

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

## Total Parenteral Nutrition: Home Care Guide

Total parenteral nutrition (TPN) gives your body nutrients that it needs. You will get TPN through a thin tube called a central venous catheter that goes 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. At home, TPN is usually given over 12 to 16 hours (during the day or night) each day. This is known as cycling. Your physician will prescribe the dose and cycle for you. They will let you know if you may also eat or drink while you get TPN.

You will need to learn about getting TPN at home and what you need to do. This brochure will explain:

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

**You will get separate instructions to learn how to care for your central venous catheter. The home infusion supply company will teach you how to use the TPN infusion pump.**

Please read all the information you get 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 getting home TPN.

When you are ready to go home, the care team will help you make plans for getting 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.
- Your care team will give you a list of names and phone numbers of people who can help you with any problems that may arise. Some are available 24 hours a day.

## The TPN solution

TPN solution contains nearly everything you would get in a regular, balanced diet.

This includes:

- Carbohydrates
- Protein
- Fat
- Vitamins
- Minerals
- Water
- 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 care team may change the TPN solution 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 give you 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***

You need protein for 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 are important for your 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 care team will adjust the solution to meet your specific needs so you do not become dehydrated.

You will have routine blood tests 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 care team may need to change your TPN solution 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, you can get a blood infection that may make 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, or a disinfectant solution or wipe. Then dry it with a clean towel or paper towel.
- If the surface is not washable, wipe dust and dirt off. Then spread a clean towel or paper towels over the surface.
- Gather your supplies. Follow the storage and preparation guidelines in this brochure to make sure the TPN bag is at room temperature.
- Do not cough or sneeze over the clean surface.
- Keep pets out of the room.

### ***Hand-washing***

Prepare your work area and gather your supplies. Then, 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 with clean, running water and apply soap.
2. Lather your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your fingernails.
3. Scrub your hands for at least 20 seconds (the time it takes to hum the “Happy Birthday” song from beginning to end 2 times).
4. Rinse your hands well under clean, running water.
5. Dry your hands with a clean towel or an air dryer.

Once you have washed your hands, do not touch anything except your catheter and supplies. If you touch anything else, such as a phone or furniture, wash your hands again. You may use hand sanitizer if you have already washed your hands with soap and water. But, do not substitute hand sanitizer for proper hand-washing techniques.

## 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. Get a new bag from the refrigerator. Call the supply company and tell them about the problem.
- The TPN should be at room temperature before using. **Take the TPN bag out of 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 “Hand-washing” on page 3).
5. Prepare and inject any needed additives (see “TPN additives” below).
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 prescribed for what you need. The most common additives 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
- Syringe with an attached needle (1 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 you are using a multidose vial that has already been opened, wipe the top of the bottle before each use. Do not open more than 1 multidose bottle at a time.
3. Clean the injection port on the TPN bag with a new chlorhexidine pad.
4. Take the cover off of the needle.
5. Pull the plunger back to draw air into the syringe. Draw up as much air into the syringe as you will draw up from the bottle. (Example: Draw in 10 milliliters (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 1 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 away in an approved container.\*
18. Gently rock the TPN bag back and forth to mix the additive.
19. Repeat these steps 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 you put used needles and other sharps in an FDA-approved sharps disposal container. You can get these strong, plastic containers through pharmacies and medical supply companies.

If you do not have a FDA-cleared container, put used sharps in a strong, plastic container like an empty 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, do not put it in the garbage can. For information about proper disposal of sharps containers and syringes, go to [safeneedledisposal.org](http://safeneedledisposal.org)

## Possible TPN complications

TPN complications can happen if there is an imbalance of nutrients, electrolytes, glucose (sugar) or fluid in your body. Some are very 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 happen when the TPN goes in 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 glucometer device (if you have 1) 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 professional if you have a high blood glucose level. They may need to adjust your TPN solution.

### ***Hypoglycemia***

#### *Causes*

Hypoglycemia or low blood glucose can happen if the TPN stops too fast or if too much insulin is in the TPN bag. When your body gets a large amount of glucose, it makes more insulin. Then, if the TPN stops suddenly, it takes your body longer to stop making insulin. 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 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, pallor (light skin looks pale, dark skin looks yellow-brown or ash gray) 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 make sure it is programmed to taper down during the last hour. Call your home health nurse or your physician if you need help.

### ***Dehydration***

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

### *Causes*

Dehydration can happen if you lose too much fluid through heavy 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. You may need a blood test to check your kidney function. You may need extra fluid 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.**