UNC Children's Eating Disorder Protocol

Target population: Patients up to age 17yo requiring admission for medical stabilization for new or previously diagnosed eating disorder. For the purposed of this protocol, eating disorder can be defined as at least one of the following:

- Significant low body weight compared with percent median BMI (ideal body weight)
- Unreasonable weight control methods (restriction of food intake or excessive use of laxatives, diet pills, exercise, etc)
- Distorted body image
- Intense fear of gaining weight or becoming fat, even though underweight

Note that patients may meet the criteria for an eating disorder but not require inpatient admission for medical stabilization and can be managed as an outpatient.

Refeeding syndrome occurs when feeding a chronically malnourished patient and results in metabolic and physiologic changes including:

- Decreased potassium, magnesium, and phosphorus
- Glucose and fluid intolerance
- Cardiac, pulmonary, hematologic, and/or neuromuscular dysfunction

NICE (National Institute for Health and Clinical Excellence) Criteria

Major risk factors for refeeding syndrome:

- BMI < 16kg/m2
- Unintentional weight loss > 15% in previous 3-6 months
- Minimal to no nutrient intake for > 10 days
- Low levels of potassium, phosphate, magnesium prior to any feeding

Minor risk factors:

- BMI < 18.5 kg/m2
- Unintentional weight loss > 10% in previous 3-6 months
- Minimal to no nutritional intake for > 5 days
- History of alcohol misuse or drugs including insulin, chemotherapy, antacids, or diuretics

**One major risk factor or two minor risk factors suggests HIGH risk for refeeding syndrome

Goals:

1) Implement of guideline for criteria for inpatient admission for medical stabilization of eating disorders
2) Collaborate as an interdisciplinary team to support the medical stabilization of patients with eating disorders
3) Reduce the occurrence of refeeding syndrome
4) Promote patient weight gain and medical stability in a structured manner

5) Decrease number of hospital days required for medical stabilization and discharge or transfer to inpatient or outpatient care

Quality Metrics:

1) Number of patients admitted for medical stabilization for eating disorders monthly
2) Percentage of patients with refeeding syndrome
3) Average length of stay
4) Average number of days to reach medical stabilization
5) Number of patients readmitted for eating disorder related issues within 30, 60, 90 days.

Recommend consultation with UNC Adolescent Medicine at time of presentation to determine if inpatient admission for medical stabilization, admission to a dedicated eating disorder unit, or outpatient management would be most appropriate for the patient.

Inpatient admission criteria for medical stabilization.:

1) Refusal to eat and drink resulting in clinical dehydration and/or electrolyte imbalance
    a. Hypokalemia < 3.5 mmol/L
    b. Hypophosphatemia < 3.0 mg/dL
    c. Hypomagnesemia < 1.8 mg/dL
2) Need for cardiac monitoring
    a. Heart rate is < 45 beats per minute awake and < 40 beats per minute during sleep
    b. *Symptomatic* orthostasis: Heart rate increase by 30 bpm and/or systolic blood pressure down by 20mmHg on standing.
    c. Syncope
    d. Prolonged QTc ≥ 0.45
3) Acute medical complications of nutrition, purging, or acute food or fluid refusal > 48h Ie. esophageal tears, hematemesis, seizure, cardiac failure, pancreatitis
4) Temperature < 35.5°C (96°F)
5) < 75% median BMI OR loss of 15% body mass loss in 6 months due to risk for refeeding syndrome

Consider PICU admission when the following is present:

1) QTc ≥ 0.5
2) Cardiac arrythmia other than sinus bradycardia (Single PVCs may be normal in adolescent patients and may not warrant PICU transfer. Consider patient condition. Cardiology consult prior to decision to transfer may be appropriate.)
3) Altered neurologic status
4) Persistently low heart rate < 40 beats per minute not responsive to warming or oral nutrition

A dedicated eating disorder unit admission may be more appropriate for patients with:

1) Ongoing weight loss despite intensive outpatient management
2) Food refusal but drinking liquids, are not dehydrated, and do not meet any of the above medical criteria.

Treatment team:

- Pediatric Hospitalist
- Adolescent Medicine Pediatrician
- Registered Dietitian
- Nursing
- Patient Care Technician (Sitter)
- Case Management/Social Work

Medical Evaluation:

1) **Pertinent history**
    - How do you control your weight?
    - Headaches?
    - Dizziness or syncope?
    - Nausea, abdominal pain, vomiting, constipation, diarrhea?
    - Blood in stool?
    - Hair changes, skin changes?
    - Cold intolerance?
    - Menstrual history?
    - Risk assessment: abuse, drugs, alcohol, tobacco, sexual activity, depression/anxiety, suicidality

2) **Pertinent physical exam findings to look for:**
    - Bruises, scratches on palate and posterior pharynx
    - Sub-conjunctival hemorrhage from vomiting
    - Salivary/parotid gland enlargement
    - Dental enamel erosion
    - Callouses on knuckles
    - Cardiac rhythm changes
    - Murmurs
    - Acrocyanosis
    - Abdominal distension with hypoactive bowel sounds
    - Delayed sexual maturity rating
    - Low of muscle mass/emaciation
    - Edema
    - Hypercarotenemia, dry skin
    - Dull/brittle hair or nails
    - Lanugo

3) **Vital Signs/measurements**
    - Vital signs q4h
        - If HR < 40, obtain STAT EKG to monitor QTc, strict bedrest until HR stabilizes.
        - If T< 35.5°C (96°F) warm with blankets and recheck.

        - Cardiorespiratory monitor- if patient is bradycardic, orthostatic, or abnormal QTc. Can be discontinued once vital signs are normal for 24h. Monitor alarm settings can be discussed with physician.
    - Orthostatic vital signs
        - Obtain on admission and daily until normalized.
        - Patient should be supine for 10 minutes prior to the initial measurement of blood pressure and heart rate. Record blood pressure and heart rate.
        - Have the patient sit on the edge of the bed with legs dangling. Record blood pressure and heart rate immediately.
        - Ask the patient to stand. Record blood pressure and heart rate immediately.
        - Repeat and record blood pressure and heart rate after patient standing for 3 minutes.
        - Note symptoms with each change in position.
        - Positive orthostatic definition for eating disorder protocol*:* Heart rate increase by 30 bpm and/or systolic blood pressure down by 20mmHg on standing.
    - Weight and Height
        - <u>Weigh patient on admission. Weights to be done on Mondays and Thursdays during admission.</u>
        - Patient should be wearing hospital gown and underwear only with back to scale. After weight is obtained, patient can wear shirt without pockets or hood, bra for females, and pants without pockets.
        - Staff must show a neutral response to any weight gain or loss and not discuss the actual weight in front of the patient.
        - Do not reweigh per patient's request.
        - If numbers do not make sense, patient can be reweighed at the discretion of the medical team.
    - Order of measurements should occur before breakfast each day (6am-8am) should be: orthostatic vital signs, void, weight. If patient cannot void, wait until first void to obtain weight, and do not provide liquids prior to voiding.
    - Height measured on admission.
    - Strict I/Os.

4) **Labs and tests**
    - Admission:
        - CBC, ESR, CMP, Phos, Mag, cholesterol, triglyceride, GGT, amylase, lipase, TSH, free T3, T3, LH/FSH/prolactin/estradiol if amenorrhoeic, urine pregnancy test, urine toxicology screen, urinalysis. Thiamine, Vitamin D, ferritin. Consider B9 or B12 if vegetarian or vegan.
        - EKG

    - Daily:
        - BMP, Mag, Phos daily for the first three days. Depending on refeeding risk and need for replacement, may obtain more frequently. Once stable, space to q48h-q72h.

        - Urinalysis daily for urine pH (>8-9 suggest purging) and specific gravity (<1.010 suggests water loading)
        - EKG daily for 3 days, then as needed if electrolytes normal.

5) **Medications**
    - Multivitamin with zinc 1 tablet PO daily.
    - Thiamine 100-300mg PO daily for first 3 days.
    - Consider Neutra-Phos 1 packet (phosphorus 250mg + potassium 7.1 mEq + sodium 7.1mEq) PO BID either empirically (especially if high risk for refeeding) or if hypophosphatemia or hypokalemia.
    - Consider medication for sleep (melatonin).
    - Docusate or miralax if constipated. Avoid stimulant laxatives.
6) **Bedside sitter**
    - Checklist to delineate responsibilities.
    - If suicidal, follow suicide protocol.
    - Patient must be monitored 24h.
    - If the patient is not suicidal or at risk for self-harm, Avasys video monitoring may be used for monitoring 11p-7a. Patient should be monitored for exercise behaviors, purging behaviors, and self-harm. Patient should only go into the bathroom with the supervision of a staff member physically in the room.

Partnering with patient and family

1) Patients and families will receive and sign treatment contract. This will be reviewed with the family by the pediatric hospitalist on admission.
2) At least one multidisciplinary team and family meeting within 48-72 hours of admission.
3) Discussions with patients/families:
    - Focus on medical condition and objective data such as vital signs, labs and orthostatic information
    - Do not discuss patient's weight or calorie goals in front of the patient
    - Avoid positive or negative reactions towards amount of meals eaten. Best to stay neutral. May state whether patient is following their medical plan.
4) Interdisciplinary support
    - Consultations from adolescent medicine, nutrition therapy, case management/social work

Nutrition

1) Nutrition Therapy consult
    - Malnutrition assessment, calorie and weight goals, recommendations for daily meal plans, supplement recommendations, assist parent in making meal choices
2) Meals/snacks
    - Food is medicine for patients with eating disorders. Food and supplements are non-negotiable.
    - Caloric goals:
        - Start with 1600 kcal/day
        - Increase by 200 kcal/day starting on hospital day 2

        - Target weight gain of 0.3-0.4lb/day (100-200g/day)
    - Meals and snacks are selected by the parent with the dietitian
        - At least 3 meals/24hours will be ordered at a time
        - Snacks will be added once patient reaches 2000kcal/day
        - Standard Day 1 Menu with three options. Subsequent days will be determined by dietitian with input from parents. Parents can identify 3 "dislikes" for their child that will not be included in the meals offered.
        - If the patient is admitted over the weekend. Use the standard day 1 menu Saturday and Sunday. Add ½ Ensure Plus (4oz) to Sunday's meal plan.
        - Ordered as Eating Disorder Diet/UNCH/Rex-Only-RD-Manage.
        - No swapping, exchanging or substitutions allowed.
        - Condiments can be offered except for hot sauce and salt.
        - If supplementation is required, patient will receive Ensure Plus for meal/snack replacements
        - Vegetarian, lactose-free (if intolerant), gluten (if Celiac) and religious diets will be respected. If not confirmed gluten allergy, will respect diet preference if able to meet nutritional requirements. If not, this will be readdressed with the patient.
        - If patient admitted after regular Nutrition Therapy Office hours (6:45p-6:45a), RN can provide one of the following meals/snacks:
            - ❖ Saltines (8 crackers), Peanut Butter (2 packets), Applesauce
            - ❖ Cheerios (1 container), Whole Milk (8oz), Juice (8oz)
    - Meal Trays
        - All food should be in unlabeled containers.
        - Tray should be checked against the tray ticket for accuracy by the nurse. The dietitian will leave the menu plan in a notebook on the floor for reference.
        - Snacks (if ordered) will come with the meal tray. For example, morning snack on breakfast tray, afternoon snack on lunch tray, and evening snack on dinner tray.
    - Meal Times
        - Breakfast 08:00
        - Morning snack 10:00
        - Lunch 1200
        - Afternoon snack 1430
        - Dinner 1700
        - Evening snack 2000
        - Meals last for 30 minutes, including any time needed for reheating of food items, and snacks last for 20 minutes
    - Meal rules
        - No food or condiments from home.
        - Patient will only eat in their room.
        - No other food or drinks are permitted in the patient's room at any time (ie. family members, visitors, etc). The sitter may have one drink with lid in the room.

- Patient can use the restroom prior to meal as this will not be allowed during the post-meal observation time.
- The patient will be observed throughout the meal by the sitter. The patient may watch TV, read a book, complete a puzzle, etc. as this may be a coping strategy for completing meals.
- Patient must eat sitting in a chair using side table. Patients cannot get up during meal time. They are not allowed to eat in bed. Hands and napkins must be above the table at all times.
- Staff must check trays for hidden food or food discarded in napkins. Staff must check tray table to ensure no food is hidden in tray.
- When the patient is first admitted, no family members or visitors are allowed during meals. However, recent studies have shown benefit of family mealtime as the patient progresses. Parents should meet with treatment team prior to be "coached" on how to best approach shared mealtimes with their child.
- If the patient has significant mealtime anxiety interfering with eating, physician can consider short term use of hydroxyzine or a benzodiazepine (lorazapam, alprazolam, or clonazepam). Caution with hydroxyzine due to risk for arrythmia. SSRIs, SNRIs, or Olanzepine are options for longer term use that can be prescribed in coordination with Adolescent Medicine.

- Meal and snack replacements/supplementation
  - *Any uneaten or vomited food* will be removed and replaced with a supplement.
  - When the patient is receiving 3 meals a day, the supplementation will occur after each meal.
    - Example: Patent at 20% of lunch, so will be offered 11oz of Ensure Plus replacement after lunch.
  - When patient is receiving 3 meals a day AND 3 snacks a day, the supplementation will occur after each snack (ie. after morning snack, after afternoon snack, and after evening snack). The volume will be determined by the amount of the meal completed AND the amount of the snack completed.
    - Example: Patient ate 50% of breakfast (6oz Ensure Plus replacement) and 25% of morning snack (3oz Ensure Plus replacement), so after morning snack will need to drink 9oz of Ensure Plus for replacement.

Meal completed	**Amount of Ensure Plus to be provided**
0-24%	11 oz
25%	8 oz
50%	6 oz
75-99%	3 oz
Snack Completed	**Amount of Ensure Plus to be provided**
0-24%	4 oz
25%	3 oz
50%	2 oz
75-99%	1 oz

- The patient has 20 minutes to drink the entire supplement. If this does not happen or vomiting occurs, a nasogastric tube will be placed, and caloric replacement will occur via this route. The Ensure Plus will be bolused through the NG tube at 400ml/h.
- The NGT can be removed after use after the first insertion. After the second insertion, the NGT is to stay in place until the patient has consumed 100% of meals (and snacks if applicable) for at least 24h.
- Portions of food consumed and any replacement supplements that the patient received will be documented in the electronic medical record by the RN.
    - 1 bottle of Ensure Plus= 8 oz = 350kcal
- If expected weight gain (100-200g/day) is not made during the first week or patient reaches a point in the meal plan where additional nutrition outside of the meal is warranted, changes in the nutritional plan will be made with the dietitian to increase calories as needed to promote weight gain.

3) Fluid intake
    - Physician and dietitian should determine the target daily fluid intake depending on age, level of hydration, and presence of symptomatic orthostasis. This is usually equivalent to maintenance rate if not dehydrated.
    - Target fluid amount should be entered into the diet order. Patient should not consume more than 2500 ml fluid/day.
    - Fluid can be given orally as water, whole milk, juice, or regular soda. No diet drinks allowed.
    - No fluids allowed 30 minutes prior to meals/snacks to preserve appetite and 30 minutes prior to daily weighing
    - IV fluids should not be used routinely unless patient had moderate to severe dehydration or symptomatic orthostasis. IV fluids should not be bolused or exceed maintenance rate of 50% so long as patient is stable. Oral or NG fluids are encouraged.
    - Fluid intake should be documented in the electronic medical record by the RN.

Activity

- Rest periods must be observed in bed after meals for 60 minutes and after snacks for 30 minutes. No bathroom/shower use during this time. Bathroom use only permitted if an emergency and is supervised.
- Activity level allowed at the discretion of the care team. Considerations include:
    - If daytime HR<45, symptomatic orthostasis, hypotension, temperature < 35.5°C or other unstable vital sign: strict bed rest with assisted bedside commode privileges.
    - Once vital signs stable, the patient can be given the option of using the bedside commode or using the bathroom and one shower per day is allowed. When using the bathroom or showering, the door should be cracked so staff member can witness movements in their peripheral vision.
    - Be consistent among team members of what activity is allowed. Activity level should be written on the patient whiteboard in the room and updated as

needed. MD order will be entered for bathroom privileges (including shower) and activity allowances.

- Exercise is not allowed. If exercise behaviors are witnessed by staff, patients will be asked directly to stop.
- Going out of the room in a wheelchair is safe starting day of admission if vital signs are stable. Activity can progress gradually from strict bedrest, to out of bed to chair, to ad lib around the room, to limited walks in the hallway and time in the playroom.

Electronic devices

- Patient allowed to use personal electronic devices in room but are restricted from searching things pertaining to body image, nutrition, calories, exercise
- Staff should directly ask patient to stop if electronic devices are being used inappropriately. If action continues, device is removed from the room.

Discharge Criteria

- Pediatric hospitalist should discuss appropriate disposition following medical stabilization with adolescent medicine, case management and the patient/family.

Criteria for transfer to dedicated eating disorders unit (can discuss with potential accepting unit):

1) Normal electrolytes
2) Normal vital signs (HR ≥ 45 daytime/awake and ≥40 nighttime/asleep), normal blood pressure for age, no symptomatic orthostasis
3) Normal cardiac rhythm and normal QTc (< 0.45) on EKG
4) No acute medical complications (ie. no esophageal tears/hematemesis, no seizure, no cardiac failure, no pancreatitis

Criteria for going home:

All of the above plus:

1) Weight is ≥ 75% IBW* or meeting daily kcal goal for at least 24 hours and a robust outpatient plan is in place
2) Comprehensive follow up in place, which can include PCP, adolescent medicine, therapist, registered dietitian, etc. If possible, have the patient go to clinic the day of discharge to get a weight done on the clinic scale that can be used as baseline.

*This does not necessarily indicate a healthy weight, but is a reasonable standard for discharge from the hospital

Protocol adapted with permission from Cone Health Guidelines for Medical Treatment of Eating Disorders On the Inpatient Pediatric Unit and UNC Division of General Pediatrics and Adolescent Medicine Guidelines for Evaluating and Treating Children and Adolescents with Eating Disorders.

Evidence base

1) American Academy of Pediatrics Clinical Report—Identification and Management of Eating Disorders in Children and Adolescents. PEDIATRICS 2010;126(6):1240-1253.
2) Committee on Adolescence, American Academy of Pediatrics. Policy Statement: Identifying and Treating Eating Disorders. PEDIATRICS 2003;111(1):204-211.
3) Eating Disorders in Adolescents: Position Paper of the Society For Adolescent Medicine. JOURNAL OF ADOLESCENT HEALTH 2003;33:496–503
4) Clinical Practice Guidelines for treating restrictive eating disorder patients during medical hospitalization. CURRENT OP IN PED 20: 390-397
5) National Institute for Health and Care Excellence (2017). Eating disorders: recognition and treatment. Available at: https://www.nice.org.uk/guidance/ng69/resources/eating-disorders-recognition-and-treatment-pdf-1837582159813

APPENDIX:

Steps to calculating % median BMI:
1. Find patient's BMI using the following link (need patient's height & weight):
https://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm

2. Using a CDC growth/BMI chart/table (or one of the links below):
BOYS: http://www.cdc.gov/growthcharts/data/set2clinical/cj41c073.pdf
GIRLS: http://www.cdc.gov/growthcharts/data/set1clinical/cj41l024.pdf Find the BMI at the 50th percentile* for the patient's age

Median (50%) BMI for age and sex tables
available here: https://www.cdc.gov/growthcharts/html_charts/bmiagerev.htm

Diagnostic Criteria from the DSM-IV-TR (1):
Anorexia Nervosa (AN)
• Refusal to maintain body weight at or above a minimally normal weight for age and height (i.e., less than 85% Expected Body Weight – see Appendix A). This can be from weight loss or from failure to gain adequate weight during a period of growth.
• Intense fear of gaining weight or becoming fat, even though underweight.
• Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight
• The presence of amenorrhea in postmenarcheal females (i.e., the absence of three or more consecutive menstrual periods). A post-menarcheal female is also considered to have amenorrhea if her menstrual periods only occur following hormone administration, (i.e., estrogen and progesterone).
• Types
Restricting Type: During the episode of AN, the patient engages in severe caloric restriction (e.g., dieting, fasting, and excessive exercise). However the

patient does not engage in binge-eating/purging behaviors (e.g., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
Binge-Eating/Purging Type: During the current episode of AN, the patient engages in both severe caloric restriction and binge-eating/purging behaviors.

Bulimia Nervosa (BN)
• Rather than restriction, the patient engages in recurrent episodes of binge-eating. An episode of binge-eating is characterized by both of the following:
1. Eating, in a discrete period of time (e.g. within any 2 hour period), an amount of food that is definitely larger than most people would eat during a similar period of time or under similar circumstances.
2. A sense of lack of control over eating during the episode (e.g. a feeling that one cannot stop eating or control what or how much one is eating).
• Recurrent, inappropriate compensatory behaviors in order to prevent weight gain (e.g., self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise).
• The binge-eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months.
• Self-evaluation is unduly influenced by body shape and weight.
• The disturbance does not occur exclusively during episodes of AN.
• Types:
Purging Type: During the current episode of BN, the patient has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
Non-Purging Type: During the current episode of BN, the patient has used other inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.
• Note: These patients tend to be of normal weight or even overweight with intact menses.

Diagnostic Criteria from the DSM-IV-TR (continued) (1):
Eating Disorder Not Otherwise Specified
• All criteria for AN are met except that the patient has normal menses.
• All criteria for AN are met except that despite significant weight loss, the patient's weight remains in the normal range (i.e., greater than 85% Expected Body Weight).
• All criteria for BN are met except that binge-eating and inappropriate compensatory behaviors occur less frequently than twice per week or for less than three months.
• The patient is of normal body weight (i.e., greater than 85% Expected Body Weight) but regularly engages in inappropriate compensatory behavior after eating small or normal amounts of food (e.g., self-induced vomiting after eating two cookies).