Home Total Parenteral Nutrition

This information will help teach you and your caregiver how to give total parenteral nutrition (TPN) at home. You will also receive a copy of the HPN (Home Parenteral Nutrition) Complication Chart. This chart describes the types of problems you may have with TPN and what you should do about them.

TPN is nutrition that is given directly into your vein. It is used to help people who are not able to get enough nutrients through eating.

TPN is a mixture of nutrients, such as carbohydrates, proteins, lipids (fat), electrolytes, vitamins, and minerals. Your solution may have all or some of these nutrients, based on what your body needs. Your solution may also include certain medications.

You will receive TPN through a central venous catheter (CVC). A CVC is a thin, flexible tube placed in a large vein near your collarbone. Your nurse will teach you about your CVC when you have it placed. Your TPN will be given through your CVC throughout the night. This usually takes 10 to 12 hours.

Checking and Storing Your TPN

Your TPN will be shipped to you. You will need to store it in the
refrigerator. To make sure that you received the correct formula, check the:

- Label on the bag to make sure that the name and formula is what your doctor or nurse practitioner ordered for you. Call your doctor or nurse practitioner if there is a mistake.
- Expiration date on the bag of TPN. Call the company who sent the formula if it has expired.

Preparing Your TPN

Take your TPN out of the refrigerator 2 hours before you need to use it so that it can come to room temperature.

You must prepare the formula in a clean environment. **Do not prepare your TPN in your bathroom or near pets.** Select an area in your home that does not have drafts, visible dirt, dust, or clutter. A good place is the kitchen or dining room area. Choose a smooth surface, like table or a counter-top, that is not located near an open window or doorway. Clean the surface with soap and water and dry it with a paper towel.

Gather the following equipment:

- Sterile drape
- TPN solution administration set
- 1 or 2 (10 mL) syringes
- Insulin syringe (if needed)
- Alcohol wipes
- Multivitamin infusion (MVI), as ordered
- Sharps container
- Waste basket

1. Wash your hands thoroughly with soap and water for 15 to 20 seconds. Dry them with a clean towel or a paper towel. If the procedure gets interrupted at any point, wash your hands again and start where you left off.

2. Open the sterile barrier (see Figure 1) and place it on your clean workspace.

3. Open 5 or 6 alcohol wipes by tearing off 3 edges of the wrapping. Peel the top back while being careful not to touch the inside (see Figure 2). Place each wipe on the sterile barrier.
4. Take the syringes out of the wrappers. Push in the plungers. Place them on the sterile barrier.

5. Take the TPN out of its protective bag. Check it for cloudiness, particles, or a change in color. If lipids (fat) have been added to bag, check the solution for fat globules or separation of the lipids from the solution. If you see any of these, do not use the solution and return the formula to your supplier. If the solution looks okay, place the bag on the sterile barrier.

6. Remove the TPN administration set from the carton. Close the roller clamp and place the set on the sterile barrier.

7. Gather any prescribed medications and place them on the sterile barrier. Your nurse will mark the names of the medications and how frequently you should take them in the chart below. Your set up should now look similar to Figure 3 below.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Syringe</th>
<th>Amount</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Humulin® insulin</td>
<td>Insulin syringe</td>
<td>As instructed</td>
<td></td>
</tr>
<tr>
<td>Medication</td>
<td>Volume</td>
<td>Preparation</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>Ranitidine/famotidine</td>
<td>10 mL</td>
<td>As instructed</td>
<td></td>
</tr>
<tr>
<td>Adult MVI</td>
<td>10 mL</td>
<td>Two 5 mL vials</td>
<td></td>
</tr>
<tr>
<td>Pediatric MVI with 5 mL vial of sterile water</td>
<td>10 mL</td>
<td>5 mL</td>
<td></td>
</tr>
<tr>
<td>Thiamine</td>
<td>3 mL</td>
<td>As instructed</td>
<td></td>
</tr>
</tbody>
</table>

Do not clutter your work area. Throw out all wrappers and disposable items in the waste basket after you use them.

**Preparing and Adding Medications to Your TPN**

1. Check the medication label and expiration date to make sure that you have the correct medication and that it has not expired (see Figure 4).
2. Remove the protective cover from the top of the medication vial. Hold the alcohol wipe in the foil and wipe the top of the vial with the wipe (see Figure 5). Place the vial on the sterile barrier. Repeat this step for all medications that you will add to your TPN bag.

![Figure 5. Swabbing top of medication vial with alcohol wipe](image)

3. Clean the medication port of the TPN bag with an alcohol wipe (see Figure 6). This is the port where you will inject the medication. The medication port may be located on the outside or middle of the TPN bag.

![Figure 6. Cleaning medication port of TPN bag with alcohol wipe](image)

4. Rest the clean medication port on a new alcohol wipe (see Figure 7).
5. Pick up a syringe and remove the protective cap (see Figure 8).

6. While holding the round end of the plunger, pull it back to the dose of medication that your doctor prescribed (see Figure 9).
7. Clean the top of the medication vial with an alcohol wipe. Hold the syringe like a pen or pencil. Push the needle of the syringe into the rubber top of the medication vial (see Figure 10). Push down the plunger so that the air enters the vial.

8. Carefully turn the vial upside down with the needle still in it. Make sure that the medication covers the tip of the needle. Pull back the plunger and fill the syringe with the prescribed amount of the medication (see Figure 11). Check to make sure that you have the correct amount of medication in the syringe. Remove the needle and set the vial to the side.
9. Insert the needle into the medication port of your TPN bag. Inject the medication into the bag (see Figure 12). When all the medication is in the bag, rest the medication port on the alcohol wipe again. Put the syringe into your sharps container.

10. Repeat steps 5 through 9 until all of your prescribed medications are injected into the TPN bag. Use a new syringe for each type of medication. Store any vials that you will use more than once in the refrigerator until they are empty or expired.

11. Gently rock the TPN bag to mix the medication(s) into the
formula. The formula will turn yellow. Check it for cloudiness or particles. **If you see any discoloration, cloudiness or particles, do not use the bag.** Save it and tell your home care provider. Then, start the procedure over with a new bag.

12. Some bags have a device near the middle of the bag that separates the formula from the lipids. If your bag has this device, remove it after you’ve added all of your medications (see Figure 13). Gently rock the bag to mix the lipids with the formula. Check the bag for fat globules or separation of lipids. **Do not use the solution if you see any of fat globules or separation of lipids.** Instead, return the bag to your supplier and start the procedure over with a new bag.

![Figure 13. Removing the divider in the middle of the TPN bag](image)

**Attaching the Administration Set to the TPN Bag**

1. Remove the protective covering (pull-tab) from the TPN bag
spike port and place it back on the sterile drape. **Do not touch the exposed end or allow it to come into contact with anything.** Pick up the TPN administration set. Hold it below the sharp end of the spike tip in one hand, and remove the protective covering (see Figure 14).

2. Insert the tip of the administration set completely into the spike port of the TPN bag using a twisting motion (see Figure 15).

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**Starting Your TPN**

1. Hang the TPN bag on an IV pole or hook (see Figure 16). If you have a portable pump, you will not need an IV pole.
2. Hold the end of the TPN bag tubing over the wastebasket. Squeeze the chamber of the administration set one time (see Figure 17).

3. Open the roller clamp and let the solution fill the entire length of the tubing, including the filter. The filter is a safety device that traps air bubbles and any particles while the solution is infusing. Make sure that there is no air trapped in the tubing.

4. When the tubing is filled, close the roller clamp. Thread the tubing through the infusion pump, using the illustrated instructions on your pump as a guide.
5. Clean the CVC connection at the end of the lumen with an alcohol wipe. Flush the lumen that you will be using for the infusion with 10 mL of normal saline (see instructions in the “Disconnecting the TPN Tubing and Flushing Your CVC” section). Remove the protective cap from the TPN tubing (see Figure 18).

Figure 18. Removing protective cap from TPN tubing

6. Carefully attach the TPN tubing to the CVC lumen (see Figure 19). If you have a CVC with 2 or more lumens, alternate the lumens that you use for the TPN infusion. This way you know that each lumen works. **Do not touch any open connections or allow them to touch anything.** If the end of the TPN tubing accidentally touches something, replace it with a new administration set.

Figure 19. Attaching the TPN tubing to the CVC lumen

7. To start the TPN, open the clamps on the lumen and the TPN tubing. Turn the infusion pump on.

**Disconnecting the TPN Tubing and Flushing**
Your CVC

Your pump will sound an alarm when your infusion is done. You will now need to disconnect the TPN tubing from the CVC and flush your CVC. Your nurse will teach you how to do this and give you the supplies you will need.

Supplies

Gather the following supplies:

- One prefilled, 10 mL syringe containing normal saline solution. You will need 1 syringe for each lumen.
- Nonsterile gloves
- Alcohol pads
- One disinfection cap for each lumen

Instructions

1. Wash your hands thoroughly with warm water and soap. Dry them with a clean towel or a paper towel. Put on a pair of nonsterile gloves.

2. Turn the infusion pump off.

3. Close the clamp on the TPN tubing and disconnect the TPN tubing from the CVC.

4. To release the air bubbles in the syringe, gently tap the side of the syringe. Point the syringe up as you do this. Loosen but do not remove the cap on the syringe. Press the plunger on the syringe until the air is pushed out. Retighten the cap.
5. Pick up 1 lumen and unclamp it.

6. If you have a disinfection cap, remove it.

7. If you don’t have a disinfection cap, scrub the end of the needleless connector with an alcohol pad for 15 seconds and allow it to dry for 15 seconds.

8. Remove the cap from the syringe. Throw away the cap. Make sure that nothing touches the clean end of the needleless connector while you are doing this.

9. Carefully push the syringe into the needleless connector and twist it in a clockwise (to the right) direction until the connection feels secure. If you can’t inject the saline, stop and check to be sure there are no twists or other blockages in the tubing. Try to inject the saline again. If you still can’t inject the saline, do not use extra pressure to flush the line. Remove the syringe, reclamp your catheter, and call your doctor or nurse.

10. Use the following push/pause method to flush your catheter:
   - Quickly inject \( \frac{1}{3} \) of the saline
   - Pause
   - Repeat
   - Inject the last \( \frac{1}{3} \) of the saline. After the injection, clamp your catheter.

11. Untwist the syringe from the lumen and throw it away.

12. Attach a disinfection cap to the end of the needleless
connector.

13. Repeat steps 5-12 for each lumen.

14. Reclamp the lumens.

15. Secure your catheter in a way that makes you feel comfortable.

16. Throw away your gloves and wash your hands thoroughly.

You have now finished giving yourself TPN. Throw away all of the disposable materials in the waste basket.

Your nurse will help you and a caregiver practice these steps until you are both comfortable doing it. If you have any questions, please ask your doctor or nurse.

**Call Your Doctor or Nurse if You Have:**

- A temperature of 100.4°F (38°C) or higher
- Severe pain around your catheter
- Chills
- Shortness of breath
- Blood in your vomit or stool (feces)
- Increased resistance or inability to flush your catheter
- Inability to infuse the TPN solution
- Leakage of blood or fluid from your catheter tubing
- Tubing that is broken or damaged
- Any complications from the *HPN Complication Chart*
Contact Information

If you have any questions or concerns, please call your doctor or nurse practitioner at 212-639-6985. You can reach a staff member Monday through Friday from 9:00 AM to 5:00 PM. After 5:00 PM, during the weekend, and on holidays, please call 212-639-2000 and ask for the doctor on call for your doctor.

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