



THE UNIVERSITY OF KANSAS HOSPITAL
KUMED

3901 Rainbow Boulevard
Kansas City, Kansas 66160



Patient Label

PEDIATRIC PARENTERAL NUTRITION (PN) ORDERS Order by 1300 (DIRECTIONS / ADDITIONAL INFORMATION ON BACK)

The Enteral Route is not indicated because: _____

ADMINISTRATION BY: CENTRAL LINE PERIPHERAL LINE

Current Weight _____ kg Height _____ cm BSA (m²) = $\sqrt{[Ht(cm) \times Wt(kg)] / 3600}$ = _____ m² Age _____

Fluid Requirements For All-in-One Bags: 24 Hour Volume includes Amino Acids, Dextrose, and Fat Emulsion
 BSA 1500 mL/m²/day = _____ mL
 mL/kg/day 100 mL/kg for each kg ≤ 10 kg + (50 mL/kg for ea kg > 10 kg and ≤ 20 kg) + (20 mL/kg for ea kg > 20 kg) = _____ mL

Continuous Rate _____ mL/hour x 24 hrs = _____ mL/24 hours or Cyclic Schedule See Below
 Total TPN, IVF, MEDS, and Enteral Fluids not to exceed: _____ mL

Amino Acids (4 kcal/g) Clinisol Trophamine _____ g/kg/day = _____ g/day
 Infants: 2-2.5 g/kg/day Children: 1.5-2.5 g/kg/day Adolescents: 1-2 g/kg/day

Dextrose (3.4 kcal/g) _____ %
 Start at 10%, Increase by 2.5-5%/day until total desired calories achieved. Maximum Peripheral % is 12.5% [125 g/Liter]

Fat Emulsion 20% (2 kcal/mL) _____ gm/kg/day x _____ kg x 5mL/g = _____ mL/day All-in-One Daily None
 Initially 0.5-1 g/kg/day, advance up to a max of 3 g/kg/day. Max of 60% of calories or, goal 20-50%. Co-Infuse at _____ mL/hr x _____ hrs

Additive	3-35 kg	Recommended Amount	>35kg	Per Kg/day	Total/Day	Rx Use
Sodium	2-4 mEq/kg		2-4 mEq/kg	_____ mEq Na/kg	_____ mEq	
Potassium	2-4 mEq/kg		2-4 mEq/kg	_____ mEq K/kg	_____ mEq	
Calcium	1.25-1.5 mEq/kg		0.5-0.7 mEq/kg	_____ mEq Ca/kg	_____ mEq	
Magnesium	0.25-0.5 mEq/kg		0.25-0.5 mEq/kg	_____ mEq Mg/kg	_____ mEq	
Phosphate	0.5-1 mmol/kg		0.5-1 mmol/kg	_____ mmol PO ₄ /kg	_____ mmol	
Chloride:Acetate	Standard is 2:1		<input type="checkbox"/> All Chloride <input type="checkbox"/> 3:1 <input type="checkbox"/> 2:1 <input type="checkbox"/> 1:1 <input type="checkbox"/> 1:2 <input type="checkbox"/> 1:3 <input type="checkbox"/> All Acetate			
Multiple Vitamins	5 mL Pediatric MVI		10 mL Adult MVI	<input type="checkbox"/> Ped MVI 5mL <input type="checkbox"/> Adult MVI 10mL		
Trace Elements	MTE-4 Peds 0.2 mL/kg/day		>MTE-5 3 mL/day	<input type="checkbox"/> MTE-4 Peds <input type="checkbox"/> MTE-5	_____ mL	
Selenium	3 mcg/kg/day with MTE-4		Already in MTE-5	_____ mcg Se/kg	_____ mcg	
Heparin				_____ units/mL	_____ units	
Famotidine	<3 months 0.5 mg/kg/day		>3 months 1mg/kg/day max of 40 mg	_____ mg/kg	_____ mg	

Trace Element Modifications [Used in special situations only. For routine Trace Elements see above]
 Zinc** _____ mg/day Copper** _____ mg/day Manganese** _____ mg/day Chromium** _____ mcg/day Selenium** _____ mcg/day
 **Individual orders for components of Trace Elements will be in addition to any that are ordered as the Trace Elements Additive.

- Orders:**
- TPN Catheters are to be used only for TPN infusions unless specifically ordered by the physician.
 - 24-hour infusions will begin at 2030. The previous solution should be removed at that time regardless of the amount remaining.
 - Cyclic infusions will be removed after the specified time period followed by appropriate catheter care.
 - If the TPN runs out early for any reason before next TPN is available or if the TPN is ordered after the cutoff time, infuse D10W/0.2NaCl at the rate ordered for the TPN. (Call Central Pharmacy if not in Pyxis.)
 - If the central line malfunctions, start peripheral line and infuse D10W/0.2 NaCl at the rate ordered for the TPN.
 - Patient weights on Monday, Wednesday, and Friday.
 - Routine laboratory tests: (in some patients more frequent monitoring may be necessary, do not duplicate labs already ordered):
 - Blood sugars: every six hours until infusion rate is unchanged for 36 hours (diabetic patients may require more frequent monitoring).
 - Comprehensive Metabolic Panel, phosphorus, triglycerides, pre-albumin, magnesium in morning following TPN initiation, then every Monday and Thursday.
 - Metabolic Panel on Tuesday, Wednesday, Friday, Saturday, and Sunday.
 - Metabolic cart analysis to be performed on _____.
 - Disregard order #: _____.

Cyclic Schedule	Nutrition	Calories
First Hour (1 hr) @ _____ mL/hr = _____ mL	Amino Acids	4 kcal/g x _____ g/day = _____ kcal
In-between _____ hrs @ _____ mL/hr = _____ mL	Dextrose	3.4 kcal/g x _____ g/day = _____ kcal
Last Hour (1 hr) @ _____ mL/hr = _____ mL	Fat Emulsion 20%	2 kcal/mL x _____ mL/day = _____ kcal
Total hours _____ hr Total Volume _____ mL/bag	Total kcal per day	

Average Caloric Needs: 1500 kcal/m²/day _____ kcal/ m² x _____ m² = _____ Kcal/day

Special Instructions: _____

Date/Time: _____ Patient: _____ Physician: _____ Pager: _____

PEDIATRIC PARENTERAL NUTRITION ORDERS

DIRECTIONS:

- New or change orders must be received by **1300**. Orders received after this time will be processed with the following day's orders and hung at the standard time that day. The only exceptions will be for Pediatric Patients who are admitted already on TPN from home. A new bag will be made as soon as possible after admission.
- If no change, please write continuation orders on regular physician's order sheet.
- Solutions will be made up in a **24-hour** bag. Standard TPN hang time is at **2030**.
- Indicate rate per hour, number of hours, and total volume or complete the Cyclic Schedule section.
- To Calculate the Formulation:
 - Calculate the body surface area [BSA].
 - Calculate the volume based on BSA. (If BSA not available, volume may be calculated based on weight.)
 - Calculate the desired calories based on BSA. (If BSA not available calories may be calculated based on weight, see chart to right).
 - Calculate then enter the grams/day or grams/Liter of amino acids. Calculate Kcal provided by this amount.
 - Calculate then enter the grams/day or grams/Liter or % of Dextrose. Calculate Kcal provided by this amount.
 - Calculate then enter the mL/day of Fat Emulsion. Calculate Kcal provided by this amount.
 - When titrating up the Dextrose concentration and Fat Emulsion volume, total caloric needs may not be possible to meet.
 - Select the electrolyte amount per kg, then calculate the daily amounts.
 - Select the factor then calculate the daily amounts of the other additives.
 - When entering individual components of Trace Elements, the amounts ordered will be in **addition** to any that are ordered as the Trace Elements Additive.

COMPOSITION OF AMINO ACID SOLUTIONS

Amino Acids (Travasol) 15% (Used in routine formulations)

Amino Acids 150g/liter 1357mOsm/L
 Nitrogen 0.158 g/g Amino Acids
 Acetate 0.85 mEq/g Amino Acids

Amino Acids (TrophAmine) 10% (Used in Neonates)

Amino Acids 100g/liter 875mOsm/L
 Nitrogen 0.155 g/g Amino Acids
 Chloride <0.03 mEq/g Amino Acids
 Acetate 0.54 mEq/g Amino Acids
 Sodium 0.05mEq/g Amino Acids

VITAMINS

Pediatric Multivitamin Injection contains the following vitamins:

FAT SOLUBLE: Vitamin A (as palmitate) 2300 IU, Vitamin D₃ (cholecalciferol) 400 IU, Vitamin E (*d*- α -tocopheryl acetate) 7 IU, Vitamin K₁ 200 mcg;

WATER SOLUBLE: Vitamin C (ascorbic acid) 80 mg, Vitamin B₆ (pyridoxine) 1 mg, Vitamin B₁ (thiamine HCl) 1.2 mg, Vitamin B₂ (riboflavin 5-phosphate sodium) 1.4 mg, Niacinamide 17 mg, Dexpanthenol (as *d*-pantothenyl alcohol) 5 mg, Biotin 20 mcg, Folic acid 140 mcg, Vitamin B₁₂ (cyanocobalamin) 1 mcg.

Adult Multivitamin Injection contains the following vitamins:

FAT SOLUBLE: Vitamin A (as palmitate) 3300 IU, Vitamin D₃ (cholecalciferol) 200 IU, Vitamin E (*d*- α -tocopheryl acetate) 10 IU, Vitamin K₁ 150 mcg;

WATER SOLUBLE: Vitamin C (ascorbic acid) 200 mg, Vitamin B₆ (pyridoxine) 1 mg, Vitamin B₁ (thiamine HCl) 6 mg, Vitamin B₂ (riboflavin 5-phosphate sodium) 3.6 mg, Niacinamide 40 mg, Dexpanthenol (as *d*-pantothenyl alcohol) 15 mg, Biotin 60 mcg, Folic acid 600 mcg, Vitamin B₁₂ (cyanocobalamin) 5 mcg.

SUGGESTED MONITORING PARAMETERS

After baseline, then monitor the following:

FREQUENCY	First week	Subsequent Weeks
1. Weight	3x/week	3x/week
2. Intake-Output	daily	daily
3. Multistix	2-4x dly	daily
4. Fingerstick Glucose	Q6H until stable	
5. Labs	See Orders on front side of this order	

NUTRITIONAL SUPPORT RESOURCES

1. Dietitian	Ext:8-7681
2. IV Team Weekday before 3pm	Pgr:7544
Evenings,Weekends,Holidays	Pgr:7538
3. Pharmacy – IV Room	Ext:8-2320
4. Pediatric Pharmacist	Ext:8-2395 Pgr:7972

CALORIC CALCULATIONS: kcal/kg/day

Term Infant	90-120	7-10 years	55-75
1-3 years	75-90	11-18 years	40-55
4-6 years	65-75		

TRACE METAL COMPOSITION

Trace Metal (values per mL)	MTE-4 Pediatric	MTE-5 Concentrate
Zinc (as Sulfate)	1 mg	5 mg
Copper (as Sulfate)	0.1mg	1 mg
Manganese (as Sulfate)	25 mcg	0.5 mg
Chromium (as Chloride)	1 mcg	10 mcg
Selenium (as Selenious Acid)	None	60mcg

NUTRIENT GOALS (per day)

	< 3 kg	3-35 kg	> 35kg
Sodium	2-4 mEq/kg	2-4 mEq/kg	2-4 mEq/kg
Potassium	2-4 mEq/kg	2-4 mEq/kg	2-4 mEq/kg
Chloride (mEq/kg)	2-4 mEq/kg	2-4 mEq/kg	2-4 mEq/kg
Calcium	1.5-2.2 mEq/kg	1.25-1.5 mEq/kg	0.5-0.7 mEq/kg
Phosphate	1-1.3 mmol/kg	0.5-1 mmol/kg	0.5-1 mmol/kg
Magnesium	0.3-0.4 mEq/kg	0.25-0.5 mEq/kg	0.25-0.5 mEq/kg
Zinc	400 mcg/kg	100 mcg/kg	2.5-4 mg/day
		2.5-4 mg/day (if >20 kg)	
Copper	20 mcg/kg	20 mcg/kg	0.5-1.5 mg/day
Chromium	0.2 mcg/kg	0.14-0.2 mcg/kg	10-15 mcg/day
Manganese	1 mcg/kg	2-10 mcg/kg	0.15-0.8 mg/day
Selenium	2 mcg/kg	2-3 mcg/kg	50 mcg/day