SECTION:	PATIENT CARE	**POLICY NUMBER:**	PC 05-t-220
SUB-SECTION:	Practice	**EFFECTIVE DATE:**	2007-11-21
SUBJECT:	Parenteral Nutrition (PN) for Adults	**LAST REVISION DATE:**	2021-01-20

PURPOSE

The purpose of this policy is to provide the safe delivery of parenteral nutrition (PN) for patients who are unable to maintain or attain appropriate nutritional status via the oral or enteral route.

POLICY

1. All patients prescribed PN must meet the inclusion criteria listed in Appendix A.
2. PN solutions and additives must be prescribed by a physician using the appropriate PN Module.
3. A Registered Dietician (RD) will be consulted for assessment and ongoing monitoring for all patients prescribed PN.
4. A Pharmacist will be consulted and provide ongoing monitoring for all patients prescribed PN.
5. PN solutions will be prepared by pharmacy in a laminar airflow-hood.
6. Medications can only be added to PN solutions by pharmacy.
7. PN infusions must be administered via a Central Venous Access Catheter (CVAC).
8. PN infusions must be administered using an infusion pump.
9. No medication or infusion will be co-administered in the same lumen as PN.
10. PN bags containing amino acid bags will be labelled with the patient's name, room number, ingredients, additives, bag number and expiry date.
11. PN bags containing amino acids will be stored in a temperature monitored refrigerator and removed one hour prior to administration.
12. PN bags containing amino acids will be changed a minimum of every 24 hours.
13. If at any time a PN solution containing amino acids is unavailable, a solution of dextrose 10% in water (D10W) will be infused at the same rate as prescribed and pharmacy notified immediately.
14. PN will be administered using the following administration set (tubing) standards:
    a) 3-in-1 PN containing amino acids and fat emulsions (lipids) together: using a 1.2-micron filter
    b) 2-in-1 PN containing amino acids: using a 0.2-micron filter
    c) Fat emulsions alone: no filter required, when Y-site infused ensure it is attached below the level of the filter used for amino acid solution
15. Administration sets used for PN containing amino acids (3-in-1 or 2-in-1) will be changed a minimum of every 24 hours and be done in conjunction with a bag change.

16. Administration sets used for infusion of fat emulsions alone will be changed a minimum of every 12 hours and done in conjunction with a bag change.
17. Administration sets used for fat emulsions (alone or with amino acids) will be Non-DEHP.
18. Nurses who practice PN administration will be competent to recognize the signs and symptoms of related complications.
19. Blood procurement for the purpose of PN maintenance will be done by direct peripheral venipuncture whenever possible to minimize the associated risks of infection and erroneous results.
20. The High Alert Medication Policy (PC 07-d-135) will be followed for PN solutions.
21. When discontinuing PN, the CCH Parenteral Nutrition Discontinuation Module will be ordered to wean the infusion rate and minimize the risk of rebound hypoglycemia.
22. All patients expected to be discharged home on PN will be referred to The Ottawa Hospital Home TPN Program.

PROCEDURE

The Physician will:

1. Ensure each patient prescribed PN has met the inclusion criteria listed in Appendix A.
2. Place an electronic order for PN using the appropriate CCH Parenteral Nutrition Module.
3. Consult and collaborate with the Pharmacist and Registered Dietitian.
4. Order the "CCH Parenteral Nutrition Discontinuation Module" when PN is being discontinued.

The Pharmacy will:

1. Collaborate with the Physician and Registered Dietitian regarding PN treatment.
2. Prepare PN solutions in a laminar airflow-hood. Pharmacy may require up to 24 hours to prepare the initial dose of PN for administration.
3. Add necessary medications into the PN solution.
4. Deliver PN bags containing amino acids to the patient care area and place them into a temperature monitored refrigerator.
5. Monitor patients receiving PN for malnutrition and refeeding syndrome.

The Registered Dietitian will:

1. Perform a nutritional assessment for each patient ordered PN.
2. Assess each patient ordered PN for appropriate indication of treatment and collaborate with the Physician and Pharmacist as required.
3. Provide recommendations for energy and macronutrients as well as rate of administration.
4. Monitor patients receiving PN for malnutrition and refeeding syndrome.

The Nurse will:

1. Collaborate with the Physician, Registered Dietitian and Pharmacist regarding the administration of PN treatment.
2. Remove PN bags containing amino acids from the refrigerator one hour prior to administration time.
3. Inspect the PN bags for clarity and ensure the bag is intact. Do not use if particulate matter is seen, notify and return to pharmacy.
4. Assess CVAC access and provide necessary line care and maintenance as per the Vascular Access and Infusion Therapy Policy # PC 05-i-040.
5. Administer PN using an infusion pump.
6. Select and use the appropriate administration set based on type of PN being administered:
   a) 3-in-1 PN containing amino acids and fat emulsions together: using a 1.2-micron filter
   b) 2-in-1 PN containing amino acids: using a 0.2-micron filter
   c) Fat emulsions alone: no filter required, when Y-site infused ensure it is attached below the level of the filter used for amino acid solution
7. Change tubing for PN containing amino acids (3-in-1 or 2-in-1) a minimum of every 24 hours and in conjunction with a bag change.
8. Change tubing used for fat emulsions alone a minimum of every12 hours and in conjunction with a bag change.
9. Piggy back fat emulsions being delivered by Y-site below the micron filter of the PN containing amino acid solution.
10. Administer PN solutions via the Medication Administration Wizard (MAW), scanning the patient armband and solution bag at the time of administration.
11. Follow the High Alert Medication Policy by having an independent double check/Nurse Witness for the administration of PN solutions.
12. Monitor patients receiving PN for complications including but not limited to; fluid retention, infection, vascular access concerns, refeeding syndrome (including low blood pressure, peripheral edema, signs of heart failure and decreased level of consciousness) and rebound hypoglycemia if PN is interrupted. Notify physician and implement interventions as required.
13. Weigh the patient weekly while receiving PN unless otherwise ordered by physician.
14. Document all care associated with the delivery of PN in the patient health record.

APPENDICES:	A: Inclusion Criteria for Adult Parenteral Nutrition (PN)	
REFERENCE DOCUMENTS:	American Society for Parenteral and Enteral Nutrition (ASPEN). 2014. ASPEN Clinical Guidelines: Parenteral Nutrition Ordering, Order Review, Compounding, Labelling, and Dispensing JPEN 2014, Vol 38, Issue 3, pp. 334–377 American Society for Parenteral and Enteral Nutrition (ASPEN). 2012. Clinical Guidelines for the Use of Parenteral and Enteral Nutrition in Adult and Pediatric Patients: Applying the GRADE System to Development of ASPEN Clinical Guidelines JPEN 2012, Vol 36, Issue 1, pp. 77-80 American Society for Parenteral and Enteral Nutrition (ASPEN). 2004. Safe Practices for Parenteral Nutrition - [Endorsed by the American Society of Health-System Pharmacists (ASHP)] JPEN 2004, Vol 28, Issue 6, pp. S39-S70 Canadian Vascular Access Association. (2019). Canadian Vascular Access and Infusion Therapy Guidelines. Pembroke, On: Pappin Communications. CCH High Alert Medication Policy# PC 07-d-135 CCH Vascular Access and Infusion Therapy Policy PC 05-i-040 Critical Care Nutrition. (2009). Canadian clinical practice guidelines, summary of topics and recommendations. Retrieved from www.criticalcarenutrition.com Infusion Nurses Society, 2016. "Infusion Therapy Standards of Practice." Journal of Infusion Nursing, Volume 39, Number 1S.	
REPEALED POLICIES:		
APPROVAL PROCESS:	Interprofessional Practice Council: 2020-08-25 Department of Surgery: 2020-12-03 Pharmacy & Therapeutics Committee: 2021-01-11 (informational purposes) Medical Advisory Committee: 2021-01-20	
APPROVAL SIGNATURE:		Christine Penney Vice President, Patient Services and Chief Nursing Officer