Critical Complications in Eating Disorder Treatment: Refeeding Syndrome, Pseudo-Bartter Syndrome, and More

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Specialized Treatment for Eating Disorders
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Objectives

1. Identify risk factors for refeeding syndrome and pseudo-Bartter syndrome.
2. Identify symptoms and lab findings in refeeding syndrome and pseudo-Bartter syndrome.
3. Recognize factors that indicate a higher level of care

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Refeeding Syndrome

- * "The clinical and metabolic derangements that can occur during refeeding…of a malnourished patient."
- Possibly fatal
- Possible at any age, size, or weight

* Academy for Eating Disorders. (2021). *Eating disorders: A guide to medical care.* Reston, VA. Academy for Eating Disorders Medical Care Standards Committee. https://www.aedweb.org/resources/publications/medical-care-standards

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Case Study: Ava

- Ava: 16-year-old sophomore in high school
- 1 year pattern of restriction
  - Now refusing all but protein shake daily
  - BMI 15
- Heart rate now 50 beats per minute while awake
- Severe abdominal pain with eating
- Extensive GI workup shows pancreatitis. Ava feels this mean she can't eat (despite education)
- Therapist and psychiatry provider help parents choose inpt care for her safety. Ava does not wish to go.

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Risk for Refeeding Syndrome

- Weight loss of > 10-15% in 3-6 months, regardless of current weight
- Chronic low body weight
- BMI < 15 kg/m
- Little or no nutrition > 10 days
- Abnormal electrolytes before weight restoration begins
- Significant alcohol use
- Insulin, laxative, or diuretic misuse

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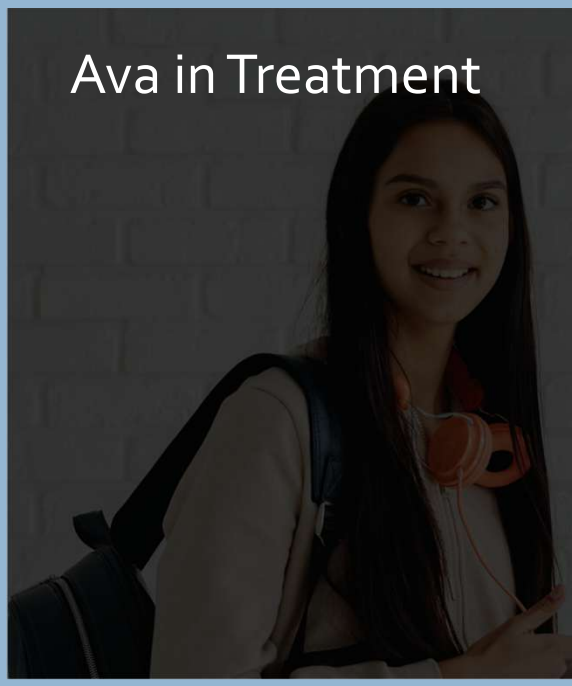
Ava in Treatment



- Labs daily x 5 days
- Ava refuses most intake for first week before deciding to trial meal plan
- 4 Days Later (day 11 of treatment):
  - Increased heartrate (now 80 beats/minute)
  - Some swelling in feet
  - Headaches
- Restart daily labs
  - Potassium low
  - Glucose low

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Signs and Symptoms of Refeeding Syndrome

- Shortness of breath
- Tachycardia (relative)
- Chest pain
- Palpitations
- Edema
- Hypothermia
- Headache
- Numbness/weakness
- Tremors/seizures
- Confusion/delirium
- Muscle cramps
- GI discomfort
- Rhabdomyolysis

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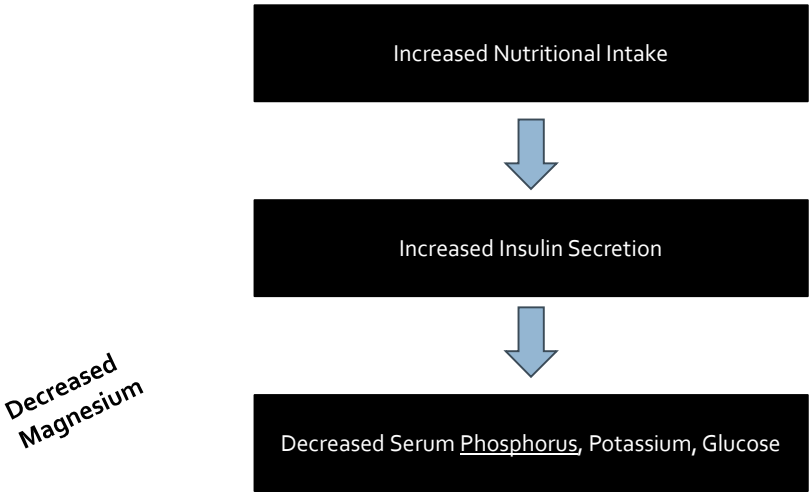
Refeeding syndrome



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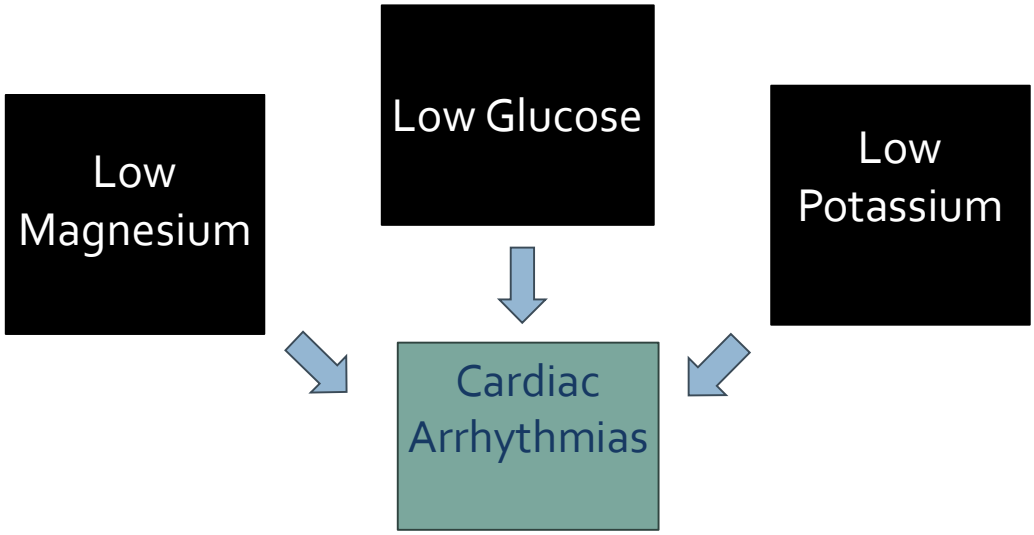
Refeeding Syndrome: Cardiac



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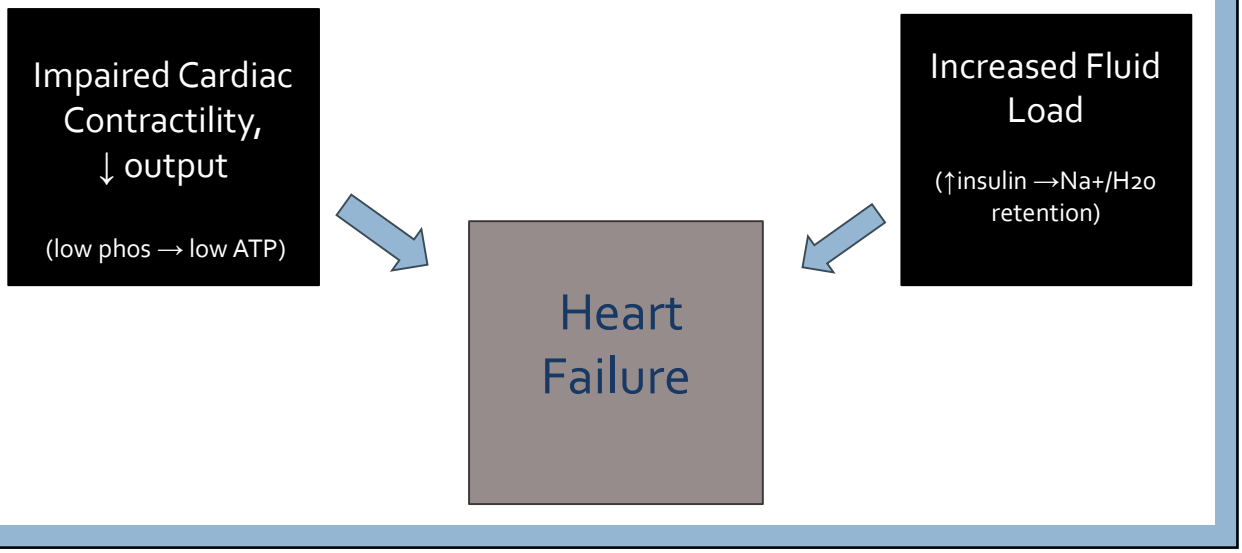
Refeeding Syndrome: Cardiac



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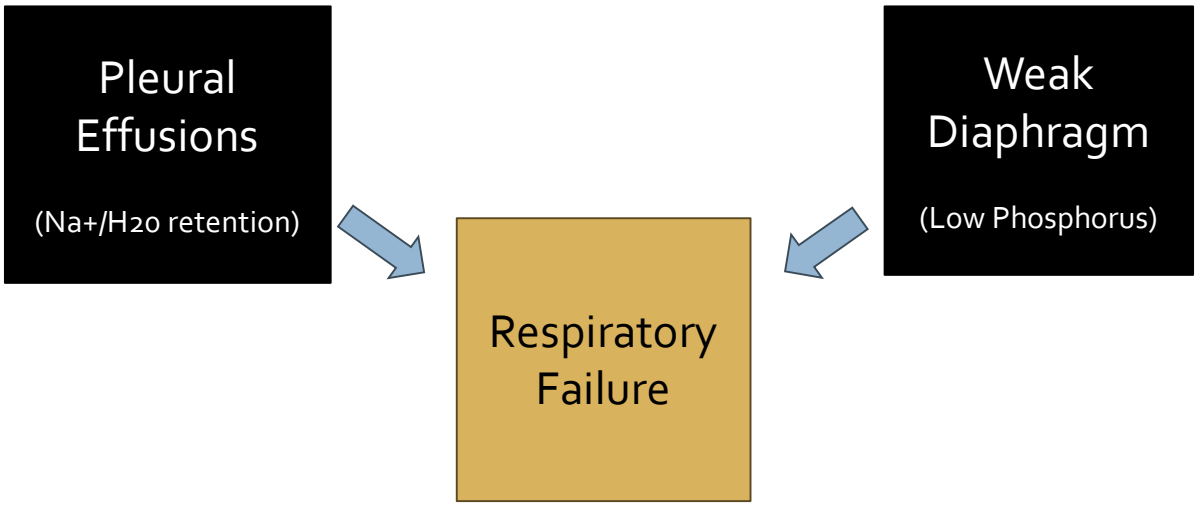
Refeeding Syndrome: Respiratory



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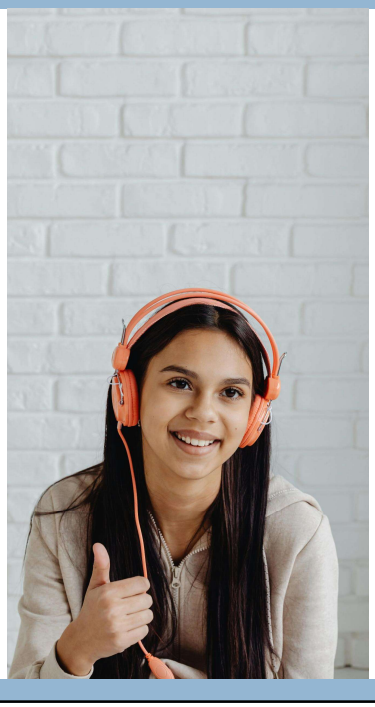
Ava in Treatment

- Supplements
  - Potassium (Regular Labs)
  - Glucose tabs when low (Regular Monitoring)
- Escalating meal plan for weight restoration
- Abdominal pain slowly improves
- Eventually to RTC
- Struggles with common discomfort related to weight restoration:
  - Body image thoughts
  - Achy joints
  - Fatigue
  - Nausea
  - Acne
  - All of these resolve within 2 weeks of weight restoration



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Refeeding Prevention & Treatment

- If risk, refer to higher level of care
- Monitor labs!
  - Usually no symptoms or concerning labs x 1st 3-5 days
  - CMP, magnesium, phosphorus daily to every other day
  - Higher risk → more frequent labs
  - Monitor until stable
- Supplement where deficiencies (usually oral)
- Daily multivitamin

Remember:
- Low Phosphorus
- Low Magnesium
- Low Potassium
- Low Glucose

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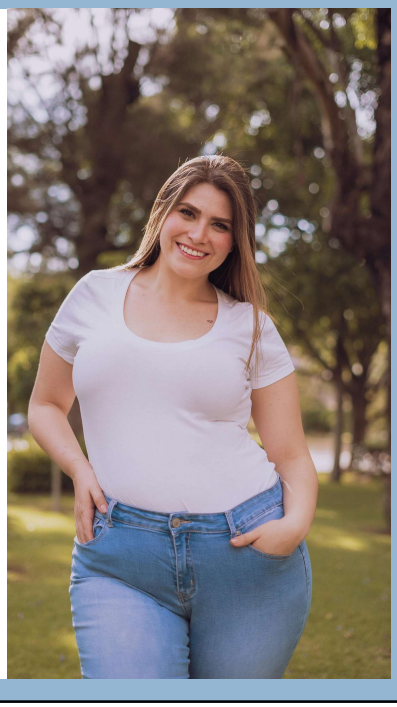
Case Study: Alyssa

- Alyssa: 30-year-old fourth grade teacher
- History of episodic dieting x 10 years with rebound weight gain (increasing over time).
- Now 6 month history severe dieting; about 1100 calories/day
- Drinks 3 shots/evening
- Has Type 1 Diabetes, doesn't take insulin if "too much carb" but reports takes appropriately ½ the time.
- 5% weight loss in the last year



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Alyssa at Therapist's

- Discuss worsening depression in the last year and relation to dieting and Alyssa's perceived self-failure.
- Discuss health at every size and opportunities to appreciate the body and engage in behaviors that focus on health.
- Discussed meeting with a dietitian to find a more appropriate approach to intake.
- Alyssa decides to start a walking group with friends and stop dieting.
- Do not discuss intake, alcohol, insulin.

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Allysa Follow Up Visits 7 Days Later

At Dietitian

- Discuss her eating with her family regularly x 6 days
- Estimates 1800 calories/day x 5 days
- Last night had pie for the first time in a year (her favorite treat)
- But today she feels very unwell
- Discussed plans for meals and eventual goal of eating intuitively

At PCP

- Rapid respiratory rate
- Reports palpitations
- Nausea and sore muscles
- A little clammy

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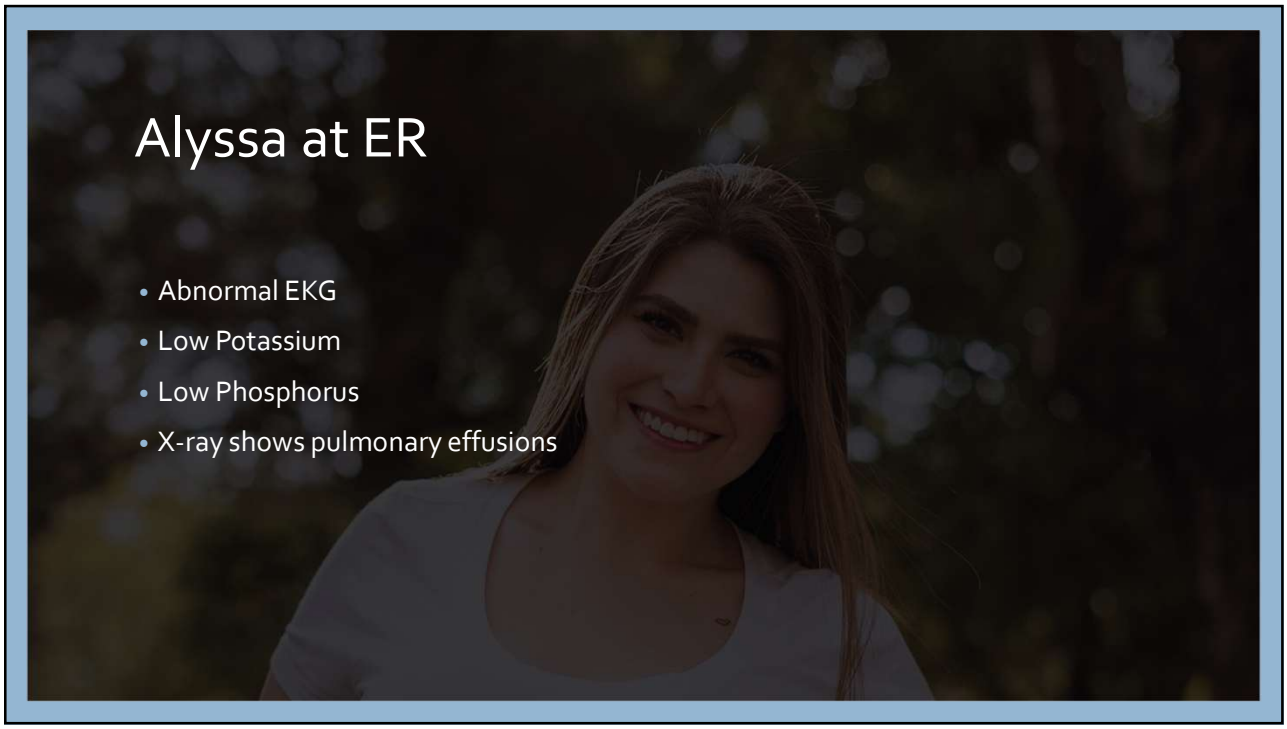
Alyssa at ER
• Abnormal EKG
• Low Potassium
• Low Phosphorus
• X-ray shows pulmonary effusions

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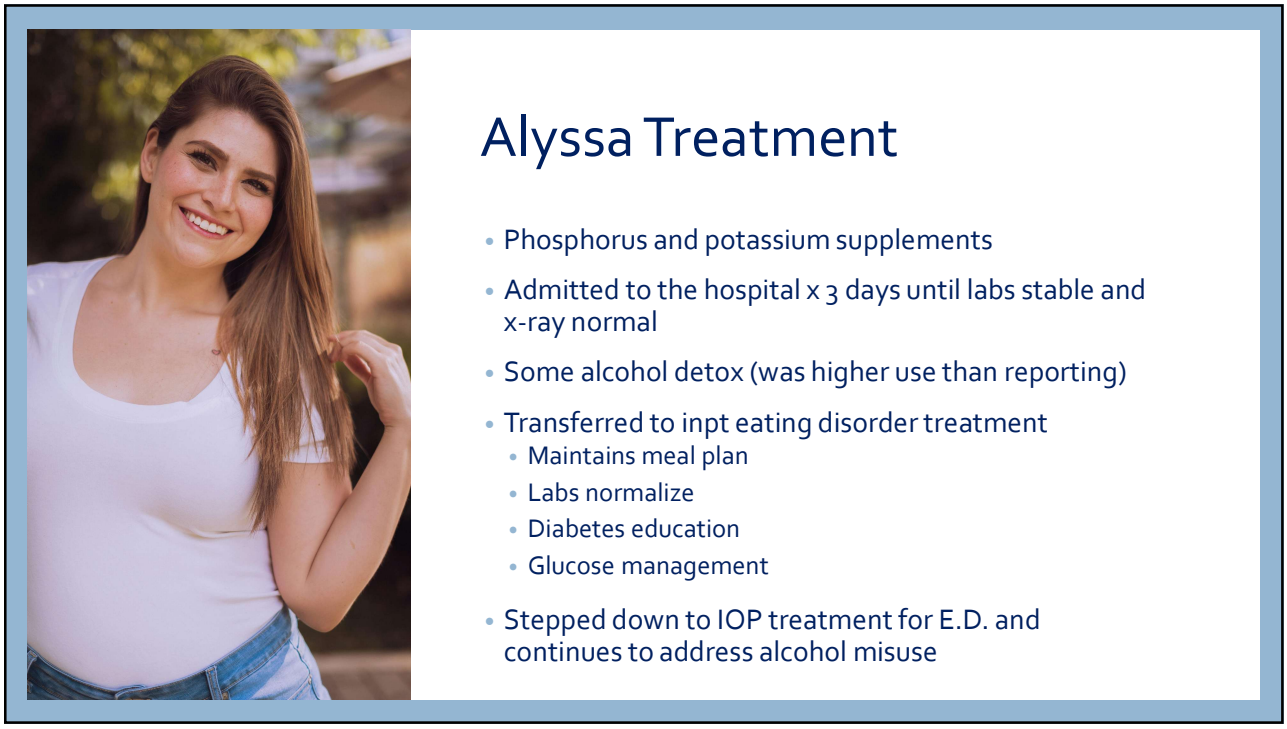
Alyssa Treatment
• Phosphorus and potassium supplements
• Admitted to the hospital x 3 days until labs stable and x-ray normal
• Some alcohol detox (was higher use than reporting)
• Transferred to inpt eating disorder treatment
• Maintains meal plan
• Labs normalize
• Diabetes education
• Glucose management
• Stepped down to IOP treatment for E.D. and continues to address alcohol misuse

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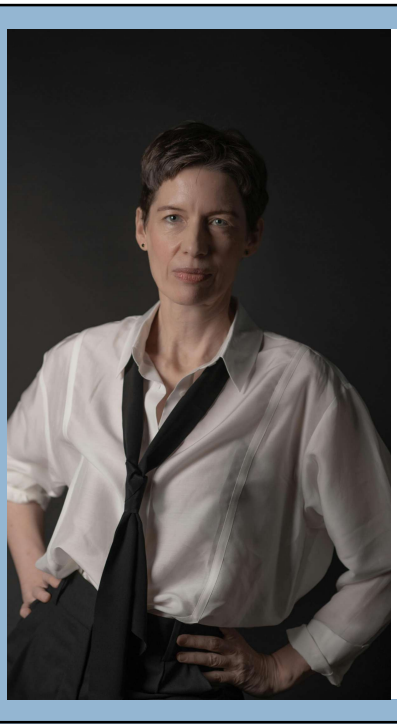

Case Study: KellyAnne

- 50-year-old CFO of a large business
- Increased stress at work with company being bought out.
- Long history anorexia nervosa, periods of recovery
- Recently losing weight
  - Is at lowest body weight
  - Intake only 1 salad/day
- Boss pressing her to get treatment now that she's finished all her audits.

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KellyAnne at Dietitian Visit

- BMI now down to 14.5
- 10% weight loss in the last 3 months
- Discuss risk for refeeding syndrome
- Discuss very low intake and weight
- Recommends a higher level of care asap
- Admitted to inpatient eating disorder hospital

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KellyAnne Inpatient Stay

- Labs daily, watching:
  - Phosphorus
  - Magnesium
  - Potassium
  - Glucose
- Lung and edema checks every night
- Begins weight restoration
- After 1st meal plan increase:
  - Severe nausea
  - Upper abdominal pain
  - Vomiting despite treatment for nausea

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Superior Mesenteric Artery Syndrome (SMA)

- Pathophysiology
  - Lack of mesenteric fat pad cushion (d/t weight loss)
  - Compression of duodenum between aorta and mesenteric artery
  - Bowel obstruction
  - Can be life-threatening
- Symptoms
  - Sudden or gradual onset epigastric pain
  - Accompanied by fullness, nausea, vomiting
  - Occurs with reintroduction of significant intake

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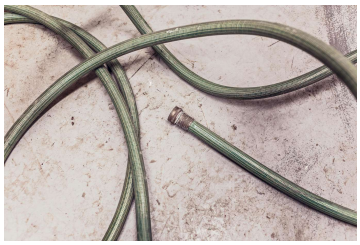
Superior Mesenteric Artery Syndrome (SMA)

- Diagnosis
  - Dilated stomach on x-ray
  - CT (standard for dx): decreased aortomesenteric angle
- Treatment
  - Liquid diet for weight restoration
  - Rarely TPN
  - Advance diet as tolerated
  - Weight restoration is the cure!



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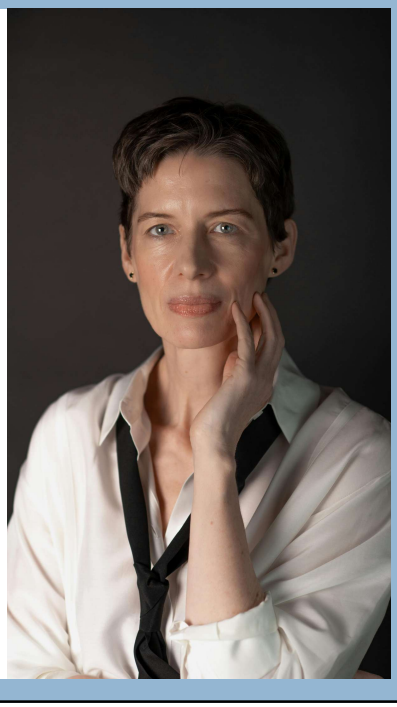
KellyAnne in Treatment

- NG tube feeding x 2 weeks
  - Near resolution of symptoms.
  - 6 lbs wt restoration
- Then able to tolerate some oral nutrition
  - Gradually reintroduced
  - To oral intake entirely within the week.
- Experiences many common discomforts:
  - Gastroparesis
  - Body Pain
  - Emotional Distress
  - Nerve Pain
  - Headaches



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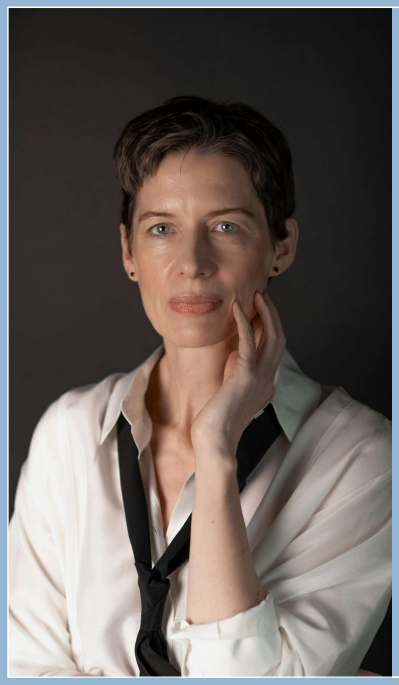

KellyAnne in Treatment

- Steps down to RTC to complete weight restoration
- Becomes more independent in meal plan
- Steps down to PHP
  Worsening restriction
  Excessive exercise
- Steps back up to RTC x 1 month
  - early labs show potential refeeding
  - supplements given, labs return to normal
- Then to PHP, does well
- 2 months later returns to outpatient care

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Case study 1: Lizette

- Lizette: 18-year-old who just started college
- 5 year history of restricting during day, binge/purge at night
- 3 months on GLP-1 agonist, decreased weight from 230 to 195 lbs (about 15% decrease).
- Because the vomiting so severe, provider stopped GLP-1
- Arrives to RD to help her manage her hunger - extreme in last week.

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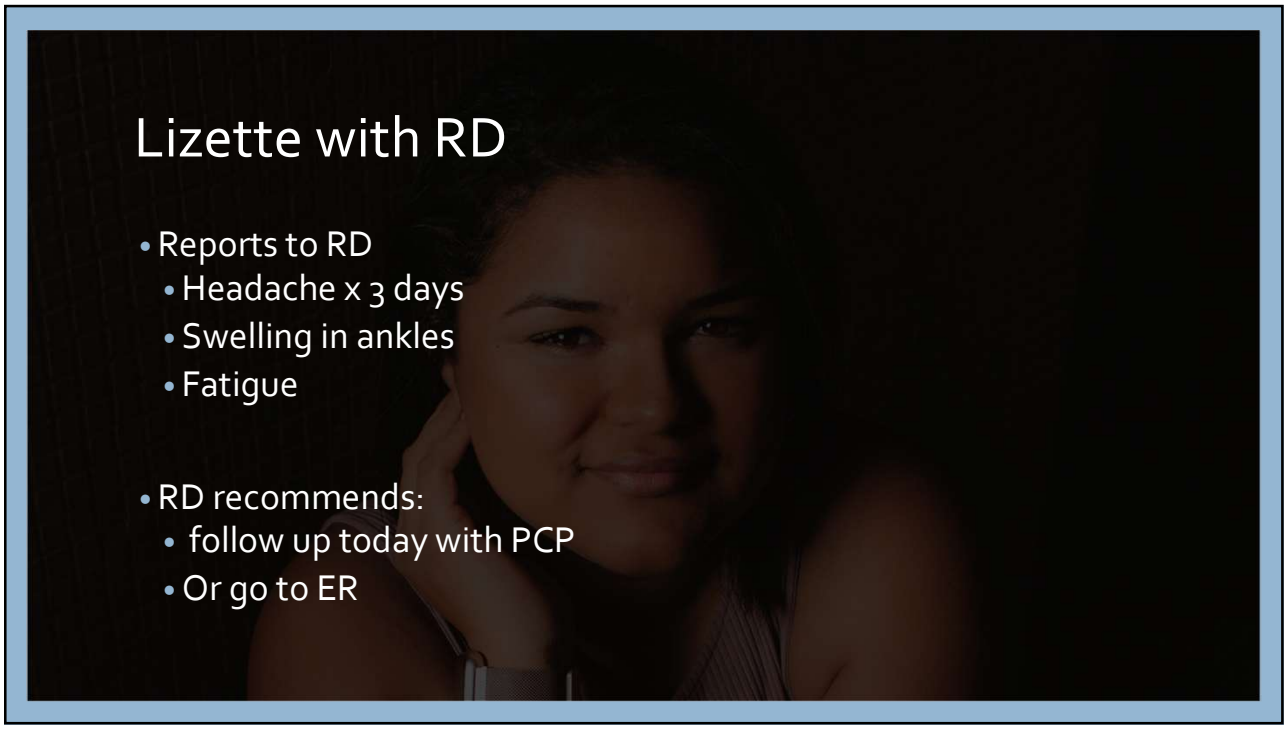
Lizette with RD
• Reports to RD
• Headache x 3 days
• Swelling in ankles
• Fatigue
• RD recommends:
• follow up today with PCP
• Or go to ER

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Lizette Treatment
In the ER
- Low glucose
- Low potassium
- Both corrected
Admitted to RTC level of care (what insurance covers for now)
- Lab monitoring daily until normal
- Potassium supplementation
- Stabilize meal plan
Steps down to PHP x 1 month before returning to outpatient care

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Case Study: Joe

- 30-year-old small business owner
- History of wrestling in high school
  - Led to eating disorder behaviors
  - Was eventually treated for anorexia nervosa, binge/purge type
- Now struggling with intake again related to stress at work, facing decisions on expansion of business

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Joe at Therapist Visit

- Joe's spouse got him to the therapist by calling it couples' therapy
- They discuss Joe's:
  - Restriction
  - Fluid restriction
  - Excessive exercise
  - Depression and anxiety
- Joe agrees to see a dietitian, psychiatrist, and PCP

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Joe at Dietitian

- Reports about 1800 calories/day
- Reports about 2 cups water/day
- Not interested in changing
- BMI is 22 (very muscular)
- Agrees will consider working on nutrition and fluids after work calms down

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Joe at PCP

- Reports:
  - General muscle pain
  - Headaches
  - Occasional dizziness
- Discuss fluid intake
  - Likely cause of symptoms
  - Goal to improve to 8-9 cups/day (64-72 oz/day)
- Labs drawn
  - High hemoglobin and hematocrit (dehydration)
  - High BUN and creatinine (kidney concerns)

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Joe and Rehydration

- Joe starts 9 cups water/day
- On 2nd day:
  - Edema
  - Jumping feeling in chest
  - Weakness (tired walking around the house)
  - A little hard to catch his breath
- Spouse convinces him go to ER
  - Low potassium
  - Metabolic alkalosis (not enough acid)

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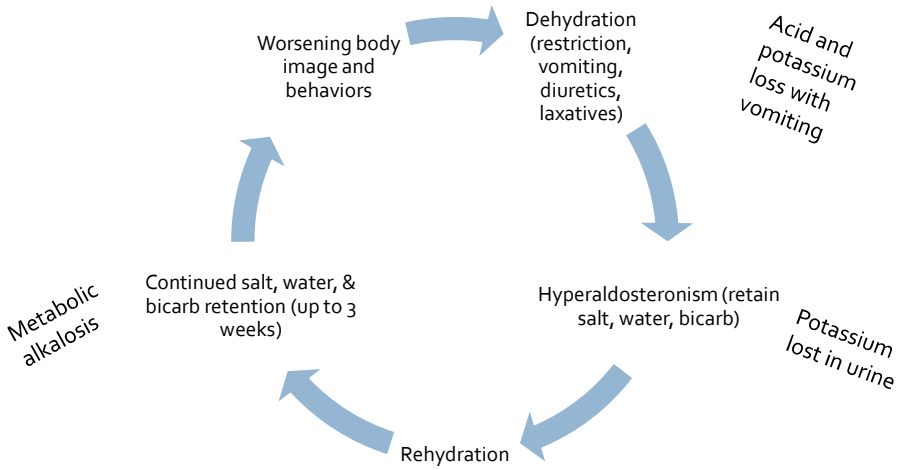
Pseudo-Bartter Syndrome



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Pseudo-Bartter's During Rehydration

- Persistent hypokalemia despite cessation purging
- Metabolic alkalosis
- Edema
- Shortness of breath
- Respiratory failure
- Irregular heartbeat
- Palpitations
- Malaise
- Cramps
- Weakness and fatigue
- Other symptoms
- Can be lethal

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Treating Pseudo-Bartter Syndrome

- Stop behaviors
- Rehydrate carefully (by mouth or slow saline infusion)
- Monitor edema and lung sounds
- Treat edema/volume overload (avoid spironolactone in cisgender males)
- Monitor for pleural and pericardial effusions
- Aggressive therapy
- Monitor CMP, magnesium, phosphorus

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When is 24 hour care appropriate?

- Risk for refeeding syndrome or pseudo-Bartter syndrome
- Labs unstable
- Failure to progress at a lower level of care
- Cardiac complications
  - Low heartrate
  - Low blood pressure
  - Chest pain
- Other medical complications
- Rapid weight loss
- Low body weight (can also result in Wernicke Korsakoff's Syndrome – need thiamine supplement)

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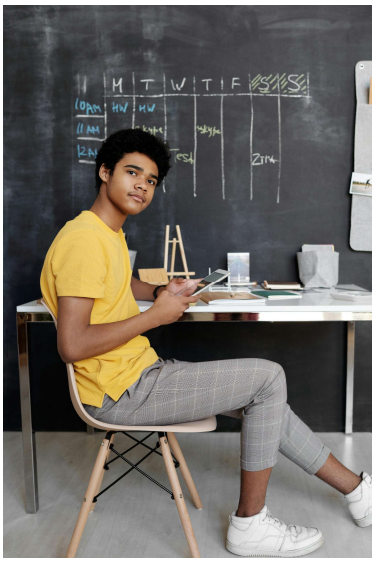
Level of Risk?

- Kenny: 14 year old 8th grader
- Low magnesium on last labs
- ARFID, minimal intake x last 2 week
  - 2 Pop -Tarts/day
  - 3 cups of water/day



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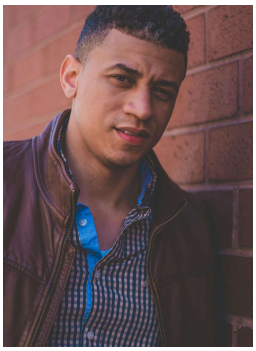

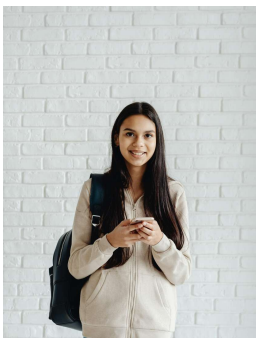

Remember…

- Anyone at risk for refeeding or pseudo-Bartter syndrome should be monitored closely
- Refeeding syndrome and pseudo-Bartter syndrome can and do occur at normal and higher weights
- These are dangerous complications
- Ask the questions, assess risk
- Communicate as a team
- Request labs from ordering provider
- If any concerns: get more assessment/labs
- Educate patients and families on reasons for concerns

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Suggested resources

- Academy for Eating Disorders Report. (2021) Eating Disorders: Critical Points for Early Recognition and Medical Risk Management in the Care of Individuals with Eating Disorders. https://www.aedweb.org/resources/publications/medical-care-standards.
- American Psychiatric Association. (2023). *Practice Guidelines For The Treatment of Patients With Eating Disorders, Fourth Edition.*
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For Questions

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