Huron Perth Healthcare Alliance		
1. Clinical Policies and Procedures	Original Issue Date:	February 15, 1985
Total Parenteral Nutrition (TPN)	Review/Effective Date:	September 9, 2019
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Scope:
This policy applies to all nurses who have received appropriate theoretical preparation to care for adult patients requiring Total Parenteral Nutrition (TPN) at the Huron Perth Healthcare Alliance (HPHA).

Policy Statement:
This policy describes the essential steps required to initiate, maintain and discontinue TPN at the Huron Perth Healthcare Alliance (HPHA). TPN initiation and discontinuation requires a physician's order.

Purpose Statement:
The purpose of this policy is to provide guidelines for the RNs, RPNs and their managers at the HPHA related to the care of the adult patient requiring TPN therapy. It is expected that all staff shall adhere to the principles outlined in this policy.

Definitions:

Central Venous Access Device (CVAD) – Also known as a central venous line (CVL), or central venous catheter (CVC), is an intravenous catheter whose tip terminates in a great vessel. The great vessels include the aorta, pulmonary artery, superior vena cava, inferior vena cava, brachiocephalic veins, internal jugular veins, subclavian veins, external iliac veins, and common femoral veins. Neither the type of line alone nor the site of insertion can determine if a line is a CVAD. If the line terminates in a great vessel, it is a CVAD. (Safer Healthcare Now, 2012).

Peripheral Parenteral Nutrition (PPN): a specialized form of nutrition support administered parenterally via peripheral access for short duration of time or until a CVAD can be obtained. PPN solutions with 5% or less Amino Acid & 10% or less Dextrose solution can be administered via peripheral venous access until a CVAD can be obtained.

Total parenteral nutrition (TPN) – a specialized form of nutritional support administered parenterally via a CVAD, or via Peripheral access if Dextrose solution is 10% or less, until CVAD access is obtained. TPN is used when adequate nutrition cannot be delivered to or absorbed by the gastrointestinal (GI) tract. TPN refers both to Amino Acids and Lipids, though they may be administered in separate containers and some patients may only receive one or the other.

Indications:
Indicated for patients when:

- The patient is nutritionally at risk, and
- A contraindication to using the gut exists or the patient cannot meet his or her nutrition needs with enteral or oral nutrition alone

Considerations:

- Parenteral Nutrition should be administered using an infusion pump
- TPN with dextrose solutions of greater than 10% must be administered via a central venous access device
- Peripheral Parenteral Nutrition (PPN) solutions with 10% dextrose concentration or less can be administered via:
  - a midline catheter for up to 14 days
  - a short peripheral IV catheter (i.e; 20 G) for less than 7 days until a CVAD can be obtained.

- Lipids must infuse at the same time as amino-acid/dextrose solution when infusing via a peripheral line. PPN can never be ordered without lipids.

- Refer to the Midline IV Catheters – Insertion, Care, Maintenance and Removal policy and/or the IV – Intravenous, Peripheral: Initiation, Maintenance and Discontinuation policy for additional considerations specific to PPN administration.
- All patients discharged home on TPN therapy must have a CVAD. A referral to a community care coordinator or equivalent for follow-up TPN maintenance requires a minimum of 48 hours notice to arrange home TPN supplies.

Competency Requirements:

- An RN or RPN having appropriate theoretical preparation and understanding of the underlying condition for which this treatment is proposed and having demonstrated the appropriate knowledge, skills and judgement may perform this treatment on the order of a physician.
- Competency in managing CVADs is required. Please refer to the individual HPHA CVAD Policies for competency requirements.

Procedure Chart:

Procedure	Rationale
Equipment: • Chlorhexidine/alcohol swabs • Pre-filled 10ml 0.9% Sodium Chloride syringe • TPN solution (Amino Acids and/or Lipids) • Infusion pump • TPN infusion set (s) • Tubing label	
Initiating the TPN Infusion	
1. Verify the signed practitioner's order for TPN via the HPHA – Adult Total Parenteral Nutrition (TPN) Order Set	

a. Initial orders for TPN should be received in Pharmacy prior to 12:00 hours b. Orders received later than 12:00 hours may be processed for the following day. 2. Ensure that an accurate patient and weight and baseline labs have been obtained and documented per the Order Set. 3. Obtain the TPN solution (s) from the-Automatic Dispensing Unit refrigerator under the patient's name. 4. Obtain, prime and label the required infusion set(s): a. Amino Acids - A solution set tubing with 0.22 micron filter b. Lipids – A solution set without an access port. 5. Perform hand hygiene, verify patient using 2 unique identifiers and explain the procedure. 6. Verify patency of dedicated CVAD lumen to be used for TPN administration, using the pre-filled Sodium Chloride syringe and strict aseptic technique. 7. Obtain and document baseline vitals 8. Perform bedside verification and eMAR scanning per HPHA protocols. 9. Connect infusion tubing to CVAD lumen using aseptic technique and initiate infusion per infusion pump after ensuring the 5 rights of medication administration.	• Always keep solutions refrigerated. The solution may be removed up to 1 hour prior to administration to come to room temperature. Amino acid-dextrose solutions containing trace elements and/or phytonadione will be protected from light by UV bags. The UV bags should remain in place covering these solutions while they are being infused into the patient. • No medication is to be added to TPN solutions by nursing staff unless otherwise instructed by pharmacy on Physicians' order sheet. • Do not use the CVAD if patency cannot be verified – notify the physician immediately. • TPN solutions are medications and must be documented in the eMAR • TPN flow rates are ordered to meet the patient's metabolic and electrolyte needs. Maintaining flow rates via infusion pump prevents electrolyte imbalances.
TPN Maintenance Requirements	
1. Monitoring: a. Accurate fluid balance monitoring every 8 hours b. Vital signs BID or more frequently as ordered by the physician c. Point of care testing (POCT) glucose monitoring as per physician's order d. Weights are obtained every Monday e. Inspect the CVAD site for signs of infection, infiltration, extravasation, or phlebitis. Notify the practitioner if evidence of these complications is present. 2. Solution changes - (amino-acid dextrose and lipids) must be changed at least daily at 1600 3. Tubing changes: a. Continuous TPN infusion - change every 24 hours. b. Continuous Lipid infusion - change every 24 hours c. Intermittent/cyclical Infusions – change tubing with every cycle. 4. Lab work is obtained every Monday and Thursday per the Order Set. It is preferable to obtain lab specimens from a lumen other than that being used for TPN administration and to waste a full 10mL prior to collecting the specimen to be sent for testing. 5. Do not stop or discontinue TPN infusions without a	• All TPN solutions are prepared for a 24 hour period 7 days/week. All changes to solution(s) must be made and authorized on the HPHA Adult Total Parenteral (TPN) Order Set and scanned to Pharmacy immediately to avoid wastage. These changes will be initiated after the present 24 hour supply is finished UNLESS OTHERWISE ORDERED BY THE PHYSICIAN. All changes to TPN orders are also indicated on the physician order sheets. • Weight gain, dependent edema, lung crackles, and intake greater than output are indications of fluid retention. • Guidelines recommend changing tubing at these intervals to prevent catheter-related bacteremia. (CVAA, 2019) • Blood Specimens obtained via the CVAD must follow HPHA Clinical Policies for the type of CVAD being used. • Abrupt discontinuation of TPN may induce rebound hypoglycemia in patients who are not receiving oral or

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physician's order.	enteral nutrition, are elderly, have a malignancy, have diabetes, or are receiving insulin.
Related HPHA Documents: • HPHA - Adult Total Parenteral Nutrition (TPN) Order Set • Central Venous Access Device (CVAD) – Implanted Central Venous Access Device: Care and Maintenance • Central Venous Access Device (CVAD) – Non-Tunneled: Care and Maintenance • Central Venous Access Device (CVAD) - PICC Line Care and Maintenance • CVAD - PICC Line Care and Maintenance • Central Venous Access Device (CVAD) - Tunneled Lines: Care and Maintenance **Related Elsevier Modules:** • Central Parenteral Nutrition - CE • Parenteral Nutrition Administration (Pediatric)	Include links to the related documents in the column to the left please.

REFERENCES:

Canadian Vascular Access Association. (2019). Canadian Vascular Access and Infusion Therapy Guidelines. Pembroke, ON: Pappin Communications.
Elsevier Inc. (2019). Elsevier Performance Manager. Clinical Skills: *Central Parenteral Nutrition*

Madsen, H., & Frankel, E.H. (2006). The Hitchhiker's Guide to Parenteral Nutrition Management. *Practical Gastroenterology, Series #40, 48-51.*

Worthington, P., Bechtold, M., Bingham, A., Chan, L-N., Jeven, A. & Mascarenhas, M. (2017). When Is Parenteral Nutrition Appropriate? *Journal of Parenteral and Enteral Nutrition, 41(3). Doi:10.1177/0148607117695251.*

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Policy Highlights to be communicated to staff

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