

PN and halal and/or kosher diets

- PN is **not** certified as halal or kosher.
- Even if you follow a halal or a kosher diet, you may choose to accept PN.
- If you follow a halal or a kosher diet, your health care team can help you decide if PN is right for you.

This pamphlet is for educational purposes only. It is not intended to replace the advice or professional judgment of a health care provider. The information may not apply to all situations. If you have any questions, please ask your health care provider.

Find all patient education resources here:
www.nshealth.ca/patient-education-resources

Connect with a registered nurse in Nova Scotia any time:
Call 811 or visit: <https://811.novascotia.ca>

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Parenteral Nutrition in the Hospital

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This pamphlet gives information about parenteral nutrition while you are in the hospital.

For information about parenteral nutrition at home, ask a member of your health care team for a copy of pamphlet 2322, *The Nova Scotia Home Parenteral Nutrition Program for Adults*, scan the QR code below, or visit:

- › www.nshealth.ca/patient-education-resources/2322

Scan the QR code on your device (open the camera on your device, point the camera at the code, and tap the banner or border that appears)



What is parenteral nutrition (PN)?

- PN is a special nutrition formula (liquid nutrient mixture) given directly into the blood using an intravenous (I.V.) site.

- If you follow a vegan or vegetarian diet, your health care team will talk to you about your options for preventing essential fatty acid deficiency. These include:
 - › **Using a PN formula that does not have fat.** This should only be done when PN is needed for a short amount of time and the risk of essential fatty acid deficiency is low.
 - › **Using a PN formula that does not have fat and getting fat from eating, drinking, and/or tube feeding.** This is only for people who can eat, drink, and/or have tube feeding.
 - › **Using a PN formula that has fat.** Even if you follow a vegan or vegetarian diet, you may choose to accept animal products in I.V. lipid solutions.
 - › **Using other treatments** to prevent essential fatty acid deficiency, if recommended by your health care team.
- Your health care team can help you decide which option is best for you.

PN and vegan and vegetarian diets

- The protein and carbohydrate in PN formulas are vegan and vegetarian certified.
- All I.V. lipid solutions have an emulsifier made from eggs.

Essential fatty acid deficiency

- A PN solution that does not have lipids can cause **essential fatty acid deficiency**.
 - › If your body does not get enough fats, you can get **essential fatty acid deficiency** (a condition that can cause skin problems, a weak immune system, and problems with wound healing).
 - › All I.V. lipid solutions can help prevent essential fatty acid deficiency.
- If you cannot have an I.V. lipid solution because of an allergy, your health care team will talk to you about other options for preventing essential fatty acid deficiency.

Why do I need PN?

- PN is used when you are not able to get enough nutrition through food and/or tube feeding (**tube feeding** is when a special nutrition formula is given into the stomach or small intestine using a tube).
- PN can be used to meet all or some of your nutrition needs. It has:
 - › Energy (calories)
 - › Protein
 - › Carbohydrates (sugars)
 - › Lipids (fats)
 - › Vitamins
 - › Minerals
- PN is often used when a person's stomach and/or bowel (intestine) are not working like they should. PN provides energy and nutrients that are already broken down (digested). The energy and nutrients in PN are carried by the blood to all parts of the body.

How is PN given?

- PN is given through an I.V. site. The type of I.V. site will depend on the type of PN you need:
 - › **Peripheral parenteral nutrition (PPN)** uses an I.V. site in a small vein (usually in the back of the hand or in the arm).
 - › **Total parenteral nutrition (TPN)** uses an I.V. site in a large vein or in an I.V. site that is fed from a small vein into a large vein.
- Small veins cannot handle PN formulas that are high in protein and carbohydrates. This can make it hard to meet a person's nutrition needs with PPN. If a person is not able to eat and/or have tube feeding, TPN is usually needed to give them enough energy and nutrients.

When is PN given?

- PN is given using a:
 - › **Continuous schedule** (PN is given 24 hours a day)
or
 - › **Cyclic schedule** (PN is given for only part of the day, usually for 12 to 18 hours and often overnight)
- Your health care team may recommend a cyclic schedule if you need TPN for a longer amount of time.

- › Fatty acids in I.V. lipid solutions can come from:
 - › Soybean oil
 - › Olive oil
 - › Safflower oil
 - › Medium-chain triglycerides (a type of fatty acid)
 - › Fish oil
- › I.V. lipid solutions have an **emulsifier** that is made from eggs. An emulsifier is a molecule that helps combine (mix together) fat and water.

PN and allergies

- You should not have some I.V. lipid solutions if you have soy, peanut, fish, egg, or olive oil allergies.
- Special steps need to be followed to make PN solutions if you have a latex allergy.
- **Tell your health care team if you have any food, latex, or medication allergies.**

What type of carbohydrates, proteins, and fats are in PN formulas?

- **Carbohydrates: Dextrose**
 - › Dextrose does not need to be digested, so the body can use it right away for energy.
- **Proteins: Amino acids**
 - › Amino acids are the building blocks of protein. They do not need to be digested.
 - › The amino acids in PN formulas are synthetically produced (made by humans). They are not made from animals or animal products.
- **Fats: Fatty acids**
 - › Fatty acids are the building blocks of fat. They do not need to be digested.
 - › Fat is added to PN formulas as an I.V. lipid solution.
 - › There are different types of I.V. lipid solutions, and each is made of different types of fat.

What are the benefits of PN?

- Your health care team will talk with you about why PN is right for you. Benefits include:
 - › Maintaining good nutrition
 - › Preventing or treating malnutrition (poor nutrition)
 - › Supporting healing and recovery

What are the possible risks of PN?

- Your health care team will talk with you about the possible complications of PN and what they will do to lower your risk of complications. Some complications include:
 - › Infection at the I.V. site
 - › Blood infection
 - › Damage to a vein (more common in small veins)
 - › Blood clots
 - › Changes in blood sugar levels
 - › Changes in electrolyte levels in the blood
 - › Changes in lipid levels in the blood
 - › Changes in liver function (how well your liver works)

How long will I need PN?

- This will depend on:
 - › How well your stomach and/or bowel is working
 - › If you can eat, drink, and/or have tube feeding
 - › How much you can eat, drink, and/or take in through tube feeding
 - › How well your body handles PN
 - › Your treatment plan
- If your health care team recommends PN while you are in the hospital, they will talk with you about how long you may need it.
- Most people only need PN for a short time.
- Sometimes, people leave the hospital with PN. If you need to keep using PN at home, you will be referred to the Nova Scotia Home Parenteral Nutrition Program for Adults. Your health care team will talk with you about this, if needed.

PN formulas

What is in PN formulas?

- PN formulas are made of water, macronutrients, and micronutrients. Medications can also be added, if needed.
- **Macronutrients** are nutrients your body needs in large amounts each day to keep up good nutrition and stay healthy. The 3 macronutrients are carbohydrates, proteins, and fats.
 - › **Carbohydrates** are the body's main source of energy.
 - › **Proteins** are also a source of energy. They also help your body gain and keep muscle, keep your immune system strong, and help you heal after an injury or illness.
 - › **Fats** are a source of energy. They also help your body build and repair cells, absorb some vitamins, and make hormones.
- **Micronutrients** are nutrients the body needs in small amounts every day to maintain good nutrition and stay healthy. Micronutrients include vitamins, minerals, and trace elements.