

Your home health nurse will help you learn more about TPN.

Total Parenteral Nutrition: Home Care Guide

This brochure will help you learn about total parenteral nutrition (TPN). TPN supplies your body with needed nutrients. You will receive TPN through a thin tube called a central venous catheter into one of your larger veins. You may have a peripherally inserted central catheter (PICC) in your arm or a central venous catheter in your upper chest (port).

During your hospital stay, you may be getting TPN continuously, 24 hours a day. When you go home, TPN is usually given once a day over 12 to 16 hours (during the day or night). This is called “cycling.” Your physician will let you know if you may also eat or drink while receiving TPN.

You will be receiving TPN at home, so there will be many things to learn. This brochure will explain:

- The TPN solution
- Infection prevention
- Storing and preparing TPN
- TPN additives
- Possible complications of TPN

You will receive separate instructions to learn how to care for your central venous catheter. The home infusion supply company will teach you how to operate the TPN infusion pump. Please read all the information you receive very carefully and ask questions about anything you are unsure about or do not understand. The Nutritional Support Services staff will work closely with you and your family to help you prepare for your home TPN program. They will also help you while you are receiving home TPN.

When you are ready to go home, plans will be made to provide you with supplies and follow-up care.

- A home infusion supply company will deliver supplies to your home on the day you leave the hospital.
- A home care agency will send a nurse to visit you once a day until you or a caregiver can care for your catheter and infuse the TPN by yourselves.
- You will be given a list of names and telephone numbers of people who can help you with any problems that may arise. Some are available on a 24-hour basis.

The TPN solution

Your TPN solution contains nearly everything you would get in a regular, balanced diet. This includes carbohydrates, protein, fat, vitamins, minerals, water, and electrolytes such as magnesium and potassium. Your body needs all of these nutrients to function. Without the correct amount of nutrients and calories, you may become weak and lose weight. The number of calories you need is determined by your weight, height, age and how active you are. After you have reached the desired weight, your TPN solution may be changed to help you stay at that weight. Here are some of the key ingredients in TPN.

Carbohydrates

Carbohydrates are a source of energy in your diet. Dextrose (sugar) is the main energy source in TPN.

Lipids (fat)

Lipids are also a source of energy. They provide you with essential fatty acids, which support and protect some of your organs. Lipids help insulate your body against heat loss. They also help your body store and use certain vitamins.

Protein

Protein is needed to make healthy bones, muscle, skin, nails and hair. It is also important for building new tissue and repairing injured tissue. Amino acids are the source of protein in TPN.

Vitamins and minerals

Vitamins and minerals play an important role in maintaining health. TPN contains the suggested daily amounts of vitamins A, B, C, D, E and K, and trace minerals such as zinc, copper and selenium.

Electrolytes

Electrolytes are important for bone, nerve, organ and muscle function. Your TPN solution contains calcium, phosphorus, magnesium, sodium, potassium, chloride and acetate.

Water

Water is an important part of TPN. Your solution will be adjusted to meet your specific needs so you do not become dehydrated.

Routine blood tests are done to check the balance of electrolytes, vitamins and minerals. When you first go home, you will have blood tests at least once a week. Your TPN solution may need to be changed depending on your needs and blood test results.

Infection prevention

Preventing infection is very important during TPN therapy. It is important to keep germs away from your catheter, TPN solution and supplies. If germs enter your catheter or the catheter insertion site, a blood infection can occur, making you very ill. To prevent this, please be sure to:

- Prepare and clean your work area.
- Wash your hands and work area carefully before starting TPN and handling your catheter or supplies.
- Store and use TPN bags and supplies properly. Be sure to keep pets away from your TPN supplies.

Preparing the work area

Tables and surfaces in your home normally have dust and some germs. The tabletop or surface you use to set up your TPN should be clean and dry. It is best to choose a work area away from household traffic and other distractions. Remember to:

- Choose a work surface such as a tray, countertop or table.
- If the surface is washable, clean it with soap and water and dry it with a clean towel or paper towel.
- If the surface is not washable, wipe it free of dust and spread a clean towel or paper towels over the surface.
- Gather your supplies. Follow the storage and preparation guidelines in this brochure to ensure the TPN bag is at room temperature.
- Avoid coughing or sneezing over the clean surface.
- Keep pets out of the room.

Hand-washing

After preparing your work area and gathering your supplies, carefully wash your hands as directed below. Be sure to wash your hands before touching your catheter or your sterile supplies. Use an antibacterial liquid soap in a pump. Follow these steps:

1. Wet your hands and wrists.
2. Squirt enough soap into your hands to get a good lather.
3. Scrub your hands thoroughly for at least 2 minutes.
4. Rinse and dry your hands with a clean towel.

Once you have washed your hands, do not touch anything except your catheter and supplies. If you touch anything else, such as the telephone or furniture, wash your hands again.

Storing and preparing TPN

To properly care for the TPN bags and supplies, follow these instructions:

- **Keep TPN bags refrigerated** when not in use.
- Check the expiration date on the TPN bag before use. If the expiration date has passed, use a new bag.
- Check the TPN bag for leaks, cloudiness or floating particles. If you see any of these, do not use the bag. Obtain a new bag from the refrigerator. Call the supply company and report the problem to them.
- The TPN should be at room temperature before using. **Remove the TPN bag from the refrigerator at least 2 to 4 hours before the infusion time.** Let it come to room temperature. **Never warm the TPN bag in the microwave or with hot water.**
- Keep other TPN supplies in a clean, dry place, away from children and pets.
- Keep TPN supplies in their packages until you are ready to use them.

Before you begin your TPN infusion, follow these steps:

1. Be sure the TPN bag is at room temperature.
2. Collect your supplies.
3. Clean your work area and set up the supplies.
4. Wash your hands (see the previous section).
5. Prepare and inject any needed additives (see the next section).
6. Refer to the separate pump instructions sheet for connecting the tubing and pump use.

TPN additives

If prescribed, you may need to add certain vitamins or medications to the TPN bag just before starting the infusion. Each additive will be tailored to your needs. The most common are multivitamins, insulin, famotidine (Pepcid®) and octreotide (Sandostatin®).

Before adding anything to the TPN bag, be sure that you have a clean work area and have washed your hands.

Gather your supplies:

- TPN bag
- Chlorhexidine pads
- One syringe with an attached needle for each additive
- Medication and/or multivitamin vial(s)

Your home health nurse will help you safely add medications or vitamins to your TPN bag. Follow these instructions:

1. Remove the protective cap from the vial.
2. Clean the top of the vial with a chlorhexidine pad. If using a preopened, multidose bottle, wipe the top of the bottle before each use. Do not open more than one multidose bottle at one time.

3. Clean the injection port on the TPN bag with a new chlorhexidine pad.
4. Remove the cover from the needle.
5. Pull back the plunger to draw back air. Draw up as much air into the syringe as you will draw up from the bottle. (Example: Draw in 10 mL of air if you will be drawing up 10 mL of vitamin/medication.)
6. Insert the needle into the bottle.
7. Hold the bottle upside down with 1 hand and push the plunger in with your other hand to inject the air into the bottle.
8. Make sure the tip of the needle inside the bottle is within the liquid medicine.
9. Slowly pull back the plunger until you have drawn up the correct amount.
10. Push any extra air out of the syringe. Recheck to make sure you have the correct amount.
11. Remove the needle/syringe from the bottle.
12. Do one last check to make sure you have the correct amount in the syringe.
13. Insert the needle into the **cleaned** center of the TPN bag injection port.
14. Slowly push the plunger on the syringe, injecting the vitamin/medication into the bag.
15. Remove the needle/syringe from the bag.
16. Activate the needle safety device (if applicable).
17. Dispose of the needle/syringe in an approved container.*
18. Gently rock the bag back and forth to mix the additive into the TPN bag.
19. Repeat this procedure for each medication or vitamin additive.

***Sharps disposal:** Never put needles and syringes directly into the garbage. The U.S. Food and Drug Administration (FDA) recommends that used needles and other sharps be placed in FDA-approved sharps disposal containers. You can get these strong, plastic containers through pharmacies and medical supply companies.

If an FDA-cleared container is not available, place used sharps in a strong, plastic container like a bleach or laundry detergent bottle. The container should be leakproof, stand upright during use, and have a tight-fitting, puncture-resistant lid. When the container is about 3/4 full, put the lid on, seal it with duct tape and write "Do not recycle" on the container with a permanent marker. Put the container in the regular trash and not the recycling bin.

If you are using a biohazard-labeled sharps disposal container, it cannot be put in the garbage can. For information about proper disposal of sharps containers and syringes in Illinois, go to <https://www2.illinois.gov/epa/Documents/iepa/waste-management/medication-disposal/sharps-fact-sheet.pdf>.

If you do not live in Illinois, please check your state and local laws for proper disposal.

Possible TPN complications

TPN complications may occur if there is an imbalance of nutrients, electrolytes, glucose (sugar) or fluid in your body. Some are quite serious and can lead to severe problems if not treated. Here are symptoms to watch for and the actions to take:

Hyperglycemia

Causes

Hyperglycemia or high blood glucose can occur when the TPN is given too fast or if your body cannot process the sugar. If you have an infection or take a medication such as a steroid, this may also cause your blood glucose levels to rise.

Symptoms

You may feel thirsty, nauseated, weak or have a headache. You may find yourself urinating more often than usual.

Action

If you have these symptoms or suspect you have high blood glucose:

- Use a glucose monitoring kit (chemstick) or device, if you have one, to test your blood glucose level.
- Contact your home health nurse or physician if you are not able to test your blood glucose level.
- Contact your physician or healthcare provider to report high blood glucose levels. You may need to have your TPN solution adjusted.

Hypoglycemia

Causes

Hypoglycemia or low blood glucose may occur if the TPN is stopped too quickly or if too much insulin is in the TPN bag. When your body gets a large amount of sugar, it produces more insulin. Then, if the TPN is suddenly stopped, the insulin takes longer to stop being produced. The result is a drop in your blood glucose level that is below normal.

Normally, your TPN pump should be set to “taper down” during the last hour of your infusion in order to prevent this from happening.

Symptoms

A low blood glucose level may cause you to feel sweaty, shaky, nervous, weak, dizzy, confused or faint. You may also have blurred vision, nausea, headache, pale skin or heart palpitations.

Action

Eat or drink something with sugar in it such as fruit juice with a few tablespoons of sugar added. You may also dissolve a glucose tablet in your mouth. You can buy glucose tablets at a drug store. Check your TPN pump setup to ensure it is programmed to taper down during the last hour. Call your home health nurse or your physician if needed.

Dehydration

Dehydration means there is not enough fluid or water in your body.

Causes

Dehydration may occur if too much fluid is lost through excessive sweating, vomiting or diarrhea. A large output from fistulas or ostomies may also lead to dehydration.

Symptoms

You may notice these symptoms: weight loss over 2 days, thirst, urinating less often than normal, urine that is dark in color, dry mouth, dizziness or lightheadedness when standing up, shakiness, weakness, or feeling nervous.

Action

Call your home health nurse or your physician. A blood test may be needed to check your kidney function. Extra fluid may be given through your venous catheter or added to your TPN solution.

If you have any questions or concerns about your TPN care, please contact your physician, home health nurse, or pharmacy supply company.