Prior to starting ketogenic therapy:
- Consult: Neurology for approval, Nutrition for diet management, Pharmacy for medication guidance
- Document baseline weight and height
- Labs: check fasting lipid profile, CMP, CBC, magnesium, phosphorus, carnitine – total and free, urinalysis, urine calcium and creatinine (random, 24 hour not needed), lipase, 25-hydroxy vitamin D, INR, pregnancy test (women)
- Continuous video EEG

Contraindications:
- Unstable metabolic condition, for example: persistent hyponatremia (sodium < 130 mg/dL), severe hypernatremia (sodium > 150 mg/dL), hypocalcemia (albumin corrected calcium <8 mg/dL), hypoglycemia (glucose < 50 mg/dL), acidosis (pH < 7.2) for 24 hours
- Hemodynamic or cardiorespiratory instability (MAP consistently < 60, persistent tachycardia > 120 beats per minute, patient requiring high dose pressors)
- Coagulopathy (INR > 1.5 and/or on anticoagulation) should be reviewed by physician
- Liver failure (AST, ALT, ammonia > 5 x upper limits of normal, hyperbilirubinemia- total bilirubin > 15 mg/dL, direct bilirubin > 5 mg/dL)
- Potential pancreatitis (lipase > 5x upper limits of normal)
- Total cholesterol > 300 mg/dL should be reviewed by physician
- Inability to tolerate enteral nutrition, i.e., ileus
- Known pregnancy or positive pregnancy test
- Any propofol infusions within 24 hours
- Diagnosis of diabetes should be reviewed by physician
- ABSOLUTE: Known primary carnitine deficiency, carnitine palmitoyltransferase (CPT) I or II deficiency, carnitine translocase deficiency, beta-oxidation defects, pyruvate carboxylase deficiency, or porphyria

Prepare patient for ketogenic therapy:
- Avoid IV dextrose when administering IV fluids.
- Discontinue / minimize carbohydrate containing medications and personal care products with pharmacy assistance
- Tube placement for enteral feeding (if applicable).
- Discontinue current enteral formula (if applicable).
- Start maintenance fluids.
- Begin supplements: multivitamin with minerals, calcium, and vitamin D via tube crushed
- Order a Nutrition consult and answer "yes" to "delegate to initiate and manage tube feeding."

Initiate ketogenic therapy:
- Begin ketogenic formula as specified by the KT treatment team.
- Provide additional enteral water flushes and/or IV fluids to meet maintenance fluid needs, unless fluid restriction is warranted per KT treatment team.
- Check Point of Care (POC) glucose every 6 hours until tube feeding is at goal rate, then as ordered.

Hypoglycemia management:
- Blood glucose goal: >50 mg/dL
- If blood glucose <50 mg/dL, treat initially with 12.5 g IV dextrose (e.g. 25 mL D50%) and recheck glucose in 15 minutes.
• Additional treatment will be based upon effect of initial dose. Repeated treatment may not be warranted if glucose is showing a positive trend. Overtreatment may cause glycemic excursions that can disrupt treatment goals.

**Maintenance of ketogenic therapy:**
- Tube feeding adjustments at the discretion of the dietitian and KT team.
- Labs: Check BMP daily x 7 days; CBC weekly; urine ketones every 12 hours x 5 days, then weekly; serum beta-hydroxybutyrate daily x 7 days, then twice weekly
- After 72 hours, consider wean from sedating medications
- No other changes to anti-seizure medications for the first 2 weeks unless there are medication side effects, convulsive or nonconvulsive seizures that impair cardiorespiratory function, or changes are deemed medically necessary by the treating or KT team.

**Managing side effects:**

<table>
<thead>
<tr>
<th>Potential Side Effect</th>
<th>Prevention/Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constipation</td>
<td>Adequate hydration, bowel regimen, treat with polyethylene glycol if needed</td>
</tr>
<tr>
<td>Hyperlipemia</td>
<td>Stop KT if total cholesterol exceeds 400 mg/dL</td>
</tr>
<tr>
<td>Acidosis</td>
<td>Adequate hydration</td>
</tr>
<tr>
<td>May require treatment with bicarbonate</td>
<td></td>
</tr>
<tr>
<td>Over Ketosis / Hypoglycemia</td>
<td>IV dextrose as described in blood glucose section</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Adequate hydration, antiemetics if it occurs</td>
</tr>
<tr>
<td>Worsening Seizures</td>
<td>Stop KT if convulsive seizures occur</td>
</tr>
<tr>
<td>Nephrolithiasis (kidney stones)</td>
<td>Adequate hydration, potassium citrate (Polycytra K) if they occur</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>Check lipase periodically per KT team. Stop KT if elevated.</td>
</tr>
<tr>
<td>Weight Loss</td>
<td>Increase calories</td>
</tr>
<tr>
<td>Carnitine Depletion</td>
<td>Monitor carnitine and supplement as needed</td>
</tr>
<tr>
<td>Osteopenia/osteoporosis</td>
<td>Treat empirically with calcium carbonate and vitamin D supplementation</td>
</tr>
</tbody>
</table>

**Upon transfer to general care:**
- KT team and patient to discuss continuation of dietary therapy.
- Swallow consult: Only approved foods and thickeners by dietitian can be used by the speech language pathologist to prevent disruption of ketosis.
- If patient passes for PO, patient will begin KT with the modified Atkins diet (MAD) at 20 net grams of carbohydrates per day.
- If patient remains NPO, continue on ketogenic formula. Discussion of PEG placement per primary team.
- Labs: urine ketones twice per week and with any breakthrough seizures; beta hydroxybutyrate weekly;
- Check weight weekly

**Upon discharge to rehabilitation or home:**
- If still receiving tube feeds, arrange for the patient to continue receiving the ketogenic formula
- If transitioned to oral feeds, ensure modified ketogenic therapy manual is given to patient and caregivers with teaching by dietitian.
- Ensure that the lowest carbohydrate medications are verified as available prior to discharge.
- Maintain calendar with: seizures, ketones twice weekly, weight weekly, menses start (women)
- Monitoring: urine ketones twice weekly and with seizures, routine labs prior to follow-up
- Follow up in the UW Adult Epilepsy Dietary Therapy Clinic (AEDTC) 4-6 weeks post discharge.
- Maintain ketogenic therapy for a minimum of 3 months post-discharge. Discussion with AEDTC team at follow-up visit for weaning as appropriate.