



BARNES
HEALTHCARE SERVICES

HOME TOTAL PARENTERAL NUTRITION

ADAPTED FROM THE A.S.P.E.N
NUTRITION SUPPORT PATIENT
EDUCATION MANUAL

INTRODUCTION

WHAT IS TOTAL PARENTERAL NUTRITION (TPN)?

Parenteral nutrition provides nutrition for those who may not be able to eat or absorb the nutrients in food. When food is digested normally, it is broken down in the stomach and then absorbed in the bowel. After it is absorbed, the body uses these nutrients to maintain good health.

Parenteral nutrition, which may also be called total parenteral nutrition, does not use normal digestion to provide nutrients to the body. The nutrition is a special, personalized mixture containing carbohydrates, protein, fat, vitamins, and minerals absorbed through your veins (IV). This mixture is personalized to provide you with optimal nutrition.

Parenteral nutrition is delivered via an intravenous (IV) catheter (needle in the vein) for a portion of each day. Many kinds of catheters can be used; Some common names of catheters are: Hickman®, Broviac®, Peripherally Inserted Central Catheter (PICC), triple lumen, double lumen, single lumen catheters, and PORTs. Your health care team will discuss which type of catheter you will have and how to care for it.

BARNES HEALTHCARE SERVICES

Parenteral nutrition can be a transition for both you and your family. Eating is a very social event and the inability to eat may bring feelings of loneliness and embarrassment. Please realize that you are not alone and many other families are in this same situation. Some days will always be better than others and as you become accustomed to your new feeding, the good days will outnumber the bad.

Barnes Healthcare Services will provide you with a team of experts that will help you adjust to your new method of “eating” including Registered Dietitians, Nutrition Support Pharmacists, Registered Pharmacists, as well as Registered Nurses.

Our pharmacy team is available 24 hours a day, 7 days a week at [1-866-373-7198](tel:1-866-373-7198) to help answer questions and address concerns. We will also follow up with you and your physician regularly to ensure your well-being.

BEFORE STARTING YOUR TPN

When you receive your shipment:

- Check the formula label. Make sure the name and contents matches what has been ordered for you.
- Check the expiration date. Check for leaks.
- Call your Barnes Healthcare Services (BHCS) Pharmacy, doctor, nurse, or home care provider if you feel there is an error.
- Call your BHCS Pharmacy if the formula is expired.
- At least 1 hour before hanging, take TPN bag from the refrigerator.

PREPARATION & INITIATION

Choose an area in your home that does not contain visible dirt, dust, clutter and drafts. Avoid preparing your TPN in the bathroom or around animals. The kitchen or dining room area that has a smooth table, counter-top, or tray away from an open window or doorway may be a good option. Clean the surface with soap and water and use a paper towel to dry it or wipe with alcohol.

EQUIPMENT AND SET-UP

Assemble your equipment:

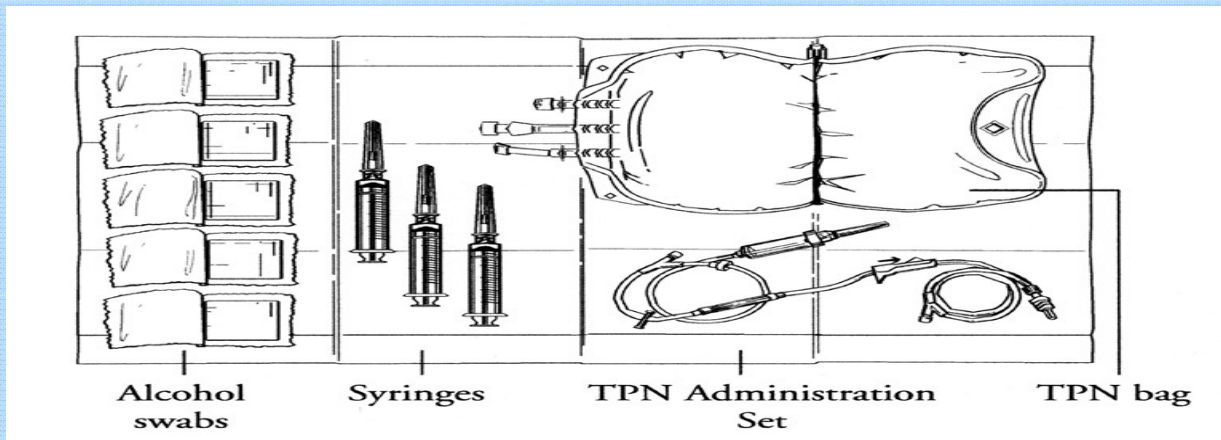
- TPN solution administration set with filter
- One or two 10 ml syringes
- Insulin syringes (if needed)
- Insulin (if Needed/ordered)
- Alcohol wipes
- Premixed bag of TPN formula
 - check labels/directions for type of TPN bag
- Multi-vitamin injection (MVI- as ordered)
 - Vial 1 = 5 ml & Vial 2= 5ml/ Total 10 ml
- One sharps container
- A waste basket



Hand washing

First, wet your hands in water that is as hot as you can comfortably stand. Then apply enough soap to lather and scrub your hands for at least 15-30 seconds. Make sure to clean between fingers, under fingernails, and arms. Rinse hands under running water and use a paper towel to turn off the sink and use a clean paper towel to dry your hands.

- ✓ Have hand sanitizer available for cleansing between processes.



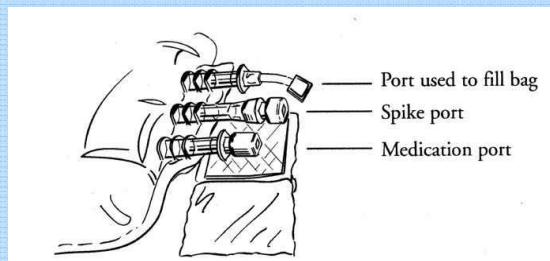
- Next, remove the syringes from the wrappers, pull back on plunger, and then push in the syringe to purge the air from each syringe.
- Then check premixed TPN solution for cloudiness, particles, or a change in color prior to adding your medicine. If lipids have been added to the bag, look for separation. TPN solution should look smooth. **Return any faulty formula to Barnes Healthcare Services.**
- If the solution looks appropriate place the TPN bag on workstation.
- Remove the TPN solution administration set with its filter from its carton.
 - Ensure that the White filtered tubing is with the White TPN solution.
 - The clear filter with Green trimming with the Clear TPN Solution.
- Please clamp tubing. [See Page 6] for attaching the tubing to the TPN solution bag.
- Next place prescribed medications on the workstation (Insulin or MVIs as ordered).
- Keep your work area free of clutter and place all wrappers and disposable items in the waste basket after use. You are now ready to prepare and add medicine(s) to the TPN solution.

PREPARING AND ADDING MEDICATION TO THE TPN FORMULA

- ✓ Check the medicine label and expiration date.
- ✓ Remove the protective cover from the medicine vial. Clean the top of the vial with the alcohol wipe. Place the vial on the work station. Repeat for all medicines that will be added to the TPN bag.
- ✓ Use an alcohol wipe to clean the medication port of the TPN bag. This is the port with a top where the medication is injected. It may be located on the outside of the middle of the TPN bag. (Maybe be wrapped in foil). Rest the clean port on a new alcohol wipe.



Wipe medication vial with alcohol wipe.



The spike port has a twist-tab and then an opening through which the spike is inserted.



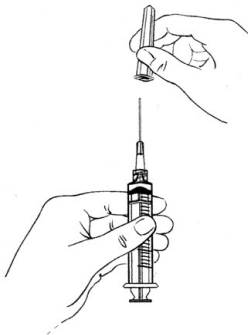
Clean medication port with an alcohol wipe.

Adding medication to the TPN solution:

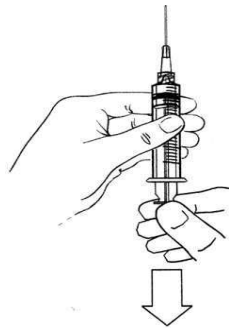
1. Pick up a syringe and remove the protective case/ loosen cap.
2. Remove cap. Pull back the plunger holding the round end only. Draw air into the syringe to the number of milliliters (mL) of medicine that is prescribed. [step 1 & 2]
3. Hold the syringe like a pen. Push the needle into the rubber top of the medication vial. Push the plunger so the air enters the vial. [Step 3]
4. Turn the vial upside down with the needle still in it. Make sure the solution covers the tip of the needle. Pull back the plunger end and fill the syringe with the correct amount of medication. [step 4]. Remove the needle and place the medication vial on your work space.
5. Don't lay down syringe. Insert the needle into the medication port and inject the solution. Place the port on the alcohol wipe again. Dispose of the syringe in your sharps container. Use a new syringe for each different type medicine.
6. Repeat by drawing and injecting all required medications. *If vials have additional doses left, store them in the refrigerator until they are empty or expired.

Gently rock the TPN bag to mix the medicine. The formula may turn yellow. Check for cloudiness or particles. Do not use the bag if there is any cloudiness or particles. Save it and notify Barnes Healthcare Services. Check for fat globules or separation of the lipid. **If you see this, do not use the solution and contact the BHCS Pharmacy.**

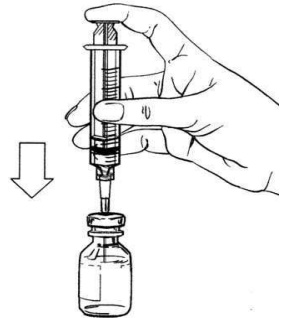
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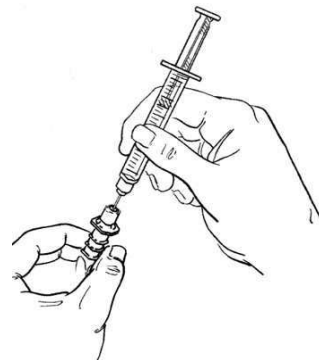
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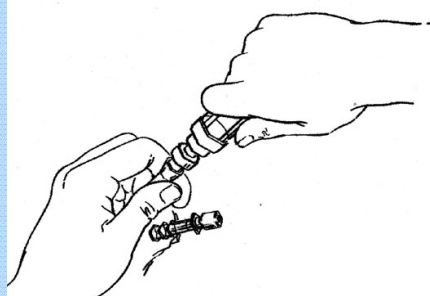
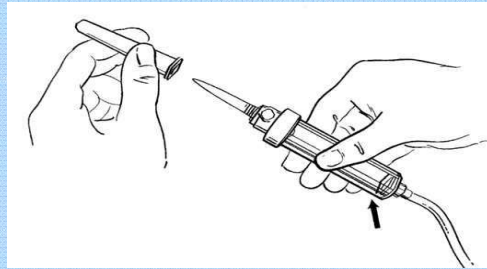
ATTACHING THE ADMINISTRATION SET TO THE TPN BAG

Remove the protective covering (twist & pull-tab) from the TPN bag spike port and set it back on your work station.

Do not touch the end that is exposed or let it touch anything else.

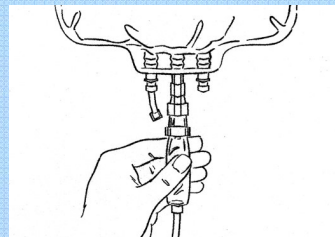
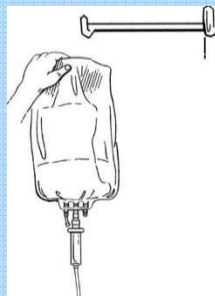
Take the TPN administration set and hold it below the sharp end of the spike tip in one hand and remove the protective covering.

Insert the tip of the administration set completely into the spike port of the TPN bag using a gentle twisting motion. Do not jab.



INITIATING THE TPN

Hang the TPN solution on a pole. If you have a portable pump, an IV pole is not necessary. Close clamp of IV Tubing, and attach the Cassette to the pump. Lock into place, then hit yes for Prime Tubing.

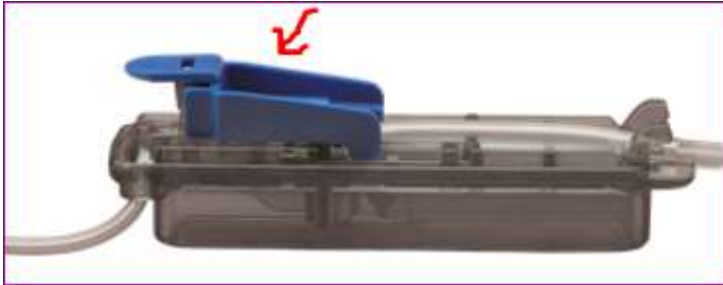


Prime the TPN solution to fill the entire length of the IV tubing. Ensure there isn't any air trapped in the tubing and then close the clamp when the tubing is filled with solution. Flush the IV line with 5-10 milliliters of normal saline (NS) prior to infusion.

Remove the protective cap from the TPN tubing and clean the catheter with alcohol. Carefully attach the tubing to the catheter connector. Do not touch the exposed areas or let it touch anything else. If it touches something, replace it with new tubing. Then open all the clamps, turn the infusion pump on and start the TPN.



- ✓ Ensure that you have removed the cover from cassette of tubing before attaching to the pump.



Remove the blue cap by pulling up on tab.

- ✓ **After attaching a new cassette to the pump and locking the latch. Use a new pump tubing for each bag of TPN.**
- ✓ **Reset the reservoir volume= Yes.**
- ✓ **Prime Tubing= Yes. (Ensure tubing not connected to patient until primed.)**
- ✓ **Start Pump = YES. (A green screen appears with a man running symbol in the upper portion of the screen.)**



- ✓
 - **Battery status level is on the right side**
 - **Reservoir volume on the left upper screen**

If any alarm codes prompt for occlusion, ensure that all clamps on tubing ,and the access device are unclamped.

DISCONTINUING THE TPN

When the TPN infusion is complete an alarm with sound on the pump.

- ✓ Clamp the tubing and disconnect it from the patient.
 - ✓ Cleanse the Catheter cap/ lumen with an alcohol prep pad.
 - ✓ Flush the central venous catheter with 5-10 milliliters of normal saline after infusion and then 3-5 milliliters of Heparin (100 units/ml).
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- First, assemble your equipment:
 - Normal Saline Syringe(s), Heparin Syringes, Alcohol wipes, and green Curoc caps.
 - Turn "Off" the infusion pump. Close the clamp on the TPN tubing.
 - Remove the TPN tubing from the catheter.
 - Clean the cap of the catheter with an alcohol wipe and unclamp the catheter tubing.
 - Push the air out of the pre-filled Saline and Heparin syringes then recap them.
 - Never touch the cap or tip of syringe to other surfaces.
 - Screw the end of each solution-filled syringe into the lumen of the catheter cap and instill the solution. Unscrew the syringe and throw it away. Repeat with each flush syringe.
 - Clamp the catheter. Then apply the green cap (Curoc).
 - Throw away all disposable materials in the waste container.



WHEN TO CONTACT YOUR DOCTOR OR NURSE

Call your primary doctor or your nurse, if you have:

- Severe pain
- Chills
- Shortness of breath
- Vomiting blood
- Blood in the stool
- A temperature greater than 100.4°F (38°C)

WHAT TO EXPECT DURING FOLLOW-UP CALLS

During a follow-up call from Barnes Healthcare Services you may be asked:

- Temperature
- Weight
- Gastrointestinal status (nausea, vomiting, diarrhea, fluid intake, appetite)
- Hydration status (thirst, urination, swelling)
- Respiratory status (shortness of breath or congestion)
- Pain level
- Activity level
- Problems with TPN formula
- Medication changes
- Supply counts for Medications, Flush Syringes, and TPN

The Oley Foundation

Founded in 1983 by Lyn Howard, MD and her patient, Clarence “Oley” Oldenburg, the Oley Foundation is a national, independent, non-profit 501 (c)(3) organization that provides information and psycho-social support to consumers of home parenteral and enteral nutrition (homePEN), helping them live fuller, richer lives.

The Foundation also serves as a resource for consumer’s families, homePEN clinicians and industry representatives, and other interested parties. Programs are directed by the staff and guidance is provided by a board of dedicated homePEN professionals and patients.

Oley Programs:

- Lifeline Letter: a bi-monthly newsletter with articles about medical advances and personal experiences, written for homePEN consumers
- Regional Coordinator Network: a national grassroots network of 50+ volunteers-all homePEN consumers or caregivers- who run support groups and provide outreach and education at the local level
- National and Regional Conferences: opportunities for homePEN consumers, clinicians, providers and industry representatives to share support and information
- Information Clearinghouse: a resource designed to answer questions about homePEN through a toll-free hotline, Web site, online education program, video/dvd library and links to other organizations
- Consumer Networking: online chat forum and toll-free calls to experienced homePEN consumers and caregivers
- Equipment/Supply Exchange: a program that provides patients with free supplies and equipment donated by members who no longer need them

Contact (800) 776-OLEY / (518) 262-5079 or www.oley.org for more information.

The American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.)

The American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) is dedicated to improving patient care by advancing the science and practice of nutrition support therapy. Founded in 1976, A.S.P.E.N. is an interdisciplinary organization whose members are involved in the provision of clinical nutrition therapies, including parenteral and enteral nutrition. With more than 5,500 members from around the world, A.S.P.E.N. is a community of dietitians, nurses, pharmacists, physicians, scientists, students and other health professionals from every facet of nutrition support clinical practice, research and education.

Patient and family resources can be found on A.S.P.E.N.’s website, www.nutritioncare.org, or by calling 301-587-6315.

TPN COMPLICATION CHART

Complication	Symptoms	Immediate action	Causes	Prevention
Infection	Temp 101 or higher; chills, especially with infusion; sweating; lethargy; body aches	Go to local ER immediately	Poor aseptic technique; contaminated tubing, heparin or saline flushes; contaminated IV solution; exposure to illness	Use proper aseptic technique; inspect all solution before for clouding/particulate
Exit site/tunnel infection	Redness; pain; swelling or drainage at insertion site or along catheter tract	Call MD/nurse	Poor aseptic technique during site care; retained sutures in skin	Use proper aseptic technique during site care, including meticulous hand washing; change dressing if loose, wet or soiled
Hyperglycemia	Nausea; weakness; thirst; headache; anxiety spells; night	Call MD/nurse/ pharmacy	Fluids infused too fast; too little insulin in infusion solution; infection; certain medications	Maintain prescribed drip rate; maintain aseptic technique at all times; inspect labels of all TPN bags for consistency in formula; alert pharmacy of new medications
Hypoglycemia	Sweating; pale facial color; heart palpitations; nausea; headache; shaky feeling; blurred vision; hunger pains; lightheadedness	Drink a glass of orange juice with 2 teaspoons sugar in it; if you are unable to tolerate fluids by mouth, place hard candy or a teaspoon or two of sugar and dissolve in mouth; call MD/nurse/ pharmacy	TPN fluids stopped abruptly without adequate period of tapering; TPN bag finishing early due to malfunction of pump; too much insulin in infusion solution. Hypoglycemia can occur during infusions but is more likely to come within 15-30 minutes of stopping	Monitoring blood glucose levels at home; always cycle off infusion over one hour or longer
Dehydration	Decreased urine output; rapid weight loss; thirst; weakness; shakiness; muscle cramping; numbness; lightheadedness/dizziness; rapid heart rate	Call MD/nurse/ pharmacy and relate signs and symptoms, describe any changes in fluid intake or output	Depletion of fluids/electrolytes due to increased losses from vomiting, diarrhea, fistula/ostomy output; inadequate intake of TPN infusion/ extra fluids	Infuse complete volume of TPN and fluids as ordered; report any significant changes from usual pattern to MD/nurse/ pharmacy; monitor weight; inform MD/ pharmacy of any medication changes