



# Safe Practices for Sustaining Yourself on Home Parenteral Nutrition (HPN)

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# Why is this topic important?

- Complex therapy
- Potential for life-threatening events if errors made in:
  - Prescribing
  - Compounding
  - Labeling
  - Administration
- Process checks can identify error and prevent harm

# Objectives

- Learn what you can do as a consumer or caregiver to prevent error
- Understand the importance of seeking qualified health care practitioners
- Learn how to read a TPN label
- Learn how to take care of your IV catheter
- Understand what measures should be taken for self-monitoring

# Writing HPN Orders

- Complex prescription with 10-15 components
- Customized to each patient
- No standardized order. Various formats used by various institutions
- Are your nutrient requirements being met?
- Requires a qualified team of health care professionals

# Seek Qualified Health Care Practitioners

- Multidisciplinary/team approach is optimal
  - Physician
  - Pharmacist
  - Dietitian
  - Nurse
  - Social work, case management
  - Psychiatrist, psychologist

# Seek Qualified Health Care Practitioners

- Ask about their training and experience in:
  - home parenteral nutrition
  - intestinal failure/intestinal rehabilitation
- Are they board certified in nutrition support?
- Consider referral to regional medical center
  - Working in partnership with local primary care physician

# Adult PN Label Template

Dosing weight: 70 kg

Base Formula	<u>Amount/d</u>
Amino Acids ®	100 g
Dextrose	350 g
Lipid ®	50 g

## Electrolytes

Sodium chloride	150 mEq
Potassium chloride	80 mEq
Sodium phosphate	20 mmol
Calcium gluconate	10 mEq
Magnesium sulfate	30 mEq
Multiple trace elements ®	1 ml

Volume 2000 ml      Infuse over 12h, taper down over 1h

**Central Line Use Only**

# Pediatric PN Label Template

Dosing weight: --- kg

Base Formula	<u>Amount/kg/d</u>	<u>Amount/d</u>
Amino Acids ®	---- g	---- g
Dextrose	---- g	---- g
Electrolytes		
Sodium chloride	---- mEq	---- mEq
Potassium chloride	---- mEq	---- mEq
Potassium phosphate	---- mmol	---- mmol
Vitamins, trace elements and medications		
Multiple vitamins ®	---- ml	
Multiple trace elements ®	---- ml	
Volume ----- ml	Infuse over ----- h	

**Central Line Use Only**



# HPN Compounding

- Consider visiting the facility of your home infusion provider
- Look for clean, organized facility
- Inspect integrity of TPN bags, supplies upon delivery
- 24hour, 7day/wk availability
- Experience managing other HPN consumers

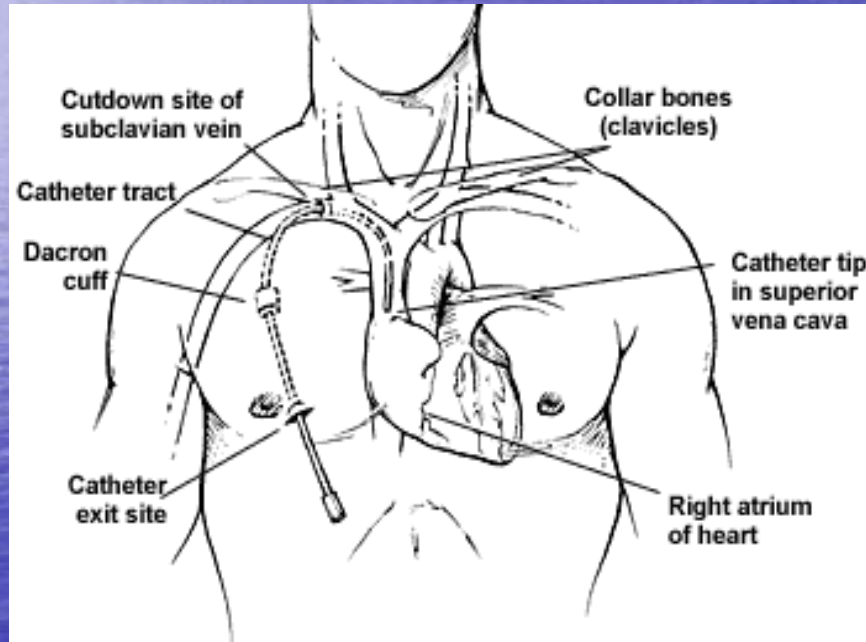
# HPN Compounding

- Batch preparation (typically once/week)
- Classified as "Medium Risk" under USP Chapter 797
- Store under controlled refrigerator temperature
  - 2-8°C (36-46°F)
- Certain vitamins can degrade over time, so must be added just prior to admin.

# In-Line Filtration

- Prevents admin. of particulate matter, air, and microorganisms
- Use a 0.2- or 1.2-micron filter for non-lipid formulations
- Use a 1.2-micron filter for lipid containing formulation

# Venous Access



- Distal tip placed in SVC or adjacent to R atrium
- Placement must be confirmed prior to initiation of PN and when malposition suspected

# Catheter Care Technique

- Transparent (bio-occlusive) dressing changed at least weekly
- Gauze/tape dressing changed daily
- Keep dressing clean and dry
- Skin antisepsis w/ chlorhexidine, PVP, or 70% isopropyl alcohol
- IV connector cap change at least weekly

# Catheter Flushing Procedure

- Flush w/ 0.9% Sodium chloride 10ml:
  - Before and after TPN infusion
  - Before and after medications
- Flush w/ Heparin 100u/ml (adults) or 10u/ml (pediatrics) 2-3ml:
  - To “lock” catheter after saline flush
  - To prevent blood from occluding catheter
- SASH → saline, administer medication, saline, heparin

# Guidelines for Swimming and Bathing: *Tunneled Catheters and Implanted Ports*

- You may take a bath for the first 2 weeks after placement as long as the dressing stays dry
- Wait 2 weeks before showering. It is best to remove the needle before showering if you have a port.
- Wait 4 weeks before submerging under bath water
- Wait 4 weeks before swimming in a chlorinated pool

# Guidelines for Swimming and Bathing: *Tunneled Catheters and Implanted Ports*

- Avoid swimming in any natural sources of water, such as lakes, ponds, or oceans
- Avoid using hot tubs and whirlpools



# HPN Administration Issues

- Verify accurate HPN label prior to administration
- Visually inspect bag prior to administration
  - Expiration date (Rotate bags with each delivery)
  - If clear bag, check for cloudiness or sediment
  - Gently squeeze bag to check for leak.
- Complete infusion of PN within 24 hours of room temperature conditions

# Monitoring Guidelines

Parameter	Frequency
BMP: Sodium, potassium, chloride, bicarbonate, BUN, Cr, calcium, glucose	Weekly until stable, then every other week, then monthly
Magnesium, Phosphorus	Weekly until stable, then every other week, then monthly
CBC	Monthly
Liver function, albumin, PT, INR	Monthly

# Fingerstick Glucose Monitoring

- Initial monitoring, 3 times daily:
  - 1 hour after starting TPN infusion
  - Mid-cycle
  - 1 hour after stopping TPN infusion
- Contact your clinician if glucose  $<60$  or  $>180$  mg/dL
- When stable, routine fingerstick monitoring can be stopped
- Urine glucose monitoring may be useful method to screen for problems

# Monitoring Guidelines

Parameter	Frequency
Iron studies (iron, ferritin, TIBC, %sat)	Every 3 months
Trace elements (zinc, selenium, copper, manganese)	Baseline, then every 6-12 months
Vitamins	As needed based on clinical condition
Bone Density (DEXA)	Every 1-2 years

# Self-Monitoring

- Weight
- Temperature
- Changes in intake
- Changes in output
  - urine
  - ostomy
  - stool
- Catheter function
- Catheter site
  - Redness
  - Swelling
  - Tenderness
  - Drainage

# Patient Education

- PN administration (prime tubing, connect, disconnect, proper flushing)
- Technique for adding medication to the bag, such as multivitamins, insulin
- Catheter care
- Proper storage of PN & supplies
- Use of infusion pump
- When to call homecare provider or MD

# Use of HPN Bags When Hospitalized

- Many hospitals hesitant to use TPN bags prepared by another facility
- Based on institution policy
- Advantages of bringing a TPN bag when presenting to ED/hospital:
  - Provides the clinician specific information regarding PN contents
  - No interruption in therapy
  - Prevents wastage

# Use of HPN Bags When Hospitalized

- Disadvantages to bringing a TPN bag when presenting to ED/hospital:
  - Adjustments in contents may be required
  - Logistics of who adds multivitamins and possibly other additives
  - Staff may be unfamiliar with bag or formulation
- If using, ensure adequate storage conditions of PN bag in transit to hospital
- For elective admissions, notify home infusion provider and plan TPN delivery accordingly



# Comments

- Multiple processes must be in place to ensure HPN safety
- Benefits of achieving independence
- Learn how to be your own best advocate!

