



OREGON
HEALTH & SCIENCE
UNIVERSITY

A Handbook for Patients & Their Families

This manual belongs to _____

Address _____

Telephone number _____

Date of kidney transplant _____

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GENERAL INFORMATION

Contact Information

My Post-Transplant Coordinator

local: (503) 494-_____

toll-free: 800-452-1369 extension _____

Transplant Office local:

Monday-Friday 8:00 am to 4:00 pm

(503) 494-8500

toll-free: 800-452-1369 extension 8500

fax: (503) 494-4492

Urgent Issues DURING Office Hours

Monday-Friday 8:00 am to 4:00 pm

(503) 494-8500

Ask to speak with a post-transplant coordinator

Urgent Issues AFTER Office Hours

Nights, Weekends, Holidays

local: (503) 494-8311

toll-free: 888-222-6478

Tell the operator you are a kidney transplant patient and that you need to talk to the kidney transplant nurse on call. Please remember, the nurse is on call for EMERGENCIES ONLY.

OHSU Pharmacy

(503) 346-3370

OHSU Laboratory

(503) 494-7383

OHSU MyChart

(503) 494-5252

Diabetes Follow-up After Transplant

During Office Hours

For help with blood sugars/insulin management, call the Harold Schnitzer Diabetes Center at (503) 494-3273. You may need to leave a message, but your call will be returned.

After Hours, Weekends and Holidays

For **urgent** assistance with blood sugars (high or low blood sugars that cannot wait until the next business day), call the OHSU operator at (503) 494-8311, or toll-free at 800-452-1369 and ask them to page the transplant nurse coordinator on-call.

Mailing Address

Oregon Health & Science University
Clinical Transplant Services
Kidney/Pancreas Transplant Program
Mail Code: CB569 • 3181 SW Sam Jackson Park Road
Portland, Oregon 97239-2966



What to Do When You Go Home

We do not expect you to grasp all the important points of your health care immediately. Read this book through more than once, note any questions, and discuss them with the Transplant Team. *Always* feel free to have points clarified that you do not understand. Do not be afraid to ask questions.

Make your health care important to you! The transplant team is here to help you return to an active life in family, work and play.

Your care really begins once you are discharged from the hospital. All the things you have learned during your hospital stay will play an important part in your care at home. It will be your responsibility to perform the following measures, and this will assist the transplant team in evaluating your health care and kidney function as an outpatient. The Self Reporting Records section of this handbook is provided to track the results of your temperature, weight and blood pressure.

- 1. Take and record your weight:** Weigh yourself every morning after emptying your bladder at approximately the same time, wearing the same amount of clothes, on the same scale, after voiding and record it. Use your scale as a guide to help control weight gain. **If you gain more than four pounds over one day, call the transplant nurse.**
- 2. Take and record your temperature:** Take your temperature at least once a day and record it. If you feel like you have a fever or the chills, take your temperature and record it more often. If your temperature is 100° Fahrenheit or greater call the transplant nurse. **If you have a fever of over 100° Fahrenheit after 3 months from your transplant, call your local doctor.**
- 3. Take and record your blood pressure:** Take your blood pressure in the morning and early evening, and record it every time. Know what your blood pressure should be before you leave the hospital. *Do not* take your blood pressure on the arm with a dialysis fistula or graft. Remember, blood pressure that is too high or too low can damage your kidney.
- 4. Take your medications:** The #1 reason why kidney transplants fail is because patients do not follow their medication routine. It is very important to take all your medications as prescribed.

5. **Go to the lab:** The Self Reporting Records section of this handbook is provided to track the results of your blood tests. As your kidney function stabilizes, the frequency of blood tests will decrease.

Routine Lab Schedule*

Discharge to Month 1.....	Monday, Thursday at OHSU lab
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
Thereafter	Every 6 months

*All labs will be done at OHSU the first month post-transplant

6. **Go to clinic:** You will be coming to OHSU Kidney transplant clinic once a week for the first 4 weeks after your transplant surgery. Once you are stable, the frequency of your clinic visits will decrease. When you are 3 months out from your transplant and stable, you will reestablish care with your primary Nephrologist.
7. **Surveillance Biopsies:** Surveillance biopsies are routinely done at 3 and 12 months.

Transplant Emergencies

Call 911 if you experience

- Chest pain
- Loss of consciousness/pass out
- Hemorrhaging

When to Call the Transplant Nurse

Your first 3 months after transplant

Call if you experience

- Temperature over 100° F
- Weight gain of four pounds in one day
- Unable to void
- Increased creatinine 0.2 or more
- Breathing problems – shortness of breath, problems catching your breath, pain when you breath in, problems breathing when you lay flat in bed
- Incision area - increased pain, redness, tenderness, swelling, and/or drainage
- Ongoing diarrhea
- Urinary infection symptoms - pain, burning, or tenderness when you void; having to urinate more frequently; cloudy or foul-smelling urine
- Nausea and vomiting - if you can't keep your pills down
- Pain that does not go away after taking your pain medication
- Bleeding that will not stop
- Heartburn
- Tenderness or pain in the area surrounding your transplanted kidney
- Anything that you are concerned about and think you need to see a doctor about, or things that can't wait until the office is open

The transplant office is open 8:00 am to 4:00 pm, Monday through Friday. Please call the office during these hours if a problem develops after you are discharged from the hospital. Please note the transplant office is closed on weekends and major holidays.

For **EMERGENCIES* ONLY** on weekends, holidays or after office hours, call the kidney transplant nurse coordinator on-call (503-494-8311/1-800-452-1369). If you need to be seen by a doctor, a clinic appointment may be scheduled. If you need to see a doctor immediately, you may be sent to an emergency room.

Remember: Once you have been referred back to your primary Nephrologist, you will direct your questions and/or concerns to them.



Medical Alert

You will be given an application for a Medical Alert bracelet or necklace. We recommend that you get one. It should state that you have had a kidney transplant. It should also list any allergies or other medical problems that you have (for example: diabetes, a heart problem, etc.)

LABS AND VITALS

Getting your blood tests done is one of your most important responsibilities. The test results help us diagnose rejection and side effects of the drugs.

- Your blood should be drawn in the morning so results are available the same day.
- You will be required to get your labs done at OHSU for the first month after transplant.
- Once you are released to do so, you will be given a letter to take to the lab of your choice that tells the lab what tests to run:
 - This letter also gives the lab permission to release the results to you and requests that they fax or telephone us with the results.
- You need to keep track of your blood test results:
 - There are pages in this section of the Transplant Manual for that purpose;
 - Get to know what the numbers mean and what is normal for you.

If you are taking Tacrolimus or Cyclosporine

- On the days that you have your drug level blood test you must take your medication 12 hours before blood draw with a ½ hour window before and after the 12 hours:
 - This means you must have your drug level drawn between 11 ½ and 12 ½ hours after you take the dose.
 - **Do not take your dose until after the blood is drawn.**

If you are taking Rapamune

- On the days that you have your drug level blood test you must take your medication 20-24 hours before the blood draw.
 - Do not take your dose until after the blood is drawn.

**If your blood is not being drawn within the time frames designated above,
DO NOT GET A TACROLIMUS/RAPAMUNE/CYCLOSPORINE LEVEL DRAWN and notify your
coordinator.**

If you use the OHSU lab

The lab at OHSU is located on the third floor of the Physicians' Pavilion. You may get the results of your blood tests by calling the lab **at 503-494-7383 after 2:00 pm** on the day of your lab work.

You also may sign up on OHSU **MyChart** to get access to your labs online.

<https://mychartweb.ohsu.edu/mychart> or call 503-494-5252.

The lab has variable hours on holidays and weekends, so verify the hours with the lab staff.

If you use a non-OHSU lab

Call your lab in the afternoon and write the results in your book. Remember, it is essential that both you and the transplant team follow your lab work closely.

Routine lab schedule

Discharge-1 Month.....	Monday, Thursday at OHSU Lab
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
Thereafter	Every 6 months

*All labs will be done at OHSU the first month post-transplant.



Normal Blood Test Values

Every lab has slightly different normal ranges, and the normal values given below are those used by OHSU and are intended to be used only as guidelines. Your own lab results will vary and every kidney transplant patient will have their own normal.

We will help you interpret your results and define what your baseline is. Often labs will run additional tests along with the tests below.

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 proper functioning of muscles, including 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 proper functioning of muscles, nerves, heart, blood clotting and maintenance of 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 percentage of red blood cells in your blood. The red cells carry oxygen and carbon dioxide throughout the body.</i>	36.1 – 46.1
Platelet (Plt) <i>Special blood cells that are important in helping your blood clot.</i>	190 – 400
Pancreas Transplant <i>Enzymes produced by the pancreas</i>	
Amylase	25 – 115
Lipase	152 – 353



LAB NAME _____ MEDICAL RECORD # _____

LAB PHONE (503) 494-7383 _____

MyChart PHONE (503) 494-5252 _____

Lab Results Record

DATE							
Glucose							
BUN							
Creatinine (worry if increase of 0.2 or more)							
Potassium							
Calcium							
Phosphorus							
Weekly Magnesium							
Amylase							
Lipase							
WBC (worry if less than 3.0)							
Hematocrit							
Drug Level							
Target Range							



LAB NAME _____ MEDICAL RECORD # _____

LAB PHONE (503) 494-7383 _____

MyChart PHONE (503) 494-5252 _____

Lab Results Record

DATE							
Glucose							
BUN							
Creatinine (worry if increase of 0.2 or more)							
Potassium							
Calcium							
Phosphorus							
Weekly Magnesium							
Amylase							
Lipase							
WBC (worry if less than 3.0)							
Hematocrit							
Drug Level							
Target Range							



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Phosphorus							
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Amylase							
Lipase							
WBC (worry if less than 3.0)							
Hematocrit							
Drug Level							
Target Range							



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Hematocrit							
Drug Level							
Target Range							



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Phosphorus							
Weekly Magnesium							
Amylase							
Lipase							
WBC (worry if less than 3.0)							
Hematocrit							
Drug Level							
Target Range							



Vital Signs Record

DATE							
Weight*							
Temp*							
BP AM							
BP PM							
Heart Rate							



DATE							
Weight*							
Temp*							
BP AM							
BP PM							
Heart Rate							

* Call if you experience: Temperature of 100° F or more
 Weight gain of 4 pounds in one day



Vital Signs Record

DATE							
Weight*							
Temp*							
BP AM							
BP PM							
Heart Rate							



DATE							
Weight*							
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Vital Signs Record

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Vital Signs Record

DATE							
Weight*							
Temp*							
BP AM							
BP PM							
Heart Rate							
DATE							
Weight*							
Temp*							
BP AM							
BP PM							
Heart Rate							

* Call if you experience: Temperature of 100° F or more
 Weight gain of 4 pounds in one day



MEDICATION INFORMATION

After you have received your new kidney, you will be required to take a combination of medications each day for the life of your new kidney:

- These medications are essential to prevent kidney rejection.
- You can never stop taking or miss these medications; if you do you risk rejecting your new kidney.
- It may also be necessary to take other medications.
- Before you go home, the Pharmacist will give you a medication list and dosing schedule.
- You will learn what the medications look like, what amounts to take, what they are for, and what side effects they may cause.

The doses of your medications will change frequently:

- After you are home, medication changes may be called to you over the phone.
- Write down any changes you are requested to make on your medication list.
- *Always* take your medication according to your medication list.
- When you are given new medication lists, be sure to destroy any old lists.

It is extremely important that you take your medications at the correct time each day.

- It is easy to forget whether you took your pills or not:
 - You may want to set your schedule around meals and bedtime.
 - You may find it helpful to use the medication pages in your transplant manual, or to set up a check system of your own.

The Transplant Office will manage your immunosuppression medications until you are referred back to your primary nephrologist. If your primary care physician wants to make any changes to your immunosuppressant medications, please have him or her contact the Transplant Office.

- At some point after your transplant we may have your primary Nephrologist manage all your medical care including your immunosuppression.
- At 3 months your primary nephrologist will manage all medications except your immunosuppression.

Explanations of specific medications you may be taking are on the following pages. It is important that you become familiar with common side effects that may occur from the medications you are taking.

It is also important for you to know that not all side effects or problems related to each medication are included. Only those that commonly occur in the transplant patient are listed. Please remember that you will not necessarily develop all of the side effects mentioned.

Feel free to call the Transplant Office to discuss any problems you feel you may be having with any of the medications you are taking.

Remember: Never change your dose of immunosuppressants without discussing it with the Transplant Team.

Prescription Do's and Don'ts

DO'S

- ✓ Call your regular pharmacy for medication refills
- ✓ Keep the name and phone number of your local pharmacy handy
- ✓ Call the Transplant Office during office hours if you have a problem with your immunosuppression prescriptions
- ✓ Keep the Transplant Office up-to-date on your allergies
- ✓ Give your local pharmacist our telephone number for refills
- ✓ Ask for refills when you are seen in the Transplant Clinic

DON'Ts

- ✗ Go to the transplant floor for refills
- ✗ Run out of medication before getting refills
- ✗ Wait until the weekend or after 4:00 pm to call for refills

Warnings

- There can be many possible drug interactions between your post-transplant medications and herbs/over-the-counter dietary supplements. **Do not take herbs or dietary supplements without first consulting with your transplant physician.** Transplant patients should never take medications or herbs intended to “boost” their immune system.
- All kidney transplant patients are told to not take ibuprofen, Motrin, Aleve, naproxen or any other NSAID (Non-steroidal Anti-inflammatory Drugs)
- Avoid 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 the transplant team.

See reference section for details.

Over the Counter Medications

Symptoms	Recommendation
Fever	Call your nurse coordinator or on call RN if your temperature is over 100 F.
Headaches & body aches	Acetaminophen (Tylenol®) Take no more than 3,000mg in 24 hours.
Sneezing, itching or runny nose	Loratadine (Claritin®), Cetirizine (Zyrtec®), Fexofenadine (Allegra)
Nasal & sinus congestion	Nasal sprays: Sodium chloride (Ocean®), (SinuCleanse®)
Chest congestion	Guaifenesin (Robitussin®), Coricidin® HBP Chest Congestion & Cough
Productive cough	Guaifenesin (Robitussin®)
Dry cough	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 RN right away for more than 3 loose stools in one day.
Insomnia	Diphenhydramine (Benadryl®), Doxylamine (Unisom®), Melatonin
Stomach upset	Calcium carbonate (TUMS®)
Heartburn	Ranitidine (Zantac®), Famotidine (Pepcid AC®), Nizatidine (Axid®), Omeprazole (Prilosec OTC®), Esomeprazole (Nexium)
Gas	Simethicone (Gas-X®)
Dry eyes and eye irritation	Artificial Tears for dry irritated eyes Ketotifen Zadiator® may be taken for allergic conjunctivitis
Nausea & vomiting	Call your nurse coordinator or on call RN right away.
Joint pain, muscle aches	Capsaicin cream (Capzasin-P®), Lidocaine (Aspercreme, Icy Hot), Camphor & Menthol (Bengay)
Skin irritation, insect bites, poison ivy	Hydrocortisone (Cortisone-10®)

DIET AFTER TRANSPLANT

Your diet will change after your transplant. If your new kidney is slow to start functioning you may need to remain on your dialysis diet of low sodium, low potassium, low phosphorus, and limited fluid. However, as kidney function improves, you will be able to enjoy much more variety.

Other changes with improved kidney function include:

- 1. With normal kidney and pancreas function, you will need to drink 10 glasses (80 oz) of fluid preferably water daily. Alcoholic and caffeinated beverages do not count to your daily fluid requirement.**
- 2. You can increase the variety of foods in your diet by enjoying foods from all major food groups.**

In the first 3 months, you continue to need the same amount of **protein** that you needed during dialysis. After your incision has healed, your protein needs go down to about 2/3 of what you needed on dialysis. The best sources of **protein** are:

- Meats, fish, poultry
- Dairy products
- Eggs
- Nuts
- Dried beans, lentils, and peas
- Soybeans, soy milk, tofu

You will need to increase the **phosphorus** foods in your diet. The best sources of phosphorus are:

- Dairy products
- Nuts and nut butters
- Dried beans, lentils, and peas
- Seeds

You will need to increase the **magnesium** foods in your diet. The best sources of Magnesium are:

- Wheat bran/ wheat germ
- Almonds/ peanuts/ cashews
- Spinach
- Raisin bran cereal

You will be able to have normal amounts of potassium foods. The best sources of **potassium** are:

- Dark green leafy vegetables
- Tomatoes
- Oranges
- Milk
- Bananas
- Dried beans, lentils, and peas
- Potatoes
- Nuts and nut butters

It is also important to take in adequate **calcium** to protect your bones. The best food sources of calcium are:

- Dairy products (milk, yogurt, cheeses, puddings, ice cream)
- Dark green vegetables

3. You should continue to limit your intake of sodium. One of your medications, prednisone, can cause fluid retention. Limiting salt intake can help control bloating. Remember the words 'NO ADDED SALT' and let them guide you when you are at the stove and at the table. The following foods are high in sodium and should be limited or avoided as much as possible:

- Salt
- Cured meats (bacon, ham)
- Luncheon meats
- Canned or dried soups
- Ethnic foods: Chinese, Japanese, Mexican, Italian
- Sauces: Worcestershire, chili, soy, teriyaki
- Prepackaged casseroles
- Macaroni & cheese

4. Heart healthy eating is very important for anyone living with an organ transplant. We will give you some information about the Mediterranean Diet; this is just one approach to enjoyable low fat, low cholesterol meals.

5. A common problem with transplant patients is weight gain. It is not uncommon for someone to gain up to 10-15% of their weight. There are several reasons for this:

- You can eat your favorite foods again
- You have a much improved appetite
- You feel better, so eating is once again a pleasure

Achieving and maintaining a desirable weight is a major goal of your post-transplant nutrition care plan. *Obesity affects your self-image, contributes to high blood pressure and diabetes, and may lead to heart attacks and strokes.*

Weight management is achievable through exercise and diet. Exercise should be a planned program that is done on a regular basis, 4-5 times per week. Walking is an excellent way to exercise, is inexpensive and easy to do (unless you have a physical condition preventing you from walking).

6. Finally, because of your medications, you have a lower than normal immune system. It is very important to avoid food-borne illnesses. *Safe food handling* is a must!

- Wash hands frequently in warm soapy water for at least 20 seconds at a time; always wash after using the bathroom and before handling your food
- Wash ALL fruits and vegetables under running water
- Separate raw produce from uncooked meats; use separate cutting boards if possible; clean cutting utensils between use on fresh produce and animal products
- Sanitize sinks and chopping boards with 1/2 teaspoon bleach in 2 cups water
- Use a fast check thermometer to check the temperature of meats; hamburger should be 160° F; Chicken 180° F
- Do not share utensils or food
- Do **not** eat the following foods **raw**:
 - Eggs
 - Avoid raw eggs in any form, including home-made eggnog, ice cream, cookie dough or cake batter; if you **MUST** have raw cookie dough, buy liquid pasteurized eggs in the grocery store.
 - Milk
 - Avoid unpasteurized milk and other unpasteurized dairy products.
 - Seafood
 - Such as some sushi and raw oysters
 - Sprouts
 - Such as alfalfa and clover sprouts
- You may purchase whole eggs at the grocery store but they must be cooked before you consume them
- Hot dogs, hamburger and sausage must be well cooked (160° F)

Phosphorus in Foods

Dairy products, meat, and fish are particularly rich sources of phosphorus. Phosphorus is also part of many food additives and is present in most soft drinks as phosphoric acid. Dietary phosphorus derived from food additives is not calculated in most food tables, so the total amount of phosphorus consumed by the average person in the U.S. is not entirely clear. See reference section for a detailed list of foods and their phosphorous content.

Magnesium in Foods

Green vegetables such as spinach are good sources of magnesium because the center of the chlorophyll molecule (which gives green vegetables their color) contains magnesium. Some legumes (beans and peas), nuts and seeds, and whole, unrefined grains are also good sources of magnesium. Refined grains are generally low in magnesium.

Eating a wide variety of legumes, nuts, whole grains, and vegetables will help you meet your daily dietary need for magnesium. See reference section for a detailed list of foods and their magnesium content.

HEALTH CARE INFORMATION

Activity Restrictions

Activity restrictions following transplant are few. We want you to resume your past level of activity and lead an active life. General restrictions include:

- Lifting
 - Do not lift anything greater than 10 lbs. until 6 weeks after transplant.
 - Do not lift anything greater than 20 lbs. from 6 to 12 weeks after transplant.
 - After 3 months post-transplant there aren't any lifting restrictions.
- Do not jog or run on hard surfaces, such as cement or asphalt, for 3 months after transplant.
- Avoid activities that cause you to "bounce", such as horseback riding, snowmobiling, and trail or cross country motorcycling, for 3 months after transplant.
- No tub baths and swimming until your incision has healed (approximately 6-7 weeks).

You may notice your muscles, especially leg and abdominal muscles, becoming weak. This is due partially to not using them, and to the side effects of prednisone.

Excellent ways to improve the strength of leg muscles include:

- Walking
- Stationary bike riding or bike riding

After 3 months, sit-ups and other abdominal exercises will improve the tone of your abdominal muscles.

Returning to Work

Depending on the kind of work you do, we encourage you to return to work as soon as possible after transplant. Most people are able to resume their previous employment at 4 to 6 weeks after transplant, unless they do manual labor. Patients may be eligible for up to 12 weeks of job protected leave via OFLA or FMLA, please check with your employer regarding this. We encourage you to return to work as quickly as you are able. Our social worker can provide resources to assist you with vocational rehabilitation counseling if necessary.

Play

Use common sense as your guide to any activity after transplant. As you gain strength and endurance, your amount of physical activity will also increase. If you have any questions, please call the Transplant Office.

Sexual Activity

Your new kidney is well protected; sexual activity will not harm your transplanted kidney. As with any major surgery, wait six weeks before engaging in sexual intercourse, to allow the incision and muscles to heal. It is even more important to take precautions against sexually transmitted diseases after a transplant. Always practice safe sex.

Men Fertility

Most men are able to father children after transplant and regain sexual desire and function often lost during kidney failure and dialysis. The status of kidney function and certain medications, such as those used to treat high blood pressure, will sometimes affect sexual function after transplant. If you notice a change in your sexual ability, do not hesitate to ask for advice about what might be done to improve the situation. Men should discuss family planning with their nephrologist. It is recommended that men do not father children while on certain immunosuppressive medications.

Women Fertility

The decision to have a child is a personal one, but we hope you will feel free to talk with us. We want you to make an intelligent choice based on all available information.

Most women are fertile after transplant. Menses (periods) resume anywhere from one to several months after transplant. You may be ovulating even though you do not have a regular period. Many women have become pregnant and delivered healthy children after a kidney transplant. Women on Cellcept or Myfortic, who are pregnant or considering pregnancy, must consult the transplant physician; **Cellcept increases the risk of birth defects.**

Regarding pregnancy:

- We recommend waiting at least 1 year after transplant before becoming pregnant.
- You should use a reliable form of birth control immediately after your transplant.
- You should not have other medical conditions that might add to the risk of the pregnancy.
- You will need more frequent lab testing.
- Your immunosuppression drugs will need to be adjusted.

Although the odds are with you for a successful pregnancy, there are some special risks to mother and child:

- About 30 percent of mothers will develop high blood pressure with protein in their urine, and in approximately 10 percent of cases this can be accompanied by a decrease in kidney function.
- There is a 30 percent risk of premature birth and prenatal care is essential for successful outcome.
- The risk of major congenital malformations of the baby is approximately 5% if the mother has had a kidney transplant, and about a 4% chance of an abnormal baby if the father has had a transplant.

Plan to have a routine gynecological exam every year, close to your birthday. It must include a Pap smear and a breast examination.

Long Term Health Maintenance

Our goal is for our patients to not only have a functioning kidney, but to also have a long, healthy life.

To prevent heart attacks and strokes, the following is recommended:

- Exercise daily
- Eat a low fat, balanced diet with plenty of fruits and vegetables
- Prevent weight gain
- Control blood pressure
- Monitor blood sugars; diabetics need assistance to maintain blood sugar control
- Monitor cholesterol
- Do not smoke or use tobacco products
- Have annual doctor visits to prevent complications

Post-Transplant Diabetes

Post-transplant diabetes has long been recognized as a risk for transplant patients. Treatment of post-transplant diabetes starts with dietary guidelines and exercise, however, many patients with adult onset diabetes may need insulin after transplantation.

Travel

Before you plan a trip to a foreign country, contact a travel clinic; they are experts regarding appropriate vaccinations required for international travel and risks of infection. Please consult your transplant team with any questions. Remember, after transplant **you should never receive live virus vaccines.**

Bone Disease

All transplant patients suffer from some bone disease. It is recommended that you have a bone density study done at least every other year. Talk to your Primary Care physician about preventative strategies, including diet and exercise.

Routine Cancer Surveillance

Always contact the Transplant office with any diagnosis of cancer. Due to the immunosuppression you are receiving, the following tests are recommended:

Women

- All women need to have an annual pelvic exam and pap smear.
- Females over the age of 40 should have an annual mammogram.
- Females over the age of 30 who have a mother or other female relative diagnosed with breast cancer before menopause should have an annual mammogram.

Men

- You should have your first prostate-specific antigen test (PSA) at the age of 45 if you have a father or brother who has been diagnosed with prostate cancer or if you are an African American.
- If you are over the age of 50 you should have an annual PSA test.

Everyone beginning at the age of 50

- Colon-rectal cancer screening, including a rectal exam, every 2 years.
- Fecal occult blood test performed annually
- Colonoscopy done every 5 years

Sun Exposure

You are at significant risk to develop skin cancer due to the medicine you are taking to help prevent rejection. The most common type of skin cancer seen in transplant recipients is called squamous cell carcinoma. This occurs 65-times more often when compared with the general population! Solid organ transplant recipients usually develop their first skin cancer about 3-8 years after their transplant depending on the age at transplantation. If you are light-skinned, had significant sun-exposure throughout your lifetime, older, or have already had skin cancer you are at a higher risk for developing skin cancer after your transplant. While not common, squamous cell carcinoma may metastasize (spread) to your lymph nodes in roughly 5-10% of cases.

Protecting your skin from the sun is the best way to prevent skin cancer and to decrease your risk.

Avoid the sun during the hours of 11AM to 3PM when the harmful rays of the sun are the most intense. Wear sunscreen with both UVA/UVB protection of SPF 30 or higher every day. Apply sunscreen liberally to any exposed skin and reapply sunscreen every 2 hours. Please remember to protect your lips and ears from the sun. Wear a wide brimmed hat and protective clothing such as long sleeves, pants, and sunglasses. You should be followed by a dermatologist for skin exams after your transplantation.

See your doctor immediately if you see any change in appearance of moles or if a new lesion arises on your skin which does not heal.

Prevention of Infectious Disease

Hand washing is the single most important way to prevent infection!

Wearing Masks and Gloves

Transplant patients should wear a mask for the first 3 months after transplant in the hospital, around active construction and farming areas, and in crowded places. Transplant patients should not garden during the first 3 months after transplant, and must wear a mask and gloves from 3 months to 1 year post transplant. After 1 year post transplant patients should always wear gloves when gardening.

Get Vaccinated

Transplant patients should not receive live vaccines (see below). A flu shot is recommended annually once you are 3 months from your transplant. If you are injured and have not had a tetanus booster within the last 5 years, please contact your primary care physician.

Vaccines you **MUST NOT** receive *

Smallpox
Measles
Mumps
Rubella
Oral Polio
Chicken Pox

You must not receive the vaccines above because they contain **live organisms. There is a chance you could contract the actual disease since your immune system is suppressed.*

Vaccines you can receive **

Injectible Polio
Flu shot (Influenza A & B)
every year
Pneumovax (booster every 5
years)
TB Skin Test
Diphtheria/Tetanus (booster
every 10 years)
Shingrix (a specific Shingles
vaccine)

***These vaccines are made from **dead** organisms so they are safe*

Dental Care

Seeing your dentist after transplant is very important. You must have a dental checkup every 6 months. Since your immune system is suppressed, infections could become serious problems. Be sure to follow the guidelines below:

- After a transplant, delay any routine dental care for 3 months.
- Inform your dentist that you have had a kidney transplant and that you are on immunosuppressive medications.
- If your dentist has any questions regarding your dental care, please have them call the Transplant Office.

Drugs and Alcohol

Smoking

The following are strongly discouraged:

- Chewing tobacco can lead to neck and mouth cancers.
- Smoking increases your surgical risk, your risk of cancers, and causes atherosclerosis (fatty deposits in blood vessels).
- Smoking increases your risk of heart attack and stroke.
- The use of marijuana can cause lung and brain fungal infections.

If you need help quitting smoking or chewing tobacco, please contact the transplant nurse.

Alcohol

Under normal circumstances, occasional use of alcohol will not place you or your kidney at risk. However, excessive use of alcohol should be avoided. Substantial alcohol use causes dehydration, which is hard on a new kidney.

We recommend not drinking more than 2 oz of hard liquor, 8 oz of wine, or 24 oz of beer per day. For every glass of alcohol, drink an extra glass of water.

Pets At Home

Most pets can remain in the household, the following are our recommendations:

- Dogs and cats vaccinations should be kept up to date and treated regularly for flea and tick prevention.
- Transplant patients cannot clean out a cat's litter box.
- Transplant patients cannot clean out a bird cage or chicken coop.
- Transplant patients should not handle any reptiles, which may carry salmonella. They are not recommended as pets.
- Always remember, good hand washing is important after working with or cleaning up after your pets.



COMPLICATIONS

Rejection

Rejection is your body recognizing the transplanted organ as foreign and attacking it. This can happen at any time. Rejection does not mean loss of your organ. Often rejections can be successfully treated with oral medications; however, some patients may require more intensive treatment. We watch for rejection by looking at your labs and also with biopsies of the transplanted organ.

Recurrent Disease

Some kidney diseases that cause organ failure can recur in your transplanted kidney. If you have a disease that can recur, you would have been counseled about this during the transplant work up. We watch for this by looking at labs and doing a kidney biopsy if needed.

Infection and Viruses

The anti-rejection medications you take put you at increased risk for developing infections. There are several types of infections that may happen, from minor to serious. So, the sooner we know about an infection, the sooner we can treat it. You should get medical advice for symptoms of infection such as: fever, chills, new onset diarrhea, new or unexplained pain, cough, tiredness for unknown reason, concerns of not feeling well, and for problems with urination such as: frequent urination, painful urination, cloudy urine.

We also monitor and treat patients when indicated for viral infections, such as Cytomegalovirus (CMV), Epstein Barr virus (EBV) and BK virus.

CMV

Cytomegalovirus (CMV) is a member of the herpesvirus family; it is a very common viral infection. CMV infection is usually asymptomatic in non-transplant patients. Transplant patients are treated prophylactically with antiviral medications to help prevent CMV infection. Symptoms of CMV infection can be: fever, extreme fatigue, diarrhea, abdominal pain, cough, and low white blood cell count. CMV is diagnosed by a lab test called a CMV PCR. Once a diagnosis is made your Transplant Team will determine what treatment is to be prescribed.

Diabetes

The anti-rejection medications you take put you at increased risk of developing diabetes after transplant. And for patients who had diabetes before transplant, you may need to take more diabetic medications. We may need to have you to see a Diabetic Specialist.

Cancer

The anti-rejection medications you take increase your risks of developing 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).

We recommend that all patients be seen by a Dermatologist once a year. It is very important that you learn more about your risk of cancer and report any new symptoms or concerns to your physician immediately.

REFERENCES

Diagnostic Tests

What is a renal scan?

A renal scan is a procedure done in the Nuclear Medicine department. A small, safe amount of radioactive tracer is injected into a vein; the tiny amount of energy given off by the material forms a picture of the kidney that helps the doctors to determine if there are any changes in blood flow to the new kidney.

What is an ultrasound?

An ultrasound is a procedure done using sound waves to determine the size of an organ, the presence of fluid around it, or urinary blockage. The procedure is often used following a kidney transplant.

What is a biopsy?

A biopsy is a procedure used for diagnosing rejection. The doctor will numb your skin with a local anesthetic and take a very small piece of your kidney using a needle. After the biopsy, a sandbag will be placed over the biopsy site for four hours to prevent bleeding.

If you are on any blood thinning agents such as, Aspirin, Plavix, Persantine, or Coumadin, you need to call your coordinator to discuss a plan prior to being scheduled for a biopsy.

Kidney Transplant Biopsy Instructions for Patients

Purpose of the biopsy:

A kidney transplant biopsy takes a very small piece of tissue from the transplant kidney. This piece of tissue is examined under a microscope to look for rejection or renal disease. It is a minimally invasive procedure. Ultrasound is used to guide a biopsy needle into the transplant kidney.

How to prepare:

- You will be notified about the date and time of the biopsy appointment.
- You will have blood and urine lab work collected the day of the biopsy
- You cannot eat or drink for at least 2 hours before procedure.
- You will need a DESIGNATED DRIVER. You and your driver should allow 5 to 8 hours for the total procedure from arrival to discharge from the hospital.

What should I do with my medications?

- Take your morning blood pressure medication. It is unsafe to do a biopsy if your blood pressure is too high.
 - **If your BP is too high the day of the procedure you will be sent home and the biopsy will be rescheduled.**
- Bring along any other medication.
 - Different blood thinners or anticoagulants will have to be held before your biopsy. Holding these medications for hours or days depends on the specific medication.

How long should I hold my blood thinners (anticoagulants)?

Blood thinners or anticoagulants increase your risk of bleeding after a kidney biopsy. They prevent a clot from forming at the site of the biopsy.

Do not take the following blood thinners before the biopsy to reduce the risk of bleeding. Each medication includes how long you need to hold this medicine before the biopsy.

- Coumadin (warfarin): Hold for 5 days (under medical supervision)
- Aspirin and Plavix (clopidogrel): Hold for 7 days
- Eliquis (apixiban) and Xarelto (rivaroxaban): Hold for 48 hours
- Lovenox (enoxaparin): Hold for 36 hours

Where to go:

Please go to the outpatient labs on the 3rd floor of the Physician's Pavilion for lab draw. Then check in at Admitting on the 9th floor of the main hospital.

What to expect:

You will be taken to the Procedural Care Unit (PCU). They will have you change into a gown in a private area.

An ultrasound technologist and the Transplant Provider will be involved in the biopsy. The procedure will be explained to you in detail by the Transplant Provider. You will be given a consent form to sign. The biopsy will be done using ultrasound guidance. This means that the path of the needle tip is seen real time with ultrasound during the procedure. The sample obtained will be taken to pathology for further evaluation.

A transplant kidney biopsy takes 30 minutes to 60 minutes to perform.

After the biopsy you will remain under observation for 4 hours in the recovery area in the PCU.

The PCU nursing team will monitor for signs of bleeding or any other complication during this period. You will NOT be allowed to drive home after discharge. So please have a designated driver available.

After the biopsy:

You should avoid any strenuous physical activity for up to 48 hours after the procedure. If you have palpitations, light-headedness or worsening pain, it may mean delayed bleeding at the biopsy site and you should go to your local ED.

You will receive the biopsy results within one week

Foods with Magnesium and Phosphorus

Selected food sources of magnesium

FOOD	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
Cereal, shredded wheat, 2 rectangular biscuits	55	15
Oatmeal, instant, fortified, prepared w/ water, 1 cup	55	15
Potato, baked w/ skin, 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
Blackeyed Peas, cooked, ½ cup	45	10
Yogurt, plain, skim milk, 8 fluid ounces	45	10
Bran Flakes, ½ cup	40	10
Vegetarian Baked Beans, ½ cup	40	10
Rice, brown, 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

Selected food sources of phosphorus

Food	Serving	Phosphorus (mg)
Mac and Cheese	1 cup (from mix/from scratch)	400 / 322
Liver and organ meats	3.5 ounces	400
Yogurt, plain nonfat	8 ounces	385
Pancakes, made from mix	3 4-inch pancakes	368
Yogurt (no added probiotics)	1 cup	326
Pudding, made with low fat milk	½ cup	313
Dried beans and peas	1 cup, after boiling	266
Fish, salmon	3 ounces, cooked	252
Fish, halibut	3 ounces, cooked*	242
Milk, skim	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, made from mix	1	140
Almonds#	1 ounce (23 nuts)	134
Cheese, mozzarella; 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.

Phosphorus from nuts, seeds, and grains is about 50% less bioavailable than from other sources.



Medications You May Be Taking

<p style="text-align: center;">ACYCLOVIR (ZOVIRAX®)</p>	<p style="text-align: center;">AZATHIOPRINE (IMURAN®)</p>
<p><i>What is it for?</i> Acyclovir is used to prevent or treat Herpes Simplex Virus (HSV or ‘cold sores’).</p> <p><i>When do I take it?</i> Acyclovir is started around the time of transplant and continued for two weeks after the transplant. It is given 2-5 times daily depending on where you are in the course of your treatment.</p> <p><i>How is it given?</i> This medication is given orally or intravenously.</p> <p><i>What side effects might I experience?</i> Possible side effects may include headache, nausea, and vomiting.</p> <p><i>What else do I need to know?</i> While taking this medication drink plenty of fluids. This medication can be taken with or without food.</p>	<p><i>What is it for?</i> Azathioprine is an immunosuppressive drug that may be used before and after kidney transplant.</p> <p><i>When do I take it?</i> Azathioprine is given once daily and most patients will continue for life.</p> <p><i>How is it given?</i> This medication is given orally or intravenously, depending on the condition being treated.</p> <p><i>What side effects might I experience?</i> Possible side effects may include low white blood cell count and hair thinning.</p> <p><i>What else do I need to know?</i> It is important that you tell your doctor if you are taking Allopurinol (a medicine sometimes used to treat gout).</p>

<p align="center">BACTRIM® , SEPTRA® (SULFAMETHOXAZOLE/ TRIMETHOPRIM)</p>	<p align="center">CYCLOSPORINE (SANDIMMUNE®, NEORAL®, GENGRAF®, EON®, APOTEX®)</p>
<p><i>What is it for?</i> Bactrim® is an antibiotic that is used to prevent or treat <i>Pneumocystis carinii</i> Pneumonitis (PCP) and bladder infections.</p> <p><i>When do I take it?</i> Bactrim® is given once a day after kidney transplant for 3 months.</p> <p><i>How is it given?</i> This medication is given orally or intravenously.</p> <p><i>What side effects might I experience?</i> Possible side effects may include a photosensitivity reaction (a sunburn-like reaction when exposed to sunlight), rash, and diarrhea.</p> <p><i>What else do I need to know?</i> Bactrim® should be taken with a full glass of water. Drink plenty of fluids while taking Bactrim®.</p>	<p><i>What is it for?</i> Cyclosporine is an immunosuppressive agent used to prevent kidney rejection.</p> <p><i>When do I take it?</i> Cyclosporine is typically started 2-5 days after transplant. In most cases it is continued for a lifetime. It is given once or twice a day.</p> <p><i>How is it given?</i> This medication is usually initially given intravenously. After several days, patients are usually switched to an oral formulary.</p> <p><i>What side effects might I experience?</i> Possible side effects may include kidney problems, high blood pressure, leg cramps, gum tenderness/inflammation, and tremors.</p> <p><i>What else do I need to know?</i> Avoid grapefruit, mandarins, pomegranates, and their juices; they will make the level of medication in your blood rise too high. Cyclosporine levels are measured using blood tests. Do not take your cyclosporine in the morning until after the blood test has been drawn on days they are due. There are two formulations of cyclosporine: Sandimmune and Apotex are one formulation. They are not to be substituted for Neoral, Sidmak, Gengraf, Eon or Plevia.</p>

<p style="text-align: center;">CALCIUM</p>	<p style="text-align: center;">LYMPHOCYTE IMMUNE GLOBULIN (THYMOGLOBULIN®)</p>
<p>What is it for? Calcium is a supplement.</p> <p>When do I take it? Calcium is generally taken once per day, usually with food.</p> <p>How is it given? This medication is given orally.</p> <p>What side effects might I experience? Possible side effects may include nausea, vomiting, diarrhea, up-set stomach, increased thirst or a chalky taste after taking the medication.</p> <p>What else do I need to know? If you are taking digoxin or an iron supplement you should discuss these with your physician.</p>	<p>What is it for? Thymoglobulin® is an antilymphocyte serum used to cause immune suppression or stop an immune response, such as acute rejection.</p> <p>When do I take it? Thymoglobulin® is used during kidney transplantation to suppress the immune system or after transplant if rejection occurs that doesn't respond to prednisone treatment.</p> <p>How is it given? This medication is given intravenously for 1 to 14 days.</p> <p>What side effects might I experience? Possible side effects may include fever, chills, rash, low white blood cell count, joint and muscle aches, low platelets, headache, shortness of breath, skin rashes, and low blood pressure.</p> <p>What else do I need to know? Before each Thymoglobulin® dose you will be given Benadryl®, Tylenol®, and possibly other medications to help prevent side effects. The nurse will monitor you closely for side effects but you should let the nurse know if you have any trouble breathing, throat tightness, itching, or any unusual side effects.</p>

<p style="text-align: center;">MAGNESIUM</p>	<p style="text-align: center;">MYCOPHENOLATE, MYCOPHENOLIC (CELLCEPT®, MYFORTIC®)</p>
<p><i>What is it for?</i> Magnesium is used as a supplement to replace natural magnesium stores which have been lost.</p> <p><i>When do I take it?</i> The Transplant Team will monitor your magnesium levels and will determine if you need supplementation. The amount of supplementation you require will determine how often you receive it.</p> <p><i>How is it given?</i> This medication, given as a supplement, is given orally or intravenously.</p> <p><i>What side effects might I experience?</i> Possible side effects when given orally may include diarrhea; possible side effects when given intravenously may include flushing.</p> <p><i>What else do I need to know?</i> It is important that you tell your doctor if you are taking any over the counter vitamin supplements. Report excessive diarrhea to your doctor.</p>	<p><i>What is it for?</i> Mycophenolate is an immunosuppressive drug that may be used before and after kidney transplant. Mycophenolate may also be used to prevent further rejection after a first rejection occurs.</p> <p><i>When do I take it?</i> Mycophenolate is given twice daily and most patients will continue throughout the lifetime.</p> <p><i>How is it given?</i> This medication is given orally or intravenously, depending on the condition being treated.</p> <p><i>What side effects might I experience?</i> Possible side effects may include nausea, vomiting, loss of appetite, diarrhea, and stomach cramps.</p> <p><i>What else do I need to know?</i> It is important that you tell your doctor if you are taking any over-the-counter iron tablet supplements. Report excessive diarrhea to your doctor. This medication should be taken with food.</p>

<p style="text-align: center;">OXYCODONE (ROXICODONE®)</p>	<p style="text-align: center;">PENTAMIDINE</p>
<p><i>What is it for?</i> Oxycodone is an opioid analgesic used to treat or prevent moderate to severe pain.</p> <p><i>When do I take it?</i> Oxycodone is given every 3 to 6 hours as needed and as directed by your doctor.</p> <p><i>How is it given?</i> This medication is given orally.</p> <p><i>What side effects might I experience?</i> Possible side effects may include drowsiness, dizziness, light-headedness, nausea, vomiting, headache, and constipation.</p> <p><i>What else do I need to know?</i> Avoid alcohol, antihistamines, or other drugs that may intensify the drowsiness caused by oxycodone. It can be taken with or without food. Avoid driving or operating heavy machinery while taking oxycodone.</p>	<p><i>What is it for?</i> Pentamidine is used to prevent Pneumocystis carinii Pneumonia (also called PCP).</p> <p><i>When do I take it?</i> Pentamidine is given once a month for four months.</p> <p><i>How is it given?</i> This medication is inhaled into the lungs using a machine called a nebulizer.</p> <p><i>What side effects might I experience?</i> Possible side effects may include nausea, vomiting, dizziness, headache, cough, rash, abdominal pain, diarrhea, and shortness of breath.</p> <p><i>What else do I need to know?</i> If you are unable to tolerate this medication another one may be ordered.</p>

<p style="text-align: center;">POTASSIUM</p>	<p style="text-align: center;">PREDNISONE (DELTASONE®)</p>
<p><i>What is it for?</i> Potassium is a supplement.</p> <p><i>When do I take it?</i> Potassium may be taken up to three times per day until you are able to absorb enough potassium through your diet.</p> <p><i>How is it given?</i> This medication is given orally, usually with meals.</p> <p><i>What side effects might I experience?</i> Possible side effects may include nausea, vomiting, abdominal pain and diarrhea.</p> <p><i>What else do I need to know?</i> Take this medication with food. Do not take this medication and Tums® at the same time.</p>	<p><i>What is it for?</i> Prednisone is used to prevent and treat acute kidney rejection.</p> <p><i>When do I take it?</i> Prednisone is given once daily for lifetime or as determined by your doctor.</p> <p><i>How is it given?</i> This medication is given orally, in the morning.</p> <p><i>What side effects might I experience?</i> Possible side effects may include difficulty sleeping, mood changes, nervousness, increased appetite, and indigestion.</p> <p><i>What else do I need to know?</i> Take this medication with food to prevent nausea. Do not abruptly stop taking prednisone unless you are told to do so by your doctor. Do not take antacids at the same time as prednisone.</p>

**SIROLIMUS
(RAPAMUNE®)**

What is it for?

Sirolimus is used to prevent or treat acute kidney rejection.

When do I take it?

Sirolimus is given once daily for lifetime or as determined by your doctor. Take Sirolimus at the same time each day and consistently with or without food.

How is it given?

This medication is only given orally.

What side effects might I experience?

Possible side effects may include low white blood cell and platelet counts, and high cholesterol.

What else do I need to know?

If you take the oral solution, mix it with milk, chocolate milk or orange juice to make it taste better. Stir it well and drink it all at once. Mix it in a glass container only (no plastic), and rinse the container to make sure you get the full dose. Do not stop taking sirolimus unless you are told to do so by your doctor. Sirolimus levels are measured using blood tests. Do not take your sirolimus in the morning until after the blood tests have been drawn on days they are due. Your cholesterol should be monitored while on this medication.

**TACROLIMUS
(PROGRAF®, FK506)**

What is it for?

Tacrolimus is used to prevent or treat acute kidney rejection.

When do I take it?

Tacrolimus is given twice daily, 12 hours apart, in the morning and at night. Take tacrolimus at the same times each day and consistently with or without food.

How is it given?

This medication is given orally or intravenously, depending on the condition being treated.

What side effects might I experience?

Possible side effects may include headache, tremors, muscle cramps, diarrhea, nausea, high blood pressure, and kidney problems.

What else do I need to know?

Take with food to prevent nausea. Do not stop taking tacrolimus unless you are told to do so by your doctor. Tacrolimus levels are measured using blood tests. Do not take your tacrolimus in the morning until after the blood tests have been drawn on days they are due. Avoid grapefruit, mandarins, pomegranates, and their juices; they will make the level of medication in your blood rise too high.

VALGANCICLOVIR (VALCYTE®)

What is it for?

Valganciclovir is used to prevent and treat cytomegalovirus (CMV).

When do I take it?

Valganciclovir is given 1-2 times daily.

How is it given?

This medication is given by orally or intravenously.

What side effects might I experience?

Possible side effects may include headache, nausea, low white blood cell and platelet counts.

What else do I need to know?

Always take valganciclovir with food; drink plenty of fluids.

Definitions

Acute

Short, relatively severe

Analgesic

Pain medicine

Anemia

A low number of red blood cells

Anesthetic

Medication that dulls sensation in order to reduce pain

Acute Tubular Necrosis (ATN)

Temporary non-functioning of the kidney transplant due to the kidney's storage time prior to transplantation

Antibody

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

Antigen

The "marker" that starts antibody production

Arteriosclerosis

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

Bacteria

Germs that can cause disease or infection

Bilirubin

A chemical that is excreted by the liver in the bile

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 excreted by the kidney

Catheter

A soft rubber tube that is inserted into the bladder to drain urine

CellCept

An immunosuppressive drug used to limit or reverse rejection

Cholesterol

A kind of fat that is necessary for bodily function, but that in excess can cause heart disease

Chronic

Persisting over a long period of time

Chronic Renal Insufficiency

Permanent damage to both kidneys, treated by dialysis or transplantation

Coagulopathy

Abnormal blood clotting

Creatinine

An indicator of kidney function, produced by muscle metabolism; the higher the creatinine level, the lower the kidney function

Crossmatch

A test that determines the compatibility of the donor's blood with that of a potential recipient

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 contracted after transplant

Diabetes

A disease characterized by high levels of blood sugar

Diabetic Nephropathy

Kidney failure as a result of diabetes

Dialysis

A process by which blood is cleaned to restore chemical balance

Diastolic Blood Pressure

The bottom number when the blood pressure is measured; this is the pressure on the arteries between heart beats

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 specific area of the body, such as the hands or legs, due to retention of excess fluids

Electrocardiogram

A test that uses electrodes placed on the chest to measure the heart rhythm and look for injury to heart tissue

Electrolyte

A dissolved mineral, such as magnesium or potassium

Endoscope

A small telescope-like instrument that is used to examine the esophagus, stomach and small intestine

Endotracheal Tube

A tube inserted through the mouth and into the windpipe to aid a person in breathing during surgery

End Stage Renal Disease

When chronic renal failure progresses to the point at which the kidneys are permanently functioning at less than 10% of their capacity

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 that determines 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

The measure of the number of red-blood cells in the 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, inherited from one's parents

Human Leukocyte Antigen (HLA) Compatibility

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

Hypertension

High blood pressure

Hypotension

Low blood pressure

Immune System

Complex fighting mechanism of the body that responds to foreign organisms or tissues that enter or are placed in the body

Immunosuppression

Decrease of the body's immune response, accomplished through the use of certain drugs, in order to help prevent or control a rejection following a transplant

Insulin

A hormone produced by the pancreas that regulates blood sugar levels

Intravenous (IV)

Refers to fluids or medications administered to patients directly into a vein via a needle or catheter

Jaundice

Yellowish discoloration of the skin and eyes indicating an excess of bilirubin in the blood

Kidney

Organs located on both sides of the spine at waist level that rid the body of waste materials via the production of urine

Kidney Failure - Acute

Rapidly diminished kidney function that can be reversed

Kidney Failure - Chronic

Diminished kidney function over time that is irreversible

Leukocyte

A white blood cell that helps fight infection

Nephrectomy

The removal via surgery of one or both kidneys

Nephrologist

A physician who specializes in diagnosing and treating kidney disease

Noncompliance

Failure to follow health care instructions regarding taking medications and treatments, getting tests on time, and taking vital signs; noncompliance often shortens the lifetime of the transplanted organ(s)

Orally

By mouth

Panel Reactive Antibody (PRA)

A laboratory process in which a patient's blood is mixed with a panel of human blood in order to determine the overall level of sensitization of the patient to foreign blood and tissue; a score of 0/42 or 0% sensitized is best, a score of 42/42 or 100% sensitized is worst; causes of sensitization can include pregnancies, blood transfusions and previous transplants

Phlebotomy

Removal of approximately one pint of blood through a vein

Platelet

A small blood cell necessary for clotting

Pneumocystis Carinii Pneumonia (PCP)

A type of pneumonia that is mostly contracted by individuals with suppressed immune systems

Polycystic Kidney Disease (PKD)

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

Potassium

A mineral; high potassium levels can irritate the heart and is a problem often associated with poor kidney function

Red Blood Cells

The part of the blood that transports oxygen to body tissues

Rejection

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

Renal

Anything regarding the kidneys

Sepsis

A severe infection that has spread to the blood stream

Shingles

A herpes virus infection that usually affects a nerve, causing localized pain

Signs

Things you or someone else can see that are determined by measurement, such as in increase in temperature or blood pressure

Simultaneous Pancreas-Kidney (SPK)

When both a pancreas and a kidney are transplanted into a recipient

Sleepy Kidney

An expression for the temporary delay in kidney function that sometimes follows transplantation (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 when the blood pressure is measured. This is the pressure when the heart muscle contracts

Symptoms

Things you feel, such as pain, dizziness or fatigue

T Cells

White blood cells that play a major part in rejection

Thrombosis

The development of a blood clot

Thrush

A fungal infection found in the mouth

Tissue Typing

Identifying a person’s major antigens used to evaluate the match between a donated organ and a potential recipient via a blood test

Toxins

Waste products in the blood that are poisonous to the body in high concentrations

Ureter

One of a pair of tubes that carries urine from the kidney to the bladder for elimination

Urethra

The tube from the bladder which carries urine out of the body

Urinary Tract

The body system that produces, transports, stores and eliminates urine; the urinary tract includes the kidneys, ureters, bladder and urethra

United Network for Organ Sharing (UNOS)

The national body that sets policies for organ allocation in order to ensure fairness; UNOS also maintains statistics on different transplant programs and collects scientific data on transplant recipients and donors

Virus

A small germ that causes infection

White Blood Cells

The part of the blood that fights infection

Web Resources

American Cancer Society “stay healthy”*

<http://www.cancer.org/Healthy/FindCancerEarly>

American Society of Transplantation***

<https://www.myast.org/>

Mainly geared toward medical professionals. Contains some patient educational brochures

Dialysis & Transplantation****

<http://www.eneph.com>

Contains mostly scientific articles. Has a list of dialysis centers worldwide that accept traveling patients

Hypertension, Dialysis and Clinical Nephrology****

<http://www.hdcn.com/hdcnold.htm>

Contains both free and subscription articles on diabetes and renal diseases

Insulin Free World Foundation**

<http://www.insulinfree.org>

Information on technologies and research geared toward finding a cure for diabetes. Includes extensive information on pancreas transplant

International Pancreas Transplant Registry***

<https://publichealth.arizona.edu/research-project/international-pancreas-transplant-registry>

Information and data on pancreas transplants worldwide

National Association of Boards of Pharmacy*

<https://nabp.pharmacy/>

Information on legitimate online pharmacies

National Institute of Diabetes and Digestive and Kidney Diseases***

<http://www.niddk.nih.gov>

Health information for the transplant patient and notices of government-funded clinical trials

National Kidney Foundation**

<http://www.kidney.org>

Information about kidney disease and kidney donation

National Transplant Assistance Fund**

<https://helpholive.org/>

The financial side of organ transplantation, including advice to patients about raising funds for their transplants

Needy Meds*

<http://www.needymeds.com>

Links to drug assistance programs

The Nephron Information Center**

<http://www.nephron.com/>

Many links to sites about transplantation as well as a search engine to find articles in Medline

Organ Donor Program*

<https://www.donatelifenw.org/>

Provides information on organ and tissue donation

OHSU Transplant Medicine Web Site*

<http://www.ohsu.edu/transplant/>

Information about the OHSU transplantation program, news clips, and videos on transplantation

Polycystic Kidney Disease Foundation*

<http://www.pkdcure.org/>

A variety of information for individuals with PKD and their families/supporters

TransWeb*

<http://www.transweb.org>

Links to transplant-related sites and information for living donors

United Network for Organ Sharing (UNOS)*

<http://www.unos.org>

Information designed for the transplant recipient and living donor

U.S. Renal Data System****

<http://www.usrds.org>

Downloadable data and analysis regarding renal disease, including national prevalence, patient characteristics, transplantation statistics, and economic cost

* not technical → **** very technical

