

Primary Objective

Develop an eating disorder pathway to establish guidelines regarding criteria for admission, support an interdisciplinary team approach to managing patients admitted with the primary diagnosis of an eating disorder, decrease the occurrence of refeeding syndrome, and minimize the number of hospital days leading to medical stabilization and transfer or discharge to inpatient or outpatient care.

Introduction

There have been recent national changes to evidence-based treatment for eating disorders in adolescents. There is evidence that refeeding syndrome is less frequent than previously assumed, and that patients can start on higher calorie diets and advance calories on a daily basis. There are objective findings that will alert providers to the progression of refeeding syndrome. Under-feeding is the opposite phenomenon when providers treat too slowly with too few calories, and don't advance quickly enough causing more weight loss and prolonging the hospital stay. Depression is not treated with medications until a patient is >85% ideal body weight as they don't work well in malnourished patients. Supplementation changes for very severely malnourished patients (<70% ideal body weight) include phosphorus, thiamine, decrease in the carbohydrate content of supplemental formula, and consideration of continuous NG feedings. Serious medical complications of malnutrition include cardiac dysrhythmias, seizures, cardiac failure, liver failure, and death.

Recommendations

Inclusion Criteria

- Age ≥ 13 years admitted for a new or previously diagnosed eating disorder diagnosis

Special Considerations:

- Patients on suicide precaution

Admission Criteria (any of the below):

- Less than 75% ideal body weight ^{1,2,5,7} or ongoing weight loss despite intensive management
- Need for cardiac monitoring
 - Heart rate less than 50 beats per minute when awake or less than 45 beats per minute when resting/asleep ^{1,2,4,5,7}
 - Hypotension (systolic less than 90) ^{1,6,7}
 - Orthostatic changes in pulse (>20 beats per min) or blood pressure (>10mm Hg) ^{1,2,5,7}
 - Cardiac arrhythmias including prolonged QTc ^{1,2,4-7}
- Temperature less than 96° ^{1,6,7}
- Significant electrolyte abnormalities ^{6,7}
- Refusal to eat or purging ^{1,2,6,7}
- Acute medical complications of malnutrition (syncope, seizures, cardiac failure, pancreatitis) ^{1,2,6}

Discharge Criteria:

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Patients with a diagnosis of an eating disorder are either discharged home, to an outpatient day program, or transferred to an inpatient eating disorders unit once medically stable. There are multiple factors determining disposition. At a minimum, the admission criteria need to be addressed and corrected to assure medical stability before discharge and continuing psychiatric treatment for the eating disorder.

Clinical Management:

- **Vital signs** every 4 hours for the first 24 hours of admission and then change to provider discretion.^{2,5}
- **Daily weight** by 0800 in underwear and hospital gown only, after 1st void.⁵ Weigh patient with their back to scale, and do not share weight with patient.^{2,4-7}
- **Cardiac monitoring** – Common cardiovascular signs and symptoms include orthostasis with blood pressure and/or pulse changes, bradycardia, and poor peripheral perfusion.^{1,7} Conduction abnormalities may occur as a result of myocardial atrophy and are thought to be the most common cause of death with anorexia nervosa.¹ Repolarization abnormalities, characterized by QTc prolongation and/or increased QT dispersion are more frequent in older patients and with increasing duration of illness.³
 - EKG upon admission^{2,5,7}
 - If abnormal, consider ECHO and consider cardiology consult, no ECHO required if sinus brady.
 - Obtain orthostatic BPs upon admission.^{2,4}
 - If abnormal (>20 BPM increase in pulse, >10 mm Hg increase in diastolic, or >20 mmHg decrease in systolic) obtain every morning
 - Telemetry^{5,6} indicated for:
 - Prolonged QTc (monitor until QTc within borderline range) see article for ranges: (all pts <15 years-QTc 440-460, females > 15 years-QTc 450-460, males > 15 years-QTc 430-450).
 - Bradycardia. Monitor until 50-60 beats per minute when awake and greater than 40 beats per minute when resting/asleep.
 - Orthostatic hypotension
- **Labs**
 - Fluid and electrolyte abnormalities are common. Dehydration can be seen in any patient with an eating disorder and can sometimes lead to orthostatic symptoms, presyncope, or syncope.¹ Chronic dehydration can lead to hypokalemia.¹ Patients with vomiting may have a hypochloremic metabolic alkalosis because of chronic loss of hydrochloric acid.¹ Hypomagnesemia that results from inadequate intake is associated with sudden cardiac death, may interfere with potassium repletion in patients who are hypokalemic, and sometimes contributes to refeeding syndrome.¹ Vigilant monitoring of serum electrolyte, magnesium, phosphorus, and glucose level, and a threshold for phosphorus supplementation prevent the development of refeeding syndrome.¹
 - Admission
 - CBC, CMP (CHEM 14), magnesium, phosphorus⁴, ionized calcium, Thyroid studies, ESR/CRP, celiac, UA⁴, Urine Drug Screen, and Thyroid studies. If female, obtain urine pregnancy test^{2,5,6}
 - If amenorrheic – obtain serum luteinizing and FSH, prolactin and estradiol

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- If amenorrheic for >6-12 months – bone density
- Daily for 7 days and then every Monday, Wednesday, Friday (for duration of hospitalization)
 - CMP (CHEM 14), magnesium, phosphorus ^{5,6} (refeeding is unusual after the 1st 2 weeks of nutritional rehab)
- **Medications**
 - Constipation is common and often difficult to manage. Delayed gastric emptying and increased intestinal transit time often contribute to bloating and fullness after meals.¹
 - Stool softeners⁵, MiraLAX (Polyethylene glycol), or Colace (Docusate). Avoid stimulant laxatives.¹
 - Behaviors
 - If compliant on home behavioral medications, please continue with admission.
 - No standard psychiatry medications upon admission, they can be added once comorbidities such as depression, anxiety, bipolar, or ADHD are impacting treatment.
 - Olanzapine (Zyprexa)¹ – there is data supporting its use with anorexia nervosa, but locally it is not used often. Although it may benefit while in treatment, most patients will not continue to take it as weight gain is a near constant side effect which they will not accept or comply with as an outpatient.
 - Depression¹ – should not be treated with medication until patient is close to 85% of an average body weight as there is data showing these medications do not work when someone is significantly underweight. An SSRI or SNRI do still help with anxiety, so could be used for anxiety as well as a short-term use of a benzodiazepine (Lorazepam, Alprazolam, and Clonazepam). These can be used to decrease anxiety at meals.
- **Nutrition** - Food is medicine for patients with eating disorders. Therefore, food and supplements are not negotiable.²
 - **Refeeding syndrome** may occur in severely malnourished patients.^{1,2,4,7} An instant reversal of prolonged starvation by the reintroduction of food leads to a sudden requirement for electrolytes involved in metabolism.⁷ Phosphate levels along with other electrolytes such as potassium and magnesium can fall very rapidly leading to a combination of metabolic, cardiovascular, neurologic, and hematologic complications.^{1,2,7} The syndrome is most common in hospitalized patients during the first week of hospitalization and patients who are receiving supplemental enteral or parenteral nutrition.^{1,4,7} Recognizing and avoiding refeeding syndrome can be controversial. Taking an overly cautious approach to re-feeding is not evidence based.⁷ There are several cases where patients have been re-fed too cautiously and continued to lose 3-4kg as a result.⁷ This phenomenon, labeled as “underfeeding” syndrome is as risky as overly aggressive re-feeding.⁷
 - **Meal Plan**
 - Initiate at 1600 kcal and advance by 200 kcal per day unless already part of an outpatient treatment program with established calorie level⁸.
 - Provided intake to be 50% carbohydrates, 20% protein, and 30% fat to help prevent refeeding syndrome⁹

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- Meal plans to be preselected for calorie levels and can be modified by the Registered Dietitian (RD) based on three food dislikes^{1,2,7}. The RD will establish a meal plan upon admission.⁵ Food variety should be encouraged.¹
 - Please refer to the document [Eating Disorder Admission: “What to Expect”](#)
- For patients equal to or less than 70% ideal body weight:
 - The [Baldwin wood table](#) is used to determine ideal body weight or can estimate ideal body weight with BMI at the 50th percentile x height (m) squared
 - Supplement daily with 100 mg thiamine and 500 mg phosphorus BID to prevent refeeding syndrome⁹.
 - First 24 hours will receive continuous nasogastric (NG) tube feedings of Nutren Jr with Fiber or Peptamen with Prebio (Nutren 1.0 is greater than 50% carbohydrate). The starvation state is associated with low basal levels of insulin, resulting in clinically significant post-prandial hypoglycemia in the first weeks of refeeding⁹.
 - 3-7 days of nocturnal NG feedings or bolus the remaining calories (50% kcal from NG and 50% kcal by mouth).
 - Nasogastric tube feeding (NG) offers a temporary means of supplementing normal oral feeding for individuals whose medical stability and/or body weight continue to decline despite refeeding efforts. Tube feeding is only used for severe eating disorders when medically necessary and, in most cases, as a supplement to oral feeding.¹¹
- [Supplements](#)
 - Boost Kids Essentials (BKE) 1.5 or Boost Plus will be used (44% and 50% carbohydrates respectively). Boost Kids 1.0 and Boost have higher percentage of carbohydrate content, which is undesirable when trying to prevent refeeding.
 - Supplement will be given based on ¼, ½, ¾ of meals/snacks uneaten.
 - Multiple vitamins,^{1,2,4} phosphorus, magnesium, zinc, and/or thiamine supplementation if <70% ideal body weight or serum phos <3.0 mg/dL.^{1,2,4,6}

Supplement Guidelines (1600-2200 kcal)	
Meals	
Full meal not eaten	12 oz. BKE 1.5
¾ meal not eaten	9 oz. BKE 1.5
½ meal not eaten	6 oz. BKE 1.5
¼ meal not eaten	3 oz. BKE 1.5
Snacks	
Full snack not eaten	6 oz. BKE 1.5
½ snack not eaten	3 oz. BKE 1.5

If the patient receives 75% of intake through BKE 1.5, this will provide a max of 1800 kcal/day. If the patient receives 100% of intake through BKE 1.5, this will provide a max of 2430 kcal/day.

Supplement Guidelines (2400+ kcal)
Meals

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Full meal not eaten	16 oz. BKE 1.5
$\frac{3}{4}$ meal not eaten	12 oz. BKE 1.5
$\frac{1}{2}$ meal not eaten	8 oz. BKE 1.5
$\frac{1}{4}$ meal not eaten	4 oz. BKE 1.5
Snacks	
Full snack not eaten	8 oz. BKE 1.5
$\frac{1}{2}$ snack not eaten	4 oz. BKE 1.5

If the patient receives 75% of intake through supplement, this will provide a max of 2430 kcal/day. If patient receives 100% of intake through BKE 1.5 this would provide a max of 3240 kcal/day.

- **Fluids**
 - 2500 mL fluid restriction with appropriate adjustment based on the dietician's patient-specific fluid recommendations.
 - 8-12 ounces of Gatorade daily will be included in total fluid restriction/requirement
 - Fluids will be milk at meals/snacks and water in between. Juice or Gatorade may be used occasionally as part of the meal plan. If boost used for supplementation, it will be included in total fluid restriction/requirement.
- **Expected weight gain**
 - 1-2 kg (2-4 lbs.) per week after 7 days of weight maintenance.^{1,7-10}
 - If 150-300 grams/day not achieved for two consecutive days after goal calories are met, then increase by 200 kcal.
- **General policies around nutrition**
 - Staff to observe all meals and snacks.
 - Ensure all food and condiments are in unlabeled containers or do not have a nutrition facts label. All labels should be removed from foods before going into the patient room.^{2,5}
 - No food substitutions by nursing.
 - No caffeinated beverages or added salt.⁵
 - No outside food can be brought into the room for patient or family.^{2,5,6}
 - Families and sitters are not allowed to eat in the patient room.^{2,5,6}
 - Complete meals in 30 minutes. Complete snack within 15 minutes. If not, patient must drink nutrition supplement within 20 minutes. If nutrition supplement not completed, place NG and provide goal intake. Remove NG tube after use.^{2,5-7}
 - If NG is being placed more than 2-3 times per day, the medical team can discuss leaving NG in on a case-by-case basis.
 - Strict intake and output.²
- **Activity**
 - 1:1 sitter with door to remain open at all times. ^{2,4-7}

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- Bedrest. No walking in halls. All transports to occur in wheelchair or bed, no ambulation in halls.^{5,7} Patient may ride in a wheelchair pushed by a staff member around the unit to get out of their room briefly.
 - If patient does any inappropriate activity, they will be redirected 2 times and if continue will receive a supplement, 1oz boost plus. Subsequent episodes will continue to receive additional supplements.
- If patient has ordered bathroom privileges, patient may walk to the bathroom and must be observed by staff for all bathroom activities.⁷ Bathroom is to be kept locked when not in use, if unable to be locked, water to sink should be shut off.
- No more than two visitors at a time.
- No electronics (phones, tablets, laptops).
- Patient may perform activities based on ordered activity level, as long as not interfering with therapy.^{2,6} All of these activities while supervised and need to be turned off and/or put away during meals. Patient may go to the playroom with the sitter.² When in playroom all activities must be sedentary (no pinball, wii, air hockey, etc.).²
- **Activity Level - Category 1**
 - This means that the patient can engage in the following activities (not during meal or snack time) as appropriate per nursing staff:
 - Movies
 - Television
 - Puzzle books
 - Reading books
 - Coloring books
 - Pet Therapy
 - Schoolwork
 - Laptop for homework only
 - Room phone to talk to parents only
- **Activity Level - Category 2**
 - This means the patient may engage in all category 1 activities and the following additional activities as appropriate per nursing staff:
 - Painting
 - Playdoh
 - Arts & Crafts
 - Bingo
 - Games
 - Nail Polish
 - Playroom time (seated activities only)
 - Video games
 - Aromatherapy
 - May use room phone to talk to others who have been approved by parent(s) and physicians for 30 minutes in the evening (not during meal or snack times).
 - May eat with family in room

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- **Activity Level - Category 3**
 - This means the patient may engage in all category 1 & 2 activities and the following additional activities as appropriate per nursing staff:
 - Music
 - Patio time
 - Lobby time
 - Movie night in the Glow
 - Family may bring in outside food and eat with patient in room
 - Limit strenuous activity to 20 minutes
- **Consults**
 - Behavioral health, Dietician, Social Work, Psychiatrist, Child Life, School Resource Educator ^{2,5}
 - Consider GI and Cardiology, discuss with primary care physician ⁵

Implementation Items

Order set, teaching sheets for sitters and patients/families

Metrics

1. Increase utilization of order set to 80% in patients admitted with eating disorder ICD diagnosis by April 2023.
2. Maintain length of stay until expected discharge date under 10 days for patients admitted with eating disorder diagnosis through April 2023.
3. Maintain >80% of patients with an order of at least 1600 kcal on admission that have an ICD-10 diagnosis of eating disorder April 2023.
4. Monitor number of patients readmitted for eating disorder related causes within 30 days of discharge by April 2023.

Supporting Documents

- Eating disorder order set
- Teaching sheet for sitters
- Teaching sheet for patient/family

Team Members

Dr. Sheilah Snyder; Sean Akers, Psychologist; Dr. Martin Harrington; Dr. John Pesavento; Kristy Anderson RD; Caitlyn Friedrichsen RD; Michelle Keane RD; Alyssa White LCSW; Melissa Epley; Child Life; Sarah Chantry RN; Katharine Schjodt, MSN, APRN-PCNS; Emily Kerwin RN; Dr. David Freestone; Kelsey Spackler DNP, APRN-NP; Abby Vipond MSN, APRN; Karen Roza RN; Kim Hanssen RN; Jeffery Saxton RN, CPN

Evidence

1. Rosen DS, The Committee on Adolescence. Identification and Management of Eating Disorders in Children and Adolescents. Pediatrics. 2010; 126(6):1240-53.
2. Cone Health Pediatrics Department Eating Disorder Protocol, Revised January 2016.

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4. Garber AK, Michihata N, Hetnal K, Shafer M, Moscicki A. A Prospective Examination of Weight Gain in Hospitalized Adolescents With Anorexia Nervosa on a Recommended Refeeding Protocol. *Journal of Adolescent Health*. 2012; 50:24-9.
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6. Chojnacki M, Ragsdale L. Disordered Eating Guideline. Kentucky Children's Hospital. Revised December 2015.
7. Junior MARSIPAN: Management of Really Sick Patients under 18 with Anorexia Nervosa. Royal College of Psychiatrists. 2012; College Report CR168.
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9. Madden S, Miskovic-Wheatley J, Clarke S, Touyz S, Hay P, Kohn M. Outcomes of a rapid refeeding protocol in Adolescent Anorexia Nervosa. *Journal of Eating Disorders*. 2015; 3(8):1-8. doi:10.1186/s40337-015-0047-1
10. *Feeding tubes for severe anorexia and ARFID rehabilitation*. ACUTE. (2021, February 26). Retrieved April 18, 2023, from <https://www.acute.org/resource/feeding-tubes-anorexia-arfid>

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Baldwin-Wood Table

Average Height-Weight Tables Boys and Girls

*Table prepared by Bird T Baldwin, Ph.D., and Thomas D. Wood, M.D. Published originally by American Child Health Association

*Weights are listed in pounds

	Age (yr)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Height (in.)																
BOYS	38	34	34														
	39	35	35														
	40	36	36														
	41	38	38	38													
	42	39	39	39	39												
	43	41	41	41	41												
	44	44	44	44	44												
	45	46	46	46	46	46											
	46	47	48	48	48	48											
	47	49	50	50	50	50	50										
	48		52	53	53	53	53										
	49		55	55	55	55	55	55									
	50		57	58	58	58	58	58	58								
		51			61	61	61	61	61	61							
		52			63	64	64	64	64	64	64						
	53			66	67	67	67	67	68	68							
	54			70	70	70	70	70	71	71	72						
	55			72	72	73	73	73	74	74	74						
4'8"	56			73	76	77	77	77	77	78	78	80					
	57				79	80	81	81	81	82	83	83					
4'10"	58				83	84	84	84	85	85	86	87					
	59						87	88	89	89	90	90	90				
5'0"	60						91	92	92	93	94	95	96				
	61							95	96	97	99	100	103	106			
	62							100	101	102	101	104	107	111	116		
	63								105	106	107	108	110	113	118	123	127
	64									109	111	113	113	117	121	126	130
5'5"	65									114	117	118	120	122	127	131	134
	67										119	122	125	128	132	136	139
5'8"	68										124	128	130	134	136	139	142
	69											134	134	137	141	143	147
	70											137	139	143	146	149	152
	71											143	144	145	148	151	155
6'0"	72											148	150	151	152	154	159
	73												153	155	156	158	163
	74												157	160	162	164	167
	75												160	164	168	170	171



Disclaimer: Pathways are intended as a guide for practitioners and do not indicate an exclusive course of treatment nor serve as a standard of medical care. These pathways should be adapted by medical providers, when indicated, based on their professional judgement, and taking into account individual patient and family circumstances.

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	Age (yr)	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	Height (in.)															
GIRLS	38	33	33													
	39	34	34													
	40	36	36	36												
	41	37	37	37												
	42	39	39	39												
	43	41	41	41	41											
	44	42	42	42	42											
	45	45	45	45	45	45										
	46	47	47	47	48	48										
	47	49	50	50	50	50	50									
4'1"	48		52	52	52	52	53	53								
	49			54	55	55	56	56								
	50			56	57	58	59	61	62							
	51			59	60	61	61	63	65							
	52			63	64	64	64	65	67							
	53			66	67	67	68	68	69	71						
	54				69	70	70	71	71	73						
4'7"	55				72	74	74	74	75	77	78					
	56					76	78	78	79	81	83					
	57					80	82	82	82	84	88	92				
4'10"	58						84	85	88	88	93	96	101			
	59							87	90	90	92	98	100	103	104	
5'0"	60							91	95	95	97	101	105	108	109	111
	61								99	100	101	105	108	112	113	116
5'2"	62								104	105	106	108	111	115	117	118
	63									110	110	112	116	117	119	120
	64									114	115	117	119	120	122	123
5'5"	65									118	120	121	122	123	125	128
	66										124	124	125	128	129	130
	67										128	128	131	133	133	135
5'8"	68										131	132	135	136	138	138
	69											135	137	138	140	142
	70											136	138	140	142	144
	71											138	140	142	144	145



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