

DIET AND NUTRITION

Kidney Transplant Nutrition Therapy

Your child's nutrition plays a big role in promoting the best possible health after a transplant. A good nutrition plan can help reduce many potential problems such as elevated blood fats, blood sugar, blood pressure, excessive weight and decreased bone strength. After transplant, a dietitian is available to provide guidance and advice for diet recommendations as well as answer any diet-specific questions.



Recommended Nutrition Therapy

1. Your child should follow a **heart healthy** diet. He/she should consume a variety of foods from each food group based on the Recommended Dietary Guidelines for Americans.
 - Depending on your child's needs, choosing lower fat dairy products (milk, cheese, yogurt) may be necessary, however plans are individualized and sometimes full-fat dairy is recommended to support growth as well as absorption of fat-soluble vitamins/minerals. Use low-fat dairy products instead of full-fat milk, yogurt and cheeses.
 - Eggs are an excellent source of healthy protein. They are a good way to add protein to your child's diet, especially for the first 3 months following transplant surgery when the body needs the extra protein for healing. Eggs are great scrambled, made into an omelet, prepared as egg salad for a sandwich, used in a quiche or hard boiled on their own.
 - Go lean with protein. Serve skinless chicken or turkey, fish, extra-lean fresh beef or pork, dry beans, eggs or unsalted nuts. Remember to cut away extra fat on meats before cooking.
 - Fruits and Vegetables are very important additions to your child's diet and should be eaten everyday. Choose fresh fruits and vegetables when able, especially when they are in season. Frozen fruits/vegetables are also great to have on hand. A good rule of thumb is to purchase fruits/vegetables when they are in season and on sale and then freeze some of them for use later in the year as meal accompaniments, snacks, or in fruit smoothies. If using canned vegetables remember to choose unsalted or if using canned fruits choose in juice rather than syrup.
 - Fiber is another essential part of your child's diet. It is important to make sure your child consumes enough fiber throughout the day. Fiber is necessary for supporting gut health, healthy blood fat levels and regular bowel movements. If you have questions about how much fiber your child should be eating be sure to ask your dietitian. Increase dietary fiber. Fiber is found in fruits, vegetables, beans/lentils and whole grain products.

2. Continuing to limit sodium intake is also important after transplant. Excess sodium in the diet can cause elevated blood pressure readings. Even if your child is not experiencing elevated blood pressure readings, it is still important to limit extra sodium intake. Encouraging your child to eat more fresh or frozen fruits and vegetables will help to limit their sodium intake. Using sodium free seasonings and cooking with fresh spices/herbs (garlic, oregano, cilantro, thyme, parsley, cinnamon, etc.) can help add flavor to dishes.
3. Normal weight gains and height growth is promoted. While excessive weight gain can be a side effect of your child being on steroid medication, there are ways to help prevent your child from becoming overweight or obese. Encourage your child to stick to appropriate portion sizes at meal times and to choose foods that have more fiber and nutrients as opposed to more empty calories. Keep fruits and vegetables available for your child to snack on. It is also important to encourage your child to be active on a daily basis. Limiting screen time and time spent being sedentary is a good rule of thumb. Take your child on a walk or with you to the grocery store. Encourage your child to participate in physical activities that they enjoy such as sports or interactive clubs. You can also encourage your child to participate in planning and/or preparing healthy meals with you. This will help them to learn more about the foods they are eating. Being a good role model and eating healthy foods yourself is also key as children learn a lot from mere observation.
4. A diet low in **saturated fats** is encouraged, as some preventative rejection medications can increase blood fat levels.
 - Choose healthy fats like olive oil, soy, safflower, sunflower, sesame and walnut.
 - Processed foods like cookies, desserts and crackers may contain saturated fats such as beef fat, lard, hydrogenated fats, or partially hydrogenated fats, which elevate blood fat levels. Look at food labels for these fats. Be sure to avoid products that contain "trans fats."

**For children less than two years of age, your registered dietitian will provide you with specific nutrition guidelines.

Vitamins and Minerals

After transplant, your child's diet will most likely be liberalized to include a wide variety of nutrients. However, sometimes certain minerals may need to be temporarily restricted or promoted in your child's diet. Your dietitian will follow up with you and your child if this happens to be the case.

- Magnesium – Some of the drugs your child will be taking can cause his/her body to waste magnesium. Sometimes your doctor may prescribe a magnesium supplement to make sure they are getting enough. This may be avoided if they can get enough from their diet.
 - Foods high in magnesium include: green leafy vegetables (spinach, kale, chard), nuts (especially cashews), seeds, whole grains, halibut, tuna fish, beans, other legumes, and pumpkin/flax seeds.
- Potassium – Some medications that your child is on may temporarily cause blood levels to be elevated. In this case, we recommend restricting dietary potassium.
 - Foods high in potassium: banana, orange, avocado, white potato, sweet potato, melon, spinach, cow's milk, cheese, yogurt, beans, chocolate, nuts and whole grains.
- Phosphorus – After transplant your child will likely no longer be phosphorus restricted or on phosphorus binders. As the newly transplanted kidney will start rebuilding bone density, your phosphorus levels may drop. The registered dietitian will encourage healthy sources of phosphorus.
 - Foods high in phosphorus: dairy (milk, cheese, cottage cheese, yogurt), nuts, seeds, whole grains, oatmeal, salmon, beans, and other legumes.
- Calcium – The steroids your child will be taking will require additional calcium in the diet to maintain healthy bones.
 - Foods high in calcium: dairy (milk, cheese, cottage cheese, yogurt), dark green leafy vegetables (broccoli, kale, bok choy, watercress), dried figs, sardines, and almonds. Limit hard cheese to 1 oz/day due to high salt and fat content.
- Multivitamin with Vitamin D – In general, individual or mega doses of vitamin or mineral supplements are not necessary after kidney transplant. However, an over-the-counter multivitamin with vitamin D is recommended to make sure that your child is receiving the recommended daily amount (RDA) of all essential nutrients including Vitamin D for adequate bone health.
 - Multivitamin suggestions: Flintstone Complete Chewable (two to 12 years), Centrum Junior Complete (four to 12 years), One-A-Day Teen Advantage (12 to 17 years)



Importance of Hydration and Fluids

Your child needs to drink plenty of fluids to help keep the newly transplanted kidney well hydrated and working properly. Encourage your child to primarily meet his/her fluid goal by drinking water as this is the best fluid source for hydration.

- Keep track of your child's fluid intake. Your child's transplant team will ask you about it at each visit. Having your child use a specific water bottle can be helpful for tracking fluid intake and ensuring that he/she is meeting his/her fluid goal.
- Water, unsweetened sparkling water, cow's milk, nut milk, and nutritional drink supplements all count toward your child's fluid goals. Juice, coffee, and soda are not recommended. However, if your child is struggling to meet his fluid goal with water alone, adding a small amount of juice to water to add a small amount of flavor is acceptable.
- Smartphone apps for tracking fluids:
 - KidneyDiet (iPhone/iPad/Android/Kindle Fire) – tracks food and fluids
 - MyNetDiary (iPhone, iPad, Android, Blackberry) – tracks food and fluids; has a bar code scanner
 - WaterLogged (iPhone, iPad/iPod touch)-tracks fluid with helpful charts and reminders. Works with Fitbit and MyFitnessPal.



Growing Kids with Enteral Nutrition

Some children cannot keep up with high fluid demands or nutritional requirements to grow properly after transplant. In these situations a temporary or permanent feeding tube may need to be placed. You will work closely with a registered dietitian who will determine specific nutrition and fluid goals to meet your child's specific needs.

For children using a feeding tube, our team will encourage use of occupational therapy or feeding therapy programs to continue to promote some by mouth feedings, as the child is able. What the child is unable to finish by mouth, the remainder will be placed through the tube into the stomach. If the child cannot tolerate any by mouth feedings, then a pump delivering food slowly overnight may work better. Your dietitian will work with your family to create a feeding schedule that fits your lifestyle.

Food Safety After Organ Transplant

Food safety is important, as your child's immune system is weakened by some of the medications they are taking. It is important to avoid food-borne illness by practicing safe food handling. Safe food practices:

- Do not eat raw or undercooked meat/seafood (no sushi)/eggs (no raw cookie dough)
- Avoid raw or unpasteurized juices, milks and cheeses
- Avoid alfalfa sprouts
- Wash all fruits and vegetables well with water
- Remember to wash your hands before cooking and eating foods. This should take about 20 seconds with soap and water. Dine safely when eating out. Open salad bars are not recommended. Plan ahead by looking up the menu and be sure to discuss your needs with your server if you are unsure about how a certain food is prepared/cooked.

Medications & Herbal Supplementation

Medications and herbal supplementation can affect your child's nutrition and overall wellbeing. It is important to share with your health care team all of your child's medications including vitamins, minerals and herbal supplements as they may interact with one another. Consult with the registered dietitian or medical doctor before starting any herbal supplements.

- Tacrolimus/cyclosporine – avoid grapefruit and grapefruit juices as they interfere with these medications.

References:

Nutrition Care Manual

National Kidney Foundation

Academy of Nutrition and Dietetics, Nutrition Care Manual

