facilities prematurely. Relapse rates for AN are high,

ranging from 30% to 50%, for patients who are treated in such settings [32]. Long-term outcome studies have reported recovery rates of 25% to 70%, with adolescents having higher success rates than adults [32].

Treatment

 The clinician, psychologist, and patient agree on a plan for the patient's treatment. The patient will meet with the psychologist and physician weekly. She will be weighed weekly and blood work and ECGs will be conducted every 2 weeks. The patient is expected to gain 1 lb per week and is referred to a nutritionist knowledgeable about eating disorders for meal planning assistance. The patient will be referred for more structured care if she loses weight for 3 consecutive weeks, if her weight remains unchanged for 3 weeks, or if her weight drops below 95 lb. She will be unable to continue this treatment regimen if her ECG or blood results indicate significant medical risk. The patient is not prescribed any medications.

The physician recommends that the patient achieve a weight that is at least 90% of her ideal body weight, or 115 lb.

Follow-up

 The patient complies with the treatment regimen and arrives for all scheduled appointments. She gains 3 lb in the first month and remains medically stable. However, at her fifth visit, her potassium is 2.8 mEq/L. The clinician immediately alerts the patient and urges her to go to the emergency department. The patient is hospitalized overnight while her potassium is corrected.

Upon her sixth visit, the patient has lost 2 lb and reports an increase in purging. She admits to struggling immensely with gaining weight on her own, and the patient, clinician, and psychologist agree that she needs more structured treatment. She is referred to an intensive outpatient program at a local eating disorder clinic.

SUMMARY

AN is a serious psychiatric disorder with severe health consequences. While AN is often a debilitating disease, early diagnosis and proper care can improve the prognosis and can help some patients achieve full recovery. Primary care physicians can play a key role in identifying AN and emphasizing to the patient the severity of the illness and the importance of therapeutic intervention. While inpatient treatment is generally regarded as the most efficient way to achieve weight restoration and may be necessary for some patients, other patients may do well in outpatient settings. Through monitoring the weight and medical complications of patients with AN, primary care physicians can be important participants in the management of patients with this challenging disorder.

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CME EVALUATION: Anorexia Nervosa: Role of the Primary Care Physician

DIRECTIONS: Each of the questions below is followed by several possible answers. Select the ONE lettered answer that is BEST in each case and circle the corresponding letter on the answer sheet.

1. Which of the following statements about patients with anorexia nervosa (AN) is TRUE?
 - A. They resume regular menses after regaining their weight
 - B. They are concerned about their weight loss
 - C. They can engage in binge/purge behavior
 - D. They do not have enough energy to exercise
 - E. They have abnormal laboratory findings
2. Which medication has been proven to be an effective treatment for AN?
 - A. Clomipramine
 - B. Pimozide
 - C. Fluoxetine
 - D. None of the above
3. Which of the following describes AN patients who are not menstruating?
 - A. They are more ill than those who are menstruating
 - B. They should be taking hormone replacement therapy
 - C. They are not very different from AN patients who are menstruating
 - D. They will menstruate when they reach a body mass index of 19 kg/m²
 - E. They are engaging in binge/purge behavior
4. Normal laboratory results in an individual with AN
 - A. Indicate that the individual is at a healthy weight
 - B. Are not necessarily indicative of health
 - C. Demonstrate that the individual has ceased binge/purge behavior
 - D. Indicate that the individual requires an electrocardiogram
 - E. Suggest laboratory error and requires a repeat assessment
5. Hypokalemia in patients with AN
 - A. Is usually indicative of self-induced vomiting
 - B. May be associated with serious medical consequences
 - C. May be indicative of diuretic use
 - D. All of the above

