

Refeeding Syndrome Guidelines

Overview

Abnormal metabolism results in refeeding syndrome, with a shift from body fat to carbohydrate as metabolic fuel sources change. Insulin secretion increases while glucagon decreases, leading to reduced gluconeogenesis, glycogenolysis, and fatty acid mobilization. Glucose is taken up rapidly into the cells, and phosphorus is driven inside the cells, resulting in dangerous hypophosphatemia. ATP levels decrease as a result, with major effects on the cardiac, pulmonary, CNS, hematological and muscular systems.

Patients at risk

Anorexia nervosa	Depression in the elderly
Chronic alcoholism	Uncontrolled diabetes (DKA)
Oncology patients	Severe unintentional weight loss
Post-op patients	Chronic underfeeding/prolonged fasting
Residents from NH facilities	Protein-calorie malnutrition
Prolonged parenteral nutrition	Chronic malnutrition (morbid obesity with profound weight loss, prolonged fasting, high-stress patients not fed for >7 days)

Guidelines for Initiating Nutrition Support

- Use actual or adjusted weight if obese
- Check electrolyte levels, esp. K, Mg, & Phos
- Total volume: 1000ml/d or less (800ml/day for severely malnourished)
- Calories: 20kcal/kg or less, 1000kcal/d, no more than 20% above BEE, 25-75% REE, or 50% total needs
- Dextrose: Limit to 150-200gms/day or 2mg/kg/min (to prevent rapid insulin surge)
- Protein: Full protein ok
- Lipids: Full lipids ok
- Supplement with MVI and thiamine (100mg x 3 days)

Advancement in Refeeding Syndrome

- Electrolyte levels should be checked every 6 hours, 12 hours, or daily for approximately 3 days (although some rec'd up to 1 week) and repleted as necessary
- Advance 200-300kcal every 3-4 days until goal is reached
- Stop nutrition support until electrolytes are corrected

Complications

- Cardiac failure due to abrupt increase in intravascular volume, increased REE, atrophic left ventricle with a poor stroke volume, & myocardial deficiencies of k, phos, and mg
- Acute thiamine deficiency (thiamine is a cofactor in CHO metabolism)
- Hypokalemia: heart arrhythmias
- Hypomagnesemia: tetany and seizures
- Hypophosphatemia: anorexia, bone pain, dizziness, muscle weakness, respiratory failure, and myocardial dysfunction (usually occurs within 4 days of restarting feeds)
- Respiratory failure occurs since the respiratory muscle (which is reduced in mass & ATP content by malnutrition) is unable to respond to the increased workload imposed by aggressive nutrition support
- Spontaneous diarrhea

Sources: Practical Gastroenterology, Jan 2005; Nourish Webinar Series; Modern Nutrition in Health and Disease; the Clinical Guide to Oncology Nutrition; Nutrition and Diagnosis-Related Care