

# Avoidant/Restrictive Food Intake Disorder

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## PRACTICE GAP

In 2013, revised guidelines were published on eating disorders with the introduction of a newly classified eating disorder diagnosis called “avoidant/restrictive food intake disorder” (ARFID) in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*.

## OBJECTIVES *After completing this article, readers should be able to:*

1. Recognize the diagnostic criteria for avoidant/restrictive food intake disorder (ARFID).
2. Distinguish how patients with ARFID lack fear of weight gain or body image disturbances that are evident in other eating disorders, such as anorexia nervosa.
3. Recognize how ARFID is more often seen in males and younger patients compared with other eating disorders.
4. Recognize that ARFID is associated with comorbid psychiatric diagnoses such as anxiety or obsessive-compulsive disorder and developmental disorders such as autism.
5. Understand that patients with ARFID can have significant disordered eating, resulting in impaired growth, pubertal delay, and malnutrition that might require medical stabilization in a hospital.
6. Identify how ARFID management requires a multidisciplinary approach.

## SUMMARY OF CASES

We present three cases to introduce and exemplify the clinical characteristics of ARFID.

### Case 1: A 15-year-old Boy with Poor Appetite, Lack of Interest in Food

A 15-year-old boy presents to an adolescent medicine eating disorder clinic after referral from his gastroenterologist for long-standing malnutrition and a BMI less than the 5th percentile for all of his life. He has a diagnosis of autism spectrum disorder and learning disability.

### Case 2: A 9-year-old Girl with Restrictive Eating Due to Fear of Choking

A 9-year-old girl presents to the eating disorder clinic with a history of restrictive eating due to a “fear of choking.” The parents and the child said that 4 months ago

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## ABBREVIATIONS

AN	anorexia nervosa
ARFID	avoidant/restrictive food intake disorder
BN	bulimia nervosa
CBT	cognitive behavior therapy
DSM-5	Diagnostic and Statistical Manual of Mental Disorders Fifth Edition
FBT	family-based therapy

she had an episode of choking while eating ice cream. Since then, the child started to obsessively worry that she would choke if she ate any food.

### Case 3: A 12-year-old Boy with Restrictive Eating Related to Food Texture

A 12-year-old boy with a history of multiple food allergies is referred to the eating disorder clinic for weight loss and restrictive eating. He reports allergies to milk as a young child and to all nuts. He has been restricting his diet all his life.

## INTRODUCTION

Avoidant/restrictive food intake disorder (ARFID) is a recent eating disorder diagnosis introduced in the Feeding and Eating Disorders section of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* in 2013. (1) ARFID replaces and expands the *DSM-IV* diagnosis of feeding and eating disorders in children. (2)(3) Since the introduction of ARFID as a diagnosis in 2013, research studies on ARFID have proliferated.

The hallmark of ARFID is a disturbance in eating or feeding pattern without fear of weight gain or a drive for thinness or body dysmorphism, which are characteristic of other eating disorders, such as anorexia nervosa (AN). The eating disturbance in ARFID can lead to a decreased variety and volume of food intake, causing persistent failure to meet appropriate energy/nutritional needs and/or psychosocial impairment. (1)(4) Current studies show that there is a lack of widespread awareness and recognition of ARFID across health-care providers, leading to an underdiagnosis of ARFID despite improved understanding of feeding and eating disorders. (5)(6)(7)

In this review paper we provide an overview of the current literature on ARFID and examine the clinical features, comorbidities, complications, diagnostic evaluation, and management of this condition.

## EPIDEMIOLOGY

Currently there is a lack of epidemiologic data on the incidence and prevalence of ARFID in the community setting. Most reports of incidence in clinical settings have been based on retrospectively classified cases and have ranged from 5% to 14% among patients presenting to tertiary pediatric eating disorder programs. (8)(9) A recent study presents an incidence of 8% in patients diagnosed as having ARFID at their initial assessment. (10) The prevalence of ARFID has ranged from 1.5% to 23% in children and adolescents who presented to day treatment programs for eating disorders, pediatric

gastroenterology outpatient clinics, and inpatient eating disorder programs in North America. (11)(12) ARFID can begin in early infancy or childhood and may persist into adulthood. (13) Patients with ARFID are more likely to be male, to be in a younger age group (4–11 years), and to have a longer duration of illness compared with those with eating disorders such as AN or bulimia nervosa (BN). (8)(9)(14)(15)(16)

## DSM-5 DIAGNOSTIC CRITERIA

ARFID is a heterogeneous disorder with diverse etiologies encompassing several types of clinical presentations, requiring varied treatment approaches. ARFID can occur in children and adolescents, as well as in adults. According to the *DSM-5*, there are 4 distinct criteria that need to be met for an ARFID diagnosis. (1)

Criterion A demonstrates an eating or feeding disturbance associated with at least 1 of the following: significant weight loss, significant nutritional deficiency, dependence on enteral feeding or oral supplements such as a nutritional formula, and a marked change in psychosocial functioning. In this case, a feeding disturbance could be due to low appetite and disinterest in food, avoidance of foods or narrow selection of foods related to sensory issues (eg, related to smell, taste, and texture), or avoidance or restrictive eating related to fear of consequences (such as choking, vomiting, and nausea).

Criterion B demonstrates that the interference with eating is not related to religious or cultural practices or lack of availability of food.

Criterion C demonstrates that the feeding disturbance is not due to another eating disorder such as AN or BN, evidenced by lack of body image issues or preoccupation with body weight.

Criterion D demonstrates that the feeding disturbance is not due to another psychiatric or medical condition (eg, gastrointestinal disease or malignancy) that may better explain the symptoms. (1)(17)

Children and adolescents with ARFID can present with 1 or more of the previously mentioned characteristic features because they are not mutually exclusive and there is currently insufficient evidence to classify these presentations as distinct subgroups. At presentation, they can be normal weight, overweight, or underweight. They can be equally as underweight as those with AN. (8)

## COMORBIDITIES

A diagnosis of ARFID is associated with a higher prevalence of neurocognitive disorders, particularly autism spectrum

disorder, anxiety disorder, and attention-deficit/hyperactivity disorder. Compared with patients with AN, patients with ARFID have higher rates of anxiety disorder, (8)(9)(15) pervasive developmental disorder, (15) learning disorder, (15) attention-deficit hyperactivity disorder, (8)(9)(15)(18) and obsessive-compulsive disorder, (9)(15) with lower comorbidity of a mood disorder such as depression. (9)(19) For example, in a study by Fisher et al, (9) among 98 patients who met the diagnostic criteria for ARFID, anxiety disorder was present in 60% and a comorbid medical condition was present in approximately 50% of patients.

### COMPARING CLINICAL FEATURES OF AN AND ARFID

There have been several recent studies comparing clinical characteristics of patients diagnosed as having AN and those with ARFID. Studies of patients hospitalized with ARFID report that they tend to be younger, have less weight loss before admission, and have fewer eating disorder behaviors compared with patients diagnosed as having AN. (16) Patients diagnosed as having ARFID relied more on enteral nutrition and required longer hospital stays compared with patients with AN. (16) Both groups had similar remission and readmission rates in one study. (16) A study of a Japanese sample reported better outcomes across 17 years in patients with ARFID compared with patients with AN. (20)

### COMPLICATIONS

The eating disturbance pattern in patients with ARFID is associated with insufficient intake in terms of the overall energy needs and/or their nutritional needs, resulting in acute and chronic adverse effects of malnutrition. The complications are summarized in Table 1.

Patients with ARFID and AN can have similar degrees of weight loss and malnutrition. (15) Patients with ARFID can be significantly underweight with a longer duration of illness with a percentage median body weight intermediate between those with AN and BN. (9)

Patients with ARFID can experience pubertal delay and growth retardation, have lower scores for bone mineral density, and have symptoms related to macronutrient and micronutrient deficiencies such as iron deficiency anemia, causing lethargy. (21) Patients with ARFID have significant dependence on enteral feeding (tube feeding) and/or oral nutritional supplements (Ensure, Boost, Orgain). (8) Patients with ARFID can be as sick and nutritionally compromised as patients with other eating disorders and may require medical stabilization in an inpatient unit. In one study, almost one-

third of the patients with ARFID required medical hospitalization. (8)

Given the heterogeneity of ARFID, the complications and medical morbidity may vary based on the type of clinical presentation. In one study, patients with the ARFID-limited variety subtype with apparent lack of interest in eating reported a significantly longer length of illness compared with ARFID-aversive patients, who restricted based on fear of aversive consequences of eating. (22)

On the other hand, the ARFID-aversive patients were admitted into tertiary care more frequently compared with those with either the ARFID-limited variety or ARFID-limited intake (those who restricted due to sensory sensitivity). (22)

### MEDICAL EVALUATION

#### History

Families of children and adolescents with ARFID are less likely to self-refer to an eating disorder program compared with patients with AN or BN. (9)(14)(15)(16)(18) Yet they tend to have a prolonged complicated history often characterized by multiple contacts with pediatric providers before receiving a formal eating disorder evaluation. It is important to engage parents and patients often using a multidisciplinary approach to make a diagnosis and treatment plan. (21)

The history is obtained by interviewing parent and child or adolescent together initially. During the latter part of the history taking, parent and child are interviewed independently. Data gathered from parents/caregivers, patient, specialist assessments, and referring physician are used to determine the appropriate setting of the treatment and level of care.

**Table 1.** Complications of Avoidant/Restrictive Food Intake Disorder

Significant weight loss causing medical instability, requiring hospitalization (bradycardia, hypotension, orthostatic tachycardia, and hypotension)
Severe malnutrition (with median BMI <75th percentile)
Pubertal delay
Growth retardation
Micronutrient deficiencies (eg, iron deficiency anemia, vitamin D deficiency)
Macronutrient deficiency (eg, protein calorie malnutrition)
Dependence on enteral nutrition
Decreased bone mineral density

A thorough birth, developmental, feeding, and psychosocial history is critical to understand the impact of ARFID on the patient's physical and mental health. (21) A careful history of the patient's eating habits, such as dislike or fear of specific foods (due to smell, taste, color, temperature, and texture) should be collected. Because some patients may present with a lifelong history of "picky" eating or food avoidance, the timing of any change in feeding and eating patterns should be clarified along with any potentially precipitating events. Examples include past acute episode of choking, vomiting, diarrhea or other potentially precipitating gastrointestinal symptom, or a traumatic medical procedure that may have overlap with actions or behaviors associated with eating (eg, barium swallow). Providers should also exclude food availability issues or any religious or cultural reasons for limiting diet or skipping meals. (9)(23) To determine whether the patient has or is at risk for any nutritional deficiencies, a thorough dietary assessment should be performed. This assessment should include a review of foods and beverages consumed, portion sizes and frequency of meals, and any specific intentional dietary restrictions or exclusions. It is crucial to query whether the patient has any body image concerns or preoccupation with weight or any history of bingeing or purging or use of diet pills, laxatives, diuretics, or herbal supplements to lose weight to differentiate from other eating disorders, such as AN or BN. Patients with ARFID are often distressed about being thin and want to gain weight. (21) Finally, it is important to obtain the extent to which the feeding and eating disturbance interferes with the patient's psychosocial functioning, such as school attendance, parental relationships, and eating with others. (21)

A menstrual history is vital to obtain because premenarchal females may experience primary amenorrhea and postmenarchal females may experience secondary amenorrhea due to acute or chronic weight loss and malnutrition. It is important to determine whether an individual has associated comorbidities (anxiety disorder, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, etc) or other underlying comorbid medical conditions. In addition, it is important to consider other etiologies that can present with weight loss and gastrointestinal symptoms, such as malignancies, endocrine disorders (hyperthyroidism, type 1 diabetes, Addison disease), infections (tuberculosis, human immunodeficiency virus), gastrointestinal disorders (celiac disease, Crohn disease, ulcerative colitis), or conditions that affect swallowing (achalasia, tonsillar hypertrophy). Finally, obtaining a family history will provide information on whether other family members are affected

by a similar eating disturbance or other psychiatric disorders. (21)

### Physical Examination

The physical examination should include the individual's weight, height, and BMI (Table 2). (24) Percentage median BMI is calculated by using the following formula: current BMI/50th percentile BMI for age and sex  $\times 100$ . (24)(25)

Medical stability is determined by obtaining heart rate, blood pressure, and orthostatic changes in heart rate and blood pressure, as well as oral temperature. Patients can present with signs of malnutrition such as lanugo, pallor, bradycardia, orthostatic tachycardia, hypotension, or hypothermia. A detailed physical examination including a sexual maturity rating should be performed to determine the stage of puberty and any growth impairment. Providers should also look for clinical findings related to micronutrient deficiencies such as anemia and/or iron deficiency. (21)

### Laboratory Tests

It is the practice of physicians treating eating disorders to perform some or all of the following tests to assess the etiology of the weight loss and any complications:

- Complete blood cell count—for example, malnutrition can be associated with a decrease in all cell lines, resulting in leukopenia, anemia, and thrombocytopenia.
- Erythrocyte sedimentation rate—to rule out inflammatory conditions or malignancies that can also be associated with weight loss. It is important to note that erythrocyte sedimentation rate is not a sensitive test for many inflammatory conditions and malignancies.
- Comprehensive metabolic panel, magnesium, phosphorous—to assess any electrolyte deficiency, such as hypophosphatemia, hypomagnesemia, and hypokalemia, that can result from malnutrition.
- Thyroid function tests (thyrotropin, free thyroxine, total triiodothyronine)—to rule out thyroid disorders that can result in weight loss. Total triiodothyronine is often used as a marker of malnutrition in patients with an eating disorder. In addition, some patients may have "euthyroid sick syndrome" related to their malnutrition with normal thyrotropin and decreased triiodothyronine or thyroxine levels.
- In postpubertal patients, luteinizing hormone, follicle-stimulating hormone, estradiol, or testosterone levels can be obtained. All these values may be decreased in patients with malnutrition.
- Urinalysis—to assess degree of hydration by looking at urine specific gravity and ketones; to assess urine pH that can be high in patients with purging behaviors.

**Table 2.** Classification of Malnutrition in Adolescents and Young Adults with Eating Disorders

	MILD	MODERATE	SEVERE
BMI, median, %	80–90	70–79	<70
BMI z score	–1.0 to –1.9	–2.0 to –2.9	≥–3.0
Weight loss	>10% Body mass loss	>15% Body mass loss	>20% Body mass loss in 1 y or >10% body mass loss in 6 mo

This is a proposed classification of degree of malnutrition in adolescents and young adults with eating disorders as reported in the Society for Adolescent Health and Medicine position paper on medical management of restrictive eating disorders in adolescents and young adults.

- 25-OH vitamin D levels—patients with malnutrition can have a low vitamin D level that can be assessed and corrected during their treatment course.
- Celiac disease screen consisting of tissue transglutaminase antibodies and total immunoglobulin A—particularly recommended in patients who have short stature or those who present with gastrointestinal symptoms such as bloating, abdominal pain, diarrhea, nausea, vomiting, or weight loss.

## MANAGEMENT

ARFID is frequently underrecognized, and the efficacy of various treatments has not been established; however, in limited studies and in specialized centers, a multidisciplinary approach has been shown to help affected children and their families. The multidisciplinary approach includes a combination of close medical monitoring, nutritional monitoring, parental education, adjunctive pharmacotherapy, hospital-based refeeding, and psychosocial interventions such as cognitive behavior therapy (CBT), family-based therapy (FBT), and individual therapy. (26) Given that children and adolescents with ARFID have a heterogeneous presentation, they require different targeted treatment models. (27) Currently, there are no specific defined treatment models for ARFID or weight ranges or indicators of malnutrition in patients diagnosed as having ARFID, unlike other eating disorder diagnoses in the *DSM-5*. (28) Because patients with ARFID may present with a complicated psychological comorbidity, a generalized common treatment model is difficult to define.

Given the complex nature of ARFID presentation, assessment and management is best performed by a multidisciplinary team. This team can include physicians (pediatrician or adolescent medicine physician), psychologists (with experience in treating eating disorders), psychiatrist (if medications are prescribed), dietitians (to help educate parents about the patient's nutritional needs), speech-language pathologists (to assess swallowing), and occupational therapists (for biofeedback and

recommendations for optimal position for eating, especially important for patients who have experienced or have a fear of choking).

## Goals of Treatment

The goals of management of patients with ARFID are medical stabilization of the patient, determination of the appropriate level of care (eg, outpatient versus inpatient), weight and growth restoration, nutritional rehabilitation (increase variety of food intake), management of fear and/or pain associated with eating, and restoration of joy of eating.

Treatment goal weight is determined by looking at the patient's BMI growth charts and trying to return the patient to his or her pre-illness trajectory. (25) Often patients with ARFID can present chronically underweight, which can complicate calculation of their treatment goal weights.

In such situations, a 2-step process is recommended: 1) determination of the degree of malnutrition compared with the reference population using percentage of median BMI, z scores, and amount and rate of weight loss, as described previously, and then 2) determination of a healthy weight range for that individual on the basis of previous height, weight, and BMI percentiles; pubertal stage; and growth trajectory (grade IVC). (29)

## Criteria for Hospitalization

These criteria are based on guidelines for the medical management of restrictive eating disorders in adolescents and young adults presented in the Position Paper of the Society for Adolescent Health and Medicine, outlined as follows (24):

- Severe bradycardia (heart rate <50 beats/min in the daytime and <45 beats/min at night)
- Hypotension (blood pressure <90/45 mm Hg)
- Hypothermia (body temperature <96°F [ $<35.6^{\circ}\text{C}$ ])
- Orthostasis
- Increase in pulse (>20 beats/min)
- Decrease in blood pressure (>20 mm Hg systolic or >10 mm Hg diastolic)
- Low weight (<75% median BMI for age and sex)



- Electrocardiographic abnormalities (eg, prolonged QTc)
- Dehydration
- Electrolyte disturbance (eg, low potassium, sodium, phosphorus level)
- Acute medical complications (eg, syncope, seizures, cardiac failure)

Hospital-based refeeding has been positively used in children with low-weight ARFID. (16) Patients with ARFID may require longer hospital stays compared with patients with AN because a higher percentage of patients with ARFID require enteral nutrition to meet their caloric needs. (16) Although tube feeding helps in refeeding low-weight patients with ARFID, there are several short-term (tube blockage, need for replacement, tube displacement, balloon rupture) and long-term (tube dependency, changes in hunger cues, nausea, recurrent vomiting, altered gastric emptying, bloating, chronic constipation or diarrhea, and gastroesophageal reflux disease) complications associated with tube feeding. (29) In the case of gastrostomy tube placement, there is the additional risk of leakage, infection, and hemorrhage around the gastrostomy tube site. (29)

### Psychotherapy

Several eating disorder treatment centers have demonstrated the use of CBT and FBT in children and adolescents for successful nutritional rehabilitation and reduction of associated symptoms such as anxiety. (17)(30) A novel form of CBT for ARFID has successfully treated ARFID in children older than 10 years and adolescents, as well as adults, over a 6- to 12-month period and involves FBT and individual therapy that focuses on restoring nutrition, gradual reintroduction of certain foods, psychoeducation, and exposure therapy to accept characteristics of certain foods without judgment. (30) The principles of FBT that include externalization, agnosticism as to the cause of the illness, emphasizing the seriousness of the illness, parental empowerment, and behavior consultation have been demonstrated to successfully refeed patients with ARFID. (31)

### Pharmacotherapy

Research on pharmacotherapy for patients with ARFID is currently lacking. Low-dose olanzapine, an antipsychotic medication, and a selective serotonin reuptake inhibitor, such as fluoxetine, when used as an adjunct to other treatment modalities have been shown to facilitate eating, weight gain, and the reduction of anxiety and depressive symptoms in patients with ARFID. (32)

## ARFID CASES (CONTINUED)

### Case 1: A 15-year-old Boy with Poor Appetite, Lack of Interest in Food

**Description.** A 15-year-old boy presents to an adolescent medicine eating disorder clinic after referral from his gastroenterologist for long-standing malnutrition and BMI less than the 5th percentile for all of his life. He has a diagnosis of autism spectrum disorder and learning disability.

He reports persistent lack of interest in food and poor appetite. He denies any body image concerns or fear of gaining weight or engagement in disordered eating behaviors. Medical history is notable for “picky” eating with poor weight gain since childhood. The patient has had extensive evaluations by a gastroenterology service resulting in normal findings. A trial of cyproheptadine by the gastroenterologist did not result in improvement in the patient’s appetite.

The relevant family medical history is remarkable for stress, related to his father’s alcohol consumption and ongoing marital discord.

On examination he is shy, anxious, thin-appearing with a flat affect, and speaking in monosyllables. His vital signs are significant for a 45-point orthostatic pulse change and a borderline blood pressure of 90/48 mm Hg. His weight is less than 75% of median BMI, which is significant for severe malnutrition and medical instability, requiring hospitalization and nutritional rehabilitation as an inpatient. During his hospitalization, the child psychiatry team diagnoses him as having ARFID and an anxiety disorder. He acknowledges that he is underweight but reports low appetite and eats small meal portions. However, he wants to get better to avoid frequent clinic and hospital visits. On discharge he is showing slight progress with his eating, but he requires 3 hospitalizations in 1 year for medical stabilization. He receives individual therapy as well as FBT as an outpatient. He is followed up every 1 to 2 weeks by the eating disorders team.

**Discussion.** This case demonstrates how patients with ARFID can be referred to the eating disorder clinic after being seen by multiple specialists for low BMI and picky eating without an organic cause being identified. This case also demonstrates how ARFID is associated with comorbidities such as autism spectrum disorder, learning disability, and an anxiety disorder. It is important to note that patients with ARFID can be quite sick, as described herein, with vital sign instability and severe malnutrition that requires medical stabilization in the inpatient setting.

### Case 2: A 9-year-old Girl with Restrictive Eating Due to Fear of Choking

**Description.** A 9-year-old girl presents to the eating disorder clinic with a history of restrictive eating due to a “fear of choking.” The parents and the child said that 4 months ago she had an episode of choking while eating ice cream. Since then, the child started to obsessively worry that she would choke if she ate any food.

She began to prefer fluids or softer foods, and she would take several hours to complete meals. Her weight started to drop, and when she presented to the clinic she had lost approximately 20 lb (9 kg) in 4 months.

On examination she is anxious, with a BMI at the 25th percentile (dropped from the 50th percentile in the past year), with a low blood pressure of 82/46 mm Hg, requiring hospitalization. During her hospitalization the child psychiatry team diagnoses her as having ARFID. She spends 3 weeks in the inpatient eating disorder unit for nutritional rehabilitation, psychotherapy, and occupational therapy. During her inpatient stay she has ears/nose/throat and gastrointestinal evaluations for her choking, including occupational therapy evaluation, barium swallow, and endoscopy, all of which had unremarkable findings. She is started on fluoxetine 10 mg daily to manage her anxiety. After 3 weeks of inpatient treatment her weight slowly increases; however, she continues to have a fear of choking when she eats any food. She is followed closely by the eating disorder medical and psychiatry team and is started on a behavior modification plan by the occupational therapist. During the next 7 months she slowly recovers from her fear of choking and makes significant progress toward eating a regular table diet.

**Discussion.** In this case, we see how ARFID presents in a young child in the context of a fear of consequences related to eating that can result in rapid weight loss and severe malnutrition, causing medical instability that requires hospitalization. This case also demonstrates how young patients with ARFID can be successfully refeed in a hospital setting using a multidisciplinary approach that includes medical and psychiatry teams and a behavior modification plan by an occupational therapist and a psychologist.

### Case 3: A 12-year-old Boy with Restrictive Eating Related to Food Texture

**Description.** A 12-year-old boy with a history of multiple food allergies is referred to the eating disorder clinic for weight loss and restrictive eating. He reports allergies to milk as a young child and to all nuts. He has been restricting his diet all his life.

During his evaluation at the eating disorder clinic he denies any body image issues or fear of gaining weight. He reports sensitivity to foods with a soft texture, such as applesauce, pudding, and butter. As a result of this sensitivity, he places additional restrictions on the variety of foods he eats, which leads to gradual weight loss of 8 lb (3.6 kg) in the past year. His vital signs are stable during his initial medical evaluation, and he is at the 25th percentile BMI for his age. During the past few months preceding this visit he would say that he was “full” when he ate small amounts of food, and his mother could not get him to complete his meals. He is doing well at school academically but has difficulty with social anxiety.

During his evaluation at a psychiatry clinic he is diagnosed as having ARFID and an anxiety disorder. He receives FBT and individual therapy as an outpatient, with close follow-up by the dietitian, the occupational therapist, and the medical eating disorders team, and he slowly increases the variety of his food intake.

**Discussion.** This case demonstrates how patients with ARFID present with a history of restrictive eating unrelated to an eating disorder, such as food allergies, and how ARFID can complicate the presentation with a gradual restriction of additional foods related to food texture, temperature, taste, and smell, thereby leading to malnutrition. Thus, taking a thorough history about diet, 24-hour diet recall, and sensitivities to foods is very important. This case also demonstrates how a multidisciplinary approach is required for the management of ARFID.

## Summary

- On the basis of consensus, avoidant/restrictive food intake disorder (ARFID) is an eating disorder diagnosis introduced in 2013 in the Feeding and Eating Disorders section of the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*. (1)
- On the basis of consensus, children and adolescents with a diagnosis of ARFID have a disturbance in eating or feeding pattern without a fear of weight gain or body dysmorphia, which are characteristic of other eating disorders, such as anorexia nervosa, that leads to decreased food intake and persistent failure to meet appropriate energy/nutritional needs and/or psychosocial impairment. (1)
- On the basis of consensus, the feeding and eating disturbances in ARFID are not related to religious or

cultural practices or lack of availability of food. (1) The feeding disturbance is not due to another eating disorder such as anorexia nervosa and is not due to other psychiatric or medical conditions. (1)(17)

- On the basis of evidence, children and adolescents with ARFID have a feeding disturbance that could be due to avoidant restrictive eating related to fear of consequences (such as choking, vomiting, and nausea), sensory issues (eg, related to smell, taste, texture), or low appetite/disinterest in food. (1)(8)(9)(26)
- On the basis of evidence, patients with ARFID are more likely to be male, to be in a younger age group (4–11 years), and to have a longer duration of illness compared with those with other eating disorders, such as anorexia nervosa or bulimia nervosa. (8)(9)(14)(15)(16)
- On the basis of evidence, children and adolescents with a diagnosis of ARFID can have associated comorbid neurocognitive disorders, particularly autism spectrum disorder, anxiety disorder, and attention-deficit/hyperactivity disorder. (8)(9)
- On the basis of recent case reports, patients diagnosed as having ARFID benefit from a multidisciplinary team approach (if available), including physicians, psychologists, dietitians, speech-language pathologists, and occupational therapists. (21)
- On the basis of recent case reports, children and adolescents with a diagnosis of ARFID can benefit from psychotherapy such as family-based treatment, cognitive behavior therapy, and individual therapy. (27)(31)(33)
- On the basis of evidence, children and adolescents with a diagnosis of ARFID may be medically compromised similar to patients with other eating disorders, requiring medical stabilization, enteral feeding, and nutritional supplements. (16)
- Research on pharmacotherapy for patients with ARFID is currently lacking. Based on recent case reports, patients diagnosed as having ARFID may benefit from pharmacotherapy such as antianxiety medicines such as selective serotonin reuptake inhibitors and/or low-dose antipsychotics such as olanzapine, which has shown to improve weight gain in patients with ARFID. (33)

## IDEAS FOR QUALITY IMPROVEMENT PROJECTS

**Problem statement:** To decrease readmissions in pediatric and adolescent patients diagnosed as having ARFID.

**Background:** There is currently a lack of data on readmissions in pediatric and adolescent patients hospitalized for ARFID. Studies have shown that use of novel methods (such as the teach-back method) of patient and family caregiver education and discharge checklists can help decrease readmissions.

**Recommend setting a SMART (Specific, Measurable, Achievable, Relevant, and Time-Bound) goal:** For example, decrease the percentage of readmissions for pediatric and adolescent patients hospitalized for ARFID from 76% to 40% over the next 12 months.

**Current state:** Measure the current readmission rates for hospitalized patients with ARFID.

**Root cause analysis:** Determine and understand the causes for the readmissions.

**Key drivers/countermeasures:** Once the current state is identified, propose countermeasures, ie, things that must happen consistently or structures that should be in place for target goals to be achieved. Examples would be use of the teach-back method, a communication method where patients are asked to demonstrate their level of understanding by repeating back the information that is provided to them. (34) This method can be used to evaluate the parent/patient understanding of the teaching and discharge instructions.

**Sustainability plan:** Ensure that new measures have appropriate structures and people in place to maintain sustainability.

**To view teaching slides that accompany this article, visit <http://pedsinreview.aappublications.org/content/41/12/613.supplemental>.**

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1. An 11-year-old boy is seen in the clinic for follow-up and weight recheck. He was diagnosed as having avoidant/restrictive food intake disorder (ARFID) a few months ago. The medical student assessed the patient and is presenting the history and physical examination findings to you as her preceptor. The medical student seems to have a difficult time distinguishing between anorexia nervosa (AN) and ARFID. She asks about what criteria are common between AN and ARFID. In your explanation, you instruct her that both AN and ARFID have which of the following common features?
  - A. Can have a similar degree of weight loss.
  - B. Fear of gaining weight.
  - C. Respond well to group therapy.
  - D. Similar rates of concomitant developmental disorders.
  - E. Unlikely to require multidisciplinary care.
2. A 13-year-old boy is brought to the clinic for evaluation. His parents describe him as being a very picky eater, and for several years he has had a limited repertoire of foods he eats. He acknowledges that he is thin and wants to gain weight but the textures of many foods bother him and he prefers to stick to eating what he always has as this is what he likes. Likewise, he often feels full but denies vomiting. He denies feeling anxious or depressed and has always had a number of friends and has been involved in extracurricular activities. His BMI has never been more than the 10th percentile since he was 6 years old. Currently his BMI z score is  $-3.2$ . His history and clinical presentation are more consistent with a diagnosis of ARFID than AN based on which of the following facts?
  - A. Absence of anxiety disorder.
  - B. Male sex.
  - C. Denial of purging behavior.
  - D. Having a BMI in the severely malnourished range.
  - E. Lack of fear of gaining weight.
3. A local psychologist refers a 14-year-old girl to you for evaluation for suspected ARFID. The patient has a BMI z score of  $-2.5$ . Her history is significant for a 15-lb (7-kg) weight loss in the past 18 months. She is premenarchal. She reports that she consumes a regular diet and denies dysphagia or emesis. After most meals, she experiences nausea, bloating, and abdominal pain. She describes her stools as loose, malodorous, and watery and says that she has at least 4 bowel movements per day, oftentimes more. She expresses her desire to gain weight. You order laboratory studies. Abnormality in which of the following laboratory studies is most likely to be expected in this patient?
  - A. Follicle-stimulating hormone.
  - B. Serum cortisol.
  - C. Thyroid-stimulating hormone.
  - D. Tissue transglutaminase immunoglobulin A.
  - E. Urinalysis.

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4. A 12-year-old boy is brought to the clinic by his mother because she is concerned about his weight. The mother reports that 4 months ago he was at a cookout and choked on a hot dog and had to be given the Heimlich maneuver. He was quite embarrassed and upset by this and has limited his intake to mostly liquids and semisolid foods ever since. In addition, she recently noticed that his clothes seem loose and he appears unwell to her. On physical examination today his temperature is 95.8°F (35.4°C) axillary, his heart rate is 44 beats/min at rest, his respiratory rate is 12 breaths/min, and his seated blood pressure is 82/40 mm Hg. He appears thin and tired but does not seem to be in acute distress. He has a normal heart rhythm on auscultation with clear breath sounds. His abdomen is scaphoid without hepatosplenomegaly. He was seen in the clinic 10 months ago for a well check and it appears that he has lost 20 lb (9 kg) since that visit. Which of the following is the most appropriate next step in management?
- A. Admit to the hospital for medical stabilization.
  - B. Initiate daily fluoxetine.
  - C. Refer to dietitian with serial weight checks in the office.
  - D. Refer to cardiology urgently.
  - E. Start family-based therapy.
5. A 13-year-old boy with ARFID is brought to the clinic by his mother for follow-up. He has been a longtime “picky eater,” and his BMI has never been more than the 10th percentile his whole life. The clinician has previously recommended oral caloric supplements, which he takes occasionally. Both the clinician and the mother agree that more needs to be done to help his condition. However, the mother is hesitant to use any appetite stimulants or selective serotonin reuptake inhibitors. Rather, she is interested in psychological therapy. The clinician will most likely recommend which of the following approaches for this patient?
- A. Cognitive behavior therapy.
  - B. Diaphragmatic breathing.
  - C. Eye movement desensitization and reprocessing.
  - D. Hypnotherapy.
  - E. Motivational interviewing.

## Avoidant/Restrictive Food Intake Disorder

Sujatha Seetharaman and Errol L. Fields

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