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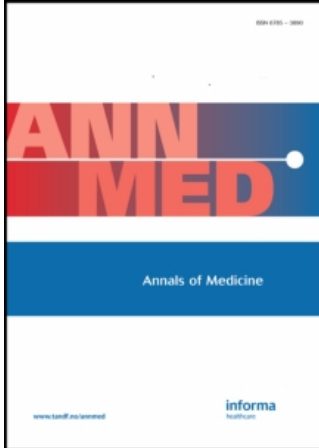
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### A practice guideline for treatment of eating disorders in children and adolescents

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# A practice guideline for treatment of eating disorders in children and adolescents

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**Eating disorders are diseases of both the body and the psyche. Early treatment focuses on restoration of nutritional status and somatic health, including psycho-educational counselling and support offered to the patient and his/her family. Diagnosis and treatment require a multi-disciplinary approach. Psychological factors related to the condition should be assessed. The most severe weight loss should be reversed before psychotherapeutic treatment. Nutritional counselling is recommended, and the benefits of individual and/or family therapy are considered in accordance with the patient's age, development, symptomatology and comorbid psychiatric disorders. Medication is useful in the treatment of bulimia nervosa and certain comorbid symptoms of anorexia nervosa. Early admission to treatment and active therapy are associated with a more favourable prognosis.**

**Keywords:** adolescents; anorexia nervosa; bulimia; children; eating disorders; guidelines; treatment

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## Introduction

The overall objective of this practice guideline is to provide caregivers with an evidence base for informed

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decision-making in the treatment of children and adolescents with eating disorders. In the ICD-10 (International Classification of Diseases, tenth revision) eating disorders are classified as follows: anorexia nervosa (Table 1), bulimia nervosa (Table 2), atypical forms of these, and other forms of eating disorders (2).

This guideline focuses on the treatment of anorexia nervosa and bulimia nervosa, but it can also be applied to atypical eating disorders. Obesity or eating disorders in young children are not covered by the guideline.

The guideline was drawn up by an independent multidisciplinary working group of the Finnish Medical Society Duodecim. Before publication the document was reviewed externally by some 100 organisations, including university departments, hospitals, primary care centres and advocacy groups. The guideline will be continuously updated as new evidence emerges.

## Genetic and neurobiological aspects of eating disorders

Anorexia and bulimia nervosa are disorders of unknown aetiology that cluster in families (3). Twin studies show a heritability of 33%–97% for these disorders (4). Anorexia and bulimia are cross-transmitted in families, and the family members of eating-disorder patients often display anxiety disorders, depression and perfectionism in excess of the levels shown by the general population (5, 6). The genetic liability to anorexia may thus be shared to some extent with bulimia and other psychiatric disorders.

The first genome-wide linkage study of anorexia found a susceptibility locus on chromosome 1 (7). A linkage study of bulimia is currently underway. Several studies of candidate genes have detected polymorphisms associated with anorexia. These

include appetite regulators, such as agouti-related protein (8) and uncoupling protein (UCP-2/UCP-3) (9), and genes associated with other psychiatric disorders, such as serotonin receptor 2A (10) and catechol-O-methyltransferase (COMT) (11). Case-control studies have also suggested that polymorphisms of oestrogen receptor 2 (12) and hSKCa3 potassium channel genes (13) may be associated with anorexia. Serotonin 1B and 2A receptors and serotonin transporter genes may play a role in bulimia (14–16). Due to lack of replication and to sample size and stratification issues, these results should be interpreted with caution. Some replication attempts, such as a meta-analysis of serotonin 2A receptor samples, have ultimately failed to show a significant association (17).

Although genetic studies suggest that diverse pathways play a role in eating disorders, the molecular-level mechanisms are still unclear. Most existing studies focus on disturbances in serotonergic transmission. Starvation reduces the levels of serotonin and its metabolite 5-hydroxyindoleacetic acid (5-HIAA) (18); these levels are permanently elevated upon recovery from anorexia and bulimia. Changes in 5-

### Key messages

- Care should be based on a mutually agreed defined treatment target.
- Optimal treatment of eating disorders requires a multidisciplinary eating disorders team.
- Refeeding should be initiated slowly in severe malnutrition.
- The most severe weight loss should be reversed before psychotherapy is started.
- Family therapy is more effective than individual psychotherapy in non-chronic adolescents.
- Data on effectiveness of pharmacological treatments in children and adolescents are missing.
- The evidence base for treatment of children and adolescents with eating disorders is limited.

HIAA levels are associated with behavioural traits such as perfectionism, harm avoidance, and obsessive behaviour (19, 20). Serotonin-selective reuptake inhi-

### BOX 1

**This practice guideline is based on available scientific evidence retrieved by extensive searches in Medline and the Cochrane Library for original publications. To inform readers about the level of the pooled underlying evidence, treatment recommendations have been coded as follows (1):**

Code Level	Definition
<b>A</b> Strong research-based evidence	Several relevant, high-quality scientific studies with consistent results
<b>B</b> Moderate research-based evidence	At least one relevant, high-quality study or several adequate studies
<b>C</b> Limited research-based evidence	At least one adequate scientific study
<b>D</b> No scientific evidence	Expert panel evaluation of other information

**Table 1.** Criteria for Anorexia nervosa (F50.0) according to the ICD-10 classification.

1. There is weight loss or, in children, a lack of weight gain, leading to a body weight at least 15% below the normal or expected weight for age and height.
2. The weight loss is self-induced by avoidance of 'fattening foods'.
3. There is self-perception of being too fat, with an intrusive dread of fatness, which leads to self-imposed low weight threshold.
4. A widespread endocrine disorder involving the hypothalamic-pituitary-gonadal axis is manifest in women as amenorrhoea and in men as a loss of sexual interest and potency. (An apparent exception is the persistence of vaginal bleeds in anorexic women who are on replacement hormonal therapy, most commonly taken as a contraceptive pill).
5. The disorder does not meet criteria 1 and 2 for bulimia nervosa (F50.2).

**Table 2.** Criteria for Bulimia nervosa (F50.2) according to the ICD-10-classification.

1. There are recurrent episodes of overeating (at least twice a week over a period of 3 months) in which large amounts of food are consumed in short periods of time.
2. There is persistent preoccupation with eating, and a strong desire or sense of compulsion to eat (craving).
3. The patient attempts to counteract the 'fattening' effects of food by one or more of the following:
  - self-induced vomiting;
  - self-induced purging;
  - alternating periods of starvation;
  - use of drugs such as appetite suppressants, thyroid preparations, or diuretics: when bulimia occurs in diabetic patients they may choose to neglect their insulin treatment.
4. There is self-perception of being too fat, with an intrusive dread of fatness (usually leading to underweight).

**Table 3.** Common laboratory tests in the diagnostic workup of eating disorders.

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Blood count
Sedimentation rate
Sodium, potassium, calcium, phosphorus, chloride
Liver function tests
Blood glucose
Amylase
Thyroid function tests
Coeliac antibodies
Acid-base homeostasis
ECG

---

bitors (SSRIs) suppress anxiety in normal weight individuals, whereas starvation-related tryptophan depletion blunts SSRI response in low-weight anorexics (21). Based on these findings it has been hypothesized that dieting in anorexia suppresses inherently overactive serotonin metabolism and reduces anxiety.

In bulimic patients, tryptophan depletion increases depressive symptoms, mood lability, body image concerns and desire to binge (22, 23). A disturbance in serotonin activity may be associated with these symptoms common in bulimia. The role of neurotransmitters in appetite regulation has recently been reviewed in this journal (24) and elsewhere (25).

### Psychological aspects

A number of personality attributes and family factors have been suggested to contribute to the pathogenesis of eating disorders. Both anorexia nervosa and bulimia nervosa are often connected with features of obsessive-compulsive disorder or obsessive-compulsive personality that show a tendency to persist even after recovery from the eating disorder (5, 26, 27).

Family factors that may have relevance include conflict avoidance, abnormal patterns of communication, inadequate boundaries between individuals and ineffective parenting. While such features are commonly present, it is unclear whether they pre- or postdate the onset of the eating disorder (28).

### Epidemiology

Studies performed in the Western countries suggest that the prevalence of anorexia nervosa in adolescent girls is approximately 0.2%–0.8% and in boys only about one-tenth of this (29, 30). The prevalence of bulimia nervosa in adolescents is similar and the lifetime prevalence in women is suggested to be about 1% (29).

**Table 4.** Indications for outpatient treatment.

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Body mass index >13 kg/m <sup>2</sup> or >70% of relative weight corresponding to height
High motivation for treatment
No severe medical disturbances
Supportive family and social network
No previous hospitalizations for anorexia nervosa

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### Comorbidity

Some studies present as high as 70%–80% lifetime comorbidity of other psychiatric disorders in school-age patients with eating disorders (31–33). In a recent study about one third of the children and adolescents with anorexia nervosa had a comorbid depressive disorder, and in most of the cases the eating disorder preceded the mood disorder (34). However, food avoidance was also part of the symptoms of emotional disorders. Substance abuse problems and, in later adolescence, personality disorders are especially common in bulimia nervosa (35). Patients with purging behaviour (vomiting, use of laxatives or diuretics) display other psychiatric problems more often than other patients with eating disorders. Suicide attempts and other self-destructive behaviours are also more common in this patient group (26).

Female patients with anorexia nervosa develop oestrogen deficiency and become amenorrhoeic (36). Women with active bulimia nervosa may have reversible occurrence of polycystic ovaries (37, 38). Patients with anorexia have a decreased bone mineral density and an increased risk of fractures (39, 40). The duration of amenorrhoea as well as the degree and duration of thinness correlate with the degree of osteoporosis (41–43). Bone loss in anorexia nervosa is multifactorial, including such causative factors as oestrogen deficiency, vitamin and micronutrient deficiencies, and hypercortisolinemia (44). Especially, low levels of insulin-like growth factor I, a nutritionally dependent bone trophic factor with known effects on osteoblast function, and low levels of dehydroepiandrosterone sulphate, may also contribute to reduced bone density in anorexia patients (42, 45). Absorption of calcium is reduced and bone resorption is increased (46). In bulimia nervosa, menstrual disturbances are common (47, 48), but bulimia has no major effect on bone mineral density (47, 49).

### Prevention

Contradictory data do not allow for any firm recommendations on prevention programmes for eating disorders in children and adolescents. No type of preventive intervention has demonstrated clear effec-

**Table 5.** Indications for inpatient treatment.**Somatic indications**

- Body mass index <13 kg/m<sup>2</sup> or <70% of relative weight corresponding to height or a rapid loss of weight (25% in 3 months)
- Severe disturbances of electrolyte or metabolic homeostasis
- Systolic blood pressure <70 mmHg or heart rate <40/min or aberrant ECG

**Psychiatric indications**

- Psychotic symptoms
- Severe self-harm or tendency towards suicide
- Severe depression
- Severe problems within family

**Failure of outpatient treatment**

tiveness (50) (B). School health services play an important role in early detection of problems.

**Somatic examination***History*

Assessing eating and physical exercise habits and reviewing growth patterns is essential in determining the severity of the disturbance. Age at menarche and menstruation history, especially weight during the last normal menstruation cycle, are helpful in determining the expected weight (51, 52). Vomiting and use of drugs (laxatives, diuretics, ipecac, antiobesity drugs) should also be noted (53).

*Assessment of nutritional status*

Relative weight (the percentage deviation from the average weight for a given height, which can be read directly in growth charts) is the most useful indicator of nutritional condition in children and adolescents (54). Usefulness of the body mass index (BMI, kg/m<sup>2</sup>) in children is limited (55, 56). Deceleration or cessation of growth also reflects the severity of the nutritional disturbance. It is not enough merely to monitor the weight, but the growth should be viewed as a whole in young patients. The degree of starvation can also be observed by mere inspection. A tendency to wear loose clothing in order to hide thinness should be taken into consideration.

In clinical examination, apart from the current nutritional condition and growth, attention should also be focused on the phase of puberty, blood pressure, pulse frequency and findings on cardiac auscultation, signs of vasoconstriction and of severe malnutrition, such as oedema and skin signs (dryness, lanugo hair, splitting nails) and teeth (enamel defects) (57).

*Laboratory findings*

Common laboratory findings (31) in patients with eating disorders include leukopenia, mild anaemia

and thrombocytopenia. Low serum T4 levels, representing a sick euthyroid syndrome, are common. Occasionally, slightly increased serum creatinine and hepatic enzyme levels are found. Rarely a low albumin concentration is observed (58, 59). Electrolyte disturbances (hypokalaemia or hyponatraemia) suggest a severe condition (60), as do electrocardiogram abnormalities (61, 62). Calcium and phosphate concentrations may also be low (63). Serum amylase and chloride as well as the acid-base balance should be tested if vomiting is suspected. It is important to keep in mind that the laboratory findings can be normal even in severe malnutrition.

*Other examinations*

Brain imaging (computerized tomography, magnetic resonance imaging) and electroencephalogram are relevant only if the presentation of anorexia nervosa is atypical or if neurological findings exist (64, 65). Pelvic ultrasound can be used to assess maturity of the ovarian function. Basal gonadotropin and oestradiol may be determined if amenorrhoea persists after the weight has normalized. Bone mineral density measurement is recommended in patients with a disorder of more than 12 months in length, BMI <15 kg/m<sup>2</sup> or low calcium intake (43).

**Psychiatric examination**

A basic evaluation of patients with eating disorders is usually performed in the primary healthcare system, but in-depth investigations of patients with anorexia nervosa should be performed in specialized healthcare facilities. The objective in child or adolescent psychiatric examination is to determine whether the patient is suffering from an eating disorder and whether other concurrent psychiatric symptoms or disorders are present, and to evaluate if the patient's psychological development is appropriate to his/her age and if the disturbance has had an effect on this development.

Child or adolescent psychiatric evaluation includes

an initial interview as well as individual examinations and parental appointments. If necessary, psychological tests are performed. A family examination is also necessary, especially with children or early adolescent patients. During the examination process, a cooperative relationship is established and effort is taken to relieve the anxiety and increase the motivation of the patient and his/her family. The objective is to establish a therapeutic alliance in which the patient's problems and phases of life are discussed, thus sharing the patient's experiences. The patient should be asked about all symptoms described in the ICD-10 (66) separately during the interview, since he/she does not necessarily offer to discuss them. Structured interview methods such as Eating Disorder Examination (EDE) (67), the adapted child version of EDE (68), as well as scoring forms (Eating Disorder Inventory, EDI) (69) can be used for assessment. Eating habits can be monitored using a food diary to be completed at home.

The family is viewed as a system from a number of different perspectives, and support is given to the family members. Treatment should mainly be based on the degree of severity and on the assessment of any associated symptoms, considering the surrounding factors. An eating disorder may reflect a crisis in adolescent development, but it may also be a sign of a severe psychiatric disorder in childhood or adolescence (70). Based on examinations, a treatment plan and a care contract are established in cooperation with the patient and the parents.

### Management principles

The treatment mode of choice is outpatient treatment (71) consisting of psychiatric treatment and correction of nutritional status. Weight expectations are gradually moved up closer to the average weight for a given height, but as the general situation improves, attention should increasingly be paid to psychiatric well-being. Optimal treatment of eating disorders requires cooperation between a multi-professional eating disorder team, the patient and the family.

### Nutritional treatment

Nutritional treatment is planned individually in cooperation between the patient, family, dietitian and treating team. The patient's eating habits and use of nutrients are reviewed and the energy requirement determined. The objectives of nutritional treatment are weight restoration, a normal and balanced diet, and ability to eat naturally in various social situations (72, 73). Family meals may help in enabling the parents to assist their child to eat at home (D).

It is imperative that a *target weight* be defined. The target weight should enable a normal menstruation cycle, preferably with a few additional kilograms. Menstruation usually resumes when the weight reaches 90% of relative weight, which is a good initial objective (74). The target weight is moved up along with growth, and in a later phase of treatment the objective should be set to normal BMI or 100% relative weight, which is a good objective for premenarcheal patients with anorexia nervosa (54). Achievable intermediary weight targets may be beneficial and should be set in collaboration with the patient.

An individually tailored diet with some degree of flexibility may increase the patient's perception of self-control and enable acceptance of the weight gain (75). Patients are encouraged to eat a versatile diet including food that they earlier avoided. The amount of dietary fat, for instance, should be consistent with nutritional recommendations. The number of daily meals should be adjusted individually, according to the patient's ability to tolerate the anxiety caused by frequent eating or feeling full after more substantial meals (76, 77) (C). Exchange lists grouping together foodstuffs similar in nutritional content can be used to increase flexibility in composition of meals (78). This may help reduce the obsessive calculation of energy contents and promote development of normal eating behaviours particularly for more mature adolescents (78) (D).

When necessary, the diet is complemented with vitamin and mineral supplements and versatile nutritional supplements. For those on a vegetarian diet, special attention is focused on sufficient intake of iron and zinc (79). Diet-related questions are discussed and changes agreed upon together in the treatment team, and all parties involved in the patient's care are informed.

During hospital treatment, patients are mainly served basic hospital meals, thus providing an example of a normal balanced diet. Those following a strict vegetarian diet can be served lactovegetarian meals containing milk and eggs. The dietitian can monitor the patient's meals and give feedback on his/her eating behaviour. Videotaping has been used as a supportive measure for feedback (80) (C). A treatment programme including computer aided support in experiencing satiety combined with resting after meals in warm surroundings was more effective than no treatment (81) (C), but has not been compared with standard treatment.

The main principles of nutritional treatment are the same for bulimia and anorexia nervosa. In bulimia nervosa, however, a further objective is the breaking of the vicious circle between dieting and binge-eating. The patient is given instructions on sufficient and regular eating. Preplanned model, sample meals, or a food diary can be useful (72, 78).

### Reversing severe malnutrition

If the weight is very low (less than 70% of relative weight), reversing the nutritional condition should be initiated slowly enough to avoid cardiovascular problems and the refeeding syndrome (hypophosphataemia, arrhythmia, delirium). Monitoring the phosphorus concentration in serum is recommended (82, 83) (C), especially during first week of treatment, which is the most critical period. In the beginning phase of treatment, the minimum energy need may be as low as 800–1000 kcal/day due to hypometabolism, but the most common energy requirement is 1000–1200 kcal/day (84). As the nutritional condition improves, the need for energy increases, and can be assessed by monitoring the patient's intake of food and development of his/her nutritional condition or mathematically with the corrected Harris-Benedict formula (85). The recommended energy intake is approximately 130% of the mathematically estimated need for energy.

In restricting-type anorectics, slow weight gain may be explained by postmeal thermogenesis in the beginning phase of nutritional treatment, (76, 77). These patients may require up to 30%–50% more energy in order to gain weight and keep the weight steady than those with binge-eating (86) (C).

Nutritional rehabilitation may be facilitated by setting well-defined goals in a *care contract*, and by using rewards when the goals are reached. Daily *weighing* is not necessary; a sufficient interval is three times per week (87) (C).

There are only limited data available on the use of *enteral feeding* in the treatment of young patients with anorexia nervosa (88, 89). This can be resorted to when natural nutrition fails, especially in critical situations during the early treatment phases, and even in these situations this has to be discussed in advance with the patient and his/her family. Supplemental nocturnal nasogastric feeding may improve weight restoration during hospitalisation (88) (C).

### Physical exercise

During re-establishment of the nutritional condition the weight restoration can be accelerated by limiting physical exercise. At a later stage, instructed physical exercise may be beneficial, since it is assumed to reduce excessive physical exercise and unrealistic thoughts of obesity and to improve compliance with treatment (90) (D). In bulimia, physical exercise has been observed to be positively associated with bone mineral density (47) (C).

Some patients with anorexia nervosa have an unrealistic perception of their body. In most cases, however, the disturbance of body image is more likely

to reflect a negative attitude to one's own body than a disturbed perception of its size (91–93) (C).

### Dental treatment

Bulimia, and especially vomiting associated with it, often causes severe dental erosion, and the teeth of patients with anorexia nervosa may be damaged (94). Rinsing the mouth with water or a neutralizing solution after vomiting can be used to prevent this erosion. Regular tooth brushing twice a day with toothpaste rich in fluoride, individually considered fluoridation treatments and the use of remineralizing solutions are recommended. Patients should not brush their teeth immediately after purging as the acid can damage the enamel (95) (D). The patient should be referred to semiannual dental examinations (94, 96, 97) (C).

### Psychotherapy

Full-scale psychotherapy should not be initiated during the acute reversing phase of the nutritional condition, but the treatment relationship should focus more on the day-to-day handling of the situation (98). More weight gain has been observed in patients who have started the actual psychotherapy only after the most severe malnutrition has been reversed (99) (C).

Studies on the efficacy of *individual psychotherapy* have been conducted mainly with adult patients. Cognitive Behavioural Therapy (CBT) is effective for binge-eating symptoms in patients over 16 years of age (100–103) (A). However, CBT has not unambiguously proved to be more efficient than other forms of psychotherapy or CBT performed by using a self-care guide. In a single study, CBT and interpersonal psychotherapy (IPT), which focus on current interpersonal relationships, contributed to remission of bulimic periods and improved self-esteem and social coping in adult patients more effectively than behavioural therapy (101–103). In another study, CBT was more effective than IPT in reducing binge-eating and purging in adult patients (104).

If used, sufficiently long therapy is necessary in anorexia nervosa. It takes time for a therapeutic alliance to form and it is essential that the patient be made to feel that the therapist understands him/her emphatically and will thus support his/her inner growth (105) (D). Recovery from severe anorexia nervosa demands a change in the way of thinking and mode of action (106). Very limited evidence is available on the outcome of psychodynamically oriented treatment (107).

In the treatment of adolescent patients with anorexia nervosa the efficacy of short-term individual

therapy, as measured by weight restoration and normalization of eating behaviour, does not differ significantly from the efficacy of intensified nutritional counselling. Social and sexual adaptation appears to be more favourable for those who have received psychotherapy, whereas weight gain is slightly, but not significantly, better for those who have received nutritional counselling (108) (C).

Group psychotherapy combining cognitive behavioural and psychodynamic elements may be useful in the treatment of patients with bulimia nervosa (109, 110) (D). Initial results are better if prompt relief of symptoms is a clearly defined objective. The results are more permanent if there are additional group psychotherapy sessions at shorter intervals (111) (C). Group psychotherapy has also been used as an additional treatment for anorexia nervosa, but there are only limited data available on its efficacy.

Group psycho-education is used especially for the treatment of bulimia. After a psycho-educational period, individual CBT may be useful (112, 113) (C). Parents of patients with eating disorders have found therapist-led parental groups to be useful (114, 115) (D).

Family therapy is often used as one form of treatment for anorexia nervosa (59). There are several studies concerning the effectiveness of family therapy in anorexia nervosa. Despite some weaknesses in the studies, it can be concluded that family therapy of systemic nature is more effective than individual therapy in adolescent patients with anorexia nervosa whose disorder has not become chronic (116–123) (B). Psycho-education directed to family groups may be as efficient as family therapy. Family therapy has been used with other forms of treatment, e.g., combined with individual psychotherapy (123). Even if the treatment does not include any family therapy, attention should be paid on the family in different phases of the treatment.

## Psychopharmacological treatment

### *Anorexia nervosa*

Antidepressants do not improve weight restoration in adult patients with anorexia nervosa during the early phases of treatment (124, 125) (C). It may be of benefit to use fluoxetine as supportive medication in the continued treatment of those who have attained normal weight (21, 126, 127) (C).

Use of anxiolytic medication has been justified by the fact that anxiety is common in patients with anorexia nervosa. Administration of short-acting benzodiazepine 30 minutes before meals may relieve eating-related anxiety (128, 129) (D).

Patients with anorexia nervosa who suffer from

malnutrition have a significant risk of severe medication-related adverse effects (130). The medication should be initiated at the lowest dose possible. Decisions on initiating psychopharmacologic treatment are normally justified only after the weight has attained the normal range. The choice of medication should be based on persistent psychiatric symptoms, such as depression, obsessive-compulsive symptoms or psychosis.

### *Bulimia nervosa*

Antidepressants have been shown to reduce binge-eating and vomiting (131) (A). However, there are no controlled published studies on drug treatment of patients under 18 years of age. Compliance with treatment has been better for adult patients on fluoxetine compared with patients on tricyclic antidepressives (131). Various antidepressives reduced bingeing and vomiting by 50%–70% in studies where patients over 18 years of age were treated for 2–4 months (131). As for long-term results, the efficacy is not equally positive. Even if the symptoms are relieved during medication, only a minority (less than one-third) of those receiving the medication are symptom-free despite continued medication, and symptoms recur in approximately one-third of the cases (132, 133). Patients with bulimia nervosa who do not benefit from one antidepressive agent may benefit from switching to another (134). The anti-epileptic drug topiramate has shown efficacy in reducing bingeing and associated purging in adult bulimics (135) (C). The opiate antagonist naltrexone has not been observed to affect the frequency of bingeing or vomiting (136) (C). Medication is useful as an additional treatment in psychotherapeutic (cognitive behavioural) treatment for patients over 18 years of age (137) (A). There is no evidence justifying the use of medication as the only or primary treatment for bulimia in children or adolescents.

## Supplement drug treatment

Evidence for the efficacy of *hormone replacement therapy* in the treatment of patients with anorexia nervosa is weak (138–141) (C), and therefore its use should always be considered individually. In the only randomized study available, hormone replacement therapy improved bone mineral mass only in patients with anorexia nervosa whose baseline weight was less than 70% of ideal body weight (141).

Calcium (1000–1500 mg/day) and vitamin D (400 IU/day) (44, 142) have been recommended for patients with anorexia nervosa (D), although the benefits have not been established. Supplemental zinc has not been shown to be of benefit in the treatment of



patients with anorexia nervosa (143, 144) (C). Osteopenic women with anorexia nervosa may increase their bone density by treatment with recombinant insulin-like growth factor I (145, 146) (B), and dehydroepiandrosterone appears to normalize bone turnover in young women with anorexia nervosa (147) (C), but these new treatment modalities are rarely used as treatment of osteoporosis in anorectic patients. There are no randomized studies available on other medications (alendronate, etidronate, calcitonin, or raloxifene). Their use for anorexia nervosa is not currently recommended.

### Scaling of the treatment

The decision on the immediate hospitalization of a patient with anorexia nervosa should be based on an evaluation of the patient's physical and psychiatric situation and behaviour (148). Whether treatment in a somatic or a psychiatric ward is to be preferred should be determined by what the patient's most severe problems are, the local treatment resources and the skills and capabilities of the care personnel with regard to the patient's problems.

A majority of patients with uncomplicated bulimia do not require hospitalization. Grounds for hospitalization include severe somatic complications, self-destructiveness, other psychiatric disorders requiring hospitalization, concomitant severe alcohol or drug abuse problems, or severe or debilitating symptoms that have not been relieved in outpatient care.

### Psychiatric inpatient treatment

Inpatient treatment of patients with eating disorders requires close cooperation and clearly established responsibilities among the members of the multidisciplinary team (58, 149) (D). The staff should have knowledge of the biopsychosocial pathophysiology of eating disorders and the countertransference emotional reactions that patients with eating disorders may provoke in caregivers (150) (D). In situations where the patient refuses inpatient treatment although his/her psychiatric or somatic status is life-threatening, involuntary treatment should be initiated (151, 152) (D). Involuntary treatment of adolescents should be performed separately from adults. Study results support intensive early treatment of adolescent patients with anorexia nervosa (58).

The treatment should be focused on both somatic and psychiatric problems. Initially the main focus is on reversing the nutritional condition and normalizing the eating habits. Behavioural therapeutic techniques can be used as an aid. A more lenient, individually composed treatment programme is as efficient as a strict controlling programme and

supports young people's ability to take care of themselves (153, 154) (C).

The hospital environment should offer clearly established rules as well as support and understanding. It is crucial to provide the patient and the parents with information on eating disorders, their motivation being essential for the treatment to be successful. In counselling and psychotherapy, it is recommended to combine different methods (nutritional counselling, psycho-education, cognitive behavioural therapy, psychodynamic psychotherapy, family therapy, self-care and supportive groups) and plan the treatment individually (anorexia nervosa is a heterogeneous disorder) (155). Supporting the family is important in all phases of the treatment.

There is no established information available on the optimal length of hospitalization. The risk of relapse is the smaller the closer the weight attained at discharge is to the ideal weight (156) (D).

### Prognosis

Mortality among patients with anorexia nervosa is approximately 5%–10%, which is higher than mortality in populations within the same age range or mortality caused by most other psychiatric disorders (157–160). The prognosis is impaired by the severity of the disorder, a low BMI (<13–15 kg/m<sup>2</sup>) and a prolonged period of illness prior to initiation of treatment (161–164). Approximately half of patients with anorexia nervosa recover, in 30% the symptoms persist and in 10%–20% the disorder becomes chronic (106, 159, 165, 166). Intensive care is considered to improve the prognosis (167) (C). Obsessive-compulsive disorders (168), depression and personality disorders (165) occur in patients later on.

In anorexia nervosa, menstruation resumes within 6 months in 80%–90% of patients achieving approximately 90% of the ideal weight (169). After recovery, the bone mineral density may persist at a lower level compared with the controls, which can predispose to fractures (41, 170, 171).

During pregnancy and the prenatal period, closer monitoring than usual is recommended (172, 173) (C). In the treatment of underweight-related infertility, increasing the weight is the primary concern. The risk of giving birth to small-for-date babies is increased in anorexia nervosa, especially after ovulation treatments, as is the risk of premature delivery and perinatal mortality (174–176).

Bulimia nervosa is a periodic disorder. The number of symptom-free patients increases with a prolonged follow-up, and approximately half of the patients become completely free of eating disorder symptoms (177–179). A long illness history prior to initiation of treatment as well as drug dependence and vomiting

**Table 6.** Quality criteria for treatment of eating disorders in children and adolescents.

1. Is there a documented local treatment programme for eating disorders?
2. Which percentage of identified eating disorder patients receive treatment as deemed necessary (have not dropped out of care)?
3. Which percentage of eating disorder patients referred to secondary care is seen for a primary workup within two weeks?
4. Which percentage of referred eating disorder patients receives a multidisciplinary secondary care workup, including child or adolescent psychiatric examination, medical examination and family interview?
5. Which percentage of eating disorder patients has a written treatment plan that has been communicated to the patient and his/her family?
6. Which percentage of eating disorder patients and their families has received psycho-education, including written material?
7. Which percentage of eating disorder patients has received dietitian consultation?
8. Which percentage of eating disorder patients receives weighing and documentation of weight at regular intervals?
9. Which percentage of eating disorder patients receives regular psychotherapy or other specific psychosocial treatment?
10. Which percentage of hospitalized eating disorder patients has been released from hospital by a common decision made in cooperation with the patient and his/her family?
11. Which percentage of eating disorder patients has a non-scheduled rehospitalization within a year after release from hospital?
12. What is the mortality of treated eating disorder patients in the area?

related to the final phase of the treatment period impair the long-term prognosis (178, 180).

### Quality criteria

The working group recommends that the quality of treatment for eating disorders in children and

adolescents be monitored using the criteria presented in Table 6.

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