

DIET AND NUTRITION

Our Approach to Nutritional Evaluation and Needs

Our goal is to improve your child's nutrition by promoting the best possible weight gain and growth. We know from studies and experience that focusing on nutrition and growth will help your child have the best possible outcome both before and after a liver transplant.

Why Can Liver Disease Affect Your Child's Ability to Grow?

Examples of problems related to a sick liver include:

- If jaundiced, they will not be able to digest fat well.
- If they have a large liver and spleen or fluid in the belly (ascites), they may have problems eating enough food or will spit up food if given a large amount at one time.
- They may not feel well or they may not have a normal appetite because of their liver disease.



Good weight gain and growth is important for a child's development and decreases the risk of death before and after a transplant. In the pediatric liver transplant clinic, **we treat nutrition as medicine**. We consider it as important as any other medicine we might prescribe. This means that we will regularly assess nutrition, food intake, and growth in a variety of ways and may ask you to do things that are not "normal" but that will help your child grow better.

We Take Your Child's Nutrition Very Seriously

- We will weigh your child at each clinic visit and measure their length (height).
- In those under three years of age, we will also get a head circumference.
- Because many children have large bellies (large liver, spleen, and or/ascites), we often will measure arm size with what we call a MUAC (mid-upper arm circumference)..
- We regularly check lab tests to help us know if your child has any imbalances related to nutrition, such as vitamin deficiencies.

Many liver functions are related to nutrition, therefore it is especially important for you to understand and respond to your child's nutritional needs both before and after transplant. As it relates to nutrition, the liver is primarily responsible for:

- Breaking down dietary protein, fat and carbohydrates, the major nutrients in foods so that they can be used by other parts of the body
- Storing vitamins A, D, E and K (fat-soluble vitamins)
- Making proteins such as clotting factors
- Removing waste products (toxins or poisons) of nutrient breakdown such as bilirubin and ammonia
- Producing and secreting bile, the substance needed for the breakdown and absorption of dietary fats and fat-soluble vitamins

What if My Child is Not Growing Well on His/Her Current Diet?

The dietitian may ask you or your child to keep a record of what is eaten over the course of several days so they can better tell the amount of nutrients being eaten. After evaluating your child, the dietitian will discuss your child's nutritional status with you. Growth and general good health are directly related to nutritional intake. Because liver disease affects appetite and the body's use of nutrients, most pre-transplant patients can improve their health by improving their nutritional status. A well-nourished body does not guarantee successful surgery, but it improves your child's ability to tolerate surgery and helps with recovery.

- If your child is not growing well on his/her current diet, we will recommend changes. Usually this involves using a formula that can be absorbed better in children with liver disease.
- When using formula, we change it so there are more calories in a smaller size of formula. For example, most formulas have 20 kilocalories in one ounce. We will change the concentration so that there may be 24 (up to 30 kcal/oz) kilocalories in each ounce so that a smaller size or the same size of formula provides more calories.
- We calculate how many calories children need by how much they weigh and the amount they weigh for how tall they are.
- Sometimes, it may be necessary to stop breast feeding in order to provide enough calories for your child to grow. We will help you make this change if it is medically recommended to improve your child's growth.



What if My Child Still Doesn't Grow Well with Formula?

- If changing the formula does not help your child grow, we will need to admit them to the hospital to start feedings with a **nasogastric** tube (NG tube).
- This is a small, soft feeding tube that goes through the nose, down the esophagus, and into the stomach (this is commonly used in premature infants and other children who cannot take enough calories by mouth).
- We set very specific goals for how much formula is needed in a day. We usually begin with allowing children to take feeds by mouth and give what they are unable to drink through the tube into the stomach. If they cannot tolerate feeding, then a pump to deliver food slowly overnight may also be necessary.
- While in the hospital you will be taught to care for this tube and how to use the pump if it is necessary.

For most children, it takes two to four weeks to determine if they need tube feedings. However, it depends on how malnourished your child is when we first see him/her and if there are other options for changes in medical treatment that may improve his/her intake (e.g., treating ascites).

In the Pediatric Liver Transplant Clinic, we will talk about your child's growth and nutrition plan regularly. You may think we are obsessed with nutrition...

WE ARE, BECAUSE NUTRITION MAKES A BIG DIFFERENCE!



