

## Nutrition Support Notes

### Formulas:

Dextrose 5% - total mL x 0.05 x 3.4 = total kcals provided per day

*Example: D5 at 50 mL → 50 mL/hr x 24 hr x 0.05 x 3.4 kcal/mL = provides 204 kcal/day*

Propofol – 1.1 kcal/mL (max dosage: 5 mg/kg/min)

*Example: Propofol is running at 5 mL/hr → 5 mL/hr x 24 hrs x 1.1 kcal/mL = 132 kcal/day*

Glucose Infusion Rate (GIR): total grams dextrose in mg / weight in kg (lowest body weight) / 1440 = mg/kg/min

*Example: 152000 mg / 62.7 kg / 1440 min = GIR safe at 1.68 mg/kg/min*

### Enteral Nutrition

#### Feeding Tubes:

G-tube or PEG-tube, NGT, Dobhoff: continuous, cyclic, or bolus

J-tube/NJT: continuous feeds

G/J tube: helps prevent stomach issues for decompression

#### Tube Feeding Formulas:

Glucerna – designed to promote glycemic control, contains fiber

Jevity 1.5 – “general diet of tube feeding formulas”, contains fiber, protein, kcal

Nepro – designed for dialysis but can also be used for pt’s with CKD and elevated Phos or K

Osmolite – no fiber = isotonic (300 mOsm/kg H<sub>2</sub>O “human osmolarity”

- “chicken broth of formulas”, indicated for pt’s with nausea/vomiting/not thought to tolerate well as it is easily digestible; pt’s are not sent home on Osmolite

Pivot – peptide based (semi-digested protein, expensive)

- “Regular Diet of formulas with Juven” may be useful for promoting immunity or wound healing

TwoCal – dense formula → good for pt’s with fluid restriction needs, volume issues (especially if patient has high calorie needs), or CHF (polymeric)

Vital AF/Vital HP – peptide based, expensive, very useful for ICU with high protein needs

ProSource – adds protein and kcals; up to 9 packets ProSource/day → 3 packets/time, 3 times/day

### Fluids:

Minimum Water Flush: 30 mL every 4 hours

- Often if pt’s is on maintenance IV fluids, minimum is indicated. However, may adjust for patient’s clinical status.

### Vitamins:

Centrum Liquid MVM (shortage, but may be indicated)

*Example in Intervention: Noted there is MVM shortage at this time. Discussed with pharmacist, for this patient recommend daily MVM in TPN.*

### **Parenteral Nutrition**

Parenteral nutrition may be compounded to a custom formula or patient can be provided with Clinimix or Clinimix E.

Clinimix E Concentrations: 5% AA/15% Dextrose or 8% AA/14% Dextrose

PICC or central line must be placed to provide TPN.

- Patients may sometimes start on PPN until PICC can be placed.

Goal Rate of TPN: 80 mL/hr or less. Want to leave at least 100 mL free water for pharmacist.

PPN: osmolarity must be below 900, good concentration: 4.5% AA and 6% Dextrose

→ will not meet needs.

→ in Interventions write: PPN is not expected to meet nutrient needs, however is appropriate and adequate at this time.

Intravenous Lipid Emulsion (ILE) to prevent EFA degradation

- Indicated for patient's not eating well the week prior or after 1<sup>st</sup> week of TPN
- Check Lipids Twice Weekly. Recommend ILE if TG <400 mg/dL.
- 250 mL/bag which provides 50 g fat, 500 kcal
- Provide ILE 2-3 days/week

### **Monitoring/Evaluation:**

All nutrition support (EN or PN) are high risk, at most 3-day follow-ups

Always recommend daily weights to monitor trends.

## Nutrition Support Case Study Examples

### Tube Feeding

Pt is a 47 y.o. male with a BMI of 24 kg/m<sup>2</sup> and current weight of 113.7 kg and IBW of 67.2 kg. The patient has a history of borderline Type 2 diabetes mellitus. He has a nasogastric tube placed for swallowing difficulty following a stroke. The dietitian calculates the following estimated needs:

### **Estimated Needs:**

Estimated Energy Needs: 1864-2259 kcal/day (Mifflin, AF/SF: 1.2-1.4; - 500 kcals for BMI)

Estimated Protein Needs: 84-100 g/day (1.25 – 1.5 g/kg x IBW)

Estimated Fluid Needs: 1864-2259 mL/day (1 mL/kcal or per attending)

Provide 24-hour continuous tube feeding recommendations.

### **Recommendations:**

Formula: Jevity 1.5

### **Interventions**

1. Recommend Jevity 1.5 via NGT for 24-hr continuous infusion.
2. Recommend initiate at 25 mL/hr, advance by 10 mL/hr every 4 hrs as tolerated, until goal rate of 55 mL/hr is reached.
3. Recommend start minimal free water flushes of 30 mL every 4 hours to keep line patent.
4. Current D5 infusion running at 60 mL/hr supplies 245 kcal/day. Recommend discontinue D5 infusion when enteral nutrition begins.
5. 1320 mL Jevity 1.5 formula with flushes provides 1980 kcal, 84 g protein, and 1183 mL free water.
6. This provides 19.5 kcal/kg of actual body weight and 1.25 g protein/kg based on ideal body weight (67.2 kg). This is within estimated energy and protein needs.
7. Recommend pt be weighed daily to monitor trends.

### **Goals**

1. Pt to receive greater than or equal to 50% of EN goal volume over the next 3 days.  
Goal Status: New
2. Pt to be weighed daily over the next 3 days.

### **Monitoring:**

Plan of Care, Weight, Labs, Bowel Function, Nutrition education needs, Medications, EN, Intake/Output

### **Evaluations:**

Last Nutrition Visit: Date

How often does dietitian need to reassess?: 3 Days // Priority – Level of Risk: 1 High

### Partial Parenteral Nutrition (PPN)

The same 47 y.o. male patient with a BMI of 24 kg/m<sup>2</sup> and current weight of 113.7 kg and IBW of 67.2 kg (suspect closer to accurate weight given Net I/Os: +3.203 L) s/p medical care for stroke developed an incident of epistaxis that would not stop until patient underwent a Rhino Rocket Placement and nasal clamp. PharmD consulted for PPN recommendations.

### **Estimated Needs: ASPEN PN Recommendations**

Estimated Energy Needs: 1481 – 1683 kcal/day (IBW x 22-25 kcal/kg)

Estimated Protein Needs: 91-170 g protein/kg (ABW x 0.8-1.5 g/kg)

Estimated Fluid Needs: 1481 – 1683 mL/day (IBW x 30-40 mL/kg)

### **Interventions:**

#### *Enteral Nutrition*

1. Enteral Nutrition is currently stopped due to nasal clamp related to episode of controlled epistaxis on 04/18. Should PEG feeding be initiated or NGT feeding be restarted, please consult clinical nutrition team for recommendations.

#### *Parenteral Nutrition*

1. Recommend 1920 mL PPN with the following macronutrient content : 3% AA (57.6 g protein) and 9% Dextrose (172.8 g dextrose).
2. Infuse via peripheral line continuously at 80 mL/hr.
3. Lipids not indicated at this time. Will evaluate lipid need at follow-up.
4. GIR safe at 1.06 mg/kg/min (lowest documented body weight utilized, 113.4 kg).
5. This TPN provides 817.92 kcal/day.
6. This supplies 12.2 kcal/kg based on ideal body weight (67.3kg) and 0.51 g protein/kg based on actual body weight (113.4 kg). This is predicted to be below estimated nutrient needs, but is appropriate at this time.
7. Pt is currently receiving D5 and ½ NS with KCl at 100 mL/hr which provides 408 kcal per day. Recommend discontinue D5 when PPN is initiated.

#### *Coordination of Nutrition Care*

1. Recommend pt be weighed daily to monitor trends.

### **Goals:**

1. Pt to receive greater than or equal to 50% of EN goal volume over the next 3 days.  
Goal Status #1: Discontinued
2. Pt to be weighed daily over the next 3 days.  
Goal Status #2: Progressing, Continue
3. Pt to receive at least 12 kcal/kg based on IBW of 67.3 kg over the next 3 days.  
Goal Status #3: New

### **Monitoring:**

Plan of Care, Weight, Labs, Bowel Function, Medications, PPN, Intake/Output

### **Evaluations:**

Last Nutrition Visit: Date

How often does dietitian need to reassess?: 3 Days // Priority – Level of Risk: 1 High

### Total Parenteral Nutrition (TPN)

The same 47 y.o. male patient with a BMI of 24 kg/m<sup>2</sup> and current weight of 113.7 kg and IBW of 67.2 kg (suspect closer to accurate weight given Net I/Os: +3.203 L) s/p medical care for stroke is pending plan of care if swallow function returns, if it is not expected to return over the next 3 days, plan is to place PEG or G-tube.

### **Estimated Needs: ASPEN PN Recommendations**

Estimated Energy Needs: 1481 – 1683 kcal/day (IBW x 22-25 kcal/kg)

Estimated Protein Needs: 91-170 g protein/kg (ABW x 0.8-1.5 g/kg)

Estimated Fluid Needs: 1481 – 1683 mL/day (IBW x 30-40 mL/kg)

### **Interventions:**

#### *Enteral Nutrition*

1. Enteral Nutrition is currently stopped due to nasal clamp related to episode of controlled epistaxis on 04/18. Should PEG feeding be initiated or NGT feeding be restarted, please consult clinical nutrition team for recommendations.

#### *Parenteral Nutrition*

1. Recommend 1920 mL TPN with the following macronutrient content: 6% AA (115.2 g protein) and 16% Dextrose (307.202 g dextrose).
2. Infuse via central line continuously at 80 mL/hr, pending placement of PICC line this morning.
3. Lipids remain not indicated at this time. Will evaluate lipid need at follow-up.
4. GIR safe at 1.88 mg/kg/min (lowest documented body weight utilized, 113.4 kg)
5. This TPN provides 1505.29 kcal/day.
6. This supplies 22.4 kcal/kg based on ideal body weight (67.3 kg) and 1.02 g protein/kg based on actual body weight (113.4 kg). this is within estimated nutrient needs.
7. D5 and ½ NS with KCl remain stopped per recommendation when PPN was initiated. D5 and ½ NS with KCl continues to not be indicated when pt indicates TPN.

#### *Coordination of Nutrition Care*

1. Recommend pt be weighed daily to monitor trends.

### **Goals:**

1. Pt to be weighed daily over the next 3 days.  
Goal Status #2: Progressing, Continue
2. Pt to receive at least 22 kcal/kg based on IBW of 67.3 kg over the net 3 days.  
Goal Status #3: New

### **Monitoring:**

Plan of Care, Weight, Labs, Bowel Function, Medications, TPN, Intake/Output

### **Evaluations:**

Last Nutrition Visit: Date

How often does dietitian need to reassess?: 3 Days // Priority – Level of Risk: 1 High

### Total Parenteral Nutrition (TPN) with Lipid Infusion

42 y.o. female patient with a BMI of 34.61 kg/m<sup>2</sup> and admit weight of 189 lb. Current wt is likely affected by fluid, Net I/Os: +4.722 L since admission. Pt receives care for persistent nausea and dehydration s/p sleeve gastrectomy with cholecystectomy 3 days ago. Pt has been receiving TPN, no lipids, due to inability to tolerate bariatric fluids x 3 days with poor oral intake the week previously. Provide follow-up recommendation.

### **Estimated Needs: ASPEN PN Recommendations (ABW: 189 lb (85.8kg; IBW: 110 lb (50kg))**

Estimated Energy Needs: 1100 – 1250 kcal/day (IBW x 22-25 kcal/kg)

Estimated Protein Needs: 68.6 g – 128.7 g protein (ABW x 0.8-1.5 g/kg)

Estimated Fluid Needs: 1500 mL – 2000 mL/day (IBW x 30-40 mL/kg)

### **Interventions:**

#### *Parenteral Nutrition*

8. Recommend 1560 mL TPN with the following macronutrients: 5% Amino Acids (78 g protein) and 15% Dextrose (234 g dextrose). Cinimix E can be utilized per pharmacist's discretion.
9. Infuse via PICC line continuously at 65 mL/hr.
10. Recommend check triglycerides. If triglycerides are less than 400 mg/dL, recommend pt receive 25 mL 20% ILE bag twice weekly starting Saturday. Recommend check triglycerides weekly to assess for lipid safety.
11. GIR safe at 1.89 mg/kg/min (lowest documented body weight utilized, 85.8 kg).
12. This TPN provides an average of 1250 kcal/day with 1107 kcal/day (non-lipid days) and 1607 kcal/day (lipid days), 78 g protein/day and 50 grams fat/day twice weekly.
13. This supplies 25 kcal/kg/day based on 50 kg (ABW) and 1.05 g protein/kg/day based on 85.8 kg (IBW). This is within estimated nutrient needs/recommendations.
14. D5 and ½ NS at 125 mL/hr was discontinued when TPN was initiated. Still appropriate to be discontinued.

#### *Coordination of Nutrition Care*

2. Recommend pt be weighed daily to monitor trends.

### **Goals:**

3. Pt to be weighed daily over the next 3 days.  
Goal Status #2: Progressing, Continue
4. Pt to receive at least 22 kcal/kg based on IBW of 50.0 kg over the next 3 days.  
Goal Status #3: New

### **Monitoring:**

Diet Advancement, Plan of Care, Weight, Labs, Bowel Function, Medications, TPN, Intake/Output

### **Evaluations:**

Last Nutrition Visit: Date

How often does dietitian need to reassess?: 3 Days // Priority – Level of Risk: 1 High