## INSTRUCTIONS:

1. TPN is ordered as the total amount of components/24 hours and will be prepared in a single bag.
2. **DAILY ORDERS MUST BE RECEIVED IN PHARMACY BY 1500** to facilitate mixing and delivery by 2100.
3. See back of form for more information about ordering and prescribing TPN and contents list of starred (**) items.
4. **IMPLEMENT TOTAL PARENTERAL NUTRITION (TPN) INITIATION PHYSICIAN ORDER #513**
   - Have IV Therapist place PICC line.
   - Radiologist placement if problematic IV access.
   - Pharmacist to write TPN orders daily.

### BASE SOLUTION

<table>
<thead>
<tr>
<th>Component</th>
<th>TPN Bag #</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMINO ACID 10%</td>
<td>ml</td>
</tr>
<tr>
<td>AMINO ACID 15%</td>
<td>ml</td>
</tr>
<tr>
<td>DEXTROSE 30%</td>
<td>ml</td>
</tr>
<tr>
<td>DEXTROSE 50%</td>
<td>ml</td>
</tr>
<tr>
<td>DEXTROSE 70%</td>
<td>ml</td>
</tr>
<tr>
<td>FAT EMULSION 20% (for 3-in-1 admixture)</td>
<td>ml</td>
</tr>
<tr>
<td>OTHER (specify)</td>
<td>ml</td>
</tr>
</tbody>
</table>

### ELECTROLYTES & ADDITIVES

**STANDARD ELECTROLYTE PACK**

<table>
<thead>
<tr>
<th>Electrolyte</th>
<th>mEq</th>
<th>20 – 60 mEq</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTASSIUM CHLORIDE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>POTASSIUM ACETATE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>POTASSIUM PHOSPHATE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>SODIUM CHLORIDE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>SODIUM ACETATE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>SODIUM PHOSPHATE</td>
<td>mEq</td>
<td></td>
</tr>
<tr>
<td>CALCIUM GLUCONATE</td>
<td>mEq</td>
<td>4.5 mEq</td>
</tr>
<tr>
<td>MAGNESIUM SULFATE</td>
<td>mEq</td>
<td>8 – 24 mEq</td>
</tr>
<tr>
<td>MULTIPLE VITAMIN PACKAGE</td>
<td>pkg 1 pkg</td>
<td></td>
</tr>
<tr>
<td>HUMAN REGULAR INSULIN</td>
<td>units</td>
<td></td>
</tr>
<tr>
<td>TRACE ELEMENT – MTE-5</td>
<td>pkg 1 pkg</td>
<td></td>
</tr>
<tr>
<td>FAMOTIDINE</td>
<td>mg</td>
<td></td>
</tr>
</tbody>
</table>

### INFUSION RATE:

TPN volume will be calculated to infuse over 24 hours, unless cyclic TPN instructions completed.

- **CYCLIC TPN:** Infusion duration: **hours**. Begin cyclic infusion approximately 2100 hour.
- Taper Instructions:
  1. Taper off at ½ rate for last hour of infusion time, or
  2. Check fingerstick blood glucose 2 hours after infusion tapered off. Call MD if less than 70 or:

- **FAT EMULSION:**
  - 20% 250 ml (500 Kcal) daily
  - 20% 250 ml (500 Kcal) twice weekly

The fat emulsion will infuse the same duration as the TPN bag.

- **PERIPHERAL PARENTERAL NUTRITION:**
  1 Liter 10% Amino Acids + 1 Liter 10% Dextrose + 40 ml Standard Electrolyte package every 24 hours (provides 740 Kcal/24 hours).
  Infuse with 20% Fat Emulsion 250 ml/24 hours (reduces phlebitis, provides additional 500 Kcal/24 hours).
  - Continue same PPN formula until further notice

**NOTE:** These orders should be reviewed by the attending physician, appropriately modified for the individual patient, dated, timed and signed below.

### DATE TIME PRESCRIBER'S SIGNATURE

Another brand of drug, identical in form and content, may be dispensed unless checked.

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**Franciscan Health System**

St. Joseph Medical Center, Tacoma, WA
St. Francis Hospital, Federal Way, WA
St. Clare Hospital, Lakewood, WA
St. Elizabeth Hospital, Enumclaw, WA
St. Anthony Hospital, Gig Harbor, WA

**PHYSICIAN ORDERS**

**PARENTERAL NUTRITION**
INSTRUCTIONS:
1. TPN will be provided in a single bag each day.
2. Specify the concentration and volume of dextrose and amino acids desired.
3. Indicate the number of standard electrolyte packages to be added. For the majority of patients, 2-3 packages/24 hours will provide adequate electrolyte replacement.
4. Phosphate is NOT included in the standard electrolyte package. Indicate the salt form desired (Potassium or Sodium).
5. If additional electrolytes are required, indicate the drug and amount to be added under the additives section.
6. Other additives (additional electrolytes, trace elements, etc.) should be indicated in the additives section.
7. For new patients starting TPN, start the first day at no greater than 50% of desired Kcal goal to avoid hyperosmolar non-ketotic dehydration (especially in elderly, diabetic, or critically ill patients).

ESTIMATE OF DAILY REQUIREMENTS:
1. Total Kcalories = 25 – 35 Kcal/kg.
2. Dextrose = 3 – 5 mg/kg/minute (diabetic = 2 – 3 mg/kg/minute)
3. Protein = 1 – 1.5 gram/kg
4. Fat = 500 – 1000 Kcal/week to prevent Essential Fatty Acid Deficiency

STANDARD ELECTROLYTE PACKAGE: (sample)
Note: Does NOT include Phosphate
Phosphate may be added to TPN as potassium or sodium salt
1. POTASSIUM 20 mEq
2. SODIUM 30 mEq
3. CALCIUM 5 mEq
4. MAGNESIUM 5 mEq
5. CHLORIDE 30 mEq
6. ACETATE 30 mEq

STANDARD VITAMIN PACKAGE: (Meets 100% of daily AMA recommendations)
1. Ascorbic Acid 200 mg
2. Vitamin A 1 mg (3300 USP units)
3. Vitamin D 5 mcg (200 USP units)
4. Thiamine (B1) 6 mg
5. Riboflavin (B2) 3.6 mg
6. Pyridoxine (B6) 6 mg
7. Niacinamide 40 mg
8. Dextanthenol 15 mg
9. Vitamin E 10 mg (10 USP units)
10. Biotin 60 mcg
11. Folic Acid 600 mcg
12. Cyanocobalamin (B12) 5 mcg
13. Vitamin K 150 mcg

STANDARD TRACE ELEMENT – MTE-5: (sample) AMA RECOMMENDATIONS:
1. Zinc 5 mg
2. Copper 1 mg
3. Manganese 0.5 mg
4. Chromium 10 mcg
5. Selenium 60 mcg
6. Zinc = 2.4 – 4 mg/day. In catabolic patients, may increase to 4.5 – 6 mg/day. Additional zinc needed to replace excessive small bowel, ileostomy, or stool losses.

CYCLIC TPN:
1. When transitioning a patient from continuous to cyclic TPN, infuse 50-100% of previous formula over 12-16 hours, starting at night (approximately 2100).
2. The volume of infusion and length of infusion time should be guided by the anticipated ability to tolerate infusion volume and glucose load.
3. Most patients require the cyclic TPN to be tapered off at ½ of the infusion rate over the last hour of infusion time to avoid rebound hypoglycemia.
4. Diabetic patients may require longer tapering times, and/or may require the cyclic infusion rate to be tapered up as well.

PERIPHERAL PARENTERAL NUTRITION:
1. The maximum concentration of PPN should not exceed 1000 mOsm/L. Higher concentrations will result in phlebitis, repeated IV starts, interruption of therapy, and patient discomfort.
2. The recommended standard formulation for PPN is 2 liters of equal portions of 10% Amino Acids with 10% Dextrose and 2 electrolyte packages. This formula should be infused with 250 ml of 20% fat emulsion daily. This will provide 1240 Kcal daily.
3. Peripheral Parenteral Nutrition should be restricted to 5 days or less. For nutrition support greater than 5 days, central line access (and TPN) is strongly encouraged.
4. Further additives should be administered through a second IV site, or by interrupting the PPN.