# Chapter 12

# EATING DISORDERS

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Eating disorders are complex psychiatric syndromes in which cognitive distortions related to food and body weight and disturbed eating patterns can lead to significant and potentially life threatening medical and nutrition complications.[1] The three types of eating disorders are: anorexia nervosa (AN), bulimia nervosa (BN) and eating disorder not otherwise specified (EDNOS).[2]

## Anorexia Nervosa

- Anorexia nervosa is characterized by a denial of hunger and intentional restriction of energy and nutrient intake to a level inadequate to maintain health and normal weight (e.g., 600-900 calories/day).[3] (See Table 1.)

- Intensive exercise and/or purging by means of self-induced vomiting, laxative abuse, diuretics, or enemas may also be used to promote weight loss.[3]

- Extreme body dissatisfaction, a delusion of being fat, an obsession with being thinner, and an intense fear of gaining weight persist regardless of the amount of weight lost.[4]

**TABLE 1**
**Diagnostic Criteria for Anorexia Nervosa**

Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).

Intense fear of gaining weight or becoming fat, even though underweight.

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.

In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

*Specify type:*

**Restricting Type:** During the current episode of anorexia nervosa, the person has not regularly engaged in binge-eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

**Binge-Eating/Purging Type:** During the current episode of anorexia nervosa, the person has regularly engaged in binge-eating or purging behaviors (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).

## Bulimia Nervosa

- Bulimia nervosa is associated with chaotic eating behaviors. Binge eating is followed by purging, fasting, and/or intensive exercise in an attempt to compensate for the excessive calories ingested.[2] (See Table 2.)

- Although commonly used in an attempt to purge all calories from the body following a binge, purging is ineffective. Approximately 1200 calories are retained after binging and vomiting, regardless of the amount eaten. Laxative use results primarily in fluid loss from the large intestine. The loss of ingested calories and nutrients, which are absorbed mainly by the small intestines, is minimal (approximately 10%).[1,5]

- Binge eating is often triggered by negative mood, psychosocial stress, or severe hunger resulting from restricted eating or excessive exercise that occurs between binges.[6]

- Large quantities of food, frequently high in carbohydrate or sugar, are consumed (approximately 3400-4800 calories per episode). Intake usually occurs rapidly and in secrecy, until extreme fullness. The binge may be planned or unplanned, but is associated with a loss of control over eating.[2,5]

- Individuals with bulimia nervosa may be overweight, slightly underweight, or of normal weight, and often experience rapid weight fluctuations.

- Depression, anxiety disorders, substance abuse, self-mutilation, and/or extreme body dissatisfaction frequently precede the onset of bulimia nervosa.[4]

**TABLE 2**
**Diagnostic Criteria for Bulimia Nervosa**

Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:

- eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances
- a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)

Recurrent, inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.

The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.

Self-evaluation is unduly influenced by body shape and weight.

The disturbance does not occur exclusively during episodes of anorexia nervosa.

*Specify type:*

**Purging Type:** During the current episode of bulimia nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

**Nonpurging Type:** During the current episode of bulimia nervosa, the person has used other inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

## Eating Disorder Not Otherwise Specified (EDNOS)

- Eating disorders which do not meet all of the diagnostic criteria for anorexia nervosa or bulimia nervosa (although still associated with potentially serious health and psychologic risks) are classified as EDNOS (see Table 3).

**TABLE 3**
**Diagnostic Criteria for Eating Disorder Not Otherwise Specified (EDNOS)**

The Eating Disorder Not Otherwise Specified category is for disorders of eating that do not meet the criteria for any specific eating disorder. Examples include:

- For females, all of the criteria for anorexia nervosa are met except the individual has regular menses.
- All of the criteria for anorexia nervosa are met except that, despite significant weight loss, the individual's current weight is in the normal range.
- All of the criteria for bulimia nervosa are met except that the binge-eating and inappropriate compensatory mechanisms occur at a frequency of less than twice a week or for a duration of less than 3 months.
- The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).
- Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
- Binge-eating disorder: recurrent episodes of binge-eating in the absence of the regular use of inappropriate compensatory behaviors characteristic of bulimia nervosa.

Source: American Psychiatric Association, Task Force on DSM-IV. Diagnostic and statistical manual of mental disorders: DSM-IV. 4th ed. Washington, DC: American Psychiatric Association; 2000.

- Adolescents with eating disorders are frequently diagnosed in the EDNOS category. Included are those who have not yet lost 15% of expected weight for height and age, those who purge but do not binge-eat, and those who have been amenorrheic for less than 3 months.[3,4]

- If untreated, EDNOS cases may progress from subclinical to diagnosable anorexia or bulimia nervosa.

- EDNOS also includes binge eating not associated with purging, restricted eating or intensive exercise (binge eating disorder), as well as the behavior of routinely chewing and discarding, without swallowing, large quantities of food.[2] The research criteria for binge eating disorder are listed in Table 4.

**TABLE 4**
**Research Criteria for Binge Eating Disorder**

- Recurrent episodes of binge eating. Binge eating episodes are characterized by both of the following:
  - Eating within a discrete period of time (e.g., within a 2-hour period) an amount of food definitely larger than most people would eat during a similar period of time and under similar circumstances.
  - A sense of lack of control over eating during the episode (e.g., a feeling that the person cannot stop or control what or how much they are eating).
- Binge-eating episodes are associated with 3 or more of the following:
  - Eating much more rapidly than normal
  - Eating until feeling uncomfortably full
  - Eating large amounts of food when not feeling physically hungry
  - Eating alone because of being embarrassed by the amount that one is eating
  - Feeling disgusted with oneself, depressed or very guilty after overeating
- Marked distress regarding binge eating is present
- Binge eating occurs, on average, at least 2 days a week for 6 months
- Binge eating is not associated with regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of AN or BN

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Eating disorders have become increasingly prevalent in adolescents of all racial, ethnic and socioeconomic groups.

- More than 75% of eating disorder cases begin during adolescence.[4]
- Anorexia nervosa is most likely to occur in early to mid adolescence, and bulimia nervosa during or after late adolescence.[7]
- Anorexia nervosa has been reported in approximately 1%, and bulimia nervosa, in up to 5% of adolescent females.[3,4]
- Eating disorders are becoming more common in adolescent males, who account for 20-30% of diagnosed eating disorder cases in youth.[8]
- The prevalence of subclinical eating disorders, or disordered eating behaviors, is higher than reported for anorexia and bulimia nervosa.
- In a recent national survey, 1 in 8 adolescent females, and 4% of adolescent males demonstrated eating disorder symptoms. One-third of both genders reported binge eating, and more than 50% engaged in fasting, purging, or excessive exercise to lose weight.[8]

## SIGNIFICANCE

Eating disorders are associated with the highest morbidity and mortality rates among psychiatric disorders. Anorexia nervosa is the most life threatening, particularly in combination with purging behaviors. Mortality ranges from 7-10%, most frequently related to cardiovascular changes secondary to starvation, gastric hemorrhaging, and suicide.[9]

The duration and intensity of malnutrition, weight loss and purging determine the severity of risk. Potential medical, nutrition and psychological consequences of anorexia and bulimia nervosa are listed in Tables 5 and 6.

**TABLE 5**
**Complications Associated With Anorexia Nervosa**

**Endocrine/Metabolic**
Menstrual dysfunction
Delayed menarche/secondary amenorrhea
Delayed growth and development
Regression of secondary sex characteristics
Decreased testosterone levels (males)
Decreased metabolic rate and resting energy expenditure
Appetite and thirst dysregulation
Low T3 syndrome
Protein calorie malnutrition
Vitamin, mineral and essential fatty acid deficiencies
Hypoglycemia
Ketonuria
Hypothermia
Cold intolerance
Depressed immune function

**Skeletal**
Decreased bone mass
Osteopenia (decreased bone density)
Stress fractures

**Cardiovascular**
Cardiac arrhythmias
ECG abnormalities
Bradycardia (<60 bpm)
Hypotension
Orthostatic hypotension
Decreased left ventricular mass and stroke volume
Congestive heart failure
Cardiac arrest

**Gastrointestinal**
Delayed gastric emptying
Constipation/obstipation
Postprandial discomfort, bloating after small meals

**Neuropsychiatric**
Depression
Anxiety
Structural brain abnormalities, brain tissue loss
Impaired concentration
Lack of insight
Sleep disturbances

- Amenorrhea has been related to hypothalamic dysfunction, weight loss, decreased amount and distribution of body fat, malnutrition, anxiety, emotional stress, and intensive exercise.[10] Approximately 20% of adolescents with AN experience amenorrhea prior to weight loss.[9] Menses frequently resume at 90% of premorbid weight, unless body fat is low or the adolescent is experiencing significant emotional stress.[9]

- Amenorrhea of six months or longer has been associated with significant loss of bone density, failure to attain peak bone mass, and increased risk of osteopenia, premature osteoporosis and fractures.[8,9,11] Bone changes have been attributed to estrogen deficiency, elevated cortisol levels, and deficiency of insulin-like growth factor.[12] Weight gain and return of menses improve bone density, although some deficit may remain. Estrogen replacement and calcium supplementation (in the absence of weight restoration) do not appear to protect against bone loss or to increase bone density.[4,8,9]

- Since energy needs take priority in metabolism, dietary protein is converted to energy via gluconeogenesis when caloric intake is inadequate. Decreased protein availability can result in

muscle-wasting and failure to achieve usual growth-related increases in lean body mass.[3] Acute or chronic malnutrition in early puberty (before completion of the growth spurt and closure of the epiphysis) may result in permanent growth retardation and short stature.[3] Inadequate energy intake results in an approximately 30% decrease in metabolic rate,[13] accompanied by fatigue, decreased body temperature and cold intolerance.[8] Metabolic activity of muscle, bone, the heart, and the endocrine system is lowered.[3]

- Nearly one-half of adolescent anorexics with restricted eating, and one-fourth of those who purged were found to have heart rates <40 bpm.[14] In addition to hypometabolism as an adaptation to starvation, a reduction in heart mass can also contribute to decreased heart rate and pulse.[3,14] Orthostatic blood pressure changes (decrease in systolic blood pressure of >20 mm Hg or <20 bpm increase in pulse rate from lying/sitting to standing position) may reflect chronic volume depletion.[14]

- Brain cell loss may not be completely reversible with weight gain and correction of malnutrition.[3] Hunger and thirst may be depressed and postprandial discomfort may occur after eating small amounts of food.[14]

**TABLE 6**
**Complications Associated With Bulimia Nervosa**

| | |
|---|---|
| **Fluid and electrolyte abnormalities** | **Gastrointestinal** |
| Hypokalemia | Impaired satiety |
| Hyponatremia | Gastric/esophageal irritation, bleeding |
| Hypochloremic metabolic alkalosis | Gastroesophageal reflux |
| Metabolic acidosis | Gastric/esophageal rupture |
| Hypomagnesemia | Abdominal pain/bloating |
| Hyphosphatemia | Diarrhea, abdominal cramping (laxative abuse) |
| Dehydration | Rebound constipation |
| Hypovolemia | Reflex hypofunctioning of the colon (laxative abuse) |
| | Malabsorption |
| **Neuropsychiatric** | Acute pancreatitis |
| Depression | |
| Anxiety | **Cardiovascular** |
| Guilt | Cardiomyopathy (ipecac use) |
| | Cardiac arrhythmias (potassium depletion) |

- Loss of hydrogen ions with vomiting increases bicarbonate levels, resulting in metabolic alkalosis. Intestinal loss of bicarbonate, chloride, and potassium with laxative abuse can cause metabolic acidosis.[14]

- Fluid loss and volume depletion from vomiting/laxative abuse, which can be intensified by diuretic use or fasting, causes secondary hyperaldosteronism, renal potassium loss and hypokalemia.[5]

- Hypophosphatemia and hypomagnesemia can occur from laxative abuse; low serum phosphate levels have also been noted in those who vomit 3 or more times per day.[14]

- Early satiety and hunger shortly after finishing a meal may occur.[15]

## ETIOLOGY

Biological, genetic, psychological, and environmental factors have been linked to the development of eating disorders. Some of these are summarized in Table 7.

**TABLE 7**
**Factors Related to the Development of Eating Disorders**

| | |
|---|---|
| Family history of eating disorders | Oppositionall disorder |
| Family emphasis on body size, shape, dieting | Anxiety disorders |
| Enmeshment with parents | Chronic dieting or restrained eating |
| Maturational fears (early adolescence) | Restricted diets (e.g. vegetarian, multiple food allergies/intolerances) |
| Independence/autonomy struggles (mid adolescence) | Type 1 diabetes mellitus |
| Identity conflict (late adolescence) | Intensive exercise/physical training |
| Difficulty expressing negative emotions or resolving conflict | Participation in appearance/body composition related sports/activities:<br>• ballet<br>• dance line<br>• cheerleading<br>• modeling<br>• figure skating<br>• gymnastics<br>• swimming<br>• diving<br>• distance running<br>• wrestling<br>• body building |
| Stressful life event or transition | |
| Sexual abuse or assault | |
| Perfectionism | |
| Eagerness to please others | |
| Low self esteem | |
| Feelings of inadequacy or lack of control | |
| Body image disturbances | |
| Negative comments from others about body size/shape or eating habits | Sexual identity conflict (particularly in males) |
| Obsessive compulsive disorder | Media/societal pressure for thinness, fitness, and in males, muscular physique |
| Depression | |

- Females who engaged in rigid dieting were found to be 18 times more likely, and those who dieted moderately 5 times more likely, to develop eating disorders. Dieting is the most important predictor of new eating disorder cases.[16]

- Adolescents with type 1 diabetes mellitus may use inadequate dosages of insulin to promote weight loss.[17]

- The "female athletic triad" has been described in athletes experiencing amenorrhea, eating disorders, and osteoporosis,[11] while unsafe weight loss practices have been reported in high school wrestlers in an attempt to "make weight."[18]

## SCREENING AND DIAGNOSIS

Early diagnosis and aggressive management of eating disorders are associated with the most favorable long-term outcomes. The American Medical Association Guidelines for Adolescent Preventive Services recommend that all adolescents be screened annually for eating disorders.[19] Common symptoms and warning signs associated with eating disorders are listed in Tables 8 and 9.

- Elevated plasma levels of beta carotene occur in 30-60% of individuals with anorexia nervosa. The cause of hypercarotenemia is unknown but may be related to decreased ability to clear or metabolize beta carotene or lowered tissue storage capacity in association with depleted fat stores.[20] Beta carotene intake and absorption have not been found to be increased.[21]

- Edema can occur from reflux fluid retention associated with laxative/diuretic-induced dehydration.[5]

- Loss of dental enamel (particularly on the inside surface of the upper teeth) occurs with repeated exposure to acidic gastric contents.[5]

If an eating disorder is suspected, an in-depth medical, psychosocial and nutrition assessment is indicated. The adolescent should ideally be evaluated by an interdisciplinary health care team specializing in eating disorders.

**TABLE 8**
**Signs and Symptoms Associated With Anorexia Nervosa**

**Physical**
Headaches
Dizziness, fainting
Lethargy
Cold hands or feet
Acrocyanosis (bluish fingers, feet)
Dry skin or hair
Hair loss
Cheilitis (cracks at corners of mouth)
Hypercarotenemia (orange tint to skin, particularly palms of hands)
Lanugo (fine downy hair on back, arms, legs and face)
Muscle wasting
Depletion of subcutaneous body fat(<16%)
Irregular menses/amenorrhea

**Weight/Body Image**
Unexplained weight loss
Falling below usual growth pattern
Wearing loose clothing to conceal body size/shape
Extreme dissatisfaction with body
Body image distortion
Frequent weighing or use of mirror
Comments about feeling fat

**Eating**
Chronic/extreme dieting
Meal skipping; excuses to miss meals
Use of diet pills/ herbal supplements/products
Avoidance of meat, dairy products, fats and/or sugars
Discomfort eating in front of others
Food hoarding
Eating slowly/cutting food into small pieces
Excessive /unusual use of condiments
Unusual eating behaviors

**Psychosocial**
Social isolation
Loss of interest in usual activities
Decreased school performance
Frequent crying
Irritability
Sleep disturbances
Intrusive preoccupation with food, eating, weight
Obsessive/compulsive exercise

Sources: Kreipe RE, Birndorf SA. Eating disorders in adolescents and young adults. Med Clin North Am 2000;84(4):1027-1049, viii-ix; American Psychiatric Association. Practice guidelines for the treatment of patients with eating disorders (revision). Am J Psychiatry 2000;(suppl)(157):1-39; Brown JM, Mehler PS, Harris RH. Medical complications occurring in adolescents with anorexia nervosa. West J Med 2000;172(3):189-193.

**TABLE 9**
**Signs and Symptoms Associated With Bulimia Nervosa**

**Physical**

Dental enamel erosion, caries
Frequent sore throats/heartburn
Puffy cheeks (enlarged salivary glands)
Bloated face
Bloodshot eyes
Subconjunctival hemorrhage
Edema
Knuckle callouses, scaring (trauma from teeth,when fingers used to induce vomiting)

**Weight**

Weight fluctuations

**Eating**

Chaotic, irregular eating
Binge eating/restricted eating
Eating in secret

**Psychosocial**

Substance abuse
Frequent crying
Compulsive/obsessive exercise

Sources: Kreipe RE, Birndorf SA. Eating disorders in adolescents and young adults. Med Clin North Am 2000;84(4):1027-1049, viii-ix; American Psychiatric Association. Practice guidelines for the treatment of patients with eating disorders (revision). Am J Psychiatry 2000;(suppl)(157):1-39; Ross HE, Ivis F. Binge eating and substance use among male and female adolescents. Int J Eat Disord 1999;26(3):245-260.

## ASSESSMENT

After ruling out organic causes for weight loss or menstrual abnormalities, evaluating the teen using the parameters in Table 10 will help determine the presence of an eating disorder. Since eating behaviors, body image, and weight are personal and sensitive and often embarrassing issues, it is critical that interviewers provide an accepting, non-judgmental atmosphere.

**TABLE 10**
**Eating Disorder Evaluation**

**Weight**
Weight and height without shoes
Current BMI
BMI percentile
Normal body weight
Weight history
Highest and lowest weight in past year
Premorbid weight
Desired weight
Weight associated with normal menses
Body fat estimate (calculated from triceps and subscapular skinfold measurements)
Muscle mass estimate

**Body image**
Perception and acceptance of:
- Current weight
- Body size and shape
- Specific body parts

Preoccupation with weight
Frequency of weighing
Time spent in front of mirror

**Weight control methods**
Dieting or restricted eating
Food label reading
Use of diet pills/products, herbal supplements
Purging behaviors
Excessive exercise

**Physical activity**
Exercise type, frequency, duration
Exercise after eating
Fidgeting
Exercise environment
Reason for exercise
Participation in organized sports
Participation in appearance-related activities

**Co-existing psychological morbidities**
Depression
Anxiety
Obsessive compulsive disorder
Bipolar disorder
Oppositional disorder
Substance use
Self harm (e.g., cutting)
Suicide risk

**Family, peer relationships**

**Eating Disorders Examination (EDE), Eating Disorders Inventory (EDI)**

**Level of readiness to change behaviors**

**Signs of nutritional deficiencies**

**Eating patterns (current/premorbid)**
Meals and snacks– frequency, duration
Types and amounts of foods eaten
Types, amounts, and frequency of fluid intake
Amount of diet soda, caffeine-containing beverages
Use of energy-, fat-, and sugar-reduced foods
Nutritional adequacy of current intake, particularly protein, zinc, calcium, essential fatty acids
Nutrient excesses
Energy intake compared to basal requirement
Food preferences and aversions
Food intolerances
Vegetarian eating styles
“good”, “bad”, “safe”, and “unsafe” foods
Rules and rituals about food and eating
Unusual eating habits
Food hoarding
Vitamin/mineral supplement use
Adolescent’s and parent’s perception of eating habits
Hunger and satiety cues
Binge-purge activity
- Binge eating
- Types and amounts of foods and beverages
- Frequency
- Time of day
- Environment
- Precipitating factors
- Triggering foods

Night time eating
Purging behaviors
- Use of ipecac to induce vomiting
- Onset and frequency
- Environment

**Medical complications**
Orthostatic blood pressure and pulse
Body temperature
Urinary ketones
Urine specific gravity
Serum electrolyte levels
Serum glucose
Blood urea nitrogen
Complete blood count
Thyroid function
Cholesterol

Sources: Kreipe RE, Birndorf SA. Eating disorders in adolescents and young adults. Med Clin North Am 2000;84(4): 1027-1049; American Psychiatric Association. Practice guidelines for the treatment of patients with eating disorders (revision). Am J Psychiatry 2000;(suppl)(157):1-39.

# INTERVENTION

## Outpatient Care

Most adolescents can be managed in an outpatient eating disorders program that provides culturally and developmentally appropriate interdisciplinary care. Essential components include medical monitoring and intervention, nutrition therapy, and individual and family therapy. Treatment is complex, often long-term, and may involve relapses.

## Anorexia Nervosa

### Primary Treatment Goals[8]

- Correction of medical complications.
- Restoration of body weight and composition.
- Resumption of normal growth and development.
- Initiation/return of normal menstrual periods (females)/testosterone levels (males).
- Normalization of dysfunctional eating patterns.
- Treatment of underlying psychologic issues/comorbid conditions.

### Nutrition Therapy

Correction of malnutrition will reverse many of the medical complications and discomforts associated with anorexia nervosa. Cognitive functioning will also be improved, which will allow the adolescent to more fully participate in and benefit from psychotherapy. In addition, selective serotonin re-uptake inhibitors (SSRI's), if used, will be more effective with improved nutritional status, since protein deficiency results in inadequate levels of tryptophan, a precursor of serotonin.[8,22]

### Energy and Nutrient Needs

- If the adolescent is restricting caloric intake below basal calories, metabolic rate is lowered and energy needs are initially reduced. As refeeding progresses and weight gain occurs, metabolic needs and energy requirements increase, frequently significantly above premorbid intakes.[23] Although energy prescriptions must be individualized, initial refeeding at approximately 30-40 kcal/kg/day (generally 1000-1600 kcal/day), with a progressive increase in calories will minimize gastrointestinal discomfort and be more acceptable to the adolescent.[8] Early aggressive refeeding in malnourished adolescents should be avoided to decrease the risk of complications such as hypophosphatemia, gastrointestinal dysfunction, cardiac arrhythmias, edema, or congestive heart failure (refeeding syndrome).[14] During metabolic recovery, calorie levels as high as 70-100 kcal/kg/day may be needed to continue weight restoration.[8]

- A meal plan based on an exchange system or servings from the Food Guide Pyramid, consisting of approximately 25-30% fat, 55% carbohydrate and 15-20% protein will provide structure as the adolescent attempts to normalize eating. Enteral nutrition supplements may be needed temporarily for those who are not able to consume at least 1000 calories/day. Postprandial discomfort can be minimized by limiting fiber and emphasizing nutrient-dense, room-temperature foods. Nutrient requirements increase as restoration of lean body mass occurs with refeeding.[3] A multivitamin-mineral supplement or highly fortified breakfast cereal may be necessary until a nutritionally adequate diet can be achieved. Once the goal weight is achieved, an intake of 40-60 kcal/kg/day is usually needed to maintain weight and support growth and development.[8]

### Weight Management

- Establish a weight range goal that is consistent with at least the 15th, and up to the 75th BMI percentile based on the teen's age and gender.
- Monitor height monthly in growing adolescents and adjust the weight goal accordingly.
- A weekly weight gain goal of 0.5-2 pounds can usually be achieved:
  - Advise the adolescent to avoid self-weighing.
  - Verify weight with a urine specific gravity in the normal range (a high value indicates dehydration and a low value indicates water-loading).
- Failure to meet an expected weight goal in spite of apparent adequate intake may suggest purging, excessive exercise, or unusually high metabolic requirements.[8]
- Moderate to strenuous aerobic exercise must be limited or restricted, particularly in those at high risk of bone fractures, until energy intake is sufficient to support continued weight gain.[8]
- Light strength training every other day may facilitate replacement of muscle tissue, which has been shown to lag behind deposition of fat stores.[24]

## Bulimia Nervosa

### Primary Treatment Goals

- Correction of metabolic abnormalities.
- Cessation of binging and purging activity.
- Minimizing weight gain in normal or overweight adolescents.
- Normalization of dysfunctional eating patterns.
- Treatment of underlying psychological issues and co-morbid conditions.

### Nutrition Therapy

Binge eating, purging, and intermittent restricted eating may be associated with a hypometabolic state. A regular eating pattern of frequent, small meals will improve metabolic efficiency, facilitate the return of normal hunger and satiety cues, reduce binging and purging behaviors, and minimize unwanted weight gain.

- Adequate protein, fat, and dietary fiber intakes and limited refined carbohydrates consumed during meals and snacks will enhance satiety. Eating structured, regularly scheduled meals and snacks regardless of appetite and in spite of binge/purge activity will prevent excess hunger and help to normalize eating. Initial avoidance of binge/purge-triggering foods and gradual re-introduction of the foods in a controlled environment can help control the binge-purge cycle.
- Behavioral change strategies can be useful in reducing binge eating and the temptation to purge. These may include:
  - Placing an average serving size of food on a plate.
  - Sitting at a dining table or avoiding eating in a location where binge eating typically occurs.
  - Eating slowly and putting eating utensils down between bites.
  - Avoiding distractions and other activities while eating.
  - Planning an activity to participate in immediately after eating.

- Weight loss should not be attempted until body weight and eating patterns have stabilized and the adolescent is no longer purging. Establish a realistic weight range goal that is genetically feasible and compatible with the adolescent's natural body weight.

- Adequate fluid and soluble dietary fiber intake will minimize constipation and rebound fluid retention related to laxative withdrawal.[1] Regular aerobic exercise will enhance mood, decrease stress and improve metabolic efficiency. An excessive level of physical activity may be used as a method of purging and should be discouraged. Asking the adolescent to face away from the scale during weighing and encouraging the avoidance of self-weighing will decrease stress as weight stabilizes.

Eating and exercise goals for adolescents with anorexia nervosa or bulimia nervosa are listed in Table 11.

**TABLE 11**
**Healthy Eating and Exercise Goals for Adolescents with Anorexia or Bulimia Nervosa**

| |
|---|
| Include a variety of foods and at least the minimum number of servings from the Food Guide Pyramid each day. |
| Avoid fat-free and sugar-free foods. |
| Avoid dieting and restricted eating. |
| Eat when hungry, eat enough to feel satisfied, and avoid eating to fullness. |
| Limit water to 8-10 cups per day. |
| Eat at least every 4 hours during the day. |
| Eat slowly and enjoy the taste of food, without guilt. |
| Be flexible with food and eating. |
| Have minimal preoccupation with food and eating. |
| Enjoy moderate exercise in a social setting. |
| Include a protein and fat source at each meal to enhance satiety. |
| Avoid diet foods, products and supplements. |
| Avoid binge eating and purging. |
| Limit caffeine sources. |
| Eat 3 regular meals and 2-3 snacks per day. |
| Eat while sitting down and avoid other activities. |
| Eat favorite, pleasurable foods each day (e.g., previously forbidden foods). |
| Believe that there are no bad foods and that all foods, in balance and moderation, can be included in a healthy eating plan. |
| Have no discomfort eating in front of others. |
| Avoid excessive/compulsive exercise to burn calories. |

## COUNSELING

Counseling the adolescent with an eating disorder requires empathy, patience, a non-judgmental and non-threatening manner, and the establishment of a trusting, therapeutic relationship. The young person may be in denial, resistant, ambivalent about recovery, and extremely fearful of eating and weight gain.[4] Initially, frequent counseling (1-2 times per week) will help to establish this relationship and facilitate the recovery process.

Topics to address in counseling eating disordered adolescents are listed in Table 12.

**TABLE 12**
**Topics to Adddress When Counseling the Adolescent With an Eating Disorder**

| |
|---|
| Basic information about nutrition, including digestion and absorption of nutrients and energy balance. |
| Recommended portion sizes (use food models, food packages). |
| Role of food and eating in healing and recovery. |
| Impact of amenorrhea on bone health. |
| Metabolic adaptation to restricted eating. |
| Relationship of adequate nutrition to normal growth and development. |
| Benefits of re-establishing normal eating patterns (decreased preoccupation with food, alleviation of post-prandial discomfort, return of hunger and satiety cues, less temptation to binge eat). |
| Normal growth and development, including pubertal deposition of body fat. |
| A healthy body image (see Chapter 13). |
| Response to hunger and satiety cues. |
| Assertiveness. |
| Stress management. |
| Components of a healthy eating plan. |
| Role of nutrients, including dietary fat in health. |
| Nutrition and health risks of eating disorders. |
| Impact of restricted eating on cognitive functioning and emotional and physical health and well-being. |
| Ineffectiveness of rigid dieting and purging in long-term weight control. |
| Misconceptions and dysfunctional attitudes about food, eating and weight (dietary fat does not become body fat; desserts do not cause immediate weight gain). |
| Composition of weight gain as body heals (e.g., glycogen, muscle, fluid and body fat). |
| Acceptance of a genetically determined, healthy body weight. |
| Healthy strategies for long-term weight control. |
| Risks of unsafe weight loss practices. |
| Anger management. |
| Relaxation techniques<br>Relapse prevention. |

## Counseling Strategies

- Motivational interviewing techniques can be effective with adolescents who are not yet ready to change their behavior.
- Cognitive behavioral therapy and behavioral change strategies can be useful in modifying dysfunctional attitudes and behaviors related to eating and weight.[8]
- Exposure therapy can help the adolescent eat feared foods in a safe environment.
- Behavioral contracts which define expectations (e.g., weekly weight gain) and consequences if not met (e.g., activity restriction) can be useful with adolescents who are not making expected progress.
- Self-monitoring by journaling daily food intake (including amounts, purging, exercise, hunger and satiety cues, and associated eating environment and emotions) will help the adolescent determine areas of behavior change. The journal will also be valuable to the health care team in evaluating compliance with the meal plan and exercise recommendations, level of hunger and satiety, binge eating and purging behaviors, and precipitating factors.

### Family Support

Successful treatment of adolescent eating disorders requires family support, commitment to the treatment program, and participation in family therapy. Involvement of the entire family in nutrition counseling is crucial, especially for young adolescents who are dependent on others for the purchasing and preparation of foods. Nutrition guidelines for caregivers of adolescents with eating disorders are listed in Table 13.

**TABLE 13**
**Nutrition Guidelines For Caregivers of Adolescents With Eating Disorders**

| |
|---|
| Try to have at least one family meal together per day in a pleasant, comfortable environment. |
| Avoid making special meals for an adolescent. |
| Avoid watching an adolescent eat or commenting on his/her food intake. |
| Avoid power struggles over food and eating. Don't monitor or police an adolescent's eating or compliance with his/her meal plan. |
| Provide the foods needed to follow the meal plan. Encourage the adolescent to go grocery shopping with you. |
| Avoiding buying/using diet foods, products and fat or sugar-free foods. |
| Remove the scale and diet books from the home. |
| Avoid commenting on the calorie, fat or sugar content of foods. |
| Avoid labeling food as "good," "bad," "healthy," "unhealthy" or "junk." |
| Avoid dieting behaviors or excessive exercise. |
| Avoid comments (positive or negative) about an adolescent's, your own, or others' body weight, size or shape. |
| Provide a positive role model of healthy eating and moderate exercise. |

## REFERRAL

Adolescents who are not able to make acceptable progress in an outpatient program may need the additional structure of a partial hospitalization or day treatment program. Those who become medically unstable or develop significant complications may require hospitalization (Table 14).

**TABLE 14**
**Indications for Hospitalization**

Medical complications
- Body temperature <97.0 degrees F
- Bradycardia (heart rate <50 bpm)
- Orthostatic blood pressure changes
- Significant electrolyte imbalances (hypokalemia, hypophosphatemia)

Acute medical complications (e.g., cardiac failure, pancreatitis)
- Cardiac dysrhythmia

Significant malnutrition
- Severe weight loss, emaciation
- Acute weight decline with food refusal

Significant and uncontrollable purging

Psychological co-morbidity requiring in-patient care

Suicide risk

Uncooperativeness with outpatient treatment program

Source: Adapted from American Psychiatric Association. Practice guideline for the treatment of patients with eating disorders. Am J Psychiatry 2000 suppl;157:1-39.

## PREVENTION

Schools provide an ideal environment for eating disorders prevention. Suggested approaches include:

- Avoid measurement of body fat or weight in classroom settings.
- Avoid an over-emphasis on health risks of dietary fat intake or obesity in school curricula.
- Provide education to students about eating disorders, healthy body image, self esteem, self acceptance, stress management, assertiveness, communication skills, patterns of growth and development and healthy eating and exercise habits.
- Provide education to school coaches (athletic, cheerleading, dance) about eating disorders, including the risks of promoting weight loss in young athletes.
- Provide healthful food choices in school cafeterias, snack bars, and vending machines.
- Discourage dieting or meal skipping.
- Institute a zero tolerance policy regarding for teasing, negative comments, or harassment of students based on body size or shape.

## RESOURCES

**National Eating Disorders Association**
603 Stewart St., #803
Seattle, WA 98101
Phone: (206) 382-3587
http://www.nationaleatingdisorders.org/

**International Association of Eating Disorders Professionals (IAEDP)**
PO Box 35882
Phoenix, AZ 85069-89552
phone: (602) 934-3024
http://www.iaedp.com/

**Something Fishy**
http://www.something-fishy.org/

Gurze Books
PO Box 2238
Carlsbad, CA 92018
phone: (800) 756-7533
http://www.bulimia.com/

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