

### 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

#### Exclusion Criteria:

- Patients on suicide precaution

#### Admission Criteria (any of the below):

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

#### Discharge Criteria:

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

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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.<sup>2,5</sup>
- **Daily weight** by 0800 in underwear and hospital gown only, after 1st void. <sup>5</sup> Weigh patient with their back to scale, and do not share weight with patient. <sup>2,4-7</sup>
- **Cardiac monitoring** – Common cardiovascular signs and symptoms include orthostasis with blood pressure and/or pulse changes, bradycardia, and poor peripheral perfusion. <sup>1,7</sup> Conduction abnormalities may occur as a result of myocardial atrophy and are thought to be the most common cause of death with anorexia nervosa. <sup>1</sup> Repolarization abnormalities, characterized by QTc prolongation and/or increased QT dispersion are more frequent in older patients and with increasing duration of illness. <sup>3</sup>
  - o EKG upon admission <sup>2,5,7</sup>
  - o If abnormal, consider ECHO and consider cardiology consult, no ECHO required if sinus brady.
  - o Obtain orthostatic BPs upon admission. <sup>2,4</sup>
    - If abnormal (>20 BPM increase in pulse, >10 mm Hg increase in diastolic, or >20 mmHg decrease in systolic) obtain every morning
  - o Telemetry<sup>5,6</sup> 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**
  - o 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. <sup>1</sup> Chronic dehydration can lead to hypokalemia. <sup>1</sup> Patients with vomiting may have a hypochloremic metabolic alkalosis because of chronic loss of hydrochloric acid. <sup>1</sup> 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. <sup>1</sup> Vigilant monitoring of serum electrolyte, magnesium, phosphorus, and glucose level, and a threshold for phosphorus supplementation prevent the development of refeeding syndrome. <sup>1</sup>
  - o Admission
    - CBC, CMP (CHEM 14), magnesium, phosphorus<sup>4</sup>, ionized calcium, UA<sup>4</sup>, Thyroid studies, ESR/CRP, celiac, if female obtain urine pregnancy test <sup>2,5,6</sup>
      - If amenorrheic – serum luteinizing and FSH, prolactin and estradiol
      - If amenorrheic for >6-12 months – bone density
  - o Daily for 7 days and then every Monday, Wednesday, Friday (for duration of hospitalization)
    - CMP (CHEM 14), magnesium, phosphorus <sup>5,6</sup> (refeeding is unusual after the 1st 2 weeks of nutritional rehab)

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### • Medications

o Constipation is common and often difficult to manage. Delayed gastric emptying and increased intestinal transit time often contribute to bloating and fullness after meals.<sup>1</sup>

- Stool softeners<sup>5</sup>, Miralax (Polyethylene glycol), or Colace (Docusate). Avoid stimulant laxatives.<sup>1</sup>

o Behaviors

- No standard psychiatry medications upon admission, they can be added once comorbidities such as depression, anxiety, bipolar, or ADHD are impacting treatment.
  - Zyprexa<sup>1</sup> – 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.
  - Depression<sup>1</sup> – 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 (Ativan, Xanax, and Klonopin). 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<sup>2</sup>

o **Refeeding syndrome** may occur in severely malnourished patients.<sup>1,2,4,7</sup> An instant reversal of prolonged starvation by the reintroduction of food leads to a sudden requirement for electrolytes involved in metabolism.<sup>7</sup> 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.<sup>1,2,7</sup> The syndrome is most common in hospitalized patients during the first week of hospitalization and patients who are receiving supplemental enteral or parenteral nutrition.<sup>1,4,7</sup> Recognizing and avoiding refeeding syndrome can be controversial. Taking an overly cautious approach to re-feeding is not evidence based.<sup>7</sup> There are several cases where patients have been re-fed too cautiously and continued to lose 3-4kg as a result.<sup>7</sup> This phenomenon, labeled as “underfeeding” syndrome is as risky as overly aggressive re-feeding.<sup>7</sup>

o **Meal Plan**

- Initiate at 1600 kcal and advance by 200 kcal per day unless already part of an outpatient treatment program with established calorie level<sup>8</sup>.
- Provided intake to be 50% carbohydrates, 20% protein, and 30% fat to help prevent refeeding syndrome<sup>9</sup>
- Meal plans to be preselected for calorie levels and can be modified by the Registered Dietitian (RD) based on three food dislikes<sup>1,2,7</sup>. The RD will establish a 7-day meal plan upon admission with the patient.<sup>5</sup> Food variety should be encouraged.<sup>1</sup>
- For patients equal to or less than 70% ideal body weight:
  - Supplement daily with 100 mg thiamin and 500 mg phosphorus BID to prevent refeeding syndrome<sup>9</sup>.
  - 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,

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resulting in clinically significant post-prandial hypoglycemia in the first weeks of refeeding<sup>9</sup>.

- 3-7 days of nocturnal NG feedings or bolus the remaining calories (50% kcal from NG and 50% kcal by mouth).

### o Supplements

- Boost Kids 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  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  of meals/snacks uneaten.
- Multiple vitamin,<sup>1,2,4</sup> phosphorus, magnesium, zinc, and/or thiamine supplementation if <70% ideal body weight or serum phos <3.0 mg/dL.<sup>1,2,4,6</sup>

<b>Supplement Guidelines (1600-2200 kcal)</b>	
<b>Meals</b>	
Full meal not eaten	12 oz. BKE 1.5
$\frac{3}{4}$ meal not eaten	9 oz. BKE 1.5
$\frac{1}{2}$ meal not eaten	6 oz. BKE 1.5
$\frac{1}{4}$ meal not eaten	3 oz. BKE 1.5
<b>Snacks</b>	
Full snack not eaten	6 oz. BKE 1.5
$\frac{1}{2}$ 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 would provide a max of 2430 kcal/day.

<b>Supplement Guidelines (2400+ kcal)</b>	
<b>Meals</b>	
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
<b>Snacks</b>	
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.

### o Fluids

- 2500 mL fluid restriction with appropriate adjustment based on the dietician's patient-specific fluid recommendations.
- 8 ounces of Gatorade daily will be included in total fluid restriction/requirement

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- Fluids will be milk at meals/snacks and water in between. Juice or Gatorade may be used occasionally as part of the meal plan.

### o Expected weight gain

- 1-2 kg (2-4 lbs. per week).<sup>1,7-10</sup>
- If 150-300 grams/day not achieved for two consecutive days after goal calories are met, then increase by 200 kcal.

### o General policies around nutrition

- Staff to observe all meals and snacks.
- Ensure all food and condiments is in unlabeled container or do not have a nutrition facts label. All labels should be removed from foods before going into the patient room.<sup>2,5</sup>
- No food substitutions by nursing.
- No caffeinated beverages or added salt.<sup>5</sup>
- No outside food can be brought into the room for patient or family.<sup>2,5,6</sup>
- Families and sitters are not allowed to eat in the patient room, sitter may have water.<sup>2,5,6</sup>
- Complete meals in 30 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.<sup>2,5-7</sup>
- Daily calorie count.<sup>6,7</sup>
- Strict intake and output.<sup>2</sup>

### • Activity

- o 1:1 sitter with door to remain open at all times.<sup>2,4-7</sup>
- o Bedrest. No walking in halls. All transports to occur in wheelchair or bed, no ambulation in halls.<sup>5,7</sup> Patient may ride in a wheelchair pushed by a staff member around the unit to get out of their room briefly.
- o Bathroom privileges must be observed by staff for all bathroom activities.<sup>7</sup> Shut water off to sink, bathroom to be kept locked when not in use. Okay to walk to bathroom.
- o No more than two visitors at a time.
- o No electronics (phones, tablets, laptops).
- o Patient may watch tv, movies, play cards, art supplies, pet therapy dogs, utilize the playroom, schoolwork, as long as not interfering with therapy.<sup>2,6</sup> 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.<sup>2</sup> When in playroom all activities must be sedentary (no pinball, wii, air hockey, etc.).<sup>2</sup>

### o 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

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- Pet Therapy
- Schoolwork
- Laptop for homework only
- Room phone to talk to parents only

### o 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

### o 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

- o Behavioral health, Dietician, Social Work, Psychiatrist, Child Life, School Resource Educator <sup>2,5</sup>
- o Consider GI and Cardiology, discuss with primary care physician<sup>5</sup>

## Implementation Items

Order set, teaching sheets for sitters and patients/families

## Metrics

- Decrease the average length of stay for eating disorder patients.
- Increase the % of patients with an order for 1600 kcal on admission.
- Increase the % of patients who gain 1-2 kg per week during their hospitalization.

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### Supporting Documents

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

### Team Members

Dr. Sheilah Snyder, Hospitalist; Sean Akers, Psychologist; Amy Vacek, RN, Performance Improvement; Kristy Anderson, Clinical Nutrition; Julianne Tullis, Social Work; Melissa Epley, Child Life; Sarah Chantry, RN, Nursing; and Elizabeth Hamilton, Clinical Nutrition; Katherine Schjodt, Clinical Nurse Specialist.

### Evidence

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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

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