



You and your kidney transplant:

A handbook for patients and their families

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General information

Important contacts

Contact	Phone
My post-transplant coordinator: _____	503-494-_____ 800-452-1369 ext. _____
OHSU transplant office <i>Weekdays 8 a.m. – 4 p.m.</i>	503-494-8500 800-452-1369 ext. 8500 Fax: 503-494-4492
Urgent issues DURING open hours <i>Weekdays 8 a.m. – 4 p.m.</i>	503-494-8500 <i>Ask for a post-transplant coordinator</i>
Urgent issues AFTER hours <i>Nights, weekends, holidays, etc.</i> EMERGENCIES ONLY	503-494-8311 888-222-6478 <i>Ask to speak to the person on call for transplant</i>
OHSU Pharmacy	503-346-3370
OHSU Laboratory	503-494-7383
OHSU MyChart	503-494-5252
Patient Financial Counselor	503-494-5539
Diabetes help DURING open hours Harold Schnitzer Diabetes Center <i>For help with blood sugars/insulin Management</i>	503-494-3273 <i>If you need to leave a message, your message will be returned soon.</i>
Diabetes help AFTER office hours <i>Nights, weekends, holidays, etc.</i> For URGENT help with high or low blood sugars	503-494-8311 800-452-1369 <i>Ask to speak to the person on call for transplant</i>

Mailing address

OHSU Clinical Transplant Services

Kidney/Pancreas Transplant Program

Mail code: CB569

3181 S.W. Sam Jackson Park Road

Portland, Oregon 97239-2966

Phone: 503-494-8500

Fax: 503-494-4492

What to do once you get home

You may be worried about all the new things you need to know about your health. It is a normal feeling, and we don't expect you to know it all right away. That's why we created this guide. You can read through it, write down any questions and discuss them with your transplant team. Please **ALWAYS ask us questions if you do not understand something**. We are here to help you return to an active life in family, work and play.

Start following these 5 steps as soon as you get home from the hospital.

1. **Every day, write down your vital signs** in your book.

Vital sign	When	How	Call
Weight	Every morning after you empty your bladder.	Weigh yourself at around the same time, wearing the same amount of clothes, and using the same scale every day.	If you gain 4+ pounds in 1 day , call the transplant department
Temperature	1+ times a day	If you feel like you have a fever or the chills, take your temperature more often.	For the first 3 months : call the transplant nurse if your fever is 100°F or more . 3+ months after transplant : call your local doctor if your fever is over 100°F .
Blood pressure	Once in the morning , and once in the early evening .	Do NOT take your blood pressure on the arm with a dialysis fistula or graft.	If your blood pressure is too high or too low .

2. **Take your medications**. The #1 reason why kidney transplants fail is because patients do not follow their medication routine. Take all your medications as prescribed.

3. **Go to the lab on schedule** and write down the results on page 65.

Routine lab schedule	
First month – all labs will be done the first month at OHSU	Monday, Thursday at OHSU
After 1 month	Monday
After 3 months	Every other Monday
After 6 months	Monthly
After 1 year	Every 2 months
After 2 years	Every 3 months
After 3 years and beyond	Every 6 months

4. **Go to your clinic on schedule.** For the first 4 weeks, you will go to the OHSU kidney transplant clinic 1 time a week. You will go less often once you are stable. After 3 months if you are stable, you will start seeing your main nephrologist again.

5. **Get your surveillance biopsies or labs** done at 3 and 12 months.

Transplant emergencies



Call 911 if you have any of these:

- **Chest pain**
- **Fainting** (loss of consciousness)
- **Bleeding** that won't stop
- **Signs of stroke**
- **Trouble breathing**

When to call the transplant nurse

Your first 3 months after transplant

OHSU transplant

Weekdays

8 a.m. - 4 p.m.

503-494-8500

800-452-1369 ext.
8500

Emergencies

AFTER hours

503-494-8311

800-452-1369

Ask to speak to the
person on call for
transplant.

Call if you have any of these:

- Fever of **over 100° F**
- Weight gain of **4 or more pounds in 1 day**
- **Trouble urinating**
- **Creatinine** goes up by **0.2 or more**
- **Trouble breathing**, especially when laying down
- Problems with your **surgical cut area**
- **Ongoing diarrhea**
- **Urinary infection symptoms**
 - Pain, burning or tenderness when you urinate
 - Needing to go more often
 - Cloudy or foul-smelling urine
- Nausea and vomiting — **if you can't keep your pills down**
- Pain that does not go away **after you take pain medicine**
- **Bleeding** that is new
- **Heartburn**
- Tenderness or pain in **the area around your transplanted kidney**

After 3 months

If your kidney is stable, you will **go back to your main nephrologist**. At 3 months, **call their office first for all medical problems**. We will keep managing your immunosuppression drugs. And, we will keep caring for your transplant and any of its complications.

After 12 months

If your kidney is stable, you will go back to your main nephrologist for **all of your care**. They will be in charge of all future transplant orders, immunosuppression refills and medicine changes. **Call your main nephrologist for all questions** about your transplant and related care.

Labs and blood tests

Blood tests are extremely important! They tell us if your kidney is being rejected or if you are having side effects from the drugs.

4 things to know:

1. Have your blood drawn in the **morning** so you can get your results that day.
2. You must get your labs done at **OHSU for the first month** after transplant.
3. After the first month, you can start going to the lab of your choice. We will give you a letter to take to the lab that tells them what tests to run and how to report the results to us and you.
4. You need to **keep track** of your blood test results. You can write down your results on page 65 and learn what they mean on page 9.

Drug level blood tests

If you take Tacrolimus or Cyclosporine*

On the day of your drug level blood test:

- Take your medication about **12 hours before** your blood draw. Your blood draw must be between 11 ½ and 12 ½ hours **AFTER** you take that dose.
- Do **NOT** take your next dose **until after** your blood draw.

If you take Rapamune (Sirolimus)

On the day of your drug level blood test:

- Take your medication **20 - 24 hours before** your blood draw.
- Do **NOT** take your next dose **until after** your blood is draw.

***If you cannot get your blood drawn within the right time frames:**

- ⊗ Do NOT get a drug level blood test, and
- **Tell your transplant coordinator.**

Labs

The OHSU lab

The lab is on the 3rd floor of OHSU Physicians Pavilion. To get your test results:

- Call **503-494-7383 after 2 p.m.** on the day of your lab draw, or
- Sign up for OHSU **MyChart** to see your results online. Go to www.ohsu.edu/mychart.

Hours change on holidays and weekends, so be sure to check with the lab staff.

If you use a non-OHSU lab

You and your transplant team must watch your lab work closely. To get your test results, call your lab in the afternoon on the day of your lab draw. Write down the results on page 65.

Routine lab schedule	
First month – all labs will be done the first month at OHSU	Monday, Thursday at OHSU
After 1 month	Monday
After 3 months	Every other Monday
After 6 months	Monthly
After 1 year	Every 2 months
After 2 years	Every 3 months
After 3 years and beyond	Every 6 months

Normal blood test values

Every lab has slightly different normal ranges for blood tests. On the next page, we've listed the normal values used by OHSU. Please use them only as guidelines. Every kidney transplant patient has their own normal.

We will help you understand your results and define what your baseline (starting point) is. Many times, labs will run other tests along with the ones we've listed.

Lab test	Normal range
Glucose (Blood Sugar) <i>The level of sugar (glucose) in your blood.</i>	65 - 110
Blood Urea Nitrogen (BUN) <i>The level of nitrogen (a waste product of protein use) in your blood.</i>	6 - 23
Creatinine (Cr) <i>The level of creatinine (a waste product of muscle metabolism) in your blood. Kidney transplant patients will have their own normal range.</i>	0.5 - 1.4
Potassium (K) <i>A mineral needed for muscles to work properly. This includes the heart.</i>	3.2 - 5.2
Phosphorous (PO4) <i>A mineral that works with calcium to form bone. A small amount is found in the muscles.</i>	2.2 - 4.2
Magnesium (Mg)	1.8 - 2.5
Calcium (Ca) <i>A mineral needed for properly working muscles, nerves, heart, blood clotting, strong bones and teeth.</i>	8.5 - 10.5
White Blood Count (WBC) <i>Special blood cells that help the body fight infection.</i>	3.0 - 8.6
Hematocrit (Hct) <i>The % of red blood cells in your blood. The red cells carry oxygen and carbon dioxide throughout the body.</i>	36.1 - 46.1
Platelet (Pit) <i>Special blood cells that help your blood clot.</i>	190 - 400
Pancreas Transplant <i>Enzymes produced by the pancreas</i>	
Amylase	25 - 115
Lipase	152 - 353

Medications

Daily medications

You need to take medications each day for the life of your new kidney. This will help prevent your body from rejecting your kidney.

- NEVER stop taking or miss these medications. It could risk rejecting your new kidney.
- You may need to take other medications, too.
- Before you leave the hospital, a pharmacist will give you a list of medications and a schedule for when you should take them.
- We will teach you what the medications look like, what amounts to take, what they are for, and what side effects they may cause.

Changes will happen often

- We will call you at home to tell you about any medication changes.
- Write down any changes we ask you to make on your medication list.
- ALWAYS take your medication the way it says to on your medication list.
- When we give you a new medication list, be sure to destroy any old lists.

You MUST take your medications at the correct time each day

- Set up a check system so you don't forget whether you took your pills or not.
- It may help to schedule around meals and bedtime.

Who manages your medications

OHSU will manage your immunosuppression medications for about 12 months or until you are referred back to your main nephrologist. If your primary care physician wants to make any changes to these medications, please ask them to contact the OHSU transplant office.

Side effects

Medications can have side effects. We have a list of medications and their most common side effects for transplant patients on pages 14-18. If you have any problems with any of the medications you are taking, call us at 503-494-8500. NEVER change your dose of these medications without talking to your transplant team first.

Prescription dos and don'ts

Do

- ✓ Call your regular pharmacy for medication refills.
- ✓ Keep the name and phone number of your local pharmacy handy.
- ✓ Call the OHSU transplant office if you have a problem with your immunosuppression prescriptions.
- ✓ Give the OHSU transplant office your list of allergies.
- ✓ Give your local pharmacist our phone number (503-494-8500) for refills.
- ✓ Ask for refills when you are seen in the transplant clinic.

Don't

- ⊗ Go to the transplant floor for refills.
- ⊗ Run out of medication before getting refills.
- ⊗ Wait until the weekend or after 4 p.m. to call for refills.

Warnings

- ⊗ Do **NOT** take any herbs or supplements without talking to your transplant doctor first. They can interact badly with your transplant medications. Transplant patients should **NEVER** take medications or herbs that claim to “boost” the immune system.
- ⊗ Do **NOT** take ibuprofen, Motrin, Aleve, naproxen or any other NSAID (Non-steroidal Anti-inflammatory Drugs).
- ⊗ Do **NOT** eat or drink grapefruit, grapefruit juice, mandarin oranges, orange marmalade, pomegranates and pomegranate juice. They will make the level of medication rise too high in your blood.
- If any of your other doctors want to make changes to your kidney drugs (immunosuppressive medications), please have them contact your OHSU transplant team.

Over-the-counter medicines that are safe to take

Symptoms	Safe over-the-counter choices
Fever	Call your nurse coordinator or on-call nurse if your fever is over 100° F.
Headaches and body aches	Acetaminophen (Tylenol) Take NO more than 3,000mg in 24 hours.
Sneezing, itching or runny nose	Loratadine (Claritin), Cetirizine (Zyrtec), Fexofenadine (Allegra)
Stuffy nose (nasal and sinus congestion)	Nose sprays: Sodium chloride (Ocean), (SinuCleanse)

Symptoms	Safe over-the-counter choices
Chest congestion	Guaifenesin (Robitussin), Coricidin HBP Chest Congestion & Cough
Wet cough (lots of phlegm)	Guaifenesin (Robitussin)
Dry cough (no phlegm)	Dextromethorphan (Delsym), Guaifenesin/ Dextromethorphan (Robitussin DM), Coricidin HBP Chest Congestion & Cough
Sore throat	Lozenges – Benzocaine, Halls
Constipation	Polyethylene glycol (MiraLAX), Psyllium (Metamucil), Docusate (Colace), Docusate with senna (Senokot-S), Bisacodyl (Dulcolax), Senna
Diarrhea	Call your nurse coordinator or on-call nurse right away if you have more than 3 loose stools in one day.
Trouble sleeping (insomnia)	Diphenhydramine (Benadryl), Doxylamine (Unisom), Melatonin
Stomach upset	Calcium carbonate (TUMS)
Heartburn	Ranitidine (Zantac), Famotidine (Pepcid AC), Nizatidine (Axid), Omeprazole (Prilosec), Esomeprazole (Nexium)
Gas	Simethicone (Gas-X)
Dry and irritated eyes	Artificial Tears for dry, irritated eyes Ketotifen Zadiator for eye allergies (allergic conjunctivitis)
Nausea and vomiting	Call your nurse coordinator or on-call nurse right away.
Joint pain and muscle aches	Capsaicin cream (Capzasin-P), Lidocaine (Aspercreme, Icy Hot), Camphor & Menthol (Bengay)
Skin irritation, insect bites, poison ivy	Hydrocortisone (Cortisone-10)

Medications you may be taking

Drug	What it's for	When to take	How to take	Common side effects	What else to know
Acyclovir (Zorvirax)	To prevent or treat cold sores (Herpes Simplex Virus or HSV).	Start around the time of transplant. Take for 2 weeks after transplant, 2-5 times a day.	By mouth (orally) or by IV (intravenously).	Headache, nausea, vomiting.	Drink plenty of fluids. You can take this drug with or without food.
Azathioprine (Imuran)	To prevent your body from rejecting your kidney.	You may use it before and after your transplant. Take 1 time a day. Most patients will take it for life.	By mouth (orally) or by IV (intravenously).	Low white blood cell count, hair thinning.	Tell your doctor if you are taking Allopurinol (a medicine used to treat gout).
Cyclosporine (Sandimmune, Neoral, Gengraf, Eon, Apotex)	To prevent your body from rejecting your kidney.	Start 2-5 days after transplant. Take 1 or 2 times a day. On lab days, do NOT take in the morning UNTIL AFTER your blood draws. Most patients will take it for life.	Will start out by IV (intravenously). Will switch to by mouth (orally) after a few days.	Kidney problems, high blood pressure, leg cramps, tender or swollen gums, tremors.	Do NOT take grapefruit, mandarins, pomegranates, and their juices. Do NOT substitute Sandimmune or Apotex for Neoral, Sidmak, Gengraf, Eon or Plevia.

Drug	What it's for	When to take	How to take	Common side effects	What else to know
Calcium	Mineral needed for properly working muscles, nerves, heart, blood clotting, strong bones and teeth.	1 time a day, with food.	By mouth (orally).	Nausea, vomiting, diarrhea, upset stomach, thirst or chalky taste after you take it.	Tell your doctor if you are taking digoxin or an iron supplement.
Lymphocyte Immune Globulin (Thymoglobulin)	To prevent or stop your body from rejecting your kidney.	During your transplant. You may need to take it after your transplant if you start rejecting the kidney and prednisone doesn't work.	By IV (intravenously) for 1 to 14 days.	Fever, chills, rash, low white blood cell count, joint and muscle aches, low platelets, headache, shortness of breath, skin rashes, low blood pressure.	We will give you drugs to help prevent side effects before each dose. Your nurse will watch for side effects. Let the nurse know if you have any trouble breathing, a tight throat, itching or any unusual side effects.
Magnesium	To replace your natural magnesium stores that you have lost.	We will watch your magnesium levels to see if you need it. The amount you take will depend on the amount you need.	By mouth (orally) or by IV (intravenously).	By mouth: diarrhea. By IV: flushing.	Tell your doctor if you are taking any over-the-counter vitamins or have a lot of diarrhea.

Drug	What it's for	When to take	How to take	Common side effects	What else to know
Mycophenolate, Mycophenolic (Cellcept, Myfortic)	To prevent or stop your body from rejecting your kidney.	Take 2 times a day with food. Most patients will take it for life.	By mouth (orally) or by IV (intravenously).	Nausea, vomiting, not wanting to eat (loss of appetite), diarrhea, stomach cramps.	Tell your doctor if you are taking any over-the-counter iron pills or have a lot of diarrhea.
Oxycodone (Roxicodone)	To treat or prevent moderate to severe pain.	Take every 3 to 6 hours as you need it, as directed by your doctor. You can take with or without food.	By mouth (orally).	Drowsiness, dizziness, light-headedness, nausea, vomiting, headache, constipation	This is an opioid. Do NOT take alcohol, antihistamines or other drugs that may add to your drowsiness. Do NOT drive or operate heavy machinery.
Pentamidine	To prevent Pneumocystis carinii Pneumonia (PCP).	Take 1 time a month for 4 months.	Inhale into the lungs by using a machine called a nebulizer.	Nausea, vomiting, dizziness, headache, cough, rash, stomach pain, diarrhea, shortness of breath.	We can give you a different medication if you have a hard time with this one.
Potassium	A mineral needed for muscles to work properly. This includes the heart.	Take up to 3 times a day until you can take in enough through your diet.	By mouth (orally) with food.	Nausea, vomiting, stomach pain, diarrhea.	Do NOT take with TUMSs at the same time.

Drug	What it's for	When to take	How to take	Common side effects	What else to know
Prednisone (Deltasone)	To prevent or stop your body from rejecting your kidney.	Take 1 time a day in the morning with food. Most patients will take it for life.	By mouth (orally). Do NOT stop taking unless your doctor says to.	Trouble sleeping, mood changes, nervousness, wanting to eat more (increased appetite), heartburn.	Do NOT take antacids (like Tums) at the same time.
Sirolimus (Rapamune)	To prevent or stop your body from rejecting your kidney.	Take 1 time a day at the same time each day, with or without food. On lab days, do NOT take in the morning UNTIL AFTER your blood draws. Most patients will take it for life.	By mouth (orally) as a tablet or liquid. Do NOT stop taking unless your doctor says to.	Low white blood cell and platelet counts, high cholesterol.	If you take as a liquid: Mix it with chocolate milk or orange juice for taste. Stir well and drink all at once. ONLY mix in a GLASS container (NO plastic) and rinse to make sure you get the full dose. Keep an eye on your cholesterol while you take this drug.
Sulfamethoxazole/Trimethoprim (Bactrim, Septra)	To prevent or treat Pneumocystis carinii Pneumonitis (PCP) and bladder infections.	1 time a day for 3 months after your transplant.	By mouth (orally) or by IV (intravenously).	Sensitive to sunlight (sunburn easily), rash, diarrhea.	This is an antibiotic that you should take with a full glass of water. Drink plenty of fluids.

Drug	What it's for	When to take	How to take	Common side effects	What else to know
Tacrolimus (Prograf, FK506)	To prevent or stop your body from rejecting your kidney.	Take 2 times a day, 12 hours apart, at the same times each day, with food to prevent nausea. On lab days, do NOT take in the morning UNTIL AFTER your blood draw.	By mouth (orally) or by IV (intravenously). Do NOT stop taking unless your doctor says to.	Headache, tremors, muscle cramps, diarrhea, nausea, high blood pressure, kidney problems.	Do NOT take grapefruit, mandarins, pomegranates, and their juices.
Valganciclovir (Valcyte)	To prevent and treat cytomegalovirus (CMV).	Take 1-2 times a day, with food.	By mouth (orally) or by IV (intravenously).	Headache, nausea, low white blood cell and platelet counts.	Drink plenty of fluids.



How to Eat After Your Kidney Transplant

After a kidney transplant, you have special nutritional needs. This handout will explain:

- What you should eat right after surgery
- Food safety, to keep you from getting sick
- What you should eat in the long-term.

What you should eat right after your transplant

Calories and protein

You need to eat extra calories and protein right after your transplant. Good nutrition helps your body:

- Heal your surgical wounds
- Keep muscle strength
- Fight infection

If you take prednisone, you need to eat more protein. This medication can cause muscle loss. Protein helps you build muscle. It is in foods like eggs, meat, fish, poultry, milk, cheese, yogurt, beans, nuts and seeds.

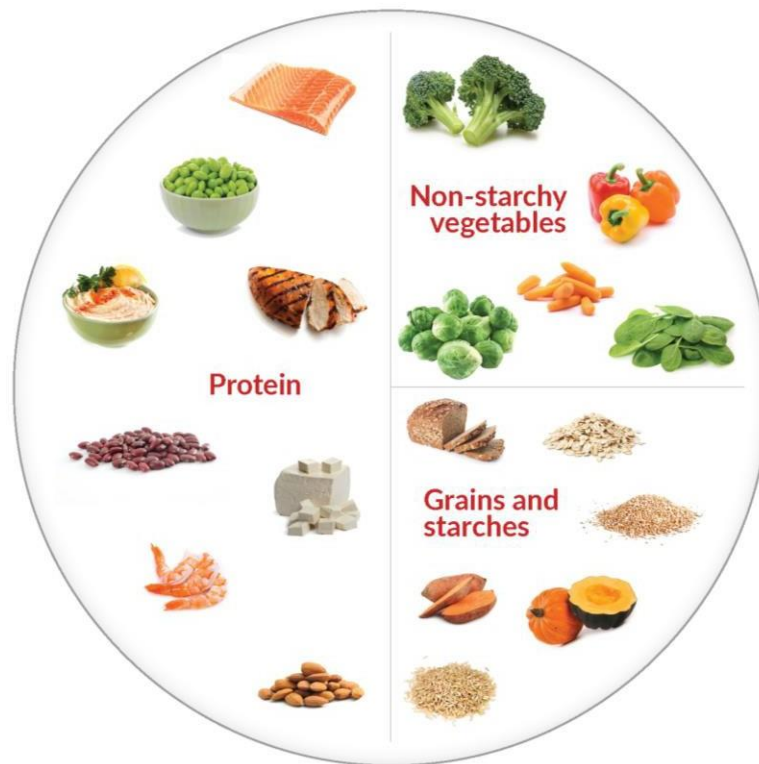
Right after transplant surgery:

- You should eat _____ grams of protein each day.
- You should eat _____ calories each day.

8 weeks after surgery:

- Lower the amount of protein you eat to _____ grams of protein each day.
- Your dietitian may change the number of calories you should eat based on how much activity you get.

A healthy plate for the first 2 months after transplant



Use the plate method of eating, where $\frac{1}{2}$ your plate is protein, $\frac{1}{4}$ is non-starchy vegetables and $\frac{1}{4}$ is starchy food like whole grain bread, pasta, rice, cereal or starchy vegetables.

High-protein foods

Protein Food	Portion Size	Protein Grams
Meat, cooked:		
• Chicken breast	3 oz	26
• Hamburger, lean	3 oz, 1 patty	18
• Pork chop	3 oz	24
• Steak, lean	3 oz	26

Protein Food	Portion Size	Protein Grams
Fish, cooked:		
• Fillet	3 oz	15
• Salmon patty	3 oz, 1 patty	15
Fish, canned:		
• Tuna or Salmon	1 oz	7
• Anchovies, sardines	1 oz	7
Shellfish, cooked:		
• Crab	1 oz	6
• Scallops, steamed	1 oz	7
• Shrimp	1 oz	6
Beans, cooked:		
• Kidney, black, garbanzo, pinto	½ cup	7
• Lentils, split peas	½ cup	8
Cheese:		
• Cottage cheese	¼ cup	6
• Soft (goat, mozzarella)	1 oz	5
• Hard (cheddar, Swiss)	1 oz	7
• Ricotta	¼ cup	7
• String cheese	1 oz (1 stick)	7
Milk:		
• Whole, 2% 1%, skim or soy	1 cup	8
• Non-fat, powdered	¼ cup	10
Yogurt:		
• Greek	5.3 oz	12-18
• Regular	5.3 oz	5-6
Nuts and seeds:		
• Peanuts, almonds, sunflower	1 oz	6-7
• Cashews, flaxseed (ground), walnuts	1 oz	4-5
• Nut butters	2 Tablespoons	5-8

Protein Food	Portion Size	Protein Grams
Protein drinks:		
• Ensure Clear, Glucerna	8 oz	8-10
• Isopure Plus	16 oz	20
• Boost High Protein, Boost Plus, Ensure Plus	8 oz	13-16
• Boost VHC, Nepro	8 oz	19-22
• Premier Protein Shakes	11 oz	30
• Carnation Instant Breakfast with 1 cup milk	8 oz	13
Other:		
• Whey protein powder (protein depends on brand)	1 oz	12-20
• Egg	1 large	6
• Quinoa, cooked	1 cup	8
• Tempeh	1 oz	5
• Tofu (soft, firm, extra firm)	3 oz	5-9

How to eat more protein

- Eat 5-6 small meals and snacks during the day instead of 3 large meals. Try to have:
 - 20+ grams of protein at each meal
 - 8+ grams of protein at each snack
- Eat Greek yogurt instead of regular yogurt. Greek yogurt has 2 times the protein of regular yogurt.
- Add diced meat, beans, cheese, nuts or seeds to salads, casseroles or soups.
- Spread nut butters or hummus on low sodium crackers, toast, or raw fruits and vegetables.
- Keep ready-made protein-rich foods like hard-boiled eggs, cheese sticks, single- serving yogurts, unsalted nuts and trail mix on hand for easy snacks

- Add a glass of milk or protein drink to your meals or as a snack.
- Add protein powder or powdered milk to casseroles, soups or oatmeal.
- Try cottage cheese or ricotta cheese with fruit, vegetables or mixed into casseroles.
- Make your own smoothie using milk, Greek yogurt, protein powders, nut butters or tofu.
- Eat whole grains such as quinoa and high protein cereals.

Fluids

How much to drink every day

- Your goal is to drink 2 liters of fluid every day. This equals 8-10 cups or 80 ounces.
- Please ask your doctor if they have a fluid goal for you.

How to drink more fluids

- Sip liquids slowly and pace yourself during the day.
- Drink even when you are not thirsty.
- Drink a small amount before, during and after meals and snacks.
- Carry a full water bottle wherever you go.
- Limit coffee, tea and soda that contain caffeine.
- ⊙ **Do NOT** drink energy drinks such as Red Bull, Monster or Rock Star.
- Set a timer or alarm to ring every 1 to 2 hours to remind you to drink fluids.
- Whenever you can, choose healthful drinks such as water, milk, unsweetened tea, low-sodium vegetable juices, smoothies, flavored or sparkling waters or nutritional supplement shakes.

Foods not to eat

Some foods may interfere with your immunosuppressant medications, especially tacrolimus (Prograf) and cyclosporine. For this reason, **do NOT eat**:

- ⊗ Grapefruit and grapefruit juice
- ⊗ Mandarin oranges (also satsumas, clementines, tangerines and blood oranges)
- ⊗ Pomegranate and drinks with pomegranate juice
- ⊗ Starfruit
- ⊗ Black licorice
- ⊗ Herbal dietary supplements

Carbohydrates

Some of the medications you are taking may raise blood glucose (blood sugar) levels. Carbohydrates in foods can also raise your blood glucose levels. If you have too much sugar in your blood for a long time, it can cause serious health problems such as heart disease, stroke, kidney disease, eye problems and nerve problems.

You can keep your blood glucose levels in control by learning which foods to include in your meals and snacks. Also, limit simple sugars in your diet such as regular soda, juice, sugar, syrups and candy.

Foods with Carbohydrates	Foods with Little or No Carbohydrates
Fruit and fruit juice	Most vegetables
Starches – grains, dried beans and starchy vegetables like potatoes, corn and peas	Meat, poultry, fish, eggs, cheese and meat substitutes
Milk and yogurt	Fats (oil and butter)
Desserts, candy, and other sweets	

How much carbohydrates you should eat

Your needs may be different, but most men need 4 to 5 servings (60-75 grams) of carbohydrate foods per meal. Most women need 3 to 4 servings (45-60 grams) per meal. Each serving should have about 15 grams of carbohydrates.

Food with 1 serving of carbohydrates

Fruits:

- 1 small piece of fresh fruit
- 4 oz of juice
- ½ banana
- 2 tablespoons of dried fruit

Starches:

- 1 slice of bread
- 1/3 cup cooked rice or pasta
- ½ cup corn, peas or beans
- ½ cup hot cereal or ¾ cup dry cereal
- 1 small tortilla

Dairy:

- 1 cup of milk
- ¾ cup yogurt

Tips for good blood glucose control

- Try to eat well-balanced meals that include carbohydrates, protein and fat at the same times every day.
- You can keep your blood sugars in balance by eating the same number of servings of carbohydrate foods at the same times each day.
- Try to eat something every 4 to 5 hours to keep you from getting too hungry between meals. If you will not be able to eat a meal for 5+ hours, eat a small snack in between.
- Fill half of your plate with non-starchy vegetables. These do not contain a lot of carbohydrates, but provide good nutrients.
- If you eat starchy foods, choose high fiber choices such as whole grain bread, brown rice and whole-wheat pasta.

- Limit or avoid foods high in added sugars. Read food labels to find out how many grams of added sugars are in the foods you commonly eat.

Minerals in food

We may ask you to change the amount of some minerals you eat. This will depend on how well your kidneys are working and how you are responding to your medications.

Potassium

Potassium is a mineral that keeps muscles and nerves working well. Too much or too little potassium can affect your heart.

Some medications, such as tacrolimus and cyclosporine, can make you have too much potassium in your blood. If this happens, or if your new kidney does not work well right away, you may need to eat less high-potassium foods.

Once your kidney works better or your blood levels of potassium are stable, you should go back to eating potassium-rich foods. High-potassium foods have many health benefits.

Foods High in Potassium

- Artichokes
- Avocado
- Banana
- Beet greens
- Broccoli, cooked
- Dairy (milk, yogurt)
- Dried fruit
- Melons (cantaloupe, honeydew)
- Mango
- Kale
- Kiwi
- Nectarines
- Nutritional supplements (i.e. Ensure, Premier Protein shakes)
- Oranges and orange juice
- Parsnips
- Potatoes (baked, French fries, chips)
- Prunes and prune juice
- Some sports drinks
- Soy beans, cooked
- Spinach, cooked
- Tomatoes (including tomato sauce and juice)
- White beans, cooked
- Winter squash (acorn, butternut, pumpkin)

Magnesium

Magnesium helps your muscles work, reduces cramping, helps control blood pressure and blood glucose, and keeps your heartbeat steady. Tacrolimus and cyclosporine may cause you to need more magnesium. You may need to take magnesium supplements to keep your levels in a healthy range. But, if you eat magnesium-rich foods each day, you may not need supplements. Foods high in magnesium often also have protein, fiber and phosphorus.

Tips for eating more magnesium

- Eat many kinds of high-magnesium foods every day.
- Crush magnesium tablets if they are hard to swallow. Crushing may help your body absorb it better.
- Some people may get diarrhea when they take high-dose magnesium supplements. Tell your provider if that happens to you. A different form of magnesium may work better for you.

Foods high in magnesium

- Fish and other seafood
- Beans, peas and lentils
- Chocolate and chocolate milk
- Coffee
- Fruits such as bananas, avocado
- Nuts and seeds, nut butters
- Quinoa
- Soybeans and soymilk
- Vegetables such as potatoes, corn and spinach
- Whole grains such as brown rice and wild rice
- Whole grain cereals and bran

Phosphorus

Phosphorus helps our kidneys and muscles to work. It also sends signals to our nerves and helps our bodies use the nutrients we eat.

Phosphorus levels can be high after a kidney transplant, but this is usually a short-term problem. It does not mean you need to lower the amount of phosphorus you eat. Your dietitian will tell you if you need to follow a low phosphorus diet after your transplant.

If your phosphorus levels become low after your transplant, you need to eat high-phosphorus foods each day. You may need to take phosphorus supplements if you do not get enough from your food.

Foods high in phosphorus

- Dairy products like milk, yogurt and cheese
- Bran cereals
- Dried beans and peas
- Lentils
- Fish
- Beef, pork, turkey, chicken
- Nuts and nut butters
- Pancakes made from a mix
- Some cola drinks (diet preferred if you have elevated blood sugar levels)

Calcium

You are more likely to get bone disease because you have had kidney disease. Plus, you could get bone and joint weakness as a possible long-term side effect of taking prednisone. To help avoid osteopenia (low bone mass) and osteoporosis (brittle bones), you must eat enough calcium, phosphorus and vitamin D each day.

Eat a few servings of calcium-rich food in your diet each day. We may ask that you take calcium and vitamin D supplements when you leave the hospital.

Foods high in calcium

- Milk
- Yogurt
- Cheese
- Salmon
- Orange juice with added calcium
- Soy or almond milk with added calcium
- Tofu, firm (processed with calcium)
- Sesame seeds
- Bok choy, boiled or steamed
- Broccoli, boiled or steamed
- Collard greens, boiled or steamed
- Kale, boiled or steamed

Food safety

You are more likely to get infections now that you are on medicine that suppresses your immune system. You'll need to practice food safety to help stop foodborne illnesses.

Food that looks fine can still contain pathogens (disease-causing bacteria, viruses or parasites) that can make you sick. You should never taste a food to determine if it is safe to eat.

How to prepare food safely

Keep your hands and kitchen surfaces clean and free of bacteria by following these rules:

- Cleaning
 - Wash hands in warm soapy water for at least 20 seconds before and after handling food, or when you change tasks (like loading the dishwasher and then chopping vegetables).
 - If you can't always wash your hands, pack hand sanitizer or moist towelettes to use before eating.
 - Clean the tops of canned goods before opening them. Clean the can opener after each use.
- Fruits and vegetables
 - Wash fresh fruits and vegetables under running tap water, even those with skins and rinds that you will not eat.
 - Wash fresh foods that are hard to clean (like leafy greens, berries and mushrooms) by soaking them in water first, then rinsing with fresh water.

- Lunch meat
 - **Do NOT** eat deli or lunch meat directly from the package. Instead, you can:
 - Heat lunch meat in the microwave or stovetop until it is steaming hot, before putting it into a cold sandwich.
 - Make a hot grilled sandwich.
- Raw meat and food
 - Use different dishes, utensils and cutting boards for raw and cooked foods.
 - Wash cutting boards, dishes, utensils and counter tops with hot soapy water after they have had raw meat, poultry or seafood on them.
 - Keep raw meat, poultry, seafood and eggs away from other foods in your grocery cart and in your refrigerator.
 - ⊗ **NEVER** place cooked food on an unwashed dish that held raw meat, poultry, seafood or raw eggs.
 - ⊗ **Do NOT** reuse marinades that you used on raw foods, unless you boil them first.
 - Marinate food in the refrigerator, not at room temperature.
 - Defrost food in the refrigerator, not at room temperature. If you defrost in the microwave, cook the food right after defrosting it.
 - ⊗ **Do NOT** taste raw or partly-cooked meat, poultry, eggs, fish or shellfish. This includes cake batter and cookie dough that contains raw eggs.
 - ⊗ **Do NOT** eat undercooked eggs, meat, poultry or fish. Use a meat thermometer and cook to these internal temperatures:

Food	Internal Temperature or State
Beef, pork veal, lamb (chops, roasts or steaks)	145° (let meat rest for 3 minutes after you remove it from heat)
Ground meat	160°
Fully cooked ham	145°
Poultry (ground, whole, parts, stuffing)	165°
Eggs	Cook until yolk and egg white are firm
Egg dishes	160°
Fin fish	145° or meat is opaque (not clear) and flakes easily with a fork
Shrimp, crab or lobster	Cook until the meat is pearly and opaque (not clear)
Clams, oysters or mussels	Cook until the shells open during cooking
Scallops	the meat is milky-white or opaque (not clear) and firm
Leftovers, casseroles	165°

If you do not have a meat thermometer:

- Cook steaks to medium-well done.
- Cook ground meat, fish and poultry to well done.

Refrigeration and storage tips

- Refrigerate or freeze meat, poultry, seafood, eggs and other dishes within 2 hours after cooking (within 1 hour if the room temperature is above 90°F).
- Break up large amounts of food into small containers for quicker cooling in the refrigerator.
- Keep your refrigerator temperature just below 40°F (4.5°C).
- Keep your freezer temperature at 0°F (-18°C).
- ⊗ **Do NOT** eat food that has been left out at room temperature for 2+ hours. This includes meat, potato salad and other dishes at barbecues or picnics.

- Keep leftover seafood, stuffing and foods in broth or gravy in the refrigerator no longer than 1-2 days.
- Keep other leftovers in the refrigerator for no longer than 3-5 days (when in doubt, throw it out).

Eating at restaurants

- ⊗ **Do NOT** eat from salad bars or at buffet-style restaurants.
- ⊗ **Do NOT** eat sushi (raw or cooked), poke or ceviche.
- Choose hot sandwiches. All sliced meats must be heated.
- Ask the server how foods are prepared.
- ⊗ **Do NOT** eat food made from raw eggs, such as mayonnaise, salad dressings or sauces. These foods should be identified on the menu.

Cleaning

- Wash kitchen surfaces and tools with hot soapy water or a bleach solution after each use.
- To make your own bleach solution, mix 1 teaspoon of bleach with 1 quart of water.
- Use paper towels to clean up kitchen surfaces. If you use cloth towels, change them often and wash them in hot water in the washing machine.
- Throw away any cracked dishes, utensils, pots, pans and cutting boards. They are hard to clean well.

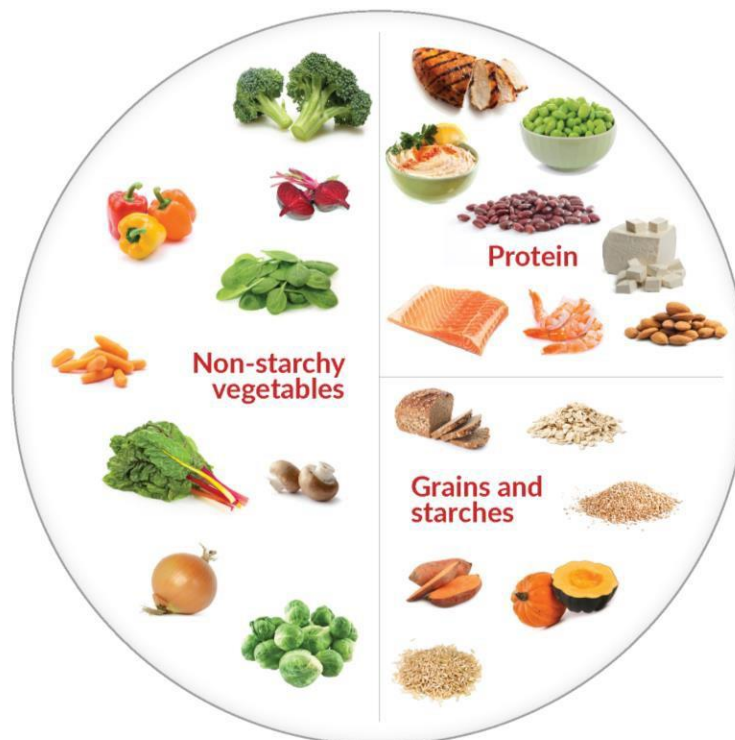
Raw and unpasteurized food

- ⊗ **Do NOT** eat raw seed and vegetable sprouts.
- Eat only pasteurized dairy products.
- Wash all bagged “pre-washed” vegetables.
- ⊗ **Do NOT** eat unroasted nuts and nuts in the shell.
- Drink only pasteurized juices and ciders.
- ⊗ **Do NOT** drink kombucha.

How to eat 2+ months after surgery

About 2 months after your transplant surgery, you will need fewer calories and less protein. This is a good time to work on long-term nutritional goals.

A healthy long-term diet after transplant



Use the plate method of eating, where $\frac{1}{2}$ your plate is non-starchy

vegetables, $\frac{1}{4}$ is protein and $\frac{1}{4}$ is starchy food like whole grain bread, pasta, rice, cereal or starchy vegetables. You should also eat low-fat dairy products and fruit.

Heart health

Patients who have had kidney disease are at increased risk of heart disease. Some of your new medications may raise your cholesterol and triglyceride levels. This can also increase your risk. Follow a heart healthy lifestyle to lower your risk.

Exercise

Start exercising as soon as your doctor says it is okay. Try to exercise for 30-60 minutes, 5+ days a week. Do heart-healthy exercise like:

- Walking
- Biking
- Aerobics
- Gardening
- Housework
- Strength training
- Swimming
- Running
- Yoga

Heart healthy eating

- Choose lean sources of protein, such as fish, chicken, turkey, beans, nuts or tofu.
- Add more heart-healthy fats to your diet. Unsaturated fats and omega-3 fatty acids may lower cholesterol and triglycerides:
 - Heart-healthy fats are in olive oil, canola oil, avocado, ground flaxseed, chia seeds, hempseeds and walnuts.

- Eat 2 or 3 servings of fish every week. Salmon, tuna and mackerel are good sources of healthy fats.
- Lower the amount of saturated fat you eat:
 - ⊗ Do NOT eat red meat more than 2 times a week. When you do eat red meat, choose lean cuts such as loins or rounds.
 - ⊗ Try not to eat fried foods and butter.
 - Choose low-fat or non-fat dairy products.
- Eat no more than 2000 mg of sodium (salt) a day by following these tips:
 - ⊗ Do NOT add salt when cooking or at the table.
 - Season foods with spices, herbs, lemon juice and vinegars.
 - Cook at home. Use fresh meats and produce.
 - Try not to eat fast food or processed food.
 - Choose products with labels that say “Without Added Salt”, “No Salt Added” or “Unsalted”.
 - Read the “Nutrition Facts” label to find the amount of sodium in packaged foods.
 - For meals, avoid food with more than 600 mg of sodium per serving.
 - For a side dish or condiment, avoid food with more than 140 mg sodium per serving.
 - Eat 25 to 35 grams of fiber a day. Fiber helps you absorb less cholesterol and fat. It may also help you feel full so you don’t gain weight. Good sources of fiber include whole grains, beans, fruits and vegetables.

Heart health diets

If you want more information about heart healthy eating, we recommend two well-researched diets: The Mediterranean Diet and the DASH Diet (DASH = Dietary Approaches to Stop Hypertension).

Mediterranean Diet: Suggested books and resources

- The New Mediterranean Diet Cookbook: A Delicious Alternative for Lifelong Health by Nancy Harmon Jenkins and Marian Nestle. New York: A Bantam Book, 2009
- The Mediterranean Diet Plan: Heart Healthy Recipes and Meal Plans for Every Eater by Susan Zogneib and Phillip Anderson III. Berkley, CA: Rockridge Press, 2016
- Good Food and Great Medicine: A Mediterranean Diet and Lifestyle Guide by Miles Hassell and Mea Hassell. Hillsboro, OR: Lithtex, 4th edition 2018
- Harvard School of Public Health Diet Review: Mediterranean Diet: www.hsph.harvard.edu/nutritionsource/healthy-weight/diet-reviews/mediterranean-diet/

DASH Diet: Suggested books and resources

- The DASH Diet Action Plan: Based on the National Institutes of Health Research: Dietary Approaches to Stop Hypertension by Marla Heller. Deerfield, IL: Amadon Press, 2007
- Your Guide to Lowering Your Blood Pressure with DASH www.nhlbi.nih.gov/files/docs/public/heart/new_dash.pdf

Weight control

It is best to be at a healthy weight after your transplant and to stay that way. Being at a healthy weight will:

- Reduce your risk of diabetes, or improve your blood glucose control if you have diabetes.
- Reduce your risk of heart disease.
- Improve your blood pressure.
- Ease joint and back pain.
- Improve your energy level.

Watch for weight gain

After your transplant, you will be feeling better and your appetite may increase. You may also have fewer limits on your diet than you did before transplant. Medicines such as prednisone may increase your appetite, which can cause you to overeat and gain weight.

Tips for Keeping a Healthy Weight

- Eat from a smaller plate or bowl. This can make your mind feel like you are eating more than you are.
- Include regular exercise as part of your lifestyle after your transplant. Exercise helps build muscle and burn calories.
- Eat 3 smaller meals and 1 snack each day.
- Wait 20 minutes before taking a second helping. It takes that long for your body to feel full after eating.
- Chew on gum instead of eating between meals.
- Limit sweets and sugars.
- Limit sweetened beverages. They have calories but don't make you feel less hungry.
- Drink plenty of water.

If you find yourself gaining weight, try some of these internet resources:

- Aim for a Healthy Weight from the National Heart, Lung and Blood Institute_
www.nhlbi.nih.gov/health/educational/lose_wt/index.htm
- USDA Nutrition_
www.nutrition.gov/healthy-weight
- Academy of Nutrition and Dietetics_
www.eatright.org/health#weight-loss

Activity

Limits

After your transplant, we want you to get back to an active life.

There are only a few limits during the first 3 months:

- **Lifting**
 - For the first 6 weeks, do NOT lift 10+ pounds.
 - For the next 6-12 weeks after transplant, do NOT lift 20+ pounds.
 - 3+ months after transplant, there are no lifting limits.
- **Running**
 - For the first 3 months, do NOT jog or run on hard surfaces, such as cement or asphalt.
- **Bouncing**
 - For the first 3 months, do NOT do things that cause you to “bounce,” such as horseback riding, snowmobiling, and trail or cross country motorcycling.
- **Soaking**
 - Until your surgical cut is healed (6-7 weeks), NO tub baths or swimming.

Building muscle

Your muscles may feel weak from not using them and as a side effect of prednisone. You can make your leg muscles stronger by walking and bike riding. After 3 months, you can do sit-ups and other abdominal exercises to tone of your stomach muscles.

Returning to work

We encourage you to return to work as soon as you can. Most people can go back to work in 4 - 6 weeks, unless they do manual labor. You may be eligible for up to 12 weeks of job protected leave through

OFLA or FMLA — check with your employer. If you need vocational rehab to help you get back to work, our social worker can help you find resources for that.

Play

Use common sense as your guide to any activity. As you get stronger, you will increase your amount of physical activity. If you are unsure if you should do an activity, please call the transplant office.

Sexual Activity

Wait 6 weeks before having sex to allow your surgical cut and muscles to heal. Your new kidney is well protected. You will not harm it by having sex. Always practice safe sex since you are less able to fight sexually transmitted diseases (STDs).

Men's Fertility

Most men are able to father children, desire sex and function again — even if they couldn't during kidney failure and dialysis. Your sexual function may change depending on how your kidney is doing and due to certain medications. If you notice a change in your sexual ability, ask your provider for advice. Talk to your nephrologist before you decide to have a child. Men should NOT father children while on certain immunosuppressive medications.

Women's Fertility

Most women are fertile after transplant. Be sure to use a reliable form of birth control right away. You should start getting your periods again within several months of transplant. You may still be ovulating even if you do not have a regular period. Many women get pregnant and deliver healthy children after a kidney transplant. If you are on Cellcept (mycophenolate) or Myfortic (mycophenolate delayed release) talk to your transplant team if you are pregnant or want to be pregnant. These drugs increase the risk of birth defects.

If you want to get pregnant, it is best to:

- Wait until at least 1 year after transplant.
- Not have other medical problems that might add to the risk of the pregnancy.
- Get lab tests more often.
- Adjust your immunosuppression drugs.
- Get proper prenatal care.

You will most likely have a successful pregnancy. But, there are some special risks to mother and child:

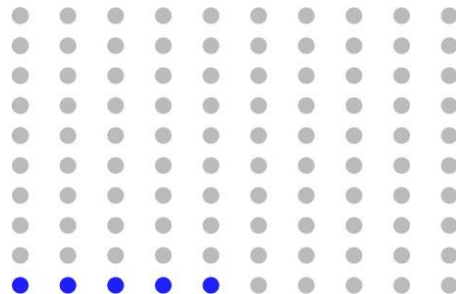
- **3 out of 10 mothers** will get high blood pressure and protein in their urine. In 10% of these cases, their kidney function will decrease.



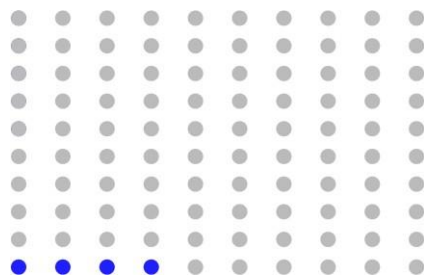
- **3 out of 10 babies** will be born premature.



- **5 out of 100 babies** will have a major birth defect if the mother has had a kidney transplant.



- **4 out of 100 babies** will have a major birth defect if the father has had a transplant.



Make to get your yearly well-woman check-up, with a Pap smear and a breast exam.

Long-term health

Transplant patients should follow these guidelines to care for the long-term health of your whole body.

Heart attack and stroke

Prevent heart attack and stroke by doing the following:

- Exercise daily
- Eat a low-fat, balanced diet with plenty of fruits and vegetables
- Limit weight gain
- Control blood pressure
- Watch blood sugars — people with diabetes should get help to control blood sugar
- Check cholesterol
- Do NOT smoke or use tobacco
- See your doctor every year

Diabetes

Post-transplant diabetes is a known risk for transplant patients. Watch your blood sugar and start treating it with diet and exercise. Many patients need insulin after transplant.

Travel

Contact a travel clinic before you go to another country. They will tell you which vaccines you need to travel there and what your risks of infection are. Please check with your transplant team with any questions. Remember, after transplant you should **NEVER get LIVE virus vaccines.**

Bone disease

All transplant patients get some bone disease. You should have a bone density study at least once every 2 years. Ask your primary care provider how to prevent bone disease with diet and exercise.

Regular cancer screenings

Contact the transplant office if you are ever told you have cancer. Due to the immunosuppression drugs you are on, you should have the following tests:

Women

- All women — pelvic exam and pap smear every year
- Age 40+ — yearly mammogram
- Age 30+ who has a female relative diagnosed with breast cancer before menopause — yearly mammogram

Men

- Age 45 if your father or brother has had prostate cancer — your first prostate-specific antigen test (PSA)
- Age 45 if you are African American — your first PSA test
- Age 50+ — yearly PSA test

Everyone ages 50+

- Colon cancer screening (with rectal exam), every 2 years
- Fecal occult blood test, every year
- Colonoscopy, every 5 years

Skin cancer

You have a **much higher risk of skin cancer** due to the medicine you take to help prevent rejection. The most common type of skin cancer we see after transplant is squamous cell carcinoma — **65 times more common** than in non-transplant patients! Patients usually get their first skin cancer 3-8 years after their transplant. You are at even higher risk if you are light-skinned, had much sun-exposure in your lifetime, are older, or have already had skin cancer. Squamous cell carcinoma may spread (metastasize) to your lymph nodes in 5-10% of cases.

How to lower your risk

- Avoid the sun from 11 a.m. to 3 p.m. — when the harmful rays are most intense.
- Wear sunscreen with both UVA/UVB protection of SPF 30+ every day.
- Use plenty of sunscreen on any exposed skin and reapply every 2 hours.
- Don't forget to protect your lips and ears.
- Wear a wide-brimmed hat and protective clothing, such as long sleeves, pants and sunglasses.
- See a dermatologist for skin exams after your transplant.



Call your doctor right away if you:

- See any change in your moles, or
- Have a new sore that does not heal

Preventing infectious disease

1. **Wash your hands often.** It is the one best way to prevent infection!
2. **Wear masks and gloves** at these times:
 - First 3 months after transplant, when you are:
 - In the hospital
 - Around active construction
 - Near farming areas
 - In crowds
 - **Do NOT garden during the first 3 months after transplant.**
 - After 1 year, always wear gloves when you garden.

3. Get the right vaccines.

- Get your flu shot every year.
- If you get hurt but haven't had a tetanus booster within the last 5 years, call your primary care provider.
- Transplant patients should **NEVER get LIVE vaccines**. Live vaccines have live organisms and you could get the actual disease since your immune system is less. Vaccines made from dead organisms are safe.

⊗ **Do NOT get these vaccines:**

- ⊗ Smallpox
- ⊗ Measles
- ⊗ Mumps
- ⊗ Rubella
- ⊗ Oral polio
- ⊗ Chicken pox

✓ **You CAN get these vaccines:**

- ✓ Injectable polio
- ✓ Flu shot (Influenza A and B) - every year
- ✓ Pneumovax - every 5 years
- ✓ TB skin test
- ✓ Diphtheria/Tetanus - every 10 years
- ✓ Shingrix (a specific Shingles vaccine)
- ✓ COVID

Dental care

Make sure to get a dental checkup every 6 months. Infections could be serious because of your lowered immunity. Be sure to:

- Wait until 3 months after transplant to get routine dental care.
- Let your dentist know you had a kidney transplant and are on immunosuppressive medications.
- You do NOT need to take antibiotics before routine dental visits unless you have:
 - Had a heart transplant,
 - Artificial heart valves,
 - Any artificial material in your heart,
 - Had a previous infection in your heart, or
 - Congenital heart defects.

We follow guidelines set by the American Heart Association and American Dental Association.

Drugs, tobacco and alcohol

Tobacco

Do NOT use tobacco.

- Chewing tobacco can lead to neck and mouth cancers.
- Smoking raises your risk of:
 - Bad surgery results
 - Cancer
 - Atherosclerosis (fatty deposits in blood vessels)
 - Heart attack
 - Stroke
- Please contact your transplant nurse if you need help quitting tobacco.

Marijuana

We do NOT recommend that you use marijuana. It can cause lung and brain fungal infections.

Alcohol

You can have the occasional without hurting your kidney. But, you should NOT drink too much alcohol since it causes dehydration. This is hard on a new kidney. For every glass of alcohol, drink an extra glass of water.

- **Do NOT have more than 2 alcoholic drinks per day.** Each of these counts as 2 drinks:
 - 2 ounces of hard liquor
 - 8 ounces of wine
 - 24 ounces of beer

Pets at home

For the most part, transplant patients can still live with pets in their home. Wash your hands after handling or cleaning up after your pets, and follow the guidelines below.

Dogs and cats

- Keep vaccinations up to date.
- Treat regularly for flea and tick prevention.
- Transplant patients CANNOT clean out a cat's litter box.

Birds

- Transplant patients CANNOT clean out a bird cage or chicken coop.

Reptiles

- ⊗ Transplant patients should NOT touch reptiles. They may carry salmonella and should NOT be pets.

Complications

Rejection

Your body may treat your new kidney as a foreign object and start attacking it. This is called “rejection” and it can happen at any time. Rejection does not mean loss of your organ. Often, we can treat it with medication. Some patients need more intense treatment. We watch for rejection by looking at your labs and biopsies of the organ.

Recurring disease

Some kidney diseases that cause organ failure can happen again (recur) in your new kidney. If you have a disease that can recur, we would have already talked to you about this during your transplant work up. We watch for recurring disease by looking at your labs and doing a kidney biopsy, if needed.

Infection and viruses

You are at more risk of getting infections due to the anti-rejection medications you take. These infections can be serious, so let us know right away if you have any of these symptoms:

- Fever
- Chills
- New diarrhea
- New or unexplained pain
- Cough
- Tiredness for no reason
- Not feeling well
- Urine problems such as going too much, pain when urinating or cloudy urine

Also, let us know if you have a viral infection like Cytomegalovirus (CMV), Epstein Barr virus (EBV) or BK virus.

CMV

Cytomegalovirus (CMV) is a very common viral infection that usually has no symptoms in non-transplant patients. Transplant patients need antiviral medications to help prevent CMV infection. Symptoms of infection can be fever, extreme tiredness (fatigue), diarrhea, stomach (abdominal) pain, cough and low white blood cell count. We can do a lab test called a CMV PCR to see if you have the infection. If you are infected, your transplant team will let you know what treatment you need.

Diabetes

Your anti-rejection medications increase your risk of developing diabetes after transplant. If you had diabetes before transplant, you may need to take more diabetic medications. You may need to see a diabetic specialist.

Cancer

Your anti-rejection medications increase your risks of certain types of cancer. The most common cancers are skin cancers, cancers of the genitals and urinary system, and lymphoma (cancer of the white blood cells).

All patients should see a dermatologist once a year. Learn about your cancer risks, and tell your doctor right away about any new symptoms or concerns.

References

How to prepare for your kidney transplant biopsy

A kidney transplant biopsy is when we take a very small piece of tissue from the transplant kidney and look at it under a microscope for signs of rejection or renal disease. We get the tissue through a small hole in your skin (minimally invasive) and use ultrasound to guide a biopsy needle into your kidney.

How to prepare

- We will let you know the date and time of your biopsy.
- We will collect your blood and urine the day of the biopsy.
- ⊖ Do **NOT** eat or drink for the **2 hours before** your biopsy.
- You will need a **designated driver**. You and your driver should expect it to take 5-8 hours from the time you get to the hospital to when you can leave.

Your medications

- Take your morning blood pressure medication. If your blood pressure is too high the day of the biopsy, we will need to reschedule it.
- Bring your other medications with you to the biopsy.
- **STOP** taking blood thinners (anticoagulants) before your biopsy. Blood thinners will increase your risk of bleeding.

Blood thinner	STOP taking	START taking again
Coumadin (warfarin)	5 days before your biopsy	
Aspirin	7 days before your biopsy	
Plavix (clopidogrel)	7 days before your biopsy	
Eliquis (apixaban)	48 hours before your biopsy	
Xarelto (rivaroxaban)	48 hours before your biopsy	
Lovenox (enoxaparin)	36 hours before your biopsy	

Where to go on the day of your biopsy

1. 30 minutes before your biopsy, go to the outpatient lab on the 3rd floor of **OHSU Physicians Pavilion** (3270 SW Pavilion Loop, Portland, OR 97239) for your lab draw.
2. After your lab draw, go across the street and check in at Admitting on the 9th floor of **OHSU Hospital** (3181 SW Sam Jackson Park Road, Portland, OR 97239).

What happens during your biopsy

1. We take you to the Procedural Care Unit (PCU).
2. We give you a gown to change into.
3. We explain the procedure and ask you to sign a consent form.
4. We numb the area of your body where we will insert the needle.
5. We use ultrasound to see where the needle tip is and use the needle to take a tissue sample.
6. The procedure should take 30 - 60 minutes.
7. After the biopsy, we take you to the recovery area in the PCU for you to rest for a few hours. We watch you for signs of bleeding and other complications during this time.
8. Once it is time for you to leave, your designated driver picks you up. You are NOT allowed to drive yourself home.

After the biopsy

- Do NOT do any strenuous physical activity for the next 48 hours.
- **Go to your local emergency room if you have any of these signs of bleeding:**
 - Your heart feels like it is beating too hard, too fast, skipping a beat, or fluttering (palpitations)
 - You feel light-headed
 - Your pain gets worse
- You will get the biopsy results within 1 week.



Magnesium in certain foods

	Milligrams (mg)	% Daily Value
Halibut – cooked, 3 ounces	90	20
Almonds – dry roasted, 1 ounce	80	20
Cashews – dry roasted, 1 ounce	75	20
Soybeans (mature) – cooked, ½ cup	75	20
Spinach (frozen) – cooked, ½ cup	75	20
Nuts (mixed) – dry roasted, 1 ounce	65	15
Shredded wheat cereal – 2 rectangular Biscuits	55	15
Oatmeal (instant, fortified) – cooked with water, 1 cup	55	15
Potato (with skin) – baked, 1 medium	50	15
Peanuts – dry roasted, 1 ounce	50	15
Peanut butter (smooth) – 2 tablespoons	50	15
Wheat bran (crude) – 2 tablespoons	45	10
Black-eyed peas – cooked, ½ cup	45	10
Yogurt (plain, nonfat) – 8 fluid ounces	45	10
Bran flakes – ½ cup	40	10
Vegetarian baked beans – ½ cup	40	10
Brown rice (long-grained) – cooked, ½ cup	40	10
Lentils (mature seeds) – cooked, ½ cup	35	8
Avocado (California) – ½ cup pureed	35	8
Kidney beans (canned) – ½ cup	35	8
Pinto beans – cooked, ½ cup	35	8
Wheat germ (crude) – 2 tablespoons	35	8

Phosphorus in certain foods

	Serving size	Phosphorus (mg)
Mac and cheese (from mix)	1 cup	400
Liver and organ meats	3.5 ounces	400
Yogurt (plain, nonfat)	8 ounces	385
Pancakes (from mix)	3 4-inch pancakes	368
Yogurt (regular, no added probiotics)	1 cup	326
Mac and cheese (from scratch)	1 cup	322
Pudding (made with low fat milk)	½ cup	313
Dried beans and peas	1 cup, after boiling	266
Salmon	3 ounces, cooked*	252
Halibut	3 ounces, cooked*	242
Milk (nonfat)	8 ounces	247
Pizza (cheese and pepperoni)	1 slice	234
Ice cream (low fat)	1 cup	200
Peanut butter	3 tablespoons	180
Lentils**	½ cup, cooked	178
Beef and turkey	3 ounces, cooked*	173
Cheese (low fat)	1 ounce	171
Cream soup (made with low fat milk)	1 cup	160
Chicken	3 ounces, cooked*	155
Biscuit (from mix)	1	140
Almonds**	1 ounce (23 nuts)	134
Mozzarella cheese (part skim)	1 ounce	131
Peanuts**	1 ounce	107
Egg	1 large, cooked	104
Bread (whole wheat)	1 slice	57
Bread (enriched white)	1 slice	25

* A 3-ounce serving is about the size of a deck of cards.

** Your body is only able to absorb 50% (half) of the phosphorus from nuts, seeds and grains.

Glossary

Acute

Short and severe

Analgesic

Pain medicine

Anemia

A low number of red blood cells

Anesthetic

Medication that reduces pain

Acute Tubular Necrosis (ATN)

When the new kidney doesn't work temporarily due to its storage time before transplant

Antibody

A part of the immune system that fights infection or foreign organisms or tissue

Antigen

A harmful substance that enters your body and starts an immune response to make antibodies

Arteriosclerosis

A hardening of the arteries that blocks blood flow to the kidneys

Bacteria

Germs that can cause disease or infection

Bilirubin

A fluid made by the breakdown of red blood cells in the liver. High levels can lead to jaundice.

Biopsy

Procedure to see if your body is rejecting your kidney, where we numb your skin and take a very small piece of your kidney using a needle.

Bladder

The organ that receives and stores urine from the kidneys until it is urinated out of the body

Blood Urea Nitrogen

A waste product that your kidneys remove from your blood

Catheter

A small rubber tube (commonly inserted into the bladder to drain urine)

CellCept (mycophenolate)

An immunosuppressive drug used to limit or reverse rejection

Cholesterol

A kind of fat that your body needs, but too much can cause heart disease

Chronic

Something that lasts over a long period of time

Chronic Renal Insufficiency

Permanent damage to both kidneys, treated by dialysis or transplant

Coagulopathy

Abnormal blood clotting

Creatinine

A waste product made by your muscles as part of normal activity. Normal kidneys filter out creatinine. The higher the creatinine level in your blood, the lower your kidney function.

Crossmatch

A test to see how compatible a donor's blood is with that of someone who could receive it

CT Scan

A 3-dimensional x-ray of internal organs

Cyclosporine

A powerful immunosuppressive drug

Cyst

A sac-like structure that contains fluid and matter

Cytomegalovirus (CMV)

A common viral infection that can be harmful to transplant recipients if they get it after transplant

Diabetes

A disease that makes your blood sugar higher than it should be, causing health problems

Diabetic Nephropathy

Kidney failure as a result of diabetes

Dialysis

A procedure where toxins are cleaned out of your blood

Diastolic Blood Pressure

The bottom number of a blood pressure measurement. It is the pressure on the arteries between heartbeats.

Echocardiogram

A test that uses beams of ultrasonic waves to measure the motion and position of the heart and nearby tissue

Edema

Swelling of a certain area of the body (such as the hands or legs) due to too much fluid

Electrocardiogram

A test where we place electrodes on your chest to measure the heart rhythm and look for injury to heart tissue

Electrolyte

A dissolved mineral (such as magnesium or potassium) that helps the body function

Endoscope

A small telescope-like instrument that we use to look into your body to see the esophagus, stomach and small intestine

Endotracheal Tube

A tube we insert through the mouth and into the windpipe to help you breathe during surgery

End Stage Renal Disease

When your kidneys no longer work well enough to keep you alive (working at less than 10%)

Enzyme

A bodily protein that can break down other substances

Gastrointestinal (GI)

The tract between the mouth and the rectum, including the intestines and stomach

Glomerular Filtration Rate (GFR)

A test to measure the level of kidney function

Glucose

Sugar found in the blood or urine

Graft

A transplanted tissue or organ, such as a kidney or pancreas

Helper T-cell

The white blood cell that tells the immune system to fight infection or foreign substances, such as transplanted tissue

Hematocrit

A blood test that counts the number of red-blood cells in your blood

Hepatitis

Liver inflammation, usually caused by a virus

Herpes

A family of viruses that can cause lip, genital sores, or other symptoms

Human Leukocyte Antigens (HLA)

Genetic markers you get from your parents

Human Leukocyte Antigen (HLA) Compatibility

A test done on the donor and the potential recipient to see how the recipient's cells would attack the graft

Hypertension

High blood pressure

Hypotension

Low blood pressure

Immune System

Your cells, tissues and organs that work together to fight foreign organisms or tissues in your body

Immunosuppression

Making it hard for your body to fight a foreign object like a transplant or disease. You can do this by taking certain drugs to help prevent or control a transplant rejection.

Insulin

A hormone made by your pancreas that controls blood sugar levels

Intravenous (IV)

Putting fluids or drugs directly into your vein with a needle or catheter

Jaundice

When your skin and eyes look yellow because your liver doesn't work as well as normal

Kidney

Organ that filters the waste and extra fluid from your blood that becomes urine.

Kidney Failure – Acute

When your kidneys suddenly stop working well, but it can be reversed

Kidney Failure – Chronic

When your kidneys slowly stop working over time, but it can't be reversed

Leukocyte

A white blood cell that helps fight infection

Nephrectomy

A surgery to remove one or both kidneys

Nephrologist

A physician who specializes in diagnosing and treating kidney disease

Noncompliance

When you fail to follow a treatment plan — like taking medications, getting tests on time, taking vital signs, etc. This often shortens the lifetime of the transplanted organ(s).

Orally

By mouth

Panel Reactive Antibody (PRA)

A blood test to find how likely your body is to reject an organ transplant from the general public. A score of 0/42 or 0% sensitized is best, a score of 42/42 or 100% sensitized is worst. You will tend to get a worse score if you've been pregnant, had blood transfusions or had previous transplants.

Phlebotomy

Removal of around 1 pint of blood through a vein

Platelet

A small blood cell you need for clotting

Pneumocystis Carinii Pneumonia (PCP)

A type of pneumonia that people with suppressed immune systems tend to get

Polycystic Kidney Disease (PKD)

A genetic disease that causes cysts to grow in place of normal kidney tissue

Potassium

A mineral your body needs but too much can harm your heart. High levels often happen when your kidneys don't work well.

Red Blood Cells

The part of the blood that carries oxygen to body tissues

Rejection

When the immune system attacks what it thinks is a foreign substance (such as a transplanted kidney)

Renal

Related to the kidneys

Renal scan

Procedure where we inject a small and safe amount of radioactive dye into your vein to see a picture of the kidney and if there are any changes in blood flow

Sepsis

A severe infection that has spread to the blood stream

Shingles

A herpes virus infection that causes a red, painful skin rash

Signs

Things you can measure to see how well your body is working — such as heart rate, blood pressure, breathing rate and temperature

Simultaneous Pancreas-Kidney (SPK)

Transplanting both a pancreas and a kidney at the same time

Sleepy Kidney

An expression for the temporary delay in kidney function after a transplant (also known as ATN)

Sodium

The main salt that is found in blood

Stenosis

Narrowing of a passage in the body (also known as “stricture”)

Systolic Blood Pressure

The top number of a blood pressure measurement. It is the pressure on the arteries when the heart beats.

Symptoms

Things you feel, such as pain, dizziness or fatigue

T Cells

White blood cells that play a major part in rejection

Thrombosis

A blood clot

Thrush

A fungal infection in the mouth

Tissue Typing

A blood test to compare a person’s major antigens with a donor’s to see if they are a good match

Toxins

Waste products in the blood that are bad for the body when there is too much

Ultrasound

Procedure that uses sound waves to see the size of an organ and if there is fluid around it or urinary blockage

Ureter

One of 2 tubes in your body that carries urine from the kidney to the bladder

Urethra

The tube in your body that carries urine out of the bladder

Urinary Tract

The body system that makes, carries, stores and gets rid of urine. It is made up of the kidneys, ureters, bladder and urethra.

United Network for Organ Sharing (UNOS)

Organization that manages the national transplant waiting list to make sure it is fair, and collects data on transplant recipients and organ donors

Virus

A small germ that causes infection

White Blood Cells

The part of the blood that fights infection

Web resources

<p>American Cancer Society “stay healthy”* www.cancer.org/Healthy/FindCancerEarly</p>	<p>Needy Meds* www.needymeds.com Links to drug assistance programs.</p>
<p>American Society of Transplantation*** www.myast.org Mainly geared toward medical professionals. Contains some patient educational brochures.</p>	<p>The Nephron Information Center** www.nephron.com Links to sites about transplant as well as a search engine to find articles in Medline.</p>
<p>Dialysis & Transplantation**** www.eneph.com Scientific articles and a list of dialysis centers worldwide that accept traveling patients.</p>	<p>Organ Donor Program* www.donatelifenw.org Information on organ and tissue donation.</p>
<p>Hypertension, Dialysis and Clinical Nephrology**** www.hdcn.com/hdcnold.htm Free and subscription articles on diabetes and renal diseases.</p>	<p>OHSU Transplant Medicine* www.ohsu.edu/transplant Information about the OHSU transplant program, news clips and videos.</p>
<p>Insulin Free World Foundation** www.insulinfree.org Information on technologies and research for finding a cure for diabetes. Includes extensive information on pancreas transplant.</p>	<p>Polycystic Kidney Disease Foundation* www.pkdcure.org Information for patients with PKD and their families and supporters.</p>
<p>National Association of Boards of Pharmacy* www.safe.pharmacy Find legitimate online pharmacies.</p>	<p>TransWeb* www.transweb.org Links to transplant-related sites and information for living donors.</p>
<p>National Institute of Diabetes and Digestive and Kidney Diseases*** www.niddk.nih.gov Health information for transplant patients and notices of government-funded clinical trials.</p>	<p>United Network for Organ Sharing (UNOS)* www.unos.org Information for the transplant recipient and living donor.</p>
<p>National Kidney Foundation** www.kidney.org Information about kidney disease and kidney donation.</p>	<p>U.S. Renal Data System**** www.usrds.org Downloadable data and analysis about renal disease. Includes national rates, patient traits, transplant statistics and economic cost.</p>

*not technical → ****very technical

Forms

Lab results

Lab name: _____

Medical record number: _____

Lab phone: 503-494-7383 MyChart help desk: 503-494-5252

Date							
Glucose							
BUN							
Creatinine *warning if increase of 0.2 or more							
Potassium							
Calcium							
Phosphorus							
Weekly magnesium							
Amylase							
Lipase							
WBC *warning if less than 3.0							
Hematocrit							
Drug Level							
Target Range							

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Vital signs

Date							
Weight							
Temperature							
Blood pressure (morning)							
Blood pressure (evening)							
Heart rate							

Date							
Weight							
Temperature							
Blood pressure (morning)							
Blood pressure (evening)							
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