

1 **Clinical Practice Guideline: Pediatric Intensive Feeding Programs**

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5 **Product: Specialty**

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Related Policies:  
CPG 155: Occupational Therapy Medical Policy/Guidelines  
CPG 166 Speech-Language Pathology/Speech Therapy  
Guidelines

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20 **GUIDELINES**

21 American Specialty Health - Specialty (ASH) considers treatment of feeding disorder in  
22 an outpatient pediatric intensive multidisciplinary feeding program medically necessary  
23 when **ALL of the following** criteria are met:

- 24     • Individual has a significant feeding disorder associated with a medical condition  
25         (e.g., failure to thrive, prematurity, neurologic conditions, developmental disability,  
26         gastrointestinal disorders, gastrostomy tube).
- 27     • Adequate treatment for any contributing underlying medical conditions, if present,  
28         has occurred without resolution of the feeding problem.
- 29     • Conventional outpatient treatment has not succeeded. At least 8 weeks of  
30         conventional treatment must be documented.
- 31     • Meaningful improvement is expected from the therapy.
- 32     • The therapy is individualized, and there is documentation outlining quantifiable,  
33         attainable short- and long-term treatment goals.
- 34     • The treatment plan includes active participation/involvement of a parent or  
35         guardian.
- 36     • The treatment includes a transition from one-to-one supervision to outpatient  
37         therapy on discharge.

**Note:** Regular documentation supporting significant progress toward treatment is required to determine the medical necessity of continuation of a pediatric intensive multidisciplinary feeding program.

**Not Medically Necessary**

A pediatric intensive multidisciplinary feeding program is considered not medically necessary for any of the following:

- Maintenance or preventive treatment provided to prevent recurrence or to maintain the patient’s current status;
- Treatment intended is to improve or maintain general physical condition;
- When a home feeding program can be utilized to continue therapy;
- Therapy that duplicates services already being provided as part of an authorized therapy program through another therapy discipline;
- Swallowing/feeding therapy for food aversions that are meeting normal growth and developmental milestones.

ASH considers pediatric intensive feeding programs unproven for all other indications (e.g., childhood obesity, Prader-Willi syndrome) because their effectiveness for indications other than those listed above has not been established.

ASH considers electrical stimulation for the treatment of swallowing/feeding disorders experimental and investigational because its effectiveness for these indications has not been established.

Also, feeding disorders should not be confused with eating disorders, such as anorexia, which are more common in adolescence and adulthood.

**ICD-10 Codes and Descriptions that Support Medical Necessity (may not be all inclusive dependent upon coverage of developmental delay per benefit)**

ICD-10 Code	ICD-10 Code Description
D51.0 - D53.9	Vitamin B12, folate, and other deficiency anemias
E41 E43	Nutritional marasmus and unspecified severe protein-calorie malnutrition
E44.0 - E46	Protein-calorie malnutrition
E56.0 - E63.9	Other nutritional deficiencies
E70.0 - E70.29 E70.4 - E71.2 E72.00 - E72.51 E72.59 - E72.9	Disorders of amino-acid transport and metabolism

E71.30, E71.39 E75.21 - E75.22 E75.240 - E75.249 E75.29, E75.3 E75.5 - E75.6 E77.0 - E78.70 E78.79 - E78.9 E88.1 - E88.2 E88.89	Disorders of lipoid and glycoprotein metabolism and other specified metabolic disorders
E73.0 - E74.9	Disorders of carbohydrate transport and metabolism
E83.00 - E83.19 E83.30 - E83.9 E20.1	Disorders of mineral metabolism
E86.0 - E87.8	Disorders of fluid, electrolyte, and acid-base balance
K90.1 - K90.49 K90.89, K90.9	Intestinal malabsorption
N18.1 - N18.9	Chronic kidney disease (CKD)
P74.0 - P74.49	Other transitory neonatal electrolyte and metabolic disturbances
P84	Other problems of newborn (acidosis)
P92.1 - P92.9	Feeding problems in newborn
Q35.1 - Q37.9	Cleft palate and cleft lip
R13.0 - R13.19	Aphagia and dysphagia
R62.51	Failure to thrive (child)
R63.30 – R63.39	Feeding difficulties
R63.4	Abnormal weight loss
R63.6	Underweight
R63.8	Other symptoms and signs concerning food and fluid intake

1  
2

**Related CPT Codes (not all inclusive)**

CPT® Code	CPT® Code Description
92610	Evaluation of oral and pharyngeal swallowing function
92526	Treatment of swallowing dysfunction and/or oral function for feeding

1 **DESCRIPTION/BACKGROUND**

2 Good nutrition is essential for the growth and development of babies. Feeding progressions  
 3 are based on specific reflexes and the development of the baby’s mouth. Initially they are  
 4 able to suck and swallow and as their first year progresses; they are soon able to chew. The  
 5 gastrointestinal or digestive tract matures from being only able to handle liquids such as  
 6 breastmilk or formula, to being able to digest a variety of foods. During this time the baby  
 7 moves from requiring help to feed to being able to feed themselves. As the infant matures  
 8 into a child, their food and feeding patterns continue to change and this rate is dependent  
 9 upon many things, including the baby’s own skills and attitudes. However, babies will do  
 10 best with feeding if they are supported in progressing at their own rate. Development of  
 11 specific reflexes is involved in feeding and eating. The different reflexes involved include:

- 12 • Rooting reflex—When a baby’s mouth, lips, cheek, or chin are touched by an  
 13 object, the head and mouth turn towards the object and the baby opens its mouth.  
 14 This reflex allows a baby to seek out and grasp a nipple.
- 15 • Suck/swallow reflex—When the baby’s lips and mouth area are touched in an open  
 16 mouth position, suckling or sucking movements begin. As liquid moves into the  
 17 mouth, the tongue moves it to the back of the mouth for swallowing.
- 18 • Tongue thrust reflex—When the lips are touched, the baby’s tongue moves out of  
 19 the mouth. This reflex allows for feeding from the breast or bottle but not from a  
 20 spoon or cup.
- 21 • Gag reflex—When an object, such as a spoon or solid food, is placed way back in  
 22 the mouth, the object is quickly moved back out of the mouth by the tongue. This  
 23 reflex is one reason for waiting until a baby is 4 to 6 months old to feed solid foods.

24  
 25 These reflexes may be stronger or weaker, or last longer than normal, in babies who are  
 26 delayed in their development.

27  
 28 Feeding is a critical self-help skill that develops during infancy and toddlerhood. Inability  
 29 to self-feed in toddlers or to be cooperative with caretaker feeding during infancy may  
 30 result in severe functional limitation, thus contributing to or establishing disability. Feeding  
 31 and swallowing is a complex process that involves the mouth, pharynx, larynx and  
 32 esophagus. In infants, the first phase also includes the sucking reflex. Oral skills such as  
 33 sucking or chewing solids are learned only at certain ages. Infants who do not learn these  
 34 skills at the specific times in their development may have difficulty mastering them at a  
 35 later point, leading to feeding problems. In infants and children, the feeding and  
 36 swallowing process includes the following phases: pre-oral or oral preparatory phase; oral  
 37 phase; pharyngeal phase; and esophageal phase (American Speech-Language-Hearing  
 38 Association [ASHA]).

39  
 40 Pediatric feeding disorders are a multifaceted set of feeding and swallowing problems that  
 41 include a wide range of problems that interfere with the attainment of age-appropriate  
 42 feeding habits and result in inadequate caloric or nutritional intake, thus compromising

1 normal growth and development rates. A feeding problem is defined as “The failure to  
 2 progress with feeding skills. Developmentally, a feeding problem exists when a child is  
 3 ‘stuck’ in their feeding pattern and cannot progress.” Feeding disorders may occur  
 4 frequently in early childhood. They are fairly common in infants and toddlers, with  
 5 approximately 25-35% of these children experiencing some difficulties (considered minor)  
 6 with feeding (Kodak, 2008). The incidence of severe feeding problems has been reported  
 7 to be as high as 40-70% among infants born prematurely or in children with chronic  
 8 medical conditions (Rogers, 2004).

9  
 10 Feeding disorders include problems gathering food and getting ready to suck, chew, or  
 11 swallow it. For example, a child who cannot completely close her lips to keep food from  
 12 falling out of her mouth may have a feeding disorder. Other examples of feeding problems  
 13 may include but are not limited to food refusal, disruptive meal-time behavior, rigid food  
 14 preferences, suboptimal growth, and failure to master self-feeding skills commensurate  
 15 with the child’s developmental abilities. Swallowing disorders, also called dysphagia, can  
 16 occur at the (previously mentioned) different stages in the swallowing process:

- 17 • Oral prep phase – preparing food or liquid in the oral cavity to form a bolus which  
 18 includes sucking, manipulating and chewing
- 19 • Oral phase – transit of food or liquid into the throat
- 20 • Pharyngeal phase – starting the swallow, squeezing food down the throat, and  
 21 closing off the airway to prevent food or liquid from entering the airway (aspiration)  
 22 or to prevent choking
- 23 • Esophageal phase – relaxing and tightening the cervical and thoracic levels of the  
 24 esophagus transferring the food or liquid via esophageal peristalsis into the stomach  
 25 (Logemann, 1998)

26  
 27 Dysphagia and feeding problems are classified according to which phase of swallowing is  
 28 affected. Oral dysphagia in children is seen most commonly in those with  
 29 neurodevelopmental disorders. These children will exhibit poor lingual and labial  
 30 coordination. This will result in loss of food and a poor seal for sucking or removing food  
 31 from a spoon. These children may also have difficulty with coordination of sucking,  
 32 swallowing and breathing. Underlying medical conditions that may cause dysphagia may  
 33 include, but are not limited to:

- 34 • Neurological disorders (e.g., cerebral palsy)
- 35 • Disorders affecting suck-swallow-breathing coordination (e.g., bronchopulmonary  
 36 dysplasia)
- 37 • Structural lesions (e.g., neoplasm, cleft)
- 38 • Connective tissue disease (e.g., muscular dystrophy)
- 39 • Iatrogenic causes (e.g., surgical resection, medications)
- 40 • Anatomic or congenital abnormalities (e.g., cleft lip and/or palate)

1 A feeding disorder is defined as a medical, nutritional, feeding skill, or psychosocial  
2 impairment that interferes with age-appropriate oral intake and the ability to meet  
3 nutritional and hydration requirements (Goday et al., 2019). Signs and symptoms of a  
4 significant feeding disorder may include refusal to eat or drink; difficulty swallowing,  
5 inability to self-feed at an appropriate age, requiring an abnormally long time to eat,  
6 choking, gagging, or vomiting when eating, or other inappropriate mealtime behaviors. If  
7 such feeding problems occur for a prolonged period of time, they will have a significant  
8 effect upon the child's nutritional intake, affecting growth and development rates and may  
9 result in frequent illnesses, or death in severe cases. Such disorders may also be  
10 accompanied by behavioral problems such as hitting, biting, kicking, tantrums, crying, and  
11 vomiting at mealtime as an attention-getting strategy. The most common signs and  
12 symptoms of feeding disorders and dysphagia are coughing or choking while eating, or the  
13 sensation of food sticking in the throat or chest. Signs and symptoms of dysphagia may  
14 also include difficulty initiating swallowing, drooling, unexplained weight loss, change in  
15 dietary habits, recurrent pneumonia, change in voice or speech, nasal regurgitation, and  
16 dehydration. Infants may exhibit a feeding disorder with signs and symptoms that include  
17 refusal to eat or drink, failure to gain weight, aversions to specific food types or textures,  
18 recurrent pneumonias and chronic lung disease. Consequences of dysphagia and feeding  
19 disorders may be severe and may include dehydration, malnutrition, aspiration, choking,  
20 pneumonia, and death.

21  
22 Feeding disorders may result from a wide range of causes, including medical conditions  
23 (for example, food allergies, neurologic or neuromuscular disease, gastroesophageal  
24 reflux, and others), structural or functional abnormalities (for example, defects of the  
25 palate), or behavioral issues (for example, crying or tantrums that prevent successful  
26 completion of mealtimes). In most cases, there is likely a complex interaction among  
27 multiple causative factors. Additionally, often therapists are challenged by the fact that  
28 children are unable to tell them what they are feeling or what is wrong. For example, a  
29 significant number of children with feeding difficulty also have a history of gastrointestinal  
30 problems such as gastroesophageal reflux, constipation, poor appetite, poor weight gain,  
31 and sometimes food intolerance. Medical problems such as gastroesophageal reflux disease  
32 (GERD) may cause eating to be painful. Early experiences with pain during eating can  
33 cause the child to refuse, avoid, or stop eating and develop behavior problems that make it  
34 difficult if not impossible for the parent to feed the child. Additionally, frequent avoidance  
35 of eating may contribute to failure to develop appropriate oral sensorimotor skills required  
36 for successful eating and swallowing due to decreased practice eating the needed amount  
37 of food for normal growth and development and poor reception of age-appropriate foods.  
38 Thus, improving stomach comfort is a key to successful treatment. For a child to be  
39 diagnosed with feeding disorder of infancy or early childhood, the disorder must be severe  
40 enough to affect growth for a significant period of time.

1 Infants and children who are tube fed for extended periods of time have an especially high  
2 occurrence of feeding problems. For these patients, there appears to be a "critical period"  
3 for developing proper oral feeding patterns and reflexes. This critical period has been  
4 described as being between six and seven months of age, during which acquisition of oral  
5 food consumption skill is most likely. Beyond this period oral feeding abilities may not be  
6 established or may be established with great difficulty. These results were based on case  
7 studies and overall program evaluation indicated that medically complicated, severe  
8 feeding disorders can be treated successfully in a few months with a multidisciplinary  
9 approach which incorporates behavioral procedures (Babbitt, 1994).

10  
11 Premature infants and those that are of very low birth weight are at very high risk for  
12 feeding disorders (Rommel et al., 2003; Schädler et al., 2007; Vohr et al., 2006). The  
13 underdeveloped sphincter muscle between the stomach and esophagus can cause the infant  
14 to spit up frequently during feedings. Because this is uncomfortable for the child, he or she  
15 may not want to eat. Schädler et al. (2007) describes the successful use of behavioral  
16 therapy for severe feeding disorders in 86 premature children. However, they indicate that  
17 other conditions such as cerebral palsy, mental retardation and interaction problems, which  
18 are frequent in this population, have a significant negative impact on therapy outcomes and  
19 may require an even more intensive approach to address feeding disorders. Authors support  
20 the addition of behavioral therapy in that they noted a therapeutic intervention based on  
21 behavioral therapy achieved sustained success in almost two thirds of the children.

22  
23 According to the recommendations of the Cole and Lanham and published in American  
24 Family Physicians (2011), screening for nutrition risks and problems is an expected part of  
25 routine preventive health services. Failure to thrive in childhood is a state of undernutrition  
26 due to inadequate caloric intake, inadequate caloric absorption, or excessive caloric  
27 expenditure. In the United States, it is seen in 5 to 10 percent of children in primary care  
28 settings. Although failure to thrive is often defined as a weight for age that falls below the  
29 5th percentile on multiple occasions or weight deceleration that crosses two major  
30 percentile lines on a growth chart, use of any single indicator has a low positive predictive  
31 value. There is no consensus on which specific anthropometric criteria should be used to  
32 define FTT. Most cases of failure to thrive involve inadequate caloric intake caused by  
33 behavioral or psychosocial issues. The most important part of the outpatient evaluation is  
34 obtaining an accurate account of a child's eating habits and caloric intake (Cole and  
35 Lanham, 2011). Failure to thrive (FTT) is a term used to describe inadequate growth or the  
36 inability to maintain growth, usually in early childhood. It is a sign of undernutrition, and  
37 because many biologic, psychosocial, and environmental processes can lead to  
38 undernutrition, FTT should never be a diagnosis unto itself. A combination of  
39 anthropometric criteria, rather than one criterion, should be used to more accurately  
40 identify children at risk of FTT (Cole and Lanham, 2011). Weight for length is a better  
41 indicator of acute undernutrition and is helpful in identifying children who need prompt  
42 nutritional treatment. A weight that is less than 70 percent of the 50th percentile on the

1 weight-for-length curve is an indicator of severe malnutrition and may require inpatient  
2 treatment (Cole and Lanham, 2011).

3  
4 When the feeding problem is severe or complex, medical causes of FTT have been treated,  
5 and initial treatment efforts by a single discipline (e.g., occupational therapist, speech  
6 language pathologist) have failed, intensive treatment is considered. A referral is made to  
7 an interdisciplinary team for assessment and intervention in order to evaluate and treat all  
8 factors influencing growth. Services can include a comprehensive clinic evaluation, video  
9 fluoroscopic swallow study, feeding therapy, and family and caregiver education. A  
10 nutrition assessment completed by a registered dietitian obtains information needed to rule  
11 out or confirm a nutrition related problem. Nutrition assessment consists of an in-depth and  
12 detailed collection and evaluation of data in the following areas: anthropometrics,  
13 clinical/medical history, diet, developmental feeding skills, behavior related to feeding, and  
14 biochemical laboratory data. During the assessment, risk factors identified during nutrition  
15 screening are further evaluated and a nutrition diagnosis is made. The assessment may also  
16 reveal areas of concern such as oral-motor development or behavioral issues that require  
17 referral for evaluation by the appropriate therapist or specialist. Other members of the  
18 interdisciplinary team may include behaviorists, occupational therapist, physical therapist,  
19 speech language pathologist/therapist, social worker, and home health care providers.

20  
21 Disorders of the digestive system can also cause feeding problems. Examples of these types  
22 of conditions include structural or functional abnormalities of the mouth, throat, or  
23 esophagus that may result in inability to chew or swallow, or cause pain during swallowing,  
24 or result in aspiration (inhaling food or fluid into the lungs). Celiac disease, necrotizing  
25 enterocolitis, Hirschprung disease, short bowel syndrome, pyloric stenosis, and GERD may  
26 also contribute to disordered feeding behaviors. A small, controlled study by Mathisen et  
27 al. (1999) concluded that the presence of GERD had a significant negative impact on the  
28 energy intake of affected infants. Such infants demonstrated fewer adaptive skills and  
29 readiness behaviors for solid foods, and significantly more food refusals and food loss at  
30 mealtimes.

31  
32 Neurologic and neuromuscular disorders, such as cerebral palsy, are associated with  
33 significantly increased difficulty with feeding. Field (2003) reported on 349 participants  
34 evaluated by an interdisciplinary feeding team that the frequencies of predisposing factors  
35 varied by feeding problem. Differences were found in the prevalence of the five feeding  
36 problems among children with three different developmental disabilities: autism, Down  
37 syndrome and cerebral palsy. Gastroesophageal reflux was the most prevalent condition  
38 found among all children in the sample and was the factor most often associated with food  
39 refusal. Neurological conditions and anatomical anomalies were highly associated with  
40 skill deficits, such as oral motor delays and dysphagia. In such children, spasticity or  
41 weakness of the oral musculature results in difficulty with oral food preparation prior to  
42 swallowing (for example, sipping, sucking, or chewing), but problems swallowing may



1 also be present. This may progress from simple frustration to more significant problems  
2 such as aspiration and respiratory infections (Arvedson, 2008; Field, 2003; Gisel, 2008;  
3 Rogers, 2004). Rogers (2004) concludes that oral feeding interventions for children with  
4 cerebral palsy may be effective in promoting oral motor function but have not been shown  
5 to be effective in promoting feeding efficiency or weight gain. Feeding gastrostomy tubes  
6 are a reasonable alternative for children with severe feeding and swallowing problems who  
7 have had poor weight gain. According to Arvedson (2008), in addition to the status of  
8 feeding in the child, considerations include health status, broad environment, parent-child  
9 interactions, and parental concerns. Interdisciplinary team approaches allow for  
10 coordinated global assessment and management decisions. Underlying etiologies or  
11 diagnoses must be delineated to every extent possible because treatment will vary  
12 according to history and current status in light of all factors that are often interrelated in  
13 complex ways.

14  
15 Feeding problems are common even in normally developing infants and children.  
16 However, they are more frequent and persistent in children with developmental disabilities  
17 (Gisel, 2008). Developmental disorders, such as Down syndrome and autism spectrum  
18 disorders, may also contribute to feeding problems (Manikam and Perman, 2000).  
19 According to Manikam and Perman (2000), pediatric feeding disorders are common: 25%  
20 of children are reported to present with some form of feeding disorder. However, this  
21 number increases to 80% in developmentally delayed children. Consequences of feeding  
22 disorders can be severe, including growth failure, susceptibility to chronic illness, and even  
23 death. While such individuals frequently have co-existing physical disorders as described  
24 above, they may also demonstrate unique behavioral issues that impair feeding (Kodak,  
25 2008; Schreck et al., 2004). Schreck et al. (2004) reported results indicating children with  
26 autism have significantly more feeding problems and eat a significantly narrower range of  
27 foods than children without autism. According to Kodak (2008), children diagnosed with  
28 autism or autism spectrum disorders (ASD) are more likely than other children to exhibit  
29 behaviors characteristic of a feeding or sleeping disorder. Food aversion and food refusal  
30 in these individuals are sometimes linked to difficulties with food texture and type which  
31 significantly limit the accepted food options for these individuals. It is important to note  
32 that feeding disorders may be comorbid with developmental disorders without being part  
33 of the developmental disorder itself. There are no developmental disorders whose  
34 diagnostic criteria include feeding disorders as defined above. The rationale for treatment  
35 is that children whose feeding problems are treated with nasogastric, gastrostomy, or  
36 jejunostomy tubes are more likely to need therapy to become oral feeders. Placement of a  
37 feeding tube has been shown to actually cause or worsen feeding problems for many  
38 children (Crosby and Duerksen, 2007). Crosby and Duerksen (2007) examined the long-  
39 term complications related to tube malfunction and the effect these have on health care use.  
40 Common tube-site complications included discharge from the tube site, red or tender  
41 stoma, and granulation tissue. Mechanical problems related to tubes plugging, breaking,  
42 and falling out were also common. Despite having a dedicated nurse and dietitian to follow

1 these patients, unscheduled health care contacts were frequent and averaged 5.4 contacts  
2 over the mean follow-up time of 10.5 months. Authors concluded that in patients receiving  
3 long-term home enteral nutrition, tube and tube-feeding complications are frequent and  
4 result in significant health care use.

5  
6 Pediatric feeding problems are typically treated in outpatient settings by individual  
7 practitioners. Some hospitals have developed comprehensive outpatient clinics with  
8 interdisciplinary care models called “pediatric intensive feeding programs” or “feeding  
9 clinics” that are designed to evaluate, diagnose, and treat children with severe or complex  
10 feeding and swallowing difficulties. Pediatric feeding disorder evaluation and, at times,  
11 treatment are most likely best performed by a multi-or inter-disciplinary team in an  
12 outpatient setting. These interdisciplinary clinics are intended to provide greater  
13 environmental control, greater frequency of treatment, accelerated learning by increased  
14 contact with caregivers, and frequent medical and nutrition monitoring to provide  
15 clinicians with additional treatment options (e.g., appetite manipulation, swallow  
16 induction). The interdisciplinary team of specialists work with the child and family to  
17 address the multiple factors involved with eating. Members of this team may include, but  
18 are not limited to, a pediatrician, family physician, gastroenterologist, dietitian,  
19 occupational therapist, speech-language pathologist, pediatric behavioral and  
20 developmental specialist, psychologist, and social worker. These professionals work  
21 together to assess the individual and determine the possible underlying causes for the  
22 disorder, followed by creating a treatment plan. Outpatient programs are typically provided  
23 eight hours a day, five days per week, and involves feeding sessions of 3–5 meals a day.  
24 Between feeding sessions, the patient may be involved in other therapies if needed,  
25 playroom, naps or school activities. The day program typically lasts approximately 4–8  
26 weeks.

27  
28 The assessment process should evaluate a wide range of issues, including the structure and  
29 function of the mouth, upper airway, gastrointestinal tract and duration of the feeding  
30 problem; as well as behavioral aspects of feeding such as the parental-child interaction.  
31 Programs vary across locations but generally focus on the feeding problems of infants and  
32 children up to 16 years of age. The Kennedy Krieger Institute (Baltimore, MD) is an  
33 example of a facility that offers services ranging from outpatient assessment, intensive day  
34 treatment, and inpatient feeding programs that typically last about 8 weeks. Key aspects of  
35 the program include direct observation behavior assessment, approaches for increasing and  
36 decreasing feeding behavior, skill acquisition, transfer of treatment gains, and parent  
37 training. Treatment for diagnosed pediatric feeding disorders may also require a  
38 multidisciplinary team approach. This team includes the same types of professionals who  
39 treat both the causative and underlying medical conditions, as well as provide the various  
40 interventions deemed appropriate for the treatment of the individual.

1 In many intensive treatment programs, the intervention involves three phases: (1) the child  
2 is fed directly by the therapist to establish a new set of feeding responses, (2) parents are  
3 introduced into the feeding environment, and (3) parents feed their child with clinicians  
4 coaching remotely.

5  
6 The multidisciplinary feeding team may include, but is not limited to, the following  
7 members:

8  
9 **Pediatric psychologist:** Provides a behavioral viewpoint on feeding disorders, assesses for  
10 associated behavioral or psychiatric conditions involved for the child or family structure,  
11 and provides interventions or refers as appropriate. Behavioral treatment techniques  
12 include application of meal-time structure and a feeding schedule, appetite, and behavior  
13 management, as well as parent training.

14  
15 **Physician:** Monitors overall medical well-being of the child and provides oversight and  
16 support as needed while the child is in treatment, including medical studies to identify and  
17 treat various physiological causes, medication management, and coordination of the entire  
18 treatment team.

19  
20 **Dietitian/Nutritionist:** Provides targeted nutrition interventions to improve growth  
21 (weight at or above 90 % of ideal body weight for length), improve growth rate, nutrient  
22 intake, and nutrient balance. They will also guide families to avoid harmful  
23 foods/supplements.

24  
25 **Occupational therapist:** Focus on enhancing feeding performance by applying techniques  
26 to improve the mechanics of feeding or by suggesting strategies to their primary caregivers  
27 to promote feeding interaction and improve children's mealtime behaviors.

28  
29 **Speech and language pathologist:** Includes therapies to improve chewing and swallowing  
30 coordination, strengthen oral musculature, and improve oral tolerance to a broad range of  
31 flavors, textures, and temperatures of foods.

32  
33 Most nutrition and feeding problems of children can be improved or controlled but may  
34 not be totally resolved in complex cases. Some children may require ongoing and periodic  
35 nutrition assessment and intervention. Hospitalization may be neither helpful nor necessary  
36 unless the child is severely malnourished, seriously ill, or at risk of harm. Separation of the  
37 child from the family by hospitalization may result in more issues that may cause a delay  
38 in feeding and supporting the child within his or her normal environment (Kirkland and  
39 Motil, 2010).

1 Indications for hospitalization include:

- 2 • Extremely problematic parent-child interaction
- 3 • Failure to respond to several months of out-patient management
- 4 • Precise documentation of energy intake
- 5 • Psychosocial circumstances that put the child at risk for harm
- 6 • Serious inter-current illness or significant medical problems
- 7 • Severe malnutrition (less than or equal to 75 % of ideal body weight)
- 8 • Significant dehydration

9  
10 Medical strategies that promote “gut” comfort and encourage appetite will help the child  
11 be receptive to eating and can improve response to feeding therapy. These strategies  
12 typically involve the following:

- 13 • Addressing weight gain and growth as the priority of a feeding program
- 14 • Treating constipation and establishing a routine of daily soft stooling
- 15 • Treating gastroesophageal reflux and hypersensitivity in the GI tract
- 16 • Using hydrolyzed formulas that are easier to digest and promote gastric emptying  
17 and stooling
- 18 • Adjusting tube feeding rates and schedules to promote comfort
- 19 • Using appetite stimulants to boost hunger

20  
21 Some children’s feeding skills improve dramatically with medical management alone.  
22 Depending on the child, using medical management strategies can take multiple visits over  
23 time with the physician. If the child’s symptoms persist despite using medicines for reflux  
24 and constipation, a pediatrician may decide to refer the child to a gastroenterologist or  
25 feeding team for specialized care. A child also may undergo further tests to rule out further  
26 medical diagnoses that can negatively affect eating such as anemia, food allergy,  
27 eosinophilic esophagitis, malrotation, and motility disorders. Other children will need  
28 feeding therapy using techniques to improve acceptance of volume and variety of foods as  
29 well as oral motor therapy to progress to age-appropriate oral motor patterns. No matter  
30 what type of feeding therapy approach used, the child will respond better if they feel better.  
31 Many therapists have been taught to start with the mouth from a treatment perspective.  
32 That means focusing on the oral motor hypersensitivity or oral motor delay first. It is  
33 important to consider that despite the physician addressing the medical issues, such as  
34 reflux, it is team effort because the physician may not see the child eat and also don’t see  
35 the children as often as the therapist does. Therefore, it is important that therapists work  
36 closely with the referring physicians to assist with proper diagnosis and treatment in order  
37 to assure the best outcomes for patients. The most important reason to recognize and treat  
38 the underlying medical issues of children with pediatric feeding problems is to help them  
39 progress. It is important that GI issues are addressed prior to starting therapy so that pain  
40 or discomfort is not reinforced for the child. Therapy goals for most patients involve weight  
41 gain and growth, age-appropriate oral motor patterns, and acceptance of a variety of foods

1 from all food groups for healthy eating. Using medical strategies to help the child feel better  
2 will improve response to feeding therapy and eventually outcomes.

3  
4 A pediatric intensive, multidisciplinary feeding program may be provided on an inpatient  
5 basis or daily outpatient basis, which is also referred to as a day feeding program. The  
6 inpatient programs are generally recommended for children with severe feeding difficulties  
7 who may require around-the-clock medical supervision. The Kennedy Krieger Institute  
8 website for their pediatric feeding disorders unit states that, “Inpatient services are  
9 recommended for children with severe feeding difficulties (e.g., failure-to-thrive, vomiting,  
10 G-tube dependence, total food refusal) so that close medical assessments, nutritional  
11 monitoring, oral motor assessments and intense behavioral interventions can be  
12 conducted.”

13  
14 An outpatient program is typically provided eight hours a day, five days per week, and  
15 involves feeding sessions of 3-5 meals a day. Between feeding sessions, the patient may  
16 be involved in other therapies if needed, playroom, naps or school activities. The day  
17 program typically lasts approximately 4–8 weeks.

## 18 ***EVIDENCE REVIEW***

### 19 **Treatment of Pediatric Feeding Disorders**

20 Byars et al. (2003) conducted a prospective clinical trial for the purpose of describing  
21 outcomes in nine children with Nissen fundoplication and feeding gastrostomy (G-tube)  
22 treated in a multicomponent intensive feeding program. Nine children with a history of  
23 behavioral feeding resistance and G-tube dependence were admitted for intensive treatment  
24 to an inpatient feeding program. The treatment included short-term behavioral treatment  
25 with a family-focused approach. A team of behavioral therapists managed all aspects of  
26 behavioral treatment. A gastroenterologist and registered dietician monitored and managed  
27 the medical and nutritional status. At discharge, it was reported that 44% of the sample had  
28 been successfully weaned from gastrostomy feedings. At follow-up, six of the nine patients  
29 (67%) were weaned from G-tube feeding and taking 100% of their nutritional needs by  
30 mouth. It was noted that range of inpatient treatment was 5–16 days. Follow-up assessment  
31 was obtained in a clinic visit scheduled 2–4 months after the child’s discharge from the  
32 program. Three families did not return for the follow-up visit due to distance from the  
33 facility. Weight gains were noted to be small. Limitations of the study included no control  
34 group, the small group size and the length of follow-up time after the study. Sharp et al.  
35 (2010) conducted a systematic review of the literature regarding treatment of pediatric  
36 feeding disorders. The review included 48 single-case research studies that reported  
37 outcomes for 96 participants. Most children in the studies had complex medical and  
38 developmental concerns and received treatment at multidisciplinary feeding disorders  
39 programs. All of the studies involved behavioral interventions—no well-controlled studies  
40 that evaluated feeding interventions by other theoretical perspectives or clinical disciplines  
41 met inclusion criteria. Treatment settings included hospital inpatient units (43.8% of the  
42

1 studies) followed by home/school setting (29.2%), day treatment programs (16.7%),  
2 outpatient clinics (10.4%) and residential facilities (6.3%). The results of the review  
3 indicated that behavioral intervention was associated with significant improvements in  
4 feeding behavior. This review evaluated behavioral interventions used in feeding disorder  
5 programs; however, the settings for the treatment was not compared or evaluated.  
6 Silverman et al. (2013) reported on a retrospective study of a cohort of 77 children  
7 diagnosed as having a feeding disorder, gastrostomy tube (GT) feeding dependence (>1  
8 year), and an inability to maintain acceptable growth via oral feeding that completed a tube  
9 weaning protocol in an inpatient behavioral feeding program. In the inpatient program,  
10 children received treatment from a pediatric psychologist at each meal three times per day,  
11 seven days per week, until discharged with at least one parent was required to be present  
12 at all mealtimes. Measures for analysis included About Your Child’s Eating, the Mealtime  
13 Behavior Questionnaire, and the Parenting Stress Index Short Form. The mean duration of  
14 hospitalization was 10.9 days. At discharge, 51% of patients needed no GT feeding, and  
15 after one year after discharge an additional 12% needed no GT feeding. Limitations of the  
16 study include the retrospective data collection and incomplete ascertainment of follow-up  
17 data resulting in a decreasing sample size through 12 months of follow-up, heterogeneity  
18 of the patient populations and the psychological measures were dependent upon parent  
19 report.

### 20 21 **Multidisciplinary Approach**

22 Many studies have demonstrated the benefits of such a multidisciplinary approach.  
23 Manikam and Perman (2000) support that assessment and treatment are best conducted by  
24 an interdisciplinary team of professionals. They believe that, at a minimum, the team  
25 should include a gastroenterologist, dietitian, behavioral psychologist, and occupational  
26 and/or speech therapist. Intervention should be comprehensive and include treatment of the  
27 medical condition, behavioral modification to alter the child's inappropriate learned  
28 feeding patterns, and parent education and training in appropriate parenting and feeding  
29 skills. A majority of feeding problems can be resolved or greatly improved through  
30 medical, oral motor, and behavioral therapy. Behavioral feeding strategies have been  
31 applied successfully even in organically mediated feeding disorders. To avoid iatrogenic  
32 feeding problems, initial attempts to achieve nutritional goals in malnourished children  
33 should be via the oral route. The need for exclusive tube feedings should be minimized.  
34 (Manikam and Perman, 2000).

35  
36 Rommel et al. (2003) described the multidisciplinary treatment of 700 infants and young  
37 children with feeding disorders, reporting that almost 50% of the study subjects presented  
38 with a combination of medical (for example, GERD, neurologic or other problem) and oral  
39 (for example, oral motor issues, sensory problems, etc.) pathology underlying their  
40 disorder. They found a significant relationship was found between the type of feeding  
41 problem and age. Infants born preterm and/or with a birthweight below the tenth percentile  
42 for gestational age are at greater risk for developing feeding disorders. There were also a

1 substantial number of individuals presenting with combined oral-behavioral (for example,  
2 food avoidance, tantrums, etc.), and medical-behavioral conditions as well. These  
3 individuals were treated by a team approach, with 73.1 % of the individuals experiencing  
4 significant benefits beyond 2 months to 5 years. Authors conclude that a multidisciplinary  
5 team approach is essential for assessment and management because combined medical and  
6 oral problems are the most frequent cause of pediatric feeding problems. In a review of the  
7 literature on feeding problems of infants and toddlers, Bernard-Bonnin (2006) note that  
8 there is often overlap between classifications of feeding problems, which includes  
9 structural abnormalities, neurodevelopmental disabilities, and behavioral disorders. A  
10 medical approach also needs an evaluation of diet and an assessment of the interaction  
11 between parent and child. Treating medical or surgical conditions, increasing caloric  
12 intake, and counseling about general nutrition can alleviate mild to moderate problems.  
13 Thus, feeding problems in early childhood often have multi-factorial causes with a  
14 behavioral component. The author states that more complicated cases should be referred to  
15 multidisciplinary teams, including behavioral therapy to foster appropriate behavior and  
16 discourage maladaptive behavior. Greer et al. (2008) investigated the impact of an  
17 intensive interdisciplinary feeding program on caregiver stress and child outcomes of  
18 children with feeding disorders across 3 categories: tube dependent, liquid dependent, or  
19 food selective. Outcomes for caregiver stress levels, child meal-time behaviors, weight,  
20 and calories were examined at admission and discharge for 121 children. Analysis  
21 examined differences pre- and post-treatment and across feeding categories. Caregiver  
22 stress, child meal-time behaviors, weight, and caloric intake improved significantly  
23 following treatment in the intensive feeding program, regardless of category placement.  
24 The authors concluded that regardless of a child's medical and feeding history, an intensive  
25 interdisciplinary approach significantly improved caregiver stress and child outcomes. This  
26 study provides support that regardless of a child's medical and feeding history, an intensive  
27 interdisciplinary approach significantly improves caregiver stress and child outcomes.  
28 Cincinnati Children's Hospital Medical Center's best evidence statement (BEST) on  
29 "Behavioral and oral motor interventions for feeding problems in children" (2013)  
30 recommended that an intensive feeding program model that combines oral motor and  
31 behavioral interventions may be used with children with severe feeding problems to  
32 increase intake.

33  
34 Williams et al. (2017) conducted a retrospective cohort controlled study design to compare  
35 outcomes of outpatient multidisciplinary intensive feeding therapy (IFT) program (n=23)  
36 who completed the 5-week IFT program to traditional therapy (TT) (n=22) of single-  
37 discipline, once weekly feeding therapy to reduce enteral tube nutrition (ETN) dependence  
38 in medically complex young children. The children in the IFT cohort experienced a median  
39 reduction in ETN dependence of 49% (34.5-58.5%) compared with a median reduction of  
40 0% (0-25%) for TT ( $p>0.0001$ ) by the conclusion of the 5-week program. Sharp et al.  
41 (2017) reported on a systematic review and meta-analysis of program outcomes for  
42 children receiving intensive, multidisciplinary intervention for pediatric feeding disorders.

1 The review included 11 studies involving 593 patients with nine retrospective articles and  
2 two studies with randomized controlled trials. All samples involved children with complex  
3 medical and/or developmental histories who displayed persistent feeding concerns  
4 requiring formula supplementation. Behavioral intervention and tube weaning represented  
5 the most common treatment approaches. The core disciplines included in the care included  
6 psychology, nutrition, medicine, speech-language pathology and occupational therapy. The  
7 overall effect size for percentage of patients successfully weaned from tube feeding was  
8 71% (95% CI 54%-83%). Treatment gains continued following discharge, with 80% of  
9 patients (95% CI 66%-89%) weaned from tube feeding at last follow-up. Treatment also  
10 was associated with increased oral intake, improved mealtime behaviors, and reduced  
11 parenting stress. The authors concluded that results indicate intensive, multidisciplinary  
12 treatment holds benefits for children with severe feeding difficulties.

13  
14 Sharp et al. (2020) assessed characteristics and outcomes of young children receiving  
15 intensive multidisciplinary intervention for chronic food refusal and feeding tube  
16 dependence. Of 229 patients admitted during the 5-year period, 83 met the entry criteria;  
17 81 completed intervention (98%) and provided outcome data (46 males, 35 females; age  
18 range, 10-230 months). All patients had complex medical, behavioral, and/or  
19 developmental histories with longstanding feeding problems (median duration, 33  
20 months). At discharge, oral intake improved by 70.5%, and 27 patients (33%) completely  
21 weaned from tube feeding. Weight gain (mean,  $0.39 \pm 1$  kg) was observed. Treatment gains  
22 continued following discharge, with 58 patients (72%) weaned from tube feeding at follow-  
23 up. Authors concluded that findings support the effectiveness of their intensive  
24 multidisciplinary intervention model in promoting oral intake and reducing dependence on  
25 tube feeding in young children with chronic food refusal. Further research on the  
26 generalizability of this intensive multidisciplinary intervention approach to other  
27 specialized treatment settings and/or feeding/eating disorder subtypes is warranted.

28  
29 Lagatta et al. (2021) compares healthcare use and parent health-related quality of life  
30 (HRQL) in 3 groups of infants whose neonatal intensive care unit (NICU) discharge was  
31 delayed by oral feedings. This was a prospective, single-center cohort of infants in the  
32 NICU from September 2018 to March 2020. After enrollment, weekly chart review  
33 determined eligibility for home nasogastric (NG) feeds based on predetermined criteria.  
34 Actual discharge feeding decisions were at clinical discretion. At 3 months post discharge,  
35 authors compared acute healthcare use and parental HRQL, measured by the PedsQL  
36 Family Impact Module, among infants who were NG eligible but discharged with all oral  
37 feeds, discharged with NG feeds, and discharged with gastrostomy (G) tubes. NICU days  
38 saved by home NG discharges were calculated. Among 180 infants, 80 were orally fed, 35  
39 used NG, and 65 used G tubes. Compared with infants who had NG-tube feedings, infants  
40 who had G-tube feedings had more gastrointestinal or tube-related readmissions and  
41 emergency encounters, and orally fed infants showed no difference in use. Multivariable  
42 adjustment did not change these comparisons. Parent HRQL at 3 months did not differ



1 between groups. Infants discharged home with NG tubes saved 1,574 NICU days. Authors  
2 concluded that NICU discharge with NG feeds is associated with reduced NICU stay  
3 without increased post discharge healthcare use or decreased parent HRQL, whereas G-  
4 tube feeding was associated with increased post discharge healthcare use.

5  
6 Ostadi et al. (2022) sought to examine if a combined program of NNS and SE compared  
7 with a program that only involves NNS would be more effective on oral feeding readiness  
8 of premature infants. This randomized controlled trial was conducted in a neonatal  
9 intensive care unit (NICU). Forty five preterm infants were recruited in three groups. In  
10 the group I, infants were provided with NNS twice a day. The group II received a program  
11 that involved 15 min of NNS and 15 min of SE, daily. Both interventions were provided  
12 10 days during two consecutive weeks. The group III, control group, just received the  
13 routine NICU care. All infants were assessed by functional oral feeding outcome measures  
14 including postmenstrual age (PMA) at the start of oral feeding, PMA at full oral feeding,  
15 transition time (days from start to full oral feeding), PMA at discharge time and also the  
16 infant's dependency on tube-feeding at discharge time after interventions. Also, all infants  
17 were assessed via Preterm Oral Feeding Readiness Scale (POFRAS) before and after  
18 intervention. No significant differences were observed in the PMA mean at start of oral-  
19 feeding, full oral-feeding, discharge time and the mean of transition time. Compared to the  
20 control group, more infants in the group II were discharged without tube-feeding. The mean  
21 of POFRAS was significantly higher in both groups I and II compared to the group III.  
22 This score was, however, not statistically different between the groups I and II. Authors  
23 concluded that both studied interventions were superior to routine NICU care in enhancing  
24 the oral feeding readiness of preterm infants based on the POFRAS score. The studied  
25 combined program of NNS and SE, and not NNS program, could significantly increase the  
26 number of discharged infants without tube-feeding compared to control group.

27  
28 Patel et al. (2022) evaluated the effectiveness of an interdisciplinary home-based feeding  
29 program, which is a unique service delivery model. Data were provided on oral intake, tube  
30 feeding elimination, and weight for patients who were dependent on tube feedings ( $n = 78$ ).  
31 Weight data were collected for patients who showed failure to thrive ( $n = 49$ ). Number of  
32 foods consumed, and percentage of solids were collected for patients who were liquid-  
33 dependent ( $n = 23$ ), and number of foods consumed were collected for patients who were  
34 food-selective ( $n = 61$ ). For patients dependent on tube feedings, 81% achieved tube  
35 feeding elimination. Tube elimination was achieved after 8 months of treatment on  
36 average. All failure-to-thrive patients showed weight gain from baseline to discharge. For  
37 liquid-dependent patients, there was an increase in foods consumed from 2 foods at  
38 admission to 32 foods at discharge. For food selective patients, there was an increase from  
39 4 foods at admission to 35 foods at discharge. For all dependent variables, results showed  
40 statistical significance and a large-sized effect. Authors concluded that these data show that  
41 an intensive interdisciplinary home-based program can be successful in treating complex  
42 feeding problems in children.

1 **PRACTITIONER SCOPE AND TRAINING**

2 Practitioners should practice only in the areas in which they are competent based on their  
3 education, training, and experience. Levels of education, experience, and proficiency may  
4 vary among individual practitioners. It is ethically and legally incumbent on a practitioner  
5 to determine where they have the knowledge and skills necessary to perform such services  
6 and whether the services are within their scope of practice.

7  
8 It is best practice for the practitioner to appropriately render services to a member only if  
9 they are trained, equally skilled, and adequately competent to deliver a service compared  
10 to others trained to perform the same procedure. If the service would be most competently  
11 delivered by another health care practitioner who has more skill and training, it would be  
12 best practice to refer the member to the more expert practitioner.

13  
14 Best practice can be defined as a clinical, scientific, or professional technique, method, or  
15 process that is typically evidence-based and consensus driven and is recognized by a  
16 majority of professionals in a particular field as more effective at delivering a particular  
17 outcome than any other practice (Joint Commission International Accreditation Standards  
18 for Hospitals, 2020).

19  
20 Depending on the practitioner’s scope of practice, training, and experience, a member’s  
21 condition and/or symptoms during examination or the course of treatment may indicate the  
22 need for referral to another practitioner or even emergency care. In such cases it is prudent  
23 for the practitioner to refer the member for appropriate co-management (e.g., to their  
24 primary care physician) or if immediate emergency care is warranted, to contact 911 as  
25 appropriate. See the *Managing Medical Emergencies (CPG 159 – S)* clinical practice  
26 guideline for information.

27  
28 **References**

29 American Medical Association. (current year). Current Procedural Terminology (CPT)  
30 Current year (rev. ed.). Chicago: AMA

31  
32 American Medical Association. (current year). ICD-10-CM. American Medical  
33 Association

34  
35 Arvedson JC. Assessment of pediatric dysphagia and feeding disorders: clinical and  
36 instrumental approaches. *Dev Disabil Res Rev.* 2008;14(2):118-127.  
37 doi:10.1002/ddrr.17

38  
39 Babbitt RL, Hoch TA, Coe DA, et al. Behavioral assessment and treatment of pediatric  
40 feeding disorders. *J Dev Behav Pediatr.* 1994;15(4):278-291

- 1 Bernard-Bonnin AC. Feeding problems of infants and toddlers. *Can Fam Physician*.  
2 2006;52(10):1247-1251  
3
- 4 Byars KC, Burklow KA, Ferguson K, O'Flaherty T, Santoro K, Kaul A. A multicomponent  
5 behavioral program for oral aversion in children dependent on gastrostomy feedings. *J*  
6 *Pediatr Gastroenterol Nutr*. 2003;37(4):473-480. doi:10.1097/00005176-200310000-  
7 00014  
8
- 9 Carnaby-Mann GD, Crary MA. Examining the evidence on neuromuscular electrical  
10 stimulation for swallowing: a meta-analysis. *Arch Otolaryngol Head Neck Surg*.  
11 2007;133(6):564-571. doi:10.1001/archotol.133.6.564  
12
- 13 Christiaanse ME, Mabe B, Russell G, Simeone TL, Fortunato J, Rubin B. Neuromuscular  
14 electrical stimulation is no more effective than usual care for the treatment of primary  
15 dysphagia in children. *Pediatr Pulmonol*. 2011;46(6):559-565. doi:10.1002/ppul.21400  
16
- 17 Cincinnati Children's Hospital Medical Center. Best evidence statement (BEST).  
18 Behavioral and oral motor interventions for feeding problems in children. Cincinnati,  
19 OH: Cincinnati Children's Hospital Medical Center; July 15, 2013  
20
- 21 Clark H, Lazarus C, Arvedson J, Schooling T, Frymark T. Evidence-based systematic  
22 review: effects of neuromuscular electrical stimulation on swallowing and neural  
23 activation. *Am J Speech Lang Pathol*. 2009;18(4):361-375. doi:10.1044/1058-  
24 0360(2009/08-0088)  
25
- 26 Cole SZ, Lanham JS. Failure to thrive: an update. *Am Fam Physician*. 2011;83(7):829-834  
27
- 28 Crosby J, Duerksen DR. A prospective study of tube- and feeding-related complications in  
29 patients receiving long-term home enteral nutrition. *JPEN J Parenter Enteral Nutr*.  
30 2007;31(4):274-277. doi:10.1177/0148607107031004274  
31
- 32 Epperson HE, Sandage MJ. Neuromuscular Development in Neonates and Postnatal  
33 Infants: Implications for Neuromuscular Electrical Stimulation Therapy for Dysphagia.  
34 *J Speech Lang Hear Res*. 2019;62(8):2575-2583. doi:10.1044/2019\_JSLHR-S-18-  
35 0502  
36
- 37 Feeding and Swallowing Disorders (Dysphagia) in Children. Retrieved on July 4, 2024  
38 from [http://www.asha.org/public/speech/swallowing/feeding-and-swallowing-](http://www.asha.org/public/speech/swallowing/feeding-and-swallowing-disorders-in-children/)  
39 [disorders-in-children/](http://www.asha.org/public/speech/swallowing/feeding-and-swallowing-disorders-in-children/)  
40
- 41 Feeding Infants in the Child and Adult Care Food Program. Retrieved on July 4, 2024 from  
42 <https://www.fns.usda.gov/tn/feeding-infants-child-and-adult-care-food-program>

- 1 Field D, Garland M, Williams K. Correlates of specific childhood feeding problems. *J*  
 2 *Paediatr Child Health*. 2003;39(4):299-304. doi:10.1046/j.1440-1754.2003.00151.x  
 3
- 4 Goday PS, Huh SY, Silverman A, et al. Pediatric Feeding Disorder: Consensus Definition  
 5 and Conceptual Framework. *J Pediatr Gastroenterol Nutr*. 2019; 68(1):124-129.  
 6
- 7 Gisel E. Interventions and outcomes for children with dysphagia. *Dev Disabil Res Rev*.  
 8 2008;14(2):165-173. doi:10.1002/ddrr.21  
 9
- 10 Greer AJ, Gulotta CS, Masler EA, Laud RB. Caregiver stress and outcomes of children  
 11 with pediatric feeding disorders treated in an intensive interdisciplinary program. *J*  
 12 *Pediatr Psychol*. 2008;33(6):612-620. doi:10.1093/jpepsy/jsm116  
 13
- 14 Kennedy Krieger Institute. Retrieved July 4, 2024 from <https://www.kennedykrieger.org/>  
 15
- 16 Kodak T, Piazza CC. Assessment and behavioral treatment of feeding and sleeping  
 17 disorders in children with autism spectrum disorders. *Child Adolesc Psychiatr Clin N*  
 18 *Am*. 2008;17(4):887-xi. doi:10.1016/j.chc.2008.06.005  
 19
- 20 Lagatta JM, Uhing M, Acharya K, et al. Actual and Potential Impact of a Home Nasogastric  
 21 Tube Feeding Program for Infants Whose Neonatal Intensive Care Unit Discharge Is  
 22 Affected by Delayed Oral Feedings. *J Pediatr*. 2021;234:38-45.e2.  
 23 doi:10.1016/j.jpeds.2021.03.046  
 24
- 25 Lawlor CM, Choi S. Diagnosis and Management of Pediatric Dysphagia: A Review.  
 26 *JAMA Otolaryngol Head Neck Surg*. 2020;146(2):183-191.  
 27 doi:10.1001/jamaoto.2019.3622  
 28
- 29 Manikam R, Perman JA. Pediatric feeding disorders. *J Clin Gastroenterol*. 2000;30(1):34-  
 30 46. doi:10.1097/00004836-200001000-00007  
 31
- 32 Mathisen B, Worrall L, Masel J, Wall C, Shepherd RW. Feeding problems in infants with  
 33 gastro-oesophageal reflux disease: a controlled study. *J Paediatr Child Health*.  
 34 1999;35(2):163-169. doi:10.1046/j.1440-1754.1999.t01-1-00334.x  
 35
- 36 Nutrition Screening for Infants and Young Children with Special Health Care Needs:  
 37 Spokane County, Washington. 2008. Retrieved on July 4, 2024 from  
 38 [http://www.doh.wa.gov/portals/1/documents/pubs/970-](http://www.doh.wa.gov/portals/1/documents/pubs/970-116_nutritionscreeningforinfantsandyoungshcn.pdf)  
 39 [116\\_nutritionscreeningforinfantsandyoungshcn.pdf](http://www.doh.wa.gov/portals/1/documents/pubs/970-116_nutritionscreeningforinfantsandyoungshcn.pdf)  
 40
- 41 Ostadi M, Jokar F, Armanian AM, Namnabati M, Kazemi Y, Poorjavad M. The effects of  
 42 swallowing exercise and non-nutritive sucking exercise on oral feeding readiness in

- 1 preterm infants: A randomized controlled trial. *Int J Pediatr Otorhinolaryngol.*  
 2 2021;142:110602. doi:10.1016/j.ijporl.2020.110602  
 3
- 4 Patel MR, Patel VY, Andersen AS, Miles A. Evaluating Outcome Measure Data for an  
 5 Intensive Interdisciplinary Home-Based Pediatric Feeding Disorders Program.  
 6 *Nutrients.* 2022;14(21):4602. Published 2022 Nov 1. doi:10.3390/nu14214602  
 7
- 8 Propp R, Gill PJ, Marcus S, et al. Neuromuscular electrical stimulation for children with  
 9 dysphagia: a systematic review. *BMJ Open.* 2022;12(3):e055124. Published 2022 Mar  
 10 25. doi:10.1136/bmjopen-2021-055124  
 11
- 12 Rogers B. Feeding method and health outcomes of children with cerebral palsy. *J Pediatr.*  
 13 2004;145(2 Suppl):S28-S32. doi:10.1016/j.jpeds.2004.05.019  
 14
- 15 Rommel N, De Meyer AM, Feenstra L, Veereman-Wauters G. The complexity of feeding  
 16 problems in 700 infants and young children presenting to a tertiary care institution. *J*  
 17 *Pediatr Gastroenterol Nutr.* 2003;37(1):75-84. doi:10.1097/00005176-200307000-  
 18 00014  
 19
- 20 Schädler G, Süß-Burghart H, Toschke AM, von Voss H, von Kries R. Feeding disorders  
 21 in ex-prematures: causes--response to therapy--long term outcome. *Eur J Pediatr.*  
 22 2007;166(8):803-808. doi:10.1007/s00431-006-0322-x  
 23
- 24 Schreck KA, Williams K, Smith AF. A comparison of eating behaviors between children  
 25 with and without autism. *J Autism Dev Disord.* 2004;34(4):433-438.  
 26 doi:10.1023/b:jadd.0000037419.78531.86  
 27
- 28 Sharp WG, Jaquess DL, Morton JF, Herzinger CV. Pediatric feeding disorders: a  
 29 quantitative synthesis of treatment outcomes. *Clin Child Fam Psychol Rev.*  
 30 2010;13(4):348-365. doi:10.1007/s10567-010-0079-7  
 31
- 32 Sharp WG, Volkert VM, Scahill L, McCracken CE, McElhanon B. A Systematic Review  
 33 and Meta-Analysis of Intensive Multidisciplinary Intervention for Pediatric Feeding  
 34 Disorders: How Standard Is the Standard of Care?. *J Pediatr.* 2017;181:116-124.e4.  
 35 doi:10.1016/j.jpeds.2016.10.002  
 36
- 37 Sharp WG, Volkert VM, Stubbs KH, et al. Intensive Multidisciplinary Intervention for  
 38 Young Children with Feeding Tube Dependence and Chronic Food Refusal: An  
 39 Electronic Health Record Review. *J Pediatr.* 2020;223:73-80.e2.  
 40 doi:10.1016/j.jpeds.2020.04.034

- 1 Sharp WG, Silverman A, Arvedson JC, Bandstra NF, Clawson E, Berry RC, McElhanon  
2 BO, Kozlowski AM, Katz M, Volkert VM, Goday PS, Lukens CT. Toward Better  
3 Understanding of Pediatric Feeding Disorder: A Proposed Framework for Patient  
4 Characterization. *J Pediatr Gastroenterol Nutr.* 2022 Sep 1;75(3):351-355. doi:  
5 10.1097/MPG.0000000000003519. Epub 2022 Jun 10. PMID: 35687655; PMCID:  
6 PMC9365260.  
7
- 8 Silverman AH. Interdisciplinary care for feeding problems in children. *Nutr Clin Pract.*  
9 2010;25(2):160-165. doi:10.1177/0884533610361609  
10
- 11 Vohr BR, Wright LL, Dusick AM, et al. Neurodevelopmental and functional outcomes of  
12 extremely low birth weight infants in the National Institute of Child Health and Human  
13 Development Neonatal Research Network, 1993-1994. *Pediatrics.* 2000;105(6):1216-  
14 1226. doi:10.1542/peds.105.6.1216  
15
- 16 Williams C, VanDahm K, Stevens LM, et al. Improved Outcomes with an Outpatient  
17 Multidisciplinary Intensive Feeding Therapy Program Compared with Weekly Feeding  
18 Therapy to Reduce Enteral Tube Feeding Dependence in Medically Complex Young  
19 Children. *Curr Gastroenterol Rep.* 2017;19(7):33. doi:10.1007/s11894-017-0569-6