Carol Rees Parrish, M.S., R.D., Series Editor

Have PN (Parenteral Nutrition) – Will Travel

Anna Patsy

Adriana Panciu

Nizar Senussi

Patients requiring long term parenteral nutrition (PN) may choose to travel at some point. Traveling with PN requires collaboration among the patient, prescriber, and the infusion pharmacy. Coordination of PN deliveries and supplies, as well as managing clinical concerns and safety, must be addressed prior to traveling. Self-monitoring, as well as necessary lab tests must be coordinated to effectively monitor electrolytes and hydration. Knowing how to reach their providers and where medical facilities are located in the event that an emergency should arise is important. While traveling with PN can sometimes be challenging to coordinate, it should not discourage medically stable patients from doing so. This article provides suggestions to clinicians to help their HPN patients travel safely.

INTRODUCTION

Home Parenteral Nutrition (HPN) is often used in patients with intestinal failure, or others unable to consume or absorb nutrients.[1] HPN may be short or long term, depending on the patient's condition, underlying disease state and future plan of care. Since patients on HPN are typically hooked up to their infusions 10-14 hours, patients often inquire about the ability to travel with PN. Many HPN patients do travel and count on their health care team to provide guidance on how to plan their travel around their PN infusions.

As a clinician, it is important to identify the method of travel, final destination as well as the duration of the trip. A travel letter signed by the patient's HPN physician, stating the need for their medical supplies, can be provided for air travel at the patient's request (see Table 1). It is important that patients contact their infusion pharmacy about their upcoming travel well in advance of travel dates. Infusion pharmacies play an integral role in providing accommodations for travel. If a patient is going to be traveling to multiple locations

Anna Patsy, MS RD LD CNSC, Home Nutrition Support Clinician, Cleveland Clinic, Digestive Disease & Surgery Institute. Cleveland, OH
Adriana Panciu, PharmD BCNSP, Nutrition Support Pharmacist, Cleveland Clinic, Center for Connected Care, Independence, OH
Nizar Senussi, MD, Liver Care Network, Swedish Medical Center, Seattle, WA

during a trip, the patient's infusion pharmacy may need to arrange for multiple pharmacies or branches to service the patient throughout their travels. While traveling with HPN may be a challenge, it can certainly be done with proper preparation.

Case Presentation

A 35 year old female reports that she is going on a 10 day trip next month. She will be flying to her travel destination. She has many questions regarding if and how she can travel with HPN, as she has not done so before. She is concerned about keeping the bags refrigerated during her travels. She has been on the home nutrition service for 6 months and is currently getting weekly labs drawn due to high stoma output related to short bowel syndrome. Her labs have been relatively stable for some time now. It is difficult for her to always time her anti-diarrheal agents (loperamide, diphenoxylate-atropine, codeine, etc.) 30-60 minutes prior to meals. Additionally, she will be traveling south

Table 1. Sample Travel Letter

Date:

To Whom it May Concern:

(Patient name) is under my care for (disease state) and requires intravenous nutritional support and hydration therapy to sustain nutritional status, hydration, and health. She must infuse fluids daily using a portable pump via a central intravenous catheter in her chest. She must also add intravenous multivitamins and medications to nutrition solutions daily.

The medical supplies and equipment are necessary to sustain her life and health. Her health and life would be in significant danger if these supplies were withheld for any reason. She has been trained to provide her own care.

The equipment and supplies include:

- Portable pump with carrying case, batteries, power packs, charging apparatus, tubing, syringes and needles.
- Medication: (list medications added to PN such as insulin, famotidine, etc.)
- Alcohol, Chlorhexidine, and/or Povidone Iodine preparations such as wipes, pads or swab sticks.
- Catheter supplies: Dressing change supplies, tape gauze, transparent dressings, gloves, injection caps and Alcohol based hand washes.
- Parenteral Nutrition (PN) solutions and Intravenous Fluid Solutions (example: 0.45%NaCl, 0.9%NaCl, $D_5$0.45%NaCl, $D_5$0.9%NaCl, 5%Dextrose in water) as needed.

Thank you for your attention and consideration to this important matter. For any questions please feel free to call my office at (office phone number)

Respectfully,

Physician's Name

to a warmer climate. She has a single lumen Hickman catheter and is independent with dressing changes. After finding out that she cannot swim in the ocean due to her Hickman catheter, she is disappointed, but looking forward to swimming in the chlorinated pool at the hotel (Note: prescribing physicians vary on their willingness to approve their HPN patient swimming in a public facility). The patient, PN prescriber, and infusion pharmacy must all collaborate and be informed of travel plans. Good communication is crucial, especially if the HPN solution needs to be altered for traveling.

Clinical Concerns

Discussing the signs and symptoms of dehydration along with electrolyte abnormalities is important. Review with the patient that if they develop any of the following:

- Signs and symptoms of electrolyte abnormalities/dehydration
- Signs of infection, (fever, or shakes and chills during their infusion)
- Central line occlusion/damage, etc.

They should report to the closest emergency room (ER) for evaluation. Travelers should always know where the closest ER is should something unexpected happen. Identifying location of hospitals along travel route in advance would also be beneficial to the traveler. Patients should be able to reach their PN prescriber and infusion pharmacy while they are traveling.

It is helpful to know if a patient is traveling to a warmer climate so that steps can be taken to prevent dehydration. Additional liter bags of appropriate intravenous (IV) fluids would be beneficial to have on hand during their travels. It is not uncommon for patients to express that traveling with HPN bags is quite cumbersome (each bag can weigh up to 10 pounds). They may be concerned about refrigeration or the amount of space they can take up in a vehicle due to pumps and necessary supplies (see Figure 1 for an example of PN supplies for one week).

Patients traveling will need to ensure that they have enough of their oral prescriptions, such as anti-diarrheal agents, anti-secretory agents, etc.; prior to leaving for their trip and the name and phone number of a pharmacy close to their destination should they need something called in. A word document with all medications used, dose and frequency is a good idea for patients to keep readily available in their wallet. The patient may also work with the pharmacy to create a list of supplies needed including a backup infusion pump and even

Figure 1. Example of PN and IVF Supplies for 1 week of Travel

Table 2. Infusion Pharmacies with National Coverage

PN Infusion Provider	Website	States Covered
American Outcomes Management, L.P	**http://www.americanoutcomes.com/**	All 50 states
Amerita*	**https://www.ameritaiv.com/**	35 states: AL, AK, AR, CA, CO, DE, FL, GA, ID, IA, IL, IN, NY, KS, KY, MD, MA, MS, ND, NE, NM, NV, OH, OK, PA, RI, SC, TN, TX, UT, WA, WV, WY
BriovaRX (formerly AxelaCare Specialty Home Infusion)*	**http://www.axelacare.com/node/67**	17 states serviced: AL, AR, CA, CO, FL, GA, KS, LA, MD, NC, NE, NM, NY, OK, OR, PA, SC
BioScrip, Inc.*	**https://www.bioscrip.com/**	25 states: AI, CA, CT, FL, GA, IL, KY, LA, MA, ME, MN, MO, MS, NE, NJ, NY, NC, OH, PA, RI, TN, TX, VA, VT, WV
Coram CVS/specialty infusion services*	**https://www.coramhc.com/**	All 50 states
LHC Group Pharmaceutical Services	**http://lhcgroup.com/**	25 states: AL, AK, AZ,CA, CO, FL, GA, ID, IL, LA, KY, MA, MD, MO, MS, NC, NV, OH, OR, SC, TX, TN,VA, WA, WV
Nutrishare, Inc	**https://nutrishare.com/**	All 50 states
Option Care (Recently purchased Clinical Specialty Infusions, LLC CSI Pharmacy)*	**http://optioncare.com/**	>90% of the US population
Paragon Healthcare Inc.	**http://paragonhealthcare.com/**	28 states: AK, AL, CO, FL, GA, IA, ID, IL, IN, KS, KY, LA, MN, MO, MS, NC, NE, NM, NY, NV, OH, OK, TN, TX, UT, WI, WV, WY
Pharmacy Specialists	**http://www.pharmacy-specialists.com**	24 states: AK, AZ, CA, CO, CT, FL, GA, IL, IN, IA, KS, LA, MN, MO, NM, NY, OK, PA, SC, SD, TN, TX, WI, WY
Soleo Health*	**http://www.soleohealth.com/**	48 states – all but AK and HI
ThriveRx (Subsidiary of Diplomat Infusion Group)*	**http://www.thriverx.net/**	All 50 states
Vital Care Inc. Home Infusion Services*	**http://www.vitalcareinc.com/**	18 states: AL, FL, GA, IA, IL, KY, LA, MS, NE, NV, NJ, NC, OK, PA, TN, TX, UT, VA

[a] Please note that infusion pharmacies servicing fewer than 10 states were not included in this table. This data is accurate as of 7/27/17 and may be subject to changes. Please contact infusion providers for most up to date information.
A full list of infusion pharmacies can be found at: ***https://www.nhia.org/provider_search/provider_search.cfm*** *[6]*
**Indicates they have partner pharmacies in other states.*

a copy of their HPN prescription should they require admission while away.

Monitoring

Laboratory draws are sometimes changed to accommodate travel plans. There are some patients who are so stable they do not require weekly lab draws anymore. However, if labs are unstable, labs will need to be ordered for the patient locally, if possible. Locating an outpatient center/lab where labs can be drawn prior to travel is important. Most outpatient labs will accept orders from an out-of-state physician. However, home care nursing services may require an in-state physician to provide orders for lab draws and dressing changes.

Infusion Pumps and Supplies

Patients may carry intravenous (IV) fluids that can be administered in an emergency without using a pump. For example, via gravity or controlled rate infusion device such as a tubing set, with or without drip chamber and control clamps that adjust the rate of infusion. In this situation, patients will need to carry a collapsible IV pole with them for ease of transportation.

Patients may arrange for their usual infusion pump, along with a backup pump, to be shipped to their final destination on the day of their arrival or in advance (note comments by HPN travelers regarding this issue in Tables). Prior to the trip they can confirm that their pump made it to its destination and is secured for them to use upon arrival. If this cannot be accomplished with their own infusion company, plans can be made with another infusion company to deliver their infusion pump and tubing sets to patient's travel destination. This pump may be a different brand than the patient's usual infusion pump, and training may be necessary. Some patients transfer their infusion service to a national company while traveling, then transfer back to their original company upon returning home. Those that travel frequently may want to select a national company that can provide consistent service wherever they are.

Planning ahead will save patients the trouble caused by the unexpected, but sometimes this may not be enough. In order to prevent damage to the HPN bags, it is recommended to pack them correctly in coolers (as instructed by the home care pharmacy), maintain the proper temperature (36-46 degrees Fahrenheit) by using a thermometer to monitor temperature during transportation, mark the coolers and boxes as fragile/handle with care, and take them on the same flight with the traveler, etc. Correct packing includes sealing PN bags in plastic overwrap and laying air bubble sheets in between bags. Cooler size should allow all cooler space to be used, including enough ice packs for the duration of the transportation. A "keep refrigerated" sticker should be in place, as well as a seal that identifies that the cooler has not been tampered with. Packing one or more PN bags separately as a carry on is a good

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Table 3. Steps to be Taken for Patient Traveling with PN

Alert Home Care Pharmacy and Provider a Month in Advance toTravel if Possible

- Dates, location
- Questions to be addressed at this time

Medications

- Make list of all medications—doses, frequency, form
- Ensure that medications are refilled prior to travel
- Extra IV fluids on hand

If Flying:

- Letter for TSA
- Transportation Security Administration's helpline, or TSA Cares:
  - 1-855-787-2227
  - Website: www.tsa.gov/travel

At Travel Destination:

- Pharmacy available
- Local lab if needed
- Closest emergency room
- Outpatient infusion center
- Phone number of physician's office/home care agency back home

Refrigeration/Storage

- Is it large enough to hold PN?
- Digital thermometer (recommended)
- Delivery ready upon arrival?
- Phone numbers of pharmacy in case of damaged supplies

Upon Return:

- Notify home care agency and pharmacy to coordinate lab draws and delivery

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idea, so that back up bags are available in case any are damaged in transit.

In the event that PN bags are damaged during transport, patients should be educated to obtain replacement bags by contacting the home infusion pharmacy as soon as possible. PN bags can be shipped to their destination in advance of their arrival and arrangements may be made to re-send them in case the shipment did not arrive or arrived damaged and deemed not safe for use. It is prudent for patients to carry contact information for their physician, pharmacy and nursing agency for fast and easy communication with their healthcare team. Depending on the duration of travel, the home nursing agency may stop services and require a new referral upon the patient's return.

Premixed multi-chamber PN products are manufacturer-prepared PN solutions that may or may not include lipids, depending on the brand. These solutions are stable at room temperature for up to two years.[2] The ingredients of premixed solutions are in separate chambers that are combined when the patient is ready for administration. They are available in preset volumes (1-2.6 liters depending on solution and manufacturer). For patients with excessive GI losses and high potassium requirements, special consideration should be given to choosing a pre-mixed solution. Supplementation with oral electrolytes may also be an option in maintaining serum levels if deemed appropriate given the patient's anatomy and absorptive capacity. If premixed multi-chamber PN solutions are used, the patient may need additional training to ensure ability to activate all sections of the bag. This should be done before the trip so that he/she is ready for administration during their trip.

Once compounded, PN is stable for only 9 days, hence longer trips will require multiple shipments. The pharmacy may choose to send these via shipping carriers such as UPS or FedEx for overnight or same day delivery. Keep in mind that the ideal temperature for storing PN is 36-46 degrees Fahrenheit, hence, the providing pharmacy or the patient will pack PN in insulated coolers and use ice packs during transit. Although ice packs may melt during transportation, the PN will be safe to use as long as it remains between 36-46 degrees Fahrenheit. Another option may be to use portable electric coolers if the patient travels by car.

Prior to arriving at their final destination, patients will need to request or confirm a refrigerator for their room that has been turned on and cooled properly. Many small refrigerators come with thermostats that display the temperature as a range from cool to coldest, rather than degrees. Monitoring the temperature is crucial for the stability of the PN solution as it becomes unstable and not usable if it freezes. Electric thermometers are relatively inexpensive and may be used for monitoring the temperature of PN while in transit and/or in small or portable refrigerators.

Information about security checkpoint screening policies and procedures for medical supplies and prescriptions can be obtained by calling the Transportation Security Administration's helpline, or TSA Cares, at 1-855-787-2227, or by visiting their website: www.tsa.gov/travel.[3] While not required, making arrangements for any special assistance in advance of the travel will help patients have a less stressful, smooth and enjoyable trip. Patients traveling for the first time with PN may wish to contact TSA with additional questions or concerns. A signed travel letter (Table 1) should be available to present to TSA

Table 4. Resources

Oley Foundation
Website: **http://oley.org/**
Phone: 518-262-5079
Email: oleyfoundation@gmail.com

Travel / Hospital Packet

- https://oley.site-ym.com/?TravelHospitalPacket

Travel Tips

- http://oley.site-ym.com/?page=TravelTipsHomePEN

Swimming with IV Nutrition/Tube Feedings

- https://oley.site-ym.com/?page=ResourcesSwimming

Oley Consumers with Significant Travel Experience

- Felice Austin (parent) HPN; fleecey@aol.com
- Barbara Klingler HPN; lbklingler@att.net

staff to get through security with PN supplies and a central catheter.

Depending on the infusion pharmacy's policy, the pharmacy will pay for the transport of PN only to those states where the pharmacy is licensed. If the pharmacy is not licensed in the state where their patient will travel, with the patient's consent, the pharmacist can assist in finding a local company and arrange for the smooth transition of patient's care to that company upon patient's arrival and until patient returns home. These arrangements may include finding another infusion pharmacy (see Table 2), home care nursing agency, laboratory, sometimes even a local ordering physician that are ideally in the patient's health insurance network, as some states require that the ordering physician be licensed in that state. Coordination of who will transfer prescriptions /HPN solution, etc. will need to be determined well in advance of travel (a month is a good goal), and communication with the health care providers identified to assume temporary care during travel will need to be arranged between all parties involved.

Some pharmacies may be part of a national specialty

Table 5. Tips from Oley Foundation Members

"We carry 2 TPN bags with us [and] also travel with the supplies. We have a refrigerator in the hotel room. However, if it is too small to hold all the TPN the hotel usually accommodates us by keeping it refrigerated in their kitchen. They bring it to us daily."

– Marcia Denebholz, Ambassador, The Oley Foundation

"A consumer should take their infusion pump and backup pump, never have it shipped. I also would not advise getting a different pump from another infusion company and stressing over learning a new pump away from home. I carry on all TPN, never ship in baggage."

– Barbara Klinger, Ambassador, The Oley Foundation

"…anyone planning to travel on HPN should consider a short trip first (3 to 4 days) to try out their travel procedure and technique…bring your own two pumps whenever you travel. My son always brings his main pump and one bag of TPN in his custom TPN backpack as a carry-on inside the plane. That way he has one night certain of TPN, pump, and tubing set."

– Bruce & On Braly

"Pack solutions appropriately in an insulated container. Ask air carrier for a release from freight charges for medical supplies (Air Canada will do this, and will provide relief for all solutions and supplies for HPN consumers. If cruising, ask for Customer Service assistance in arranging onboard refrigeration for solutions, and assistance with boarding. Absolutely essential to arrange for Travel Insurance."

– Laurie McBride, Ambassador, The Oley Foundation

"I would recommend always bringing your pump with you. I always have it in hand and checked when going through security. You don't know if everything will arrive in time. If your infusion company is shipping supplies to your destination you still always want to carry one night of supplies with you, including HPN bag. You never know when your flight could be delayed or cancelled even with nice weather. When traveling outside of the United States you have to carry all your supplies and HPN with you. They [pharmacy] is not allowed to ship outside of the country. We have asked hotels to refreeze our ice packs for us so we can keep changing out ice packs to keep the HPN cold."

– Rhonda Arends MT(ASCP), Oley Foundation Board Member

group or nationwide company and may have a partner pharmacy in the state where their patient is traveling. In this case, the transition may be easy to facilitate; it is recommended that patients check with their pharmacist regarding this possibility.

Swimming

Patients often inquire about swimming with a central line in place. The existing literature is inconsistent and there are no evidence-based guidelines or consensus recommendations. A review article identified a lack of consistency regarding swimming with a central line across various HPN programs.[4] Some programs do not permit swimming at all, while others allowed swimming in chlorinated pools. All programs recommended site care and dressing change after swimming. The length of time that the catheter must be in place prior to swimming differed among HPN programs. The nurses in the Cleveland Clinic Home Nutrition Support Service use the following physician guidance to educate patients:

"Swimming is not recommended with a peripherally inserted central catheter (PICC) or with an accessed port; swimming in a chlorinated pool is acceptable with tunneled catheters in place for >1 month. Regardless of the catheter type, swimming in hot tubs, lakes, streams, or the ocean, or other natural body of water is not recommended. Those with a de-accessed port may participate in all water-related activities with no restrictions. Patients traveling with PN should either know how to change their own dressing (with the exception of a PICC), or have a caregiver or outpatient location set up for dressing changes. Should the dressing become wet or soiled, it should be changed immediately."

Case Study Continued

The patient was able to arrange with her infusion pharmacy to ship the PN supplies to the hotel, since the pharmacy was able to transfer service to the company's branch at her destination. The pharmacy shipped 9 bags of PN and 7 bags of IV fluids in case she would need additional fluids during her stay. The local pharmacy branch servicing her would need to make a second delivery to the patient at her hotel during her stay. She did not need to obtain labs on her trip, as the trip was 10 days in duration and she has been stable on PN for a long time. Lab results and home care would resume as usual upon her return from her vacation.

CONCLUSION

PN should not be a limitation to travel—it just requires some additional planning. Advance planning ensures a smooth transition back to the local pharmacy upon patient's return home. See Table 3 for the steps to take when a patient plans to travel with PN. Clear communication between the pharmacies and prescribers involved including the most current PN orders, recent lab results, new referral to the nursing agency for restart of services upon returning home, supplies needed, and when to send them, and any changes in the place where patient will stay locally. For those with additional questions, patients can utilize the resources available from the Oley Foundation[5] (see Table 4). Resources include travel tips, guidelines on swimming, and information to network with other people who are well versed in traveling with PN. Tips from PN patients that frequently travel can be found in Table 5. ■

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