

Stephanie's Long Walk

Facilitator's Guide

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Topic: Anorexia Nervosa

Abstract:

Disordered eating is common among adolescents, and primary care clinicians need to promote healthy eating patterns and physical activity as part of clinical preventive services. A small number of adolescents develop a serious problem with eating behavior, such as anorexia nervosa or bulimia nervosa. Clinicians need to be able to ask appropriate questions and plan a treatment program for teens with eating disorders. In this case, Stephanie, a 17 year old being seen for a routine visit before college, is found to have anorexia nervosa. Although she initially states that she feels fine, a different picture emerges during the review of systems. She has lost 14 kg, is exercising excessively, and “feels fat.” She is diagnosed with anorexia nervosa and begins the “long walk” of medical, nutritional and psychiatric treatment.

Goal:

To provide learners with an overview of the clinical presentation of anorexia nervosa and treatment options available to patients and their families.

Objectives:

By the end of this session, learners will be able to:

1. Recognize the physical and psychological manifestations of anorexia nervosa.
2. Understand the medical complications of anorexia nervosa and know the guidelines for hospital admission.
3. Describe the treatment options for anorexia nervosa.

Prerequisite Case:

“New World, Old Worries” (Early Adolescent Health Screening)
“But All My Friends Do It” (Middle Adolescent Health Screening)
“Amy Goes to College” (Older Adolescent Health Screening)

Related Cases:

“Too Tired to Sleep” (Depression)
“The Crafty Pupil” (Adolescent Substance Abuse)

Themes: Adolescent Health



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Key Words:

Anorexia Nervosa, body image, risk factors, osteoporosis, amenorrhea, ideal body weight, family therapy, bone density, depression

Bright Futures Core Concepts:

While all of the Core Concepts are included in each case, this particular case can be used to highlight communication, partnership, advocacy, and prevention/health promotion.

Materials Provided:

- Facilitator's Guide
- 3-part Case Narrative: Part I, Part II, Epilogue
- Handout #1: Stephanie's Growth Chart
- Handout #2: Percentiles for Weight for Height of Youths Aged 17 Years, 1966-1970
- Handout #3: Eating Disorders in Adolescents
- Bibliography

Facilitator Preparation:

Facilitators should thoroughly review this guide and the other materials provided. A copy of the BMI chart in *Bright Futures* should be available for learners.

At the end of the guide we have included a section entitled, "**Independent Learning/Prevention Exercises**," that will further stimulate group and individual education on this topic.

Suggested Format for a One Hour Discussion:

We anticipate that case facilitators will modify implementation of the case session to best fit their educational setting and learners. For detailed recommendations on case facilitation, please see the chapter entitled, "**A Brief Guide to Facilitating Case-Discussion**," found in *The Case Teaching Method; and Growth in Children and Adolescents* (book 1 of this series).

Introduction: Eating disorders are common among adolescent girls in the United States and in other industrialized nations. A number of studies have suggested an increase in the incidence of anorexia nervosa and bulimia over the past 50 years in the U. S., although there may be a recent decrease in binge/purging behaviors among college students.¹⁻⁶ The actual prevalence of anorexia nervosa (AN) and bulimia nervosa (BN) has been difficult to measure in the U.S. because of differences in case definition and reporting and in case ascertainment (because the illness may be characterized by denial and secrecy). The onset of AN typically occurs during adolescence or young adulthood although manifestations may be apparent later in life or in childhood. The peak age of onset is bimodal at age 13-14 years and age 17-18 years. It is estimated that 0.48% of 15-19 year olds have AN, 1-5% of adolescents have BN, and 3-5% of 15-30 year old women have eating disorders not otherwise specified (ED NOS).¹⁻⁸ Anorexia nervosa represents the third most common chronic disease in the U.S., and 95% of cases of AN occur in females.

An obsession with thinness permeates the U.S. media with images of thin, successful models, diets that purport to bring rapid results, and numerous advertisements of low

caloric, low fat foods. Dieting behaviors are manifest even at ages as early as 8 to 10 years, and up to 20% of adolescent girls score in the abnormal range on standardized tests of eating attitudes.^{1,9} The Commonwealth Fund Survey of the Health of Adolescent Girls,¹⁰ published in 1997, documented that as girls progress through adolescence they diet more and exercise less. In grades 5 to 8, 39% of girls gave a history of dieting and by 9th to 12th grades, 58% had dieted. In the 1999* Youth Risk Behavior Survey¹¹ which is administered to 9th to 12th grade U.S. students, 30.0% of girls thought they were overweight, nearly 42.7% were attempting to lose weight, 40.4% were dieting, and 58.4% were exercising to lose weight. All of these behaviors were much more common in girls than in boys. Disordered eating affects all races and ethnicities.

The pathogenesis of eating disorders remains elusive, but is multifactorial and includes psychological, biologic, family, environmental, genetic, and social factors. For example, an adolescent with low self-esteem, biologic predisposition, or family trauma may develop an eating disorder to establish a sense of control and stability. Similarly, an adolescent participating in an athletic or artistic endeavor such as ballet, track and gymnastics may experience praise and success following weight loss.

Young women with eating disorders have high rates of depression, anxiety disorders, obsessive compulsive disorders, and substance use (the latter noted particularly with BN). Biologic issues involved in the pathogenesis of eating disorders have been highlighted recently with research on neurotransmitters (norepinephrine and serotonin), changes in leptin levels, alterations in cerebral blood flow, and secondary changes in white and gray matter with increased CSF volume.

The family history is often striking in girls with disordered eating and points to both environmental and genetics factors. Not infrequently, the clinician may find a family history of eating disorders, depression, alcoholism, substance abuse and other mental illness during the evaluation. Families may have high expectations, poor communication styles, and marital tension. Genetic studies have found variable rates of eating disorders within families and twins.¹² It appears that young women with first-degree relatives have a 5 to 10 fold increased risk of developing an eating disorder.¹³

There may or may not be identifiable triggers for the onset of an eating disorder, but some may include teasing about weight, mild illness that initiated weight loss, death or severe illness of a close relation (personal loss), and change in family constellation. Studies have yielded conflicting evidence on the association of sexual abuse and the development of eating disorders, but the history should always include questions about nonconsensual sexual contact. Often what naturally starts as dieting becomes out-of-control behavior and a difficult habit to break.

Current treatment involves a multidisciplinary approach and includes a medical provider, mental health therapist, and nutritionist. The primary care clinician can provide the initial medical management and then, depending on the severity of the disorder, may collaborate with a specialty Eating Disorders Team.

*Facilitators should check the complete 1999 and future YRBS results available on the Center for Disease Control and Prevention web site (www.cdc.gov/nccdphp/dash/yrbs/index.htm).

Open the Discussion: Introduce the case title and the session goal. Explain that this will be an interactive case discussion and not a lecture.

Distribute Part I of the case and ask one or more of the participants to read it aloud.

Part I

Stephanie is a 17 10/12 year-old high school senior who presents for her yearly physical examination prior to leaving for college. Her mother accompanies her to the exam room, and appears somewhat anxious. Stephanie says that she feels fine, “*great even.*” On review of systems, a different picture of Stephanie emerges. She started losing weight 4 months ago “to be healthy” and to “look better.” She feels cold frequently and has noted her hair thinning. She occasionally has a headache. Her last menstrual period was four months ago (her menses had previously occurred every 30 days). She denies any cardio-respiratory symptoms. She runs five miles a day and does 250 abdominal crunches in her room after dinner. She states, “*I'm eating three meals a day.*”

Her mother interrupts in a confrontational manner, “*Stephanie has been dieting for the past four months. My husband and I are very worried about her.*” You note that Stephanie has lost 14 kg from her weight of 58 kg one year ago. Her height has remained the same. She answers defensively, “*I feel fine. I like the way I look now. I just don't like all those dishes my mother cooks. They are so full of oil and butter. I want to eat healthy.*”

Stephanie is wearing baggy clothes and appears quite thin.

Following this reading, ask all participants “So what do you think about this case? What would you like to focus on during our discussion today?” List agenda items on a blackboard or flipchart. Then use the questions below to guide the discussion. Remember that the key to successfully leading a small group is facilitation of the discussion rather than lecture. Draw as many participants as possible into the discussion. Allow silences while group members think about questions. Present material from the discussion guide only when needed to complement or redirect the group discussion.

Guiding Questions for Discussion:

How does Stephanie's history alert you to the diagnosis of an eating disorder? The marked weight loss, the amenorrhea, and the lack of concern about a possible medical problem suggest a diagnosis of an eating disorder. Stephanie's mother gives an important clue when she described the marked reduction in the calories Stephanie consumes. This is a pivotal point in taking the history since the patient will often state she is eating three meals a day as she has always done, but fails to qualify exactly how reduced the actual volume of food has become. Her avoidance of “fat” is also a clue to a change in her eating habits.

It would be helpful to obtain a more detailed history of her physical and psychological symptoms to better assess the impact of an eating disorder on her overall health. Cardiovascular instability (orthostatic hypotension, bradycardia) and hypothermia would be the most immediate concerns. Since electrolyte abnormalities pose the greatest risk of death, a careful review of purging behaviors is important. Patients with anorexia nervosa may primarily restrict intake to lose weight (“restricting type”) or they may engage in bingeing and purging behaviors (“binge-eating/purging type”). This means asking specific and direct questions about purging methods such as vomiting and laxatives and

ipepecac abuse when the patient is alone with the clinician. A high index of suspicion on the provider's part may well save the patient's life. Death from anorexia nervosa is typically caused by cardiac arrhythmia (from electrolyte imbalance) or suicide.

What are the criteria for the diagnosis of anorexia nervosa? The DSM-IV criteria for Anorexia Nervosa are: (1) refusal to maintain body weight over a minimal normal weight for age and height (body weight less than 85% of that expected), or failure to make expected weight gain during period of growth; (2) intense fear of gaining weight or becoming fat, even though underweight; (3) disturbance in the way in which one's body weight or shape is experienced or denial of the seriousness of the current low body weight; and (4) in postmenarcheal females, amenorrhea of at least three consecutive menstrual cycles.

In this case, the first criterion of anorexia nervosa, weight loss (15% below IBW), has been met. The fourth criterion, amenorrhea of 3 cycles duration, is evident. Stephanie has not had a period for four months. The second and third criteria will need to be further assessed, but her lack of concern about her weight loss and that fact that she likes herself at the new weight are points of concern. Her compulsive exercise pattern also supports the diagnosis. These concerns can be difficult to elicit. Some helpful questions which open up these issues are, "Would you be able to gain weight if I told you that you needed to? Do you think your weight is too much, too little, or just right?" In this case, Stephanie's answer of "just right" or "too much" would suggest a distorted body image.

In contrast, Bulimia Nervosa is a disorder characterized by two episodes of binge eating (larger than normal servings) per week for three months, a sense of lack of control over binge eating behavior, and recurrent inappropriate compensatory behavior to prevent weight gain (fasting, exercising) or purging (vomiting, laxatives). Most patients weigh within the normal range, yet exhibit persistent over-concern with body shape and weight.

Bright Futures questions related to nutrition can be used as initial screening questions for a clinical preventive services visit:

- "How do you feel about the way you look? Do you feel that you are underweight? Overweight? Just right? Are you trying to change your weight? If so, in what ways?"
- "What do you usually eat and drink in the morning? Around noon? In the afternoon? In the evening? Between meals?"

Other questions include "Do you eat in secret? Do you eat large amounts all at once?" "Do you ever use vomiting or laxatives to control your weight?" "Tell me about your exercise patterns? Has it changed recently?"

How would you deal with the anxious and/or confrontational parent of a patient with an eating disorder? It is in the best interest of the patient to enlist the parents in the role of allies, not adversaries. This can be difficult when the parent is angry and hostile toward either the patient or the provider. Assure some time alone with both the patient and the parent(s). Request the parents leave the room to allow their daughter to remove all of her clothing and put on a johnny prior to the examination. For the occasional mother who refuses to leave, the provider can ask the patient what her preference is. If she wants her mother to remain for the examination, the provider should

honor the patient's choice. On the other hand, if she wants her to go, the clinician can ask the mother to wait in the reception area while reassuring her the medical findings will be discussed with her and that she will be involved in planning treatment. At some point, a history from the patient alone is essential to elicit risk behaviors, as is a history from the parent alone to assess parental observations and response.

The next phase of the visit will be a physical examination. What characteristics of anorexia nervosa will you expect to find when you examine Stephanie? Patients with anorexia nervosa usually present with typical physical signs. Bradycardia, hypothermia, and hypotension are the characteristic vital signs. The patient may experience fainting or dizziness. Blood pressure and pulse obtained in the supine and standing positions may show orthostatic changes, even if the patient does not complain of dizziness or weakness. Bradycardia may, however, not be present if the patient has recently consumed caffeinated beverages or is extremely dehydrated. The weight percentile is usually significantly below the height percentile and the patient appears emaciated. Bony prominences are accentuated due to the lack of subcutaneous tissue. There is often lanugo hair covering the body. The scalp hair may be thinning and dull. The breasts are atrophied. The abdomen is scaphoid, often with palpable stool from constipation. The vaginal mucosa is unestrogenized. A pelvic exam should be performed if indicated. The extremities may be cold and bluish in appearance. The patient's affect may be flat and depressed alternating with anger and hostility or irritability; she may have trouble concentrating or making decisions. She may also appear to obsess about food or other daily habits or rituals.

If the patient is binge eating and vomiting, the salivary glands may become enlarged. They may have linear scars in the anterior tonsillar pillar areas and gingivitis. Subconjunctival hemorrhage may also be seen as a consequence of vigorous vomiting. Russell's sign may be present ("callus" formation over knuckles secondary to trauma by the teeth during induced vomiting), and erosion of the dental enamel may occur. These signs occur relatively late in the course of the illness and are by no means typical.

Distribute Part II of the case and have participant(s) read it aloud.

Part II

Stephanie's mother is asked to wait in the reception area during the physical examination. She leaves the office reluctantly. Stephanie denies vomiting, diarrhea, use of laxatives or diet pills. She tells you that she feels her stomach is "too fat," and she admits that she would like to be just 2 or 3 pounds lighter. She has never had sexual intercourse and does not use drugs, alcohol, or tobacco.

Physical Examination: Thin, slightly pale adolescent girl with obvious loss of subcutaneous tissue and increased lanugo hair on her back and arms.

Vital signs are obtained [including a weight in the examination gown, after voiding]:
BP 90/50, Pulse 54 bpm, Temp 35 C, Respirations 18/min
Height 64" (162.5 cm), Weight 98 lbs (44.5 kg); BMI = 16.9

HEENT: normal

Thyroid: not enlarged

Breast: Tanner stage 5 with obvious loss of fatty tissue

Lungs: clear to percussion and auscultation

Heart: no murmur, bradycardia with regular rate and rhythm

Abdomen: scaphoid, no palpable subcutaneous tissue. No organomegaly or tenderness

Genitalia: Tanner Stage V pubic hair

Poorly estrogenized vaginal mucosa

Extremities: Hands and feet are cold with a cyanotic hue.

Neurological: No gross abnormalities.

Where is Stephanie on her growth chart? What is Ideal Body Weight for her?

Her height (162.5 cm) is at the 45th percentile and her weight (44.5 kg) is 5th percentile.

The facilitator should distribute Handout #1: Stephanie's Growth Chart and Handout #2: Percentiles for Weight for Height of Youths Aged 17 Years, 1966-1970. Ask learners to plot the patient's current height and weight, noting the contrast with her previous growth parameters (including a weight of 58 kg from a year ago). Using the NCHS Height and Weight Chart, determine ideal body weight (IBW) which is 50% weight for height. The facilitator may also wish to pass out the chart on BMI from *Bright Futures* and review with learners.

An IBW (50th percentile) for her height at 17 years is 55 kg (10th percentile is 48 kg). When discussing weight ranges for health with patients, a range should be offered of 10th percentile to 50th percentile (48-55 kg), or if that would be overwhelming, 10 percentile plus 10 lbs (48-52 kg). Resumption of menses is the ultimate sign of health and may require a weight for height higher than the 10th percentile.

BMI is calculated as weight in kg/(height in cm)². Her BMI is just above the 5% and a BMI <17.5 kg/m² is low in older adolescents.

What other diagnoses need to be considered when making the diagnosis of anorexia nervosa?

Conditions that result in weight loss need to be considered in the differential diagnosis: thyroid disease, cancer, central nervous system pathology (especially the satiety center in the hypothalamus), inflammatory bowel disease, celiac disease, diabetes mellitus, HIV disease, Addison's disease, and other chronic illnesses. The history, physical exam, and screening lab tests usually differentiate these conditions from anorexia nervosa.

What initial screening labs should be obtained? With what frequency do they need to be repeated?

The initial laboratory tests should be seen as providing a baseline since no blood or urine test can make the diagnosis of anorexia nervosa. The CBC and differential, sedimentation rate, urinalysis with specific gravity, and blood chemistries (electrolytes, BUN, creatinine, glucose, Ca, Mg, Phosphorus) will provide initial information to the health care provider. A normal CBC and differential and sedimentation rate coupled with the history greatly reduce the likelihood of cancer and bowel disease as the etiology of the weight loss. However, patients with AN may have mild anemia (iron deficiency or marrow suppression), leukopenia with lymphocytosis, and mild thrombocytopenia. Normal electrolytes and a typical history are usually

sufficient to exclude Addison's disease, but if any symptoms or signs are suggestive, a first morning cortisol can be obtained. Most girls with anorexia have a normal to high morning cortisol; any other signs of Addison's would require an ACTH stimulation test and endocrinology consultation. The BUN may be mildly elevated with dehydration or low because of inadequate protein intake. The liver function tests may be mildly elevated. Incidental laboratory findings include hypercholesterolemia and hypercarotenemia. Hypoglycemia may occur with minimal if any symptomatology. Hypophosphatemia may occur with refeeding. An elevated bicarbonate level and low potassium level would alert the physician to vomiting behavior. Similarly, an elevated amylase level in the presence of a normal lipase level suggests vomiting.

A normal thyroxine (T₄) and Thyroid Stimulating Hormone (TSH) level helps exclude thyroid disease, but these tests are usually obtained for specific clinical indications only. The thyroid tests often show "sick euthyroid" state with low total T₃, which returns to normal with restoration of weight and health.

The specific gravity in the urine when low (1.010 or less) indicates probable water loading on the part of the patient to falsely elevate her measured weight. Diabetes insipidus needs to be considered if the patient cannot concentrate her urine with fluid restriction. An EKG is warranted for significant bradycardia, electrolyte abnormalities, or at the time of hospital admission when medically indicated. Monitoring the QTc interval is important in at-risk patients. CNS imaging should be considered in a patient with an early and unusual presentation of an eating disorder, growth failure, or neurological signs or symptoms.

A Dual Energy X-ray absorptiometry (DEXA) scan to assess bone density is frequently obtained on girls with hypoestrogenic amenorrhea for more than 6 months since osteopenia is common and only partially reversible with treatment. Gonadotropin (FSH, LH) and prolactin levels are drawn for evaluation of persistent amenorrhea despite weight gain.

Repeating laboratory tests is dependent on the patient's self-report of eating/purging behaviors, the physical findings at subsequent visits, prior laboratory abnormalities, and the overall medical status of the patient.

Treatment for anorexia nervosa can be provided as an outpatient or inpatient.
What are the criteria for a medical admission, a psychological admission, or outpatient management? Who comprises the treatment team? A patient is admitted to a medical service when she is no longer medically stable or refuses food. The newest Practice Guideline for the Treatment of Patients with Eating Disorders by the American Psychiatric Association lists criteria for inpatient hospitalization for adolescents: heart rate in the 40s, orthostatic blood pressure changes (>20 bpm increase in heart rate or >10-20 Hg drop in blood pressure), blood pressure below 80/50; hypokalemia or hypophosphatemia, <75% IBW, and a number of other psychological parameters.¹⁴ Girls who are in early puberty and actively growing may have adult stature compromised without nutritional rehabilitation. Psychiatric admissions occur when the patient's emotional status presents a threat to her safety (e.g. suicidal ideation, depression resulting in patient's inability to eat). The Practice Guideline offers 5 levels of treatment for

patients with eating disorders spanning from outpatient treatment to partial hospitalization, residential treatment to inpatient hospitalization. The inpatient hospital setting may vary with the community and include treatment in a psychiatric eating disorder program or a medical ward with psychiatric consultation. Outpatient therapy that allows the patient to remain in her home and pursue her usual daily activities while dealing with her eating disorder is preferred if possible. Day hospital treatment provides an option for some patients and often provides a transition from hospital to home.

The team consists of the medical provider, a therapist for the patient, a family therapist, and a nutritionist. For a college student, communication between the patient's primary care provider and the college health service is important.

Anti-depressant medication such as serotonin re-uptake inhibitors (SSRIs), and neuroleptics have been used with limited success in initial treatment of anorexia nervosa and should be prescribed by a consulting psychopharmacologist or the medical provider for specific indications such as comorbid depression, obsessive-compulsive disorder (OCD), and anxiety. The SSRIs also appear promising for maintenance of normal weight for patients in recovery.

What problems are associated with amenorrhea? Girls with anorexia nervosa who have amenorrhea are estrogen deficient and are at risk for significant osteopenia and stress fractures. Bone mass may improve following restoration of weight and return of menses, but often remains low compared to age matched controls. Optimally, girls with anorexia nervosa should regain weight to restore their hypothalamic-pituitary-ovarian axis and return to normal estrogen status. Some patients, however, may remain at low weight and estrogen deficient. Calcium intake of 1300-1500 mg/day should be encouraged in all patients. Estrogen replacement therapy in girls (e.g. cyclic or continuous estrogen/progestin or low dose oral contraceptives) should be recommended, although only a few studies on efficacy have been conducted, with conflicting outcomes.¹⁵ Newer agents are being investigated. Bone density should be assessed by DEXA scans of the lumbar spine, as noted above, annually.

Exercise is an important component of maintaining normal bone density, but usually needs to be restricted during the initial rehabilitation phase until steady weight gain has begun. Then a graded exercise program of fitness and weight bearing can be encouraged.

What is the role of the family in the patient's struggle with an eating disorder? The family plays a crucial role in the patient's struggle with anorexia nervosa. Family members, especially parents, often blame themselves for their child's problem. Siblings may experience hostility and anger toward the sister with anorexia because of the disruption she has caused in the family. Everyone's lives now revolve around the ill adolescent and her needs. Helping family members sort out their negative feelings through family therapy is an essential component of the treatment plan. Family members can also be a wonderful source of support for the patient. They are intimately involved in the daily living struggles the patient faces.

Distribute the Bibliography page and Epilogue. Ask someone to read the Epilogue aloud.

Epilogue

Stephanie's evaluation was consistent with a diagnosis of Anorexia Nervosa and she agreed to begin treatment. She met weekly with a medical provider, nutritionist, and mental health therapist. She gained ½ pound a week for three weeks. After much discussion among her parents, Stephanie, and her treatment team about whether she should attend college, Stephanie left for college, promising to continue treatment through her college health services with ongoing communication between her primary care clinician and her treatment team. Despite having a treatment team in place, she returned home on her Christmas break having lost another 3.6 kg. Her condition warranted hospitalization. For the next four years she had multiple admissions to various hospitals and treatment programs. Her college career was interrupted. At 23, she became more engaged in the treatment process and enrolled in a local university. Six years after diagnosis she is now normal weight (54 kg), but still struggles with the eating disorder. She continues in therapy and is being treated for depression.

The chronicity of eating disorders and the challenge to the care team need to be stressed. About 50% of the young women will improve significantly, 25% will do poorly, and 25% will have an intermediate outcome. Strober and colleagues¹⁶ in a follow-up study of patients who had been hospitalized in the UCLA Eating Disorders Program reported that full recovery was evident in 76% of patients with a median time of 79 months, a partial recovery of 10% of patients with a median time of 57 months, and a chronic course was observed in 14%. Poorer prognosis is associated with late onset, longer duration, lower minimum weight, premorbid obesity, dysfunctional family, dual psychiatric diagnosis, vomiting, and laxative use. Mortality figures from series range from 0-18%.

A study of patients with bulimia 11.6 ± 1.9 years after presentation¹⁷ found that 30% were still engaging in bingeing and purging behavior, and 70% had full or partial remission. Of the participants, 0.6% satisfied criteria for anorexia nervosa, 11% for bulimia nervosa, and 18.5% eating disorder not otherwise specified. Substance abuse and longer duration of illness were associated with a worse prognosis.

The facilitator should distribute Handout #3: Eating Disorders in Adolescents.

Refer back to group's learning agenda and summarize the key teaching points that were made. This will give the group a sense of accomplishment, and emphasize the important messages. Suggest further sources of reading or other information if there are agenda items that were not covered in the discussion.

Independent Learning/Prevention Exercises: Facilitators may wish to assign "Independent Learning/Prevention Exercises" to the group, particularly if time constraints hinder the completion of the case. The following list includes suggestions to explore the available community resources that focus on Eating Disorders, as well as other avenues of pertinent interest that can be integrated during or after the session. If the exercise is done in the absence of the facilitator, learners should take notes on their experience, then discuss with a faculty member for feedback.

1. Brainstorm with the group: "How can your clinic promote a healthy body image?"
2. Find local support groups for patients with an eating disorder
3. Determine if there are any school curricula concerning eating disorders/body image (e.g., within a Health Education class)
4. Find out about the National Eating Disorders Screening week (in both colleges and high schools).

Stephanie's Long Walk

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Part I

Stephanie is a 17 10/12 year old high school senior who presents for her yearly physical examination prior to leaving for college. Her mother accompanies her to the exam room, and appears somewhat anxious. Stephanie says that she feels fine, "*great even.*" On review of systems, a different picture of Stephanie emerges. She started losing weight 4 months ago "to be healthy" and to "look better." She feels cold frequently and has noted her hair thinning. She occasionally has a headache. Her last menstrual period was four months ago (her menses had previously occurred every 30 days). She denies any cardio-respiratory symptoms. She runs five miles a day and does 250 abdominal crunches in her room after dinner. She states, "*I'm eating three meals a day.*"

Her mother interrupts in a confrontational manner, "*Stephanie has been dieting for the past four months. My husband and I are very worried about her.*" You note that Stephanie has lost 14 kg from her weight of 58 kg one year ago. Her height has remained the same. She answers defensively, "*I feel fine. I like the way I look now. I just don't like all those dishes my mother cooks. They are so full of oil and butter. I want to eat healthy.*"

Stephanie is wearing baggy clothes and appears quite thin.

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Part II

Stephanie's mother is asked to wait in the reception area during the physical examination. She leaves the office reluctantly. Stephanie denies vomiting, diarrhea, use of laxatives or diet pills. She tells you that she feels her stomach is "too fat," and she admits that she would be like to be just 2 or 3 pounds lighter. She has never had sexual intercourse and does not use drugs, alcohol, or tobacco.

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Height 64" (162.5 cm), Weight 98 lbs (44.5 kg); BMI = 16.9

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Breast: Tanner stage 5 with obvious loss of fatty tissue

Lungs: clear to percussion and auscultation

Heart: no murmur, bradycardia with regular rate and rhythm

Abdomen: scaphoid, no palpable subcutaneous tissue. No organomegaly or tenderness

Genitalia: Tanner Stage V pubic hair

Poorly estrogenized vaginal mucosa

Extremities: Hands and feet are cold with a cyanotic hue.

Neurological: No gross abnormalities.

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Epilogue

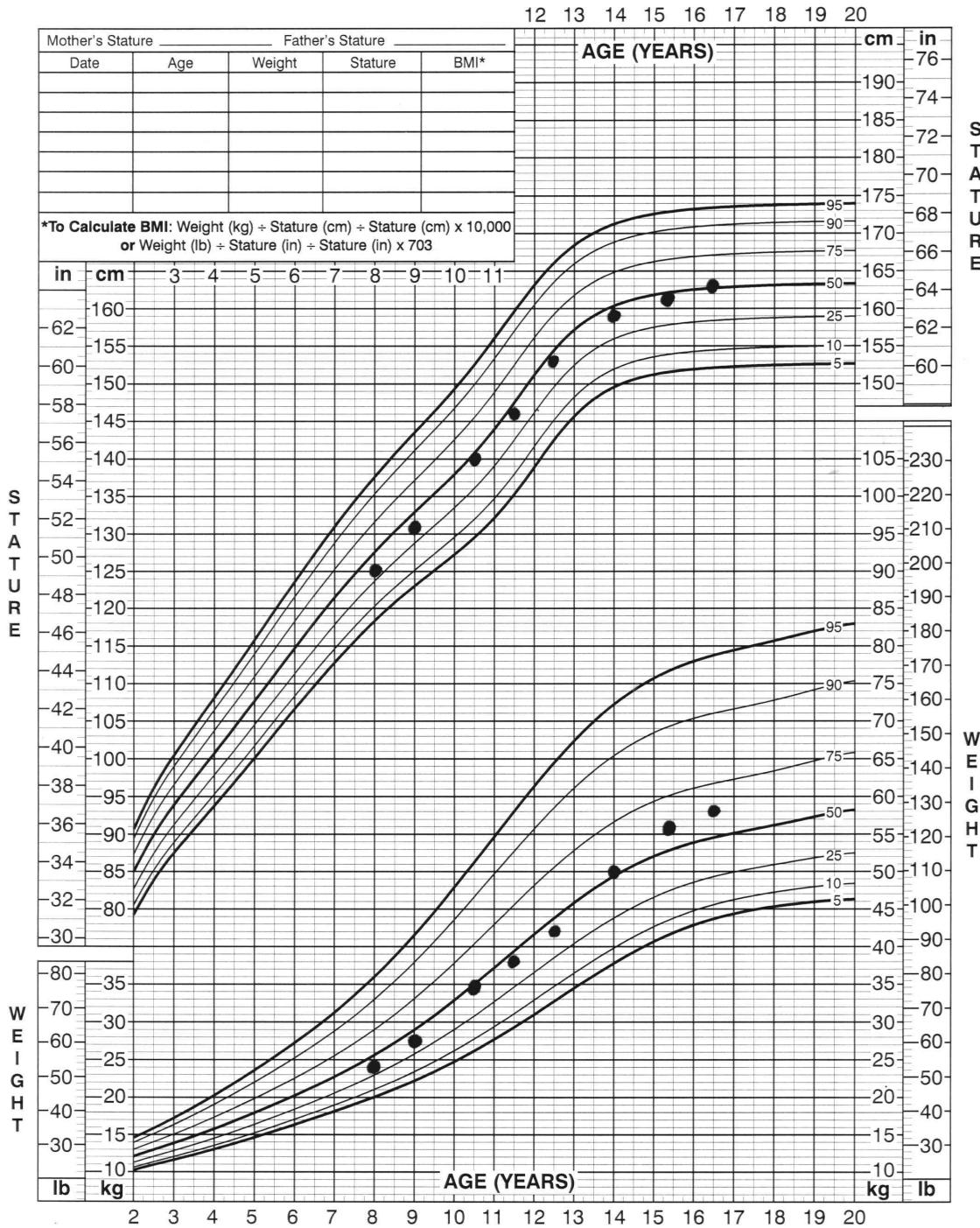
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Handout #1: Sarah's Growth Chart

2 to 20 years: Girls
Stature-for-age and Weight-for-age percentiles

NAME Stephanie
 RECORD # _____



Revised and corrected November 28, 2000.

SOURCE: Developed by the National Center for Health Statistics in collaboration with
 the National Center for Chronic Disease Prevention and Health Promotion (2000).
<http://www.cdc.gov/growthcharts>



Stephanie's Long Walk

Handout #2: Percentiles for Weight for Height of Youth Aged 17 years, 1966-1970

						Percentile			
	n	N	5 th	10 th	25 th	50 th	75 th	90 th	95 th
					In kg				
Sex and Height									
Male									
Under 130 cm	-	-	-	-	-	-	-	-	-
130.0-134.9 cm	-	-	-	-	-	-	-	-	-
135.0-139.9 cm	-	-	-	-	-	-	-	-	-
140.0-144.9 cm	-	-	-	-	-	-	-	-	-
145.0-149.9 cm	-	-	-	-	-	-	-	-	-
150.0-154.9 cm	1	3	•	•	•	•	•	•	•
155.0-159.9 cm	11	39	43.8	46.4	48.2	49.7	57.8	69.9	73.2
160.0-164.9 cm	25	81	49.7	51.1	52.5	56.9	61.6	70.1	70.8
165.0-169.9 cm	63	248	50.2	53.2	56.4	61.5	66.9	72.7	77.3
170.0-174.9 cm	115	396	53.3	55.5	59.5	64.6	71.9	80.9	91.6
175.0-179.9 cm	151	537	56.9	58.9	61.5	66.5	73.6	79.4	88.4
180.0-184.9 cm	80	297	59.6	61.0	65.1	71.2	78.4	91.8	102.7
185.0-189.9 cm	36	133	62.4	66.3	70.5	75.3	80.8	90.3	92.9
190.0-194.9 cm	7	25	62.9	62.9	67.8	87.3	90.3	90.6	90.6
195.0 cm and over	-	-	-	-	-	-	-	-	-
Female									
Under 130 cm	-	-	-	-	-	-	-	-	-
130.0-134.9 cm	-	-	-	-	-	-	-	-	-
135.0-139.9 cm	-	-	-	-	-	-	-	-	-
140.0-144.9 cm	2	5	•	•	•	•	•	•	•
145.0-149.9 cm	8	26	38.6	38.8	40.1	45.1	45.7	51.1	51.2
150.0-154.9 cm	43	151	41.6	42.3	44.6	48.9	53.5	59.2	64.1
155.0-159.9 cm	103	385	44.4	45.5	48.7	53.2	57.7	61.6	76.2
160.0-164.9 cm	133	506	46.8	48.0	50.2	55.4	61.5	72.3	82.3
165.0-169.9 cm	116	433	47.9	50.3	55.1	59.3	65.1	69.4	71.6
170.0-174.9 cm	51	186	50.6	52.9	55.5	60.2	65.7	76.1	82.7
175.0-179.9 cm	12	47	54.9	56.7	60.1	61.7	75.2	75.9	83.0
180.0-184.9 cm	1	2	•	•	•	•	•	•	•
185.0-189.9 cm	-	-	-	-	-	-	-	-	-
190.0-194.9 cm	-	-	-	-	-	-	-	-	-
195.0 cm and over	-	-	-	-	-	-	-	-	-

Note: n=sample size and N=estimated number of youths in population in thousands

Adapted from National Center for Health Statistics *Height and Weight for Youths 12-17 Years, United States*. Vital and Health Statistics series 11, no.124. Health Services and Mental Health Administration, US Government Printing Office, 1973.

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Handout #3: Eating Disorders in Adolescents

Anorexia Nervosa

Anorexia nervosa is a symptom complex which includes: a weight > 15% below expected for height, intense fear of gaining weight, distorted body image, and amenorrhea for > 3 cycles. Female:male ratio is about 20:1 to 10:1.

1. **Evaluation and diagnosis:** Exclude any physical illness that would account for the weight loss (inflammatory bowel disease, renal disease, endocrine disorder, neoplasm) and major thought or mood disorder.
 - a. *History:* a self-imposed diet that gradually leads to drastic caloric reduction (restricting), marked weight loss, preoccupation with food, an intense fear of gaining weight, distorted body image, and amenorrhea. Patients may also exhibit purging (self-induced vomiting, laxative or diuretic abuse, and/or excessive exercising). Symptoms include abdominal pain, bloating, constipation, cold intolerance, hair loss, hair texture change, fatigue, weakness, fainting, delayed puberty or short stature, and stress fractures.
 - b. *Physical findings* include hypothermia, bradycardia, hypotension, lanugo hair, dry skin, muscle wasting, and rarely dependent edema (especially with refeeding). Primary and secondary amenorrhea and growth retardation can occur.
 - c. *Laboratory findings* may include:
 - (1) Anemia, leukopenia, lymphocytosis, low erythrocyte sedimentation rate, hypercholesterolemia, and low fibrinogen levels. Total protein and albumin levels tend to be preserved.
 - (2) Electrolyte disturbances (hypokalemic, hypochloremic alkalosis) are most common with purging, and may be life threatening.
 - (3) “Sick Euthyroid” with low T3 which corrects with nutritional rehabilitation
 - (4) Low calcium and magnesium may occur, and sudden drops in phosphorous during the first one or two weeks of refeeding may occur.
 - (5) Low bone density on DEXA scan which is often irreversible.
2. **Treatment:**
 - a. Nutritional education, counseling, encouragement and support, along with appropriate weight range (and gain) expectations, are indicated. Target weight is calculated using the National Center for Health Statistics Tables of Height and Weight of Youth 12-17 years, U.S., giving the range of 10-50% weight/height. Menses usually return around 92% of Ideal Body Weight (IBW). Alternatively, the Frisch tables can be used to determine target weight. A range of 10th to 25th

percentile or 10th percentile plus 10 lbs can be used for a given height. (See R. E. Frisch et al., Hum. Biol. 45:469-483, 1973.) A nutritional plan is given to ensure a weight gain of $\frac{1}{2}$ -1 lb/week.

- b. Depending on initial weight and illness severity, the outpatient team includes a medical provider, nutritionist, and psychotherapist for patient and family. Outpatients should initially be seen medically at least once a week for weight monitoring. Postural vital signs should be checked, and urine specific gravity obtained to exclude water loading. Self-help groups (e.g. Anorectic-Bulimics Anonymous, Overeaters Anonymous, Massachusetts Eating Disorder Association) may be very helpful for some.
- c. Hospitalization is indicated for severe malnutrition, vital sign instability, dehydration, electrolyte imbalance (e.g., hypokalemic alkalosis), inability to eat, uncontrollable binging and purging, suicidality, and failure of outpatient therapy. Management requires a team approach including medicine, psychiatry and other mental health professionals, nutrition, and nursing, with a coordinated, structured protocol.

Activity allowed during hospitalization is increased with improvements in vital signs and weight gain. Baseline weight is set after rehydration and measured in a gown each morning after voiding. A nutritional consultant determines intake necessary to gain 1.4 kg per week (0.2 kg/day). The initial caloric amount is increased by 250 kcal every day until the appropriate caloric level is reached. If patient is unable to eat food, liquid nutritional supplements (e.g., Ensure) can be given orally or by NG tube.

3. **Prognosis:** About 50% of the young women will improve significantly, 25% will do poorly, and 25% will have an intermediate outcome. Poorer prognosis is associated with late onset, longer duration, lower minimum weight, premorbid obesity, dysfunctional family, dual psychiatric diagnosis, vomiting, and laxative use. Mortality figures from series range from 0 to 18%. Strober and colleagues¹ in a follow-study of patients who had been hospitalized in the UCLA Eating Disorders Program reported that full recovery was evident in 76% of patients with a median time of 79 months, a partial recovery of 10% of patients with a median time of 57 months, and a chronic course was observed in 14%.

Bulimia Nervosa

Bulimia nervosa is a disorder characterized by two episodes of binge eating per week for three months, a sense of lack of control over binge eating behavior, and recurrent inappropriate compensatory behavior to prevent weight gain (fasting, exercising) or purging (vomiting, laxatives). Most patients weigh within the normal range or are overweight, yet exhibit persistent over-concern with body shape and weight.

1. **Evaluation and diagnosis:** Differential diagnosis includes central nervous system (CNS) tumors and abdominal pathology.
 - a. *History:* weight fluctuation, lack of control over binge eating behaviors, often secretive purging, use of emetics, diuretics, and laxatives. May have co-morbid psychiatric illness or substance abuse.
 - b. *Physical findings* may include erosion of dentition, abrasions over the knuckles or dorsum of the hand, exercise injuries and stress fractures, tender, swollen parotids, or facial petechiae, and scleral hemorrhage.
 - c. *Laboratory findings* include electrolyte imbalance and elevated serum amylase with vomiting (with normal serum lipase). Normal chemistries do not exclude purging although the bicarbonate level is often elevated. Acidosis may occur with laxative abuse.
 - d. *Complications* include Mallory-Weiss tears, esophagitis, aspiration pneumonia, gastric rupture, mediastinal dissection, bloody diarrhea, congestive heart failure, dental enamel erosion, cardiomyopathy with ipecac, arrhythmia, and sudden death.
2. **Treatment**
 - a. Outpatient cognitive-behavioral treatment and psychopharmacology (SSRI's in trials have been helpful). 12-Step support group programs are often effective.
 - b. Dehydration and electrolyte imbalance secondary to the vomiting, cathartics, or diuretics may need correction with intravenous fluids and hospitalization.
3. **Prognosis:** A study of patients with bulimia by Keel² (221 participants with BN 11.6 ± 1.9 years after presentation) found that 30% were still engaging in binging and purging behavior, and 70% had full or partial remission. Substance abuse and longer duration of illness were associated with worse prognosis.

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Suggested Readings (Annotated):

Fisher M, Golden NH, Katzman DK, Kreipe RE, Rees J, Schebendach J, Sigman G, Ammerman S, Hoberman HM. Eating disorders in adolescents: a background paper. *Journal of Adolescent Health* 1995;16:420-437.

An overview of eating disorders including presentation and clinician care issues. This paper provides background information for the Society for Adolescent Medicine Position Paper.

Kreipe RE, Dukarm CP. Eating disorders in adolescent and older children. *Pediatrics in Review* 1999;20:410-420.

An excellent overview of clinical presentation, differential diagnosis, and management of eating disorders.

Klibanski A, Biller BM, Schoenfeld DA, Herzog DB, Saxe VC. The effects of estrogen administration on trabecular bone loss in young women with anorexia nervosa. *Journal of Clinical Endocrinology and Metabolism* 1995;80:898-904.

A randomized study of estrogen therapy in older adolescent and adult women with anorexia nervosa. The most consistent increase in bone density occurred in women with weight gain and spontaneous resumption of menses. Women <70% of IBW benefited from estrogen treatment compared to those untreated.

Yager J and the Work Group on Eating Disorders. American Psychiatric Association Practice Guidelines. Practice Guideline for the Treatment of Patients with Eating Disorders (Revision), *American Journal of Psychiatry* 2000;157(Suppl):1-36.

New practice guideline from the American Psychiatric Association detailing evaluation, diagnosis, and management of patients with eating disorders.

Educational Resource on the World Wide Web:

<http://www.youngwomenshealth.org>

This site provides health information for women on a variety of topics including, "Information on Eating Disorders" and "Supporting Teens with Eating Disorders: A Guide for Family Members and Close Friends."

American Academy of Child and Adolescent Psychiatry-Facts for Families. This site provides access to the AACAP's award winning "Facts for Families" pamphlet series on various developmental topics. The information sheet on Teenagers with Eating Disorders is #2.

<http://www.aacap.org/publications/pubcat/facts/htm>