PEDIATRIC BLOOD AND MARROW TRANSPLANT PROGRAM

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Administration of Parenteral Nutrition (PN) in Pediatric Blood and Marrow Transplant Patients

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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 patient 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

3.1.1 Requires order in the medical record by physician or designee.

3.2 Physicians

3.2.1 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.

3.3 Dietitians

3.3.1 Assess 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 Pharmacists

3.4.1 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.

3.5 Staff Nurses

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

4 DEFINITIONS/ACRONYMS

4.1 CVL Central Venous Line

4.2 MAR Medication Administration Record

4.3 MRI Magnetic Resonance Imaging

4.4 MVI Multivitamin, Intravenous

4.5 PET Positron-Emission Tomography

4.6 PBMT Pediatric Blood and Marrow Transplant

4.7 PN Parenteral Nutrition

4.8 TPN Total Parenteral Nutrition

5 MATERIALS

5.1 TPN bag with unvented tubing

5.2 Tubing with greater than or equal to (>/=) 1.2 micron filter

5.3 Parenteral lipid emulsion 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 10 mL 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 and enteral intake, if intake is insufficient, TPN and parenteral lipid emulsion, when indicated, will be initiated. If parenteral nutrition orders are written by practitioners other than a physician order, orders must be cosigned within 48 hours of being written.

8.1.2 Prior to initiation:

8.1.2.1 Assess nutritional status

8.1.2.2 Check baseline labs as follows, or as ordered by the physician or designee:

8.1.2.2.1 Sodium

8.1.2.2.2 Potassium

8.1.2.2.3 Chloride

8.1.2.2.4 Carbon dioxide

8.1.2.2.5 Blood urea nitrogen

8.1.2.2.6 Creatinine

8.1.2.2.7 Glucose

8.1.2.2.8 Calcium

8.1.2.2.9 Magnesium

8.1.2.2.10 Phosphorous

8.1.2.2.11 Hepatic Panel

8.1.2.2.12 Triglycerides

8.1.2.3 Assess patient for allergies (i.e., eggs) prior to initiating TPN and parenteral lipid emulsion. If allergies are present TPN or parenteral lipid emulsion may need to be modified accordingly.

8.1.3 Monitor the following during TPN and parenteral lipid emulsion administration:

8.1.3.1 Daily weight

8.1.3.2 Intake and Output

8.1.3.3 Catheter site

8.1.3.4 Signs and symptoms of complications such as: infection, allergies, and lab abnormalities.

8.1.3.5 Urine glucose per Physician or designee.

8.1.3.6 Routine labs as follows, or as ordered by the physician or designee:

8.1.3.6.1 Daily: sodium, potassium, chloride, carbon dioxide, blood urea nitrogen, creatinine, glucose

8.1.3.6.2 Every Monday, Wednesday, and Friday: calcium, magnesium, phosphorus, hepatic panel

8.1.3.6.3 Weekly: triglycerides

8.2 Administration

8.2.1 Utilizing the team verification method, verify the accuracy of the TPN and parenteral lipid emulsion bag formula with the written order as per hospital policy (See related DUHS policy: *High Alert Medication Administration Policy*).

8.2.2 Prime TPN line, change cap on the 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 CVL with normal saline.

8.2.5 Connect TPN and parenteral lipid emulsion tubing to catheter cap.

8.2.6 Begin infusing via CVL or approved line at the prescribed rate as per hospital policy (See related DUHS policy: *High Alert Medication Administration Policy).*

8.2.7 Record TPN and parenteral lipid emulsion administration on the Medication Administration Record (MAR), and record in the computer charting system, per hospital policy (See related DUHS policy: *High Alert Medication Administration Policy*).

8.3 Interruption

8.3.1 Indications requiring TPN to be stopped are listed below:

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 Hepatobiliary iminodiacetic acid (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

8.4 TPN Infusion – Taper

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

8.4.2 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.

8.4.3 Need to provide adequate hydration fluids while off TPN. Call Physician or designee for orders.

8.4.4 When TPN is discontinued and line not in use, flush the catheter with heparin flush to maintain patency according to hospital policy (See related DUH policy: *Central Venous Access Device (CVAD) Policy-Pediatrics*).

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

8.5 Conditions to Report

8.5.1 Hypo or hyperglycemia, hyperkalemia, elevated triglyceride (> 400)

8.5.2 Signs of allergic reaction after hanging TPN and parenteral lipid emulsion.

8.5.3 Interruption in TPN therapy, complication

8.5.4 Special additives

8.6 Additives and Other Information

8.6.1 Carnitine

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

8.6.1.2 Dosage:

8.6.1.2.1 Patients </= 20 kg: 15 mg/kg/day

8.6.1.2.2 Patients > 20 kg: 300 mg/day

8.6.2 Vitamin K

8.6.2.1 Vitamin K will be added based on PT, PTT levels as requested by the physician or designee.

8.6.3 Multivitamin

8.6.3.1 Patients who react to intravenous multivitamin (MVI) in TPN will be started on oral multivitamin. The nurse will report if the patient is not taking oral vitamins.

8.6.4 Parenteral Lipid Emulsion (i.e. Intralipid, smolipid, etc.)

8.6.4.1 Do not administer to patients with parenteral lipid emulsions contraindications – such as egg allergies, peanut allergies, and elevated triglyceride levels.

8.6.5 Insulin

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

8.6.5.2 The nurse will report occurrences of hypoglycemia and hyperglycemia to the medical team and will alert the physician or designee for interruptions in infusions.

9 RELATED DOCUMENTS/FORMS

9.1 DUHS related policy: High Alert Medication Administration Policy.

9.2 DUH related policy: Central Venous Access Device (CVAD) Policy-Pediatrics.

10 REFERENCES

10.1 N/A

11 REVISION HISTORY

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08	S. McCollum	• Section 8: Removal of heparin as an additive as this is no longer utilized as prophylaxis

Signature Manifest

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