

# Module 2

## Parenteral Nutrition Procedures

### Parenteral Nutrition

**General guidelines to follow when administering parenteral nutrition:**

Parenteral nutrition orders will include an order for dextrose 10% IV to run at the same rate as parenteral nutrition, in case the parenteral nutrition must be stopped or discontinued suddenly or suddenly becomes unavailable.

The orders for parenteral nutrition and the parenteral nutrition bag labels must match. Otherwise, contact the pharmacy.

Total parenteral nutrition CANNOT BE STOPPED SUDDENLY. The rate must be tapered slowly to avoid drops in glucose levels that could cause hypoglycemia.

If a replacement parenteral nutrition bag has not been received from pharmacy, infuse dextrose 10% at the same rate that parenteral nutrition was running to avoid hypoglycemia.

## Parenteral Nutrition

### **General guidelines to follow when administering parenteral nutrition:**

Parenteral nutrition (PPN or TPN) must be administered via an electronic pump. The solution must be filtered.

The size of the filter on the end of the IV tubing is determined by the type of solution:

- A 0.2-micron filter is used if solution does not contain intravenous fat emulsion (lipids).
- A 1.2-micron filter is used if lipids are in solution. (Recommended for all type of parenteral nutrition)

The type of catheter that is used is determined by the final concentration of dextrose (peripheral or midline for dextrose concentration less than or equal to 10%; central line catheter for dextrose concentration greater than 10%).

Strict aseptic technique is used when handling parenteral nutrition.

## Parenteral Nutrition

### **General guidelines to follow when administering parenteral nutrition:**

Parenteral nutrition may be infused as a continuous or intermittent solution.

Parenteral nutrition bags must be changed at least every 24 hours.

Parenteral nutrition solutions should be infused or discarded within 24 hours of attaching the administration set.

Medications cannot be "piggybacked" or administered via IV push through the parenteral nutrition tubing/lumen.

The tubing cannot be disconnected to administer another medication. The system must stay intact to maintain a sterile system.

Additives will be mixed with parenteral nutrition and administered per facility/pharmacy protocol. (Refer to parenteral nutrition: Placement of Additives.)

IV tubing administration set, filter, and needleless connection device must be changed with every new bag of parenteral nutrition(at least every 24 hours).

## Equipment and Supplies

### To safely administer parenteral nutrition, you will need:

- Parenteral nutrition solution
- Fat emulsion (lipid) solution (may be in a 3 in 1 mixture)
- Administration sets with in-line (or add-on) filtration systems
- Normal saline and/or heparin for flush, as appropriate (Refer to your Policies and Procedures Manual)
- Needleless connection device
- Electronic infusion pump
- Gloves
- Alcohol wipes
- Tape

## Parenteral Nutrition Procedure

### Procedure

1. Remove parenteral nutrition bag from refrigerator - AT LEAST ONE HOUR PER LITER - before infusing.
2. Verify orders. Compare orders to bag label. Verify with second Nurse if required by facility protocol.
3. Assess IV catheter to make sure it is without complications.
4. Check resident chart for any allergies or special considerations.
5. Check lab results for appropriate use of therapy.

## Parenteral Nutrition Procedure

### Procedure

6. Do physical assessment, especially heart, lungs, and extremities, to determine if resident can tolerate large amounts of continuous fluids.
7. Check vital signs for any signs of complications.
8. Verify if there are any additives to be put in bag. If so, add before starting parenteral nutrition.
9. Verify identity of resident.
10. Inspect bag and equipment sterility, precipitate, expiration date, any separation of parenteral nutrition and lipids (oiling out). Call pharmacy if any problems are noted.
11. Perform hand antisepsis. Don non-sterile gloves.

## Parenteral Nutrition Procedure

### Procedure

12. Clean end of needleless connection device on catheter with alcohol wipe for 20 seconds.
13. Flush catheter with normal saline.
14. Attach tubing with filter to parenteral nutrition bag. Prime tubing and filter by opening roller clamp. Prime, then clamp tubing. Place sterile end cap on tubing.
15. Set pump with prescribed rate and volume (continuous or intermittent).
16. Connect end of filter (or tubing if filter is included in tubing) into needleless connection device.
17. Check connections. Secure tubing to resident with tape.

## Parenteral Nutrition Procedure

### Procedure

18. Start infusion and monitor for proper flow and any complications.
19. Educate resident that he or she should notify the Nurse if any problems develop such as shortness of breath, heart palpitations, catheter-related pain, or signs and symptoms of hypoglycemia or hyperglycemia.
20. Monitor resident, insertion site, and flow at regular intervals (at least every 2 hours).
21. Dispose of flush syringes and equipment packaging properly.
22. Document procedure in resident's medical record.

## Documentation

### The following should be documented in the resident's medical record:

- Date and time of administration.
- Signature and title of Nurses checking and hanging parenteral nutrition bag and person monitoring infusion.
- Rate and volume infused.
- Additives. Document in the medicine administration record.
- Infusion rate, and changing of parenteral nutrition bag, tubing, needleless connection device, filter, and flushes.
- Any complications, interventions, the condition of the insertion site, the dressing and the catheter, any changes in parenteral nutrition formula, lab results, and the resident's response to the procedure.

## Parenteral Lipid Administration

### **General guidelines to follow when administering parenteral nutrition with lipids:**

Lipid administration requires a physician order. Lipid strength, volume, rate and frequency must be included in physician order.

Lipids are commonly ordered in conjunction with TPN or PPN solutions.

Lipids are used to provide calories and/or essential fatty acids to residents who are not able to get sufficient oral intake.

Lipids may be administered mixed with parenteral nutrition or separately.

An electronic infusion pump must be used with lipids and/or parenteral nutrition (PN).

When lipids are administered concurrently with TPN, the lipid solution may be connected to primary tubing via "piggyback" attached below the filter if possible. A 1.2-micron filter is attached to the primary administration set (tubing) when lipids are administered.

The pharmacy may mix a 3 in 1 solution of parenteral nutrition with lipids which is delivered and administered as one bag.

## Parenteral Lipid Administration

### **General guidelines to follow when administering parenteral nutrition with lipids:**

Lipids can be administered through peripheral or central catheters if separate from parenteral nutrition .

Aseptic technique should always be used when administering lipids.

Lipids expire 24 hours after being started.

Lipids that are not mixed with parenteral nutrition solutions do not require refrigeration.

- Lipids must be inspected for signs of instability and deterioration prior to administration. Signs of instability include discoloration (other than white color), separation, oily appearance, and/or inconsistent texture.

## Parenteral Lipid Administration

### **General guidelines to follow when administering parenteral nutrition with lipids:**

NEVER SHAKE LIPID CONTAINER or add anything to lipids; this could cause aggregation of fat globules.

No other medications or fluids are to be attached or added to the lipid solution.

Lipid administration is contraindicated in residents with:

- Allergy to egg yolk
- Hepatic disease
- Hyperlipidemia
- Blood coagulation defect caused by a depressed platelet count

## Parenteral Lipid Administration

### **General guidelines to follow when administering parenteral nutrition with lipids:**

Monitor the resident receiving lipids for:

- Signs and symptoms of adverse reactions such as fluid overload, chest pain, nausea, shortness of breath, abdominal pain, or wheezing;
- Lab results for levels of triglycerides, cholesterol, and liver enzymes; and
- Any signs and symptoms of catheter or resident infection.

Administration set (tubing), needleless connection device, and container must be changed every 24 hours or when a new container is started.

## Equipment and Supplies

### To administer a Lipid solution, you will need:

- Lipid (or 3 in 1) solution
- Needleless connection device
- Electronic infusion pump
- Administration set (tubing)
- Non-sterile gloves
- Alcohol wipes
- 1.2-micron filter
- Normal saline flushes (1 or 2)

## Administration of Lipid Procedure

### Procedure

1. Inspect lipid solution for discoloration or other signs of breakdown (separation, oily appearance, inconsistent texture). Do not administer if any signs of problems are observed.
2. Verify resident name, type of solution, rate, route and time.
3. Assemble solution, tubing, needleless connection device, normal saline flushes, and alcohol wipes.
4. Perform hand antisepsis. Don non-sterile gloves.
5. Place tubing in container and prime tubing.



## Administration of Lipid Procedure

### Procedure

6. Close clamp on tubing, replace needleless connection device, and flush catheter with normal saline (per protocol).
7. To run "piggyback" into primary parenteral nutrition tubing, place at most distal side port (Y connector) after cleansing port with alcohol.
8. Place tubing into pump and set rate as ordered.
9. Start pump and observe flow.
10. Note resident response to procedure.

## Documentation

### The following should be documented in the resident's medical record:

- Date, time, amount, and flow rate of lipids administered.
- Document solution and equipment change in the treatment administration record.
- Any observation facts related to catheter insertion site, problems with solution, resident reactions. Any interventions that were done.
- Intake and output if ordered.

## Placement of Additives

### **Preparation for parenteral nutrition including the placement of additives:**

The Nurse placing the additives into the parenteral nutrition bag will receive training and demonstrate competency related to the handling of parenteral nutrition prior to performing this procedure.

Maintain aseptic technique when working with parenteral nutrition . The room where the additives are placed in parenteral nutrition bag must be clean and away from general traffic.

Check expiration dates on additive bottles or vials and inspect the parenteral nutrition solution for deterioration or breakdown before placing additives.

Check additives for compatibility before adding to the parenteral nutrition solution.

## Placement of Additives

### **Preparation for parenteral nutrition including the placement of additives:**

Additives are medications or supplements that are added to the parenteral nutrition solution just before infusing the parenteral nutrition. Examples of additives include multivitamins, vitamin K, H2 blockers and insulin.

Medications added to parenteral nutrition are stable for up to 24 hours. Parenteral nutrition solutions may be delivered from the pharmacy in quantities that last 3 to 4 days. Therefore, medications are added to the parenteral nutrition at the facility rather than at the pharmacy.

## Placement of Additives

### **General guidelines to follow when administering parenteral nutrition with additives:**

Place additives in parenteral nutrition bag before the bag is connected to the resident. Never add medications while parenteral nutrition is infusing; this could result in a bolus dose of medication.

Place additives in the parenteral nutrition mixture immediately before administering the parenteral nutrition to the resident.

Add medications to the parenteral nutrition bag one at a time using a new syringe for each medication.

When additive is placed in bag, rotate bag back and forth to mix the additive with the solution. DO NOT SHAKE BAG.

## Equipment and Supplies

### **To place additives in parenteral nutrition solution you will need:**

- Parenteral nutrition solution
- Alcohol wipes
- Filter straw for glass medication ampules
- Sterile syringe for each additive
- Sterile injection needles or needleless system to access medication containers and injection port of bag
- Sharps container
- Non-sterile gloves
- Waterproof barrier for countertop

## Placement of Additives Procedure

### Procedure

1. Verify orders for parenteral nutrition . Check orders against parenteral nutrition bag label. If they do not match, call pharmacy and verify.
2. Verify orders for additives.
3. Check compatibility of medications.
4. Clean countertop with alcohol, soap and water, or antimicrobial solution. Allow to air dry.
5. Perform hand antisepsis. Don non-sterile gloves.
6. Assemble equipment and medication additives.
7. Clean injection port of parenteral nutrition bag with alcohol wipes.

## Placement of Additives Procedure

### Procedure

8. Draw up additives one at a time in separate sterile syringes. Use filter straw to draw up medications from glass ampules.
9. Place additives into parenteral nutrition bag one at a time. Rotate bag back and forth gently in between medications to mix the additive with the solution. DO NOT SHAKE BAG.
10. Wipe needleless connection device with alcohol in between each additive.
11. Document medications added to the parenteral nutrition solution on a label affixed to the parenteral nutrition bag.
12. Prepare bag to be hung after the addition of additives.
13. Discard used equipment according to facility procedure.

## Documentation

**The following should be documented in the resident's medical record:**

- Additives (document on label affixed to parenteral nutrition bag AND in the medication administration record (MAR)).
- If there was any visible deterioration in the parenteral nutrition solution, including notification of the pharmacy.
- Any communication with Physician, Supervisor, or oncoming shift (document in the nurse's notes).

## Reporting

**The following should be reported immediately to the appropriate individuals:**

- Report any problems or complications with the parenteral nutrition solution or the additives to the pharmacy.
- Report any complications with treatment to the physician, supervisor, and oncoming shift.
- Report any changes in the resident's condition to the physician.
- Report any changes in the parenteral nutrition formula to the pharmacy.
- Report other information in accordance with facility policy or professional standards of practice.