# PEDIATRIC BLOOD AND MARROW TRANSPLANT PROGRAM

**DOCUMENT NUMBER:** PBMT-GEN-023

**DOCUMENT TITLE:**
Administration of Parenteral Nutrition (PN) in Pediatric Blood and Marrow Transplant Patients

**DOCUMENT NOTES:**

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## Document Information

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<th>MOORE171</th>
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PBMT-GEN-023

ADMINISTRATION OF PARENTERAL NUTRITION (PN) IN PEDIATRIC BLOOD AND MARROW TRANSPLANT PATIENTS

1 PURPOSE

1.1 To outline multidisciplinary care of the pediatric bone marrow transplant patient (PBMT) receiving parenteral nutrition (PN).

2 INTRODUCTION

2.1 Due to chemotherapy and/or Total Body Irradiation (TBI), the gastrointestinal tract becomes sensitive. Mucositis, nausea, vomiting and diarrhea makes it difficult to take food by mouth. As a result patients receive parenteral nutrition support continuing until they are able to tolerate oral/enteral nutrition.

3 SCOPE AND RESPONSIBILITIES

3.1 Interdisciplinary - Requires order by physician or physician designee

3.2 Staff Nurses

3.2.1 Registered Nurses (RNs) administer parenteral nutrition following demonstration of clinical competency.

3.3 Physicians

3.3.1 Initiates and reviews Parenteral Nutrition. If parenteral nutrition orders are written by practitioners other than a physician order, orders must be cosigned within 48 hours of being written.

3.4 Dietitian

3.4.1 Assesses nutritional status, calculate nutrition requirements, writes parenteral nutrition orders per physician order, and provides ongoing electrolyte and additive assessment. Monitors oral intake and adjusts parenteral nutrition. Documents nutritional assessment per the Department of Nutrition Service policy.

3.4.2 Provides advice regarding drug compatibility, metabolic management, and solubility of calcium and phosphorous. Writes parental nutrition orders per physician order in the absence of the dietitian. Checks for appropriate dosing of Total Parenteral Nutrition (TPN) components and verifies TPN calculations.

4 DEFINITIONS/ACRONYMS

4.1 CVL - Central Venous Line

4.2 IL - Intralipid

4.3 MAR - Medication Administration Record

4.4 MRI - Magnetic Resonance Imaging
4.5 MVI – Multivitamin, Intravenous
4.6 PET – Positron-Emission Tomography
4.7 PBMT – Pediatric Bone Marrow Transplant
4.8 PN – Parenteral Nutrition
4.9 TPN – Total Parenteral Nutrition

5 MATERIALS
5.1 TPN bag with unvented tubing
5.2 Tubing with >= 1.2 micron filter
5.3 IL bag or syringe when applicable
5.4 Y connector if necessary
5.5 Alcohol swabs
5.6 Gloves (sterile)
5.7 End Cap
5.8 10ml normal saline syringe

6 EQUIPMENT
6.1 Infusion Pump

7 SAFETY
7.1 N/A

8 PROCEDURE
8.1 Assessment and Initiation
   8.1.1 Monitor patient’s oral intake, if oral intake is insufficient, TPN will be initiated.
   8.1.2 Patient’s nutritional status will be assessed; labs will be checked including baseline Triglyceride levels. TPN/Intralipid (IL) will be ordered and signed by the physician.
   8.1.3 Assess patient for allergies i.e., eggs, heparin prior to initiating TPN/IL. If allergies are present TPN or IL may need to be modified.
   8.1.4 During TPN/IL administration monitor
       8.1.4.1 Daily weight
       8.1.4.2 Intake and Output
       8.1.4.3 Catheter site
   8.1.5 Daily serum Sodium, Potassium, Chloride, Carbon Dioxide, Blood Urea Nitrogen, Creatinine, Glucose; Calcium, Magnesium Chem GI,
Phosphorus every Monday, Wednesday, and Friday, Triglycerides every week or as ordered by Physician or designee.

8.1.6 Check urine glucose per Physician or designee.

8.1.7 Monitor signs and symptoms of complications such as: infection, allergies, and lab abnormalities.

8.2 Administration

8.2.1 Verify accuracy of TPN/IL bag formula, with TPN/IL orders, per standards in nursing drip protocol.

8.2.2 Prime TPN line, change cap on Central Venous Line (CVL) using sterile technique during the pre-engraftment stage and clean technique after engraftment.

8.2.3 Clean connector cap with alcohol swab.

8.2.4 Flush patients CVL with normal saline.

8.2.5 Connect TPN/IL tubing to catheter cap.

8.2.6 Begin infusing via central line or approved line at prescribed rate, utilizing nursing drip protocol.

8.2.7 Record TPN/IL administration on Medication Administration Record (MAR), and record in Computer charting system, per standard in nursing drip protocol.

8.3 Interruption

8.3.1 Indication requiring TPN to be stopped:

8.3.1.1 Major surgical procedure i.e. exploratory laparotomy, wound debridement, bowel surgery.

8.3.1.2 Magnetic Resonance Imaging MRI scans.

8.3.1.3 Positron-emission tomography PET scans.

8.3.1.4 HIDA scans.

8.3.1.5 Line break

8.3.1.6 Line dislocation

8.3.1.7 Equipment malfunction

8.3.1.8 Other indication as determine by Physician or designee

8.3.2 How to Taper TPN

8.3.2.1 Decrease rate 50% one hour prior to stopping. Alert Physician or designee if patient is on an insulin drip.

8.3.2.2 If lack of time to taper TPN, then discontinue TPN bag and provide IV fluids containing at least D5. Again, check for other medication in TPN and alert provider team if on insulin drip.
8.3.2.3 Need to provide adequate hydration fluids while off TPN. Call Physician or designee for orders.

8.3.2.4 When TPN is discontinued and line not in use, flush the catheter with Heparin flush according to central line flush policy to maintain patency.

8.3.2.5 Do not reconnect partially infused TPN bags except in approved situations (i.e. patient to be transferred off unit for testing).

8.3.3 Conditions to report

8.3.3.1 Hypo or hyperglycemia, hyperkalemia, elevated Triglyceride (>400)

8.3.3.2 Signs of allergic reaction after hanging TPN/IL.

8.3.3.3 Interruption in TPN therapy, complication

8.3.3.4 Special additives

8.3.4 Carnitine

8.3.4.1 Patients on steroid therapy after transplant may have carnitine added to their TPN if fasting triglyceride levels >400 (>200 for infants)

8.3.4.2 Dosage, if required:

8.3.4.2.1 Patients <= 20kg will receive 15mg/kg/day;

8.3.4.2.2 Patients > 20kg will receive 300mg/day.

8.3.5 Vitamin K

8.3.5.1 Vitamin K will be added based on PT, PTT levels as requested by Physician or designee.

8.3.6 Multivitamin

8.3.6.1 Patients who react to intravenous multivitamin (MVI) in TPN will be started on oral multivitamin. RN to report if patient not taking oral vitamins.

8.3.7 Heparin

8.3.7.1 If continuous infusion Heparin therapy utilized, Heparin may be added to TPN. If TPN is stopped for > 4 hours or TPN cycled begin separate Heparin infusion at rate per transplant protocol.

8.3.8 Intralipids

8.3.8.1 Do not administer to patients with Intralipids (contraindications) for egg allergies, peanut allergies, and elevated Triglyceride levels.
8.3.9 Insulin

8.3.9.1 Patients with insulin in TPN require frequent blood glucose checks.

8.3.9.2 RN to report hypoglycemia and alert Physician or designee for interruptions.

9 RELATED DOCUMENTS/FORMS

9.1 N/A

10 REFERENCES

10.1 N/A

11 REVISION HISTORY

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<td>06</td>
<td>S. McCollum</td>
<td>• Acronyms defined throughout and added to section 4:</td>
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<tr>
<td></td>
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<td>CVL - Central Venous Line</td>
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<tr>
<td></td>
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<td>IL - Intralipid</td>
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<td></td>
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<td>MAR - Medication Administration Record</td>
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<tr>
<td></td>
<td></td>
<td>MRI - Magnetic Resonance Imaging</td>
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<tr>
<td></td>
<td></td>
<td>MVI - Multivitamin, intravenous</td>
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<td>PET - Positron-emission tomography</td>
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<td>PN - Parenteral Nutrition</td>
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<td>TPN - Total Parenteral Nutrition</td>
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<td>• Section 8.2.2 Defined when to use sterile technique and clean technique for cap changes.</td>
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<td>• Section 8.3.8.1 Removed intralipid ALD contraindication</td>
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**PBMT-GEN-023 Administration of Parenteral Nutrition (PN) in PBMT Patients**

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<td></td>
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### Medical Director

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