Guide to Your Kidney/Pancreas Transplant

To help you learn more about having a kidney/pancreas transplant at UWMC
Guide to Your Kidney/Pancreas Transplant

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Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881

This patient education guide was developed and written by University of Washington Medical Center (UWMC) health care providers and staff. Patients and their families reviewed this guide.

Please share your comments or suggestions about this guide with your health care providers.

UWMC is committed to working with patients and their families to help them make the best choices about their health.

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Welcome
A guide to your kidney/pancreas transplant

You, the transplant recipient, are a vital member of the transplant team. Our team depends on you to be an active partner during the entire transplant process. We want you to learn all you can about the evaluation process, the transplant surgery, and how to take care of your new organ after transplant.

This is why Guide to Your Kidney/Pancreas Transplant was created. It is filled with useful information to guide you through every step of the transplant process, from getting referred for transplant to your long-term care after a transplant. We hope this guide answers questions you have about your treatment and your progress along the way. Keep your guide handy, and bring it with you to all appointments and when you are called in for your transplant.

Thank you again for choosing University of Washington Medical Center. We look forward to working with you for a successful transplant.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
Benefits and Risks
About your kidney/pancreas transplant

Deciding whether or not to have a kidney or kidney/pancreas transplant may be one of the biggest decisions you will ever make. A transplant can improve your life greatly, but it also carries serious risks.

This chapter describes the benefits and risks of a transplant.

Improved Quality of Life
Most people who receive a kidney transplant have a better overall quality of life when compared to staying on dialysis. Most say they are more satisfied with life and feel better emotionally and physically. And, most are more likely to be able to return to work. Transplant patients usually are freer to travel since they are not tied down by going to dialysis visits. Also, we now know that people who have kidney transplants to treat their kidney disease can live longer than people who stay on dialysis.

Many problems that occur from long-term dialysis improve after getting a transplant. Some of these are:

- **Anemia (low blood count) improves.** The production of blood cells by the bone marrow needs the hormone erythropoietin, which is produced in the kidneys. The healthy new kidney will be able to produce this hormone that the diseased kidneys no longer can. The result is an improved blood count.

- **Thickening of the heart muscle (left ventricular hypertrophy) gets better.** This thickening can lead to permanent damage and heart failure. Much of this problem is related to fluid overload in the body that occurs when the kidneys fail. This overload decreases after a transplant, and the risk of these heart problems lessens.

- **The risk of developing blockages of blood vessels (cardiovascular disease) decreases.** Blocked blood vessels can lead to heart attack or stroke. The chance of this problem getting worse in patients who already have cardiovascular disease lessens.

- **Nerve damage (neuropathy) caused by kidney failure decreases.** Neuropathy can cause “restless legs,” pain, decreased sensation in the legs or arms, and sleeping and memory problems. These problems can become less severe after a kidney transplant.

- **Limiting fluids and the foods you are able to eat usually is not required after transplantation.** For example, your intake of phosphorous or potassium may not be restricted any longer.
Benefits of a Pancreas Transplant

Patients with type 1 diabetes may qualify for a pancreas transplant as well as a kidney transplant, if needed. A successful pancreas transplant can allow the patient to control blood sugar without needing to use insulin. Patients no longer have problems with very low blood sugars (hypoglycemia), or diabetic ketoacidosis (DKA) or coma from very high sugars (hyperglycemia), both of which can be life-threatening. Normal blood sugars can also prevent long-term complications of diabetes.

For diabetic patients with good kidney function, getting only a pancreas transplant can prevent kidney disease from developing. If there is minor kidney disease due to diabetes, this can get better.

For those patients who already have kidney failure due to diabetes, getting a pancreas transplant and a kidney transplant can prevent the new kidney from being damaged due to diabetes.

Diabetic patients may have other complications such as retinopathy (damage to the retina of the eye) or neuropathy (damage to the nerves of sensation or motor function). Retinopathy can cause bleeding in the eye, which can lead to blindness. Neuropathy may cause severe pain, numbness, tingling in the hands and feet, or problems with motor strength. Decreased sensation, especially in the feet, can lead to injury, sores on the feet, and increased risk of infection.

Retinopathy and neuropathy can get better after a pancreas transplant, but it may take 3 to 5 years after the transplant to really see an improvement. And, the chance that problems related to retinopathy or neuropathy will get better after a transplant depends on how much damage these conditions caused before transplant. For example, if a patient with diabetes has severe retinopathy and has had several laser surgeries to treat it, the scarring that is left from the laser surgeries cannot be reversed. This scarring decreases vision, and so the patient’s vision would not be expected to improve after transplant.

What are the success rates of transplants?

Success rates of transplants are usually reported in 2 ways: patient survival and graft survival.

**Patient Survival**

Patient survival is the percentage of patients who are alive after transplant. It is usually measured at 1 and 5 years. Overall, the patient survival at 1 year after transplant is 97% (97 out of 100). At 5 years, patient survival is 95% (95 out of 100).
In general, patients who receive a transplant can live longer than if they stay on dialysis. This is especially true for patients with diabetes and kidney failure. This may be because the transplant lowers the risk that cardiovascular disease will get worse, but staying on dialysis keeps this risk higher. In the first few months after a transplant, there is an increased risk of having problems that could cause death. These problems may be caused by complications from surgery, infections, or heart attack or stroke. Over time, the risk of these life-threatening problems decreases.

**Graft Survival**

Graft survival means that the transplanted organ is still functioning. Kidney graft survival after 1 year for a deceased donor kidney is about 90% (90 out of 100 will still be functioning). For a kidney from a living donor, the 1-year graft survival rate is about 94% (94 out of 100 will still be functioning).

Another way to think about graft survival is the “half-life” of the organ. The half-life is the number of years that has gone by in which half a group of patients still have kidneys that are functioning, and the other half do not have functioning kidneys. Think of it as an average amount of time the kidney may function. The half-life of a deceased donor kidney transplant is about 7 to 12 years. The half-life for a living donor transplant can be 15 to 20 years, or more.

Survival for kidney transplants for UWMC’s transplant center is 91.33% for deceased donor transplants (about 91 out of 100) and 90.57% for living donor transplants (about 91 out of 100).

**What affects patient survival after transplantation?**

Patients with kidney failure who receive a kidney transplant can live longer than if they stay on dialysis. But, transplant patients still have a higher risk of death than the general population.

The most common causes of death after transplantation are:

- Cardiovascular (heart) disease
- Stroke
- Infections
- Cancers

We will work with you after your transplant to lower your risk of these types of complications.
Heart Disease and Stroke

Many patients have severe cardiovascular disease at the time of their transplant. This may affect the success of their transplant and may increase their chance of dying after transplant.

Kidney disease and high blood pressure are risk factors for cardiovascular disease. These problems are a major cause of patient death after a kidney transplant. If you smoke or have diabetes, the risk of developing these problems can be higher.

We will talk with you about ways you can decrease your risk of developing heart problems or stroke. This may include good blood pressure control, taking medicine to lower cholesterol, and taking aspirin to decrease your risk of having a heart attack or stroke. Because smoking cigarettes can increase the risk of these problems, as well as the risk of some cancers, we require that you not smoke in order to get placed on the transplant list. We also require that you continue not to smoke after receiving your transplant.

Infections

The medicines all transplant patients must take to prevent rejection of the new organ weaken their immune system. This can increase the chance of getting infections. Most of these infections are minor and can be easily controlled, such as a urinary tract infection. Rarely, infections can be much more severe, difficult to control, or even life-threatening.

We closely monitor all patients to try to detect signs of infection early. We also do screening tests before and after transplant for certain types of infections to assess possible infection risk or early signs of these infections.

Cancer

Transplant patients can be at higher risk of some types of cancers, especially skin cancer. Protecting your skin from the sun by using sunscreen and protective clothing can help decrease your risk of skin cancer.

Patients who have had skin cancer in the past have to be especially careful. We recommend regular evaluation by a dermatologist (skin doctor) for these patients.

Lymphoma is a type of cancer of the white blood cells. The risk of lymphoma is higher in transplant patients, but it is still rare. The average rate of lymphoma in transplant patients is about 1% (1 out of 100).
We advise all transplant patients to follow recommendations for health screening tests, such as colonoscopy. Women may have a higher risk of cancer of the cervix after transplant, so it is important to continue to have routine PAP tests. Men should be screened for prostate cancer.

**Surgical Complications**

About 5% of kidney transplant patients (5 out of 100) and about 10% of kidney/pancreas patients (10 out of 100) have major complications from surgery. These complications can include:

- Blood clots
- Bleeding
- Lymphocoele (buildup of lymph fluid)
- Urine leak
- Renal artery stenosis (narrowing of the renal artery)

**Blood Clots**

There is a risk of developing blood clots in the legs after any type of surgery, including transplant surgery. Clots in the legs could travel to the lungs and cause breathing problems and require blood-thinning medicine. We follow standard care procedures to lessen the risk of this problem occurring. One of these is that you will wear compression stocking on your legs after surgery until you are able to get up and walk around. These stockings help increase blood flow in your legs, and this helps keep clots from forming.

After transplant surgery, a blood clot could also form in an artery or vein of the transplanted organ. This is rare, but if it occurs surgery may be needed to remove the clot. A blood clot could cause loss of the transplanted organ.

**Bleeding**

Because of the nature of this surgery, and also the increased bleeding risk from kidney failure and medicines such as warfarin (taken by some patients), you may require a blood transfusion. If bleeding is severe, you may need another surgery to find the source of the bleeding and to stop it.

**Lymphocoele**

Lymph vessels are small tubes next to arteries and veins that carry fluids from the tissues of the body back into the large veins and the heart. Since they are very small, injury to these vessels often occurs in the area of the transplant surgery. This can cause lymph fluid to collect in the area around the transplanted organ. This buildup of lymph fluid is called lymphocoele.
Usually this is a minor problem, but sometimes the amount of fluid that builds up in the area is large and causes swelling or puts pressure on the transplanted organ. If the fluid buildup causes such problems, it may need to be drained. Usually it is drained through the skin using a small needle. Rarely, another surgery is needed to drain the fluid. Most of the time, the fluid goes away on its own.

**Urine Leak**

A urine leak can occur if there is a small opening where the ureter of the transplanted kidney connects to your bladder. The ureter is the small tube that drains urine from the kidney to the bladder. A urine leak may be suspected if there is concern about how the transplanted kidney is functioning. Signs of a urine leak can include:

- Unexpected pain in the area of the transplant
- Fluid draining from the incision

A urine leak is first treated by placing a catheter in the bladder to drain it and relieve pressure in the bladder. The catheter may need to stay in place for an extended period of time, since often this is all that is needed to let the area heal on its own. But, sometimes surgery is needed to repair the connection of the ureter to the bladder.

**Renal Artery Stenosis**

Renal artery stenosis is a narrowing of the blood vessel that supplies blood to the kidney transplant. It may be related to the way healing has occurred where the vessels are connected.

This problem is rare. It can be seen 2 to 3 months or longer after the transplant. If it is severe, it may cause a large decrease in blood flow to the kidney. Possible signs of this problem may include:

- High blood pressure that is getting worse
- New leg swelling
- Kidney function that is getting worse

An ultrasound of the kidney and artery may be done to check for this problem. If there is concern, other tests such as an angiogram may be needed to see if there is major narrowing of the artery. An angiogram is an imaging test that uses X-rays and a contrast agent (also called “dye”) to study blood flow in arteries and veins.

Renal artery stenosis can often be treated by dilating the artery with a balloon at the time of an angiogram. Rarely, surgery may be needed to correct the problem.
Medical Complications

Delayed Graft Function

Sometimes the kidney transplant does not work right away because of the “shock” from being removed from one person and placed in another. This can happen in 10% to 30% of patients (10 to 30 out of 100) who receive a kidney from a deceased donor. It can happen in up to 2% of patients (2 out of 100) who receive a kidney from a living donor.

Most of the time the kidney will function, but it may take a few days or even a few weeks. There is nothing anyone can do to speed up this process. You will need to continue dialysis until the kidney starts to function well enough on its own. In a small number of patients, the kidney may never work and may need to be removed.

Rejection

Rejection is the body’s natural response to the foreign kidney or pancreas. You need to take anti-rejection (also called immunosuppressive) medicines so that your body’s immune system does not reject the transplanted organ. Rejection causes inflammation in the transplanted organ. If it is not treated, it will cause scarring and permanent damage.

The 6-month period just after transplant is the time of highest risk for rejection. Rejection occurs in about 15% to 20% of kidney transplant patients (15 to 20 out of 100). The risk of rejection for pancreas transplants is a little higher.

Reversing rejection is most successful when it is caught and treated early. The only way to know for sure if there is rejection is to do a needle biopsy of the transplanted organ (see “Biopsy” section on page 2-8).

Early Rejection

Most bouts of early rejection (within 6 months after transplant) can be treated and reversed. Early rejection can happen even when the patient is taking their anti-rejection drugs correctly. Often, early rejection does not cause any symptoms. Your doctor may be concerned about rejection based only on changes in blood tests for kidney function.

Later Rejection

Rejection that occurs more than 6 months after transplant can be more difficult to treat, and success rates are not as high. When rejection happens later on, it is often because the patient has not been taking their anti-rejection drugs properly.
Signs of later rejection of a kidney transplant may include:

- A decrease in urine output
- Fluid retention
- Weight gain
- Pain or swelling in the area of the transplant
- Flu-like symptoms such as fatigue, aches, and fevers

**Biopsy**

A needle biopsy of your transplanted organ may be done if there is concern about rejection. It may also be done to rule out rejection as a cause of abnormal function of the transplanted organ.

A needle biopsy involves inserting a thin needle into the transplanted organ. Small pieces of tissue are removed through the needle. The procedure is done very safely under local anesthesia, and ultrasound is used to guide the needle into the organ. There is a small risk of bleeding from a needle biopsy.

After the needle biopsy, a *pathologist* will look at the tissue samples under the microscope. A pathologist is a doctor who examines tissues and cells to diagnose health conditions.

If you need a biopsy to check for rejection, you will be monitored after the procedure to make sure you did not bleed or have any major complications. Your doctor will talk with you about the procedure and complications in more detail, if needed.

See Chapter 16, “Transplant Renal Biopsy,” for more information about having a biopsy.

**Chronic Allograft Nephropathy**

Chronic allograft nephropathy is when problems cause the kidney function to get worse slowly. It is also known as “chronic rejection.” It is different from “acute rejection,” which usually happens more quickly. This type of damage to the kidney transplant may be due to the immune system. Other issues such as high blood pressure or high cholesterol may also cause slow damage to the kidney. In some cases, the original cause of your kidney disease can also affect the kidney transplant and damage it.

Your doctor will watch for any signs of these problems. Like diagnosing rejection, sorting out the reasons for chronic problems with the kidney transplant often requires doing a needle biopsy. Whatever the cause, we know that good control of blood pressure can help slow down the rate of kidney function decline. Your goal blood pressure is 120 to 130 over 70 to 85.
Infection

Infection has already been mentioned as a possible life-threatening complication after transplantation. The anti-rejection medicines you need to take after transplant to keep your body from rejecting the organ will lower your immune defense system. This will make you more open to getting infections.

Your infection risk is highest in the 6 months just after transplant, when the doses of anti-rejection medicines are highest. You are also at higher risk during treatment for rejection. Over time, your risk of infection declines as your doses of anti-rejection medicines are lowered. But, your infection risk is always higher than if you were not taking these medicines.

Infections may be caused by bacteria, viruses, or fungus, and they may be life-threatening if they are not found and treated early. In the first 6 months after transplant, you will be asked to take certain antibiotics to help prevent some of the more common types of infections we see. This helps prevent many infections that might occur otherwise.

We ask patients to watch for and report any symptoms that may indicate that an infection is developing. Some of these symptoms are:

- Fever
- Cough
- Night sweats
- Sore throat
- Abdominal pain
- Diarrhea
- New headache

Cancer

Cancers are another possible life-threatening complication after organ transplant. Immunosuppressive medicines increase the risk of these cancers:

- Skin cancer: The risk of skin cancer for transplant patients is much higher than in the general population, and the cancer can be more severe and aggressive. *Squamous cell* and *basal cell carcinoma* are the types of skin cancer seen most often. If you had skin cancer before receiving a transplant, your risk is even higher.

  We recommend that you see a dermatologist for close monitoring after your transplant. All transplant patients should avoid long, unprotected sun exposure and should use sunscreen regularly.
• **Lymphomas:** Most lymphomas that occur after transplant are classified as the “non-Hodgkin’s” type. They are also called post-transplant lymphoproliferative disease, or PTLD. Early signs of lymphoma may include unexplained weight loss, fevers, or enlarged lymph nodes. If you have lymphoma, you will need to see an oncologist for treatment. An oncologist is a doctor who specializes in cancer treatment. PTLD is a very rare complication. It occurs in only 1% or fewer kidney transplant patients (1 out of 100).

**Joint and Bone Disease**

Kidney disease can cause bone problems. Transplant medicines are also linked to bone loss.

Today, bone and joint problems are less common in transplant patients. This is because we now use corticosteroid drugs (also called “steroids”) less often for anti-rejection treatment. Most problems related to bone and joints are due to steroids. Bone loss, mostly in the spine and hip bones, can lead to osteoporosis (thin, weak bones) and increase the risk of fractures. Your doctor will talk with you about whether you may be at higher risk for this problem, and what treatment you may need to preserve your bone density.

People with diabetes may have low bone density if they also have peripheral neuropathy (nerve damage in the outer limbs). This is especially true if the nerve damage is in their feet and ankles, which can put them at risk for fractures in these areas. It is not clear whether corticosteroids add any more risk since the bone loss due to steroids usually does not affect feet and ankles as much as other areas.

Steroids can also cause a bone problem called avascular necrosis (AVN). AVN can lead to arthritis, mostly in the hip joint. But, it may also affect other bones such as the kneecap and some bones in the wrist. This problem is not seen as much as it once was due to less use of steroids.

**Gout**

Gout is a painful, red swelling of a joint, usually the big toe. It can occur after transplant as a side effect of some of the transplant medicines. Patients who have had gout before transplant are at highest risk for it after transplant.

**Diabetes**

Some patients who do not have a history of diabetes may develop diabetes after their transplant. This is from the way the anti-rejection drugs affect how the body makes and uses insulin. These drugs make insulin work less effectively.
You may need to start medicine, either pills or insulin shots, to control your blood sugar. Short-term problems of not controlling blood sugar can include a higher risk of infections. Long-term problems can include damage to your kidney, eye problems, and higher risk of heart disease.

We can predict if some patients may have a higher chance of developing diabetes after transplant. These patients are overweight or have a family history of diabetes. Some patients who have type 2 diabetes, “pre-diabetes,” or “borderline” diabetes do not need diabetes treatment when they are on dialysis before transplant. After transplant, these patients will almost certainly need treatment for diabetes.

For overweight patients, even a small weight loss and regular exercise can improve blood sugar control. This can reduce the chance of needing insulin or pills, or at least lower the amount of medicine needed.

**Medicine Side Effects**

(See “Medicines” section for more complete information.)

Each anti-rejection medicine can have certain side effects, as well as the general complications listed above.

**Tacrolimus** is the most commonly used *calcineurin inhibitor* drug. It may cause:
- Shakiness or tremor
- Headaches
- Heartburn
- Diarrhea
- *Hyperkalemia* (high potassium levels)
- Mild hair loss (usually lessens over time)
- Diabetes
- Gout

**Mycophenolate** may cause:
- Heartburn
- Diarrhea
- *Hyperkalemia*
- Low white blood cell count
- Low red blood cell count (*anemia*)
Questions?

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Transplant Services:
206-598-8881

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**Cyclosporine** may cause:
- Increased hair growth
- Darkening of the hair on the face and body
- Oily skin
- High blood pressure
- High cholesterol levels
- Gout

**Prednisone** may cause:
- Thinning of the skin
- Bruising
- Joint and bone disease

Many patients gain weight after transplant, and usually prednisone is blamed for this. But, many patients who are not on prednisone also gain weight. This may be due to improved appetite and improved sense of well-being after transplant. We counsel patients to be aware of this. Monitoring your diet and doing regular exercise can help keep you from gaining too much weight.

**What can I do to avoid complications?**

Many patients ask this question after transplant. To some degree, things such as risk of early rejection and infection are not things you can control. But, we stress the things you can control. This includes the importance of understanding all your medicines and taking them correctly, especially your anti-rejection drugs, to help things go as smoothly as possible.

We know that we ask a lot of you, especially right after your transplant. We ask you to have many clinic visits and blood tests, but this is so that we can find any problems early.

We want you to tell us about any problems or concerns that you may have. We would rather have you call about something that turns out to be minor than not to hear about an issue that turns out to be important. Even after you return to your referring doctor for longer-term follow-up, we are always available to you for problems related to your transplant. Please feel comfortable asking us for help.
Being Referred
For a kidney/pancreas transplant

Preparing for Your First Visit

• A scheduling coordinator will call you to schedule your first visit. You will also be told who your transplant nurse coordinator is. Call this nurse if you have any questions.

  My transplant nurse coordinator is: ____________________________

  Phone number: __________________________________________

  My first visit is on ____________________________

  DAY  DATE  TIME

• We will mail you a packet of information. The packet will contain a cover letter, this guide, a DVD of our transplant class, information about UWMC, and forms to fill out and return in the provided self-addressed stamped envelope. It also includes directions, maps and parking information. Please review the entire packet before your first visit.

• Send (or have your nephrologist’s office send) all of your medical reports for your pre-transplant workup to:

  UWMC Transplant Services
  Box 356174, 1959 N.E. Pacific St.
  Seattle, WA 98195

  Or, fax them to 206-598-2201.

• Bring your immunization records. If you are overdue for any shots, you will get them at your clinic visit. Before your transplant, you will also need these immunizations:

  - Heptovax – hepatitis B vaccination
  - Pneumonia
  - Flu
  - Tetanus
  - Hepatitis A
  - Shingles, for patients older than 60 years of age
If you have not been a patient at UWMC before, you will need to register. Go to the registration desk inside the main entrance before your visit. Allow about 30 minutes for the process. Or, you may call 206-598-4388 and register over the phone before your first visit.

Your first visit with the transplant team could take up to 4 or 5 hours. Plan to bring a support person to this visit. This person can be a family member or a friend.

Your First Visit with the Transplant Team

At your first visit, you will:

- Meet with your team, which includes a social worker, surgeon, your transplant nurse coordinator, and a dietitian.
- Learn more about transplants and how the system works regarding being accepted or not being accepted for placement on the transplant list.
- Review factors that will increase the success of your transplant.
- Have blood and urine tests.
- Give a detailed medical and social history.
- Receive immunizations if needed.

My Questions for the Transplant Team
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
The evaluation process is complex, and it is different for each patient. It begins with a referral your doctor makes to UWMC.

The Evaluation Process

For your kidney/pancreas transplant

About the Evaluation Process

Before you are accepted for transplant, members of your evaluation team will:

- Review your medical records.
- Ask for your medical history and do a physical exam.
- Talk with you and your support person about:
  - The transplant process
  - The risks related to transplant
  - What is involved in the surgery
  - The use of *immunosuppressive* drugs (drugs you will take that keep your body from rejecting the new organ)
  - Your eating habits, dietary needs, and food and drug interactions
- Briefly review what you can expect during your hospital stay and the routine for clinic visits and follow-up after a transplant.
- Clarify your financial arrangements.
- Assess your personal, family, and financial situations.
Basic Labs, Tests, and Procedures for Pre-transplant Evaluation

You will have many tests to look at your major body systems such as your lungs, heart, circulation, stomach, and intestines. A check mark (✓) means that these tests are required before transplant.

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<td>Eyes</td>
<td>Fundus exam, refractory index, slit-lamp</td>
<td>some</td>
<td>✓</td>
</tr>
<tr>
<td>Tuberculosis exposure</td>
<td>PPD skin test with controls</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Cancer screening</td>
<td>Women: Pap smear</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Mammogram if over 35 years old</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Vaccinations</td>
<td>Hepatitis A</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Hepatitis B</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Pneumonia</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Influenza</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Tetanus</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Shingles if over 60 years old</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Heart</td>
<td>EKG</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Cardiac stress test</td>
<td>some</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Coronary angiogram</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Echocardiogram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lungs</td>
<td>Chest X-ray</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Pulmonary function test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>UGI (if history of stomach problems)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Barium enema/colonoscopy if history of colon problems, over 50 years old, or having a re-transplant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vascular</td>
<td>Carotid artery, as indicated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Iliac and LE arterial duplex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bones</td>
<td>DEXA scan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liver/gallbladder</td>
<td>Abdominal ultrasound</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Other</td>
<td>Biopsy, if available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teeth</td>
<td>Dental exam</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Questions?
Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services: 206-598-8881

Evaluation Outcome

Your evaluation team members will meet to discuss the results of your tests and to decide whether and how best to proceed. Your evaluation may show medical concerns that need to be treated before transplant. Or, the outcome of your evaluation may show something that would eliminate you as a transplant candidate.

A recommendation about whether or not to proceed with a transplant can come at any time during the process. There is no way to tell at the beginning of your evaluation how it will proceed or what the final recommendation will be. You can move this process along by seeing your own doctor for your tests and appointments. Or, you can have them done at UWMC. UWMC Transplant Services will schedule them if you choose to have your workup and testing here.

We understand this can be an overwhelming, tiring, and stressful time for you and your family. One of the hard parts about the evaluation process is knowing that you may not be a candidate for transplant. It may help you to share your thoughts and feelings with someone you trust. Please know that we carefully evaluate all of the information we gather during your evaluation to try and reach the best medical outcome for you.

Please feel free to ask the transplant team staff any questions you may have as you go through this process.

Being Accepted for Transplant

After the entire medical workup is completed, we send patients a letter to let them know whether or not they have been accepted for transplant. If you are accepted for transplant:

- If you smoke, you will need to stop smoking before transplant. Smoking will decrease transplant survival and increase your risk for infection, heart disease, and cancer. Ask the transplant social worker if you need a referral to a stop-smoking program.

- The final decision about transplant is yours. A transplant is a form of treatment for kidney disease or diabetes. It is not a cure. Over 90,000 people are waiting for a kidney transplant. If you do not think you can do what is needed before and after the transplant to get the best results possible, then you should really think about whether a transplant is the right choice for you. The transplant team will respect whatever decision you make.
Tissue Matching
For your kidney/pancreas transplant

What does “donor compatibility” mean?

Every body is unique, and each one has a built-in immune system that recognizes and protects the body against substances that could harm it. The main job of the immune system is to prevent infections.

Your immune system is programmed by your genes, or DNA, to recognize or react against things that are different from or foreign to your body. Since the transplanted organ came from another person’s body, your immune system would recognize it as something foreign to you and would try to destroy it. You will receive immune suppressant medications to help prevent your immune system from reacting against or rejecting a transplanted organ.

As part of your evaluation for transplantation, you will have blood tests, including tissue matching, to evaluate aspects of your immune system. These tests are done to see whether or not you and a potential donor are compatible (similar). The more compatible you are to a potential donor, the lower the chance your body will reject an organ from that donor.

Three components of your immune system are tested to determine whether a certain donor is compatible to you:

- Blood type
- Blood antibodies that may react against the donor organ
- Tissue type

Compatibility Tests

You will have 4 tests to check for compatibility with your potential donor. They are:

**Blood Type (ABO) Compatibility**

Blood samples from both you and the potential donor are tested to make sure the blood types are compatible. The chart on page 5-2 shows which blood types are usually compatible for receiving from and donating to other blood types.
Blood type O is compatible to donate to all other blood types. It is called the “universal donor.” Blood type AB is compatible to receive from all other blood types. It is called the “universal recipient.”

Some people with blood type A have slightly different proteins on their red blood cells that make their blood look like blood type O to the immune system. This is called an “A2 subtype.” People with A2 blood subtype may be able to donate to people with blood types O and A.

The Rh factor of the blood (listed as negative or positive) does not need to match for the donor to be compatible.

**Antibody Testing**

Antibodies are proteins in the blood that identify and react against a foreign object in your body. These foreign objects are usually proteins called antigens.

Antibodies that react against human tissue, as with a transplant, are usually directed against human leukocyte antigens (HLAs). Your body usually does not make antibodies against HLA unless your immune system has been exposed to them before. Events that can cause your body to produce these types of antibodies include pregnancies, blood transfusions, infections, or a previous organ transplant.

There are 2 types of tests to find out if you make antibodies against HLA:

**Panel Reactive Antibody (PRA) Test**

The PRA test compares your blood to the “tissue” (in this case, the white blood cells) of people who have donated blood. This shows how reactive (sensitive) your immune system is against HLA.

The more people you react against, the higher chance you may have of rejection when you do get a transplant, and the more immune suppressant medication you may need. It may also be more difficult to match you with a donor, and this may make your wait for a transplant longer.

Pregnancy, blood transfusions, and infections can make your immune system more sensitive to HLA. If you become pregnant or have a blood transfusion or infection after you have completed your PRA test, contact your transplant nurse coordinator. You may need to have another PRA test done.

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Can Receive From</th>
<th>Can Donate To</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>O, A2</td>
<td>O, A, B, AB</td>
</tr>
<tr>
<td>A</td>
<td>A, O</td>
<td>A, AB</td>
</tr>
<tr>
<td>B</td>
<td>B, O, A2</td>
<td>B, AB</td>
</tr>
<tr>
<td>AB</td>
<td>O, A, B, AB</td>
<td>AB</td>
</tr>
</tbody>
</table>
Cross Matching

The second test for antibodies against HLA is called cross matching. Instead of testing against many people in a random sample, this test compares your blood to a specific donor. This can be a living donor or a deceased donor.

With a living donor, cross matching is done early in the evaluation process to see if that donor is compatible with you. With a deceased donor, your blood is tested against the donor’s blood at the time an organ becomes available to you.

If you have antibodies in your blood that react against the donor’s blood, this is called a “positive cross match.” A positive cross match usually means you cannot receive an organ from that donor since the antibodies in your blood would cause rejection of the donor organ right away.

In some cases, a treatment can be done to remove the antibodies and keep more of them from forming. This treatment may allow organ transplant from a specific living donor. This option will be discussed with you if it applies to your situation. But even with this treatment, the antibodies may return, making the risk of organ rejection higher than if the antibodies were never present.

Tissue Typing: Human Leukocyte Antigen (HLA)

HLAs are antigens (proteins) found on human tissue or cells. They are recognized by the immune system and can cause a reaction, which can lead to organ rejection.

Antigens are coded by your genes and are unique for every person. In general, the more closely related you are to someone, the fewer genetic differences you have and the more similar your antigens are. This means your immune system is more likely to accept an organ from a donor who is related to you.

HLA is coded for by chromosome 6, which is part of your DNA. Each chromosome has 2 parts, called haplotypes. A person inherits 1 haplotype from each parent, so you can think of yourself as a “half match” with each parent. Each part of chromosome 6 has 3 types of HLA genes: A, B, and DR. Since there are 2 parts of the chromosome, there are a total of 6 HLA antigens coded in for every person.

HLA matching was more important in the early days of transplant surgery because strong anti-rejection medications were not available. Today, we have much stronger anti-rejection medications, making HLA matching less of a factor in how well someone does after transplantation, especially in the short term. HLA does matter in the long term and is also related to the amount of immunosuppression medications needed to prevent rejection.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services: 206-598-8881

A “perfect match” would seem ideal when receiving an organ from a deceased or non-relative donor, but there is not a large difference in transplant outcomes between matches that are perfect and those that are not. If a donor is related to you, there is an advantage even if the match is not perfect, since you may have other genes in common that are not measured. These genes may make your transplant more successful.
Living Donors

For a kidney/pancreas transplant

Are there different types of kidney donors?

There are 2 types of living kidney donors:

- A living related donor (LRD) is a blood relative who desires to donate to a family member.
- A living unrelated donor (LURD) could be a spouse, in-law, friend, co-worker, or anyone who desires to donate a kidney to a potential recipient.

What is the success rate for living kidney donation?

With an LRD or LURD transplant, the surgery can be planned in order to enhance the recipient’s well-being. The transplant can also be done much sooner than a kidney transplant from a deceased donor. This gives the recipient the chance to be the best health possible at the time of transplant.

The success rate for an LRD transplant is over 95% for the first year. On average, a kidney transplant for an LRD would be expected to function for 15 to 20 years.

A kidney from an LURD also has a success rate of 95% for the first year. This compares to a success rate of 90% after the first year for a patient who receives a kidney from a deceased donor.

“My sister was on dialysis. I was watching her get sicker. I was glad I could do something to help her get better.”

Who can I talk with about being a donor?

You may want to talk about living kidney donation with your family members, spouse or partner, friends, co-workers or other people who may be interested in donating. Providing family and friends with general information and a phone number to call for more information is an excellent place to start.
If talking about living kidney donation is uncomfortable for you, ask a close friend or family member to act as your advocate. It is also helpful to bring family and friends with you to your kidney transplant evaluation appointment so that we can explain living donor transplantation to them. Even if these people are not able to donate, they may be able to talk about living donation with others. You or someone who knows you needs to tell your story to people who might be able to donate.

Tips on Talking about Living Kidney Donation

- **Pick a place and time that feels right.** Your family member or friend needs to feel comfortable and have time to talk.

- **Speak from your heart and listen with your heart.** When you talk with your family members or friends about living kidney donation, take the time to listen to their feelings and concerns.

- **Be careful not to pressure others.** Donation is a major surgery. Other factors may also prevent your family members or friends from being a living kidney donor.

- **Give it time.** Don’t expect an answer right away. People will need information, time, and support to decide. They may need time to talk with their own family, employer, or others involved in their daily lives.

What else should I consider when talking with family and friends?

**Work**

Kidney donation is major surgery with a recovery time of 4 to 8 weeks. Sometimes a donor’s time off can be covered with sick leave and vacation pay or donated time from other employees. Employees in the U.S. may qualify for special leave under the Family and Medical Leave Act (FMLA).

Federal government employees are allowed paid leave to be a living kidney donor. Some employers and state governments have also arranged for paid leave specifically for living donors. Encourage your family and friends to talk with their employer about time-off benefits that may be available to them.

**Family History**

Certain kidney diseases may be hereditary. A family member who wishes to donate a kidney should talk with their own doctor about this possible risk. The doctors in the living donor program can also talk with potential donors about this issue.
**Pregnancy**

There is no evidence that pregnancy increases the risk of problems for the remaining kidney in a living kidney donor. Kidney donation should not interfere with a woman’s decision to become pregnant at a later date. But, there may be a higher risk of preeclampsia (high blood pressure and protein in the urine) and early delivery in women who have donated a kidney.

The general risk for preeclampsia is 2.5% (2.5 out of 100). For a woman who has donated a kidney, the risk is 4% to 5% (4 to 5 out of 100).

If the donor does become pregnant, she should tell her obstetrician that she has only 1 kidney. In general, no special care is needed.

**Religion**

Most religions view organ donation as a form of charity and love. All potential kidney donors receive a handout on the basic views of many religions about organ donation. Please contact your clergy for more information about the doctrine of your own faith community.

**Smoking and Drug Use Policy**

The transplant program recognizes that the use of tobacco, marijuana, and cocaine negatively impacts patient health. It increases the risks of surgery due to many factors, including lung infections and wound infection. Using these substances increases the risk of having future health problems such as kidney disease, heart disease, and cancer.

The use of marijuana and illegal drugs is prohibited in our pre-transplant patients and living donors.

Potential kidney donors must have stopped smoking for at least 60 days before the day of surgery. Also, we strongly recommend not smoking after kidney donation.

**Who can donate?**

Persons considering living kidney donation should:

- Be over the age of 21
- Be in good health
- Have a body mass index (BMI) no greater than 30
- Not have diabetes or high blood pressure
- Have normal kidney function
- Not smoke, or be willing to stop smoking
What if I have more than one donor?

You may have more than one family member or friend who would like to be evaluated at the same time. All individuals interested in being considered as a donor are encouraged to contact the Living Donor Program. Every potential living donor for you will be considered for evaluation by the transplant team. One donor is chosen to proceed through to the end of the evaluation.

Special care and attention are taken to ensure that your family and friends would not face unusual risk if they donate. This may mean the transplant team does not accept their offer of kidney donation to you.

Are there reasons interested family members or friends cannot donate?

Yes. Kidney donation is a major surgery. There is always risk involved when a person has major surgery. Only a person in optimal health, who does not have diabetes or high blood pressure and has normal functioning kidneys will be evaluated as a potential kidney donor.

Medical screening for a potential kidney donor usually takes about 3 to 6 months. This screening process is done to confirm that the potential donor is in good health. At several points during the medical screening process, the potential donor’s chart will be reviewed. The transplant team may decide not to accept your family member or friend’s offer of kidney donation based on medical screening tests.

What if my donor is healthy but cannot donate to me?

Your potential living donors may not be able to donate to you because of either a positive cross-match or an incompatible blood type. If this is true, you might want to learn more about UWMC’s Donor Exchange Program. This program matches recipient/donor pairs through the National Kidney Registry, which UWMC belongs to. The National Kidney Registry searches for a match among incompatible recipient/donor pairs until a match is found.

To learn more, visit the National Kidney Registry website at kidneyregistry.org.

What about organ donation from the general public?

We do evaluate individuals who are not related, either by blood or emotionally, to the person who needs a kidney. These are people who have a sincere desire to be a living kidney donor. They are called non-directed kidney donors.
UWMC has a non-directed donor program. Non-directed donors can donate either to someone on UWMC’s wait list or to someone on the National Kidney Registry’s waiting list.

Donors are generally matched to the person on the list with a compatible blood type who has been waiting the longest for a transplant.

**What is an independent donor advocate?**

To protect donors, every transplant program has an *independent donor advocate* (IDA). This is a person donors can talk with about their concerns. The IDA advises donors and helps guide them through the process of deciding if donating is in their best interest.

**What is the donor evaluation process?**

- The first step in the process is for interested family and friends to contact the Living Donor Program (LDP) at 206-598-3627.
- The IDA collects preliminary information from your potential living donors and explains the donor process to them.
- A donor information packet is sent to those who are interested. This packet contains a list of what medical information is required and forms to fill out. These forms must be completed and returned with all of the medical information requested before the evaluation can begin.
- The recipient must be medically and financially cleared for transplant before testing of the potential donor can begin.
- All medical evaluation testing for potential living donors must be approved by the LDP.
- The potential living donor may stop the evaluation at any time if they decide they do not want to donate.

**Donor Evaluation Steps Checklist**

- Potential donor contacts the IDA at 206-598-3627 for information.
- Potential donor completes medical questionnaire.
- Recipient cleared medically and financially for transplant.
- Donor evaluation begins.
Will I know how my donor is doing?

All potential living donor evaluations are confidential. Federal and state law requires us to keep all medical records confidential, so no information about your donor’s evaluation can be given to you or your nephrologist (kidney doctor) by the transplant team. This federal law is called the Health Insurance Portability and Accountability Act (HIPAA). Your donor may or may not choose to keep you updated about the evaluation process.

What do I need to know about payment for living donor evaluations?

- The costs for obtaining the initial medical information are not covered by the LDP. The required initial health history and physical exam should be covered by the potential living donor’s medical insurance policy. If your potential donor does not have medical insurance, they should call the LDP coordinator at 206-598-3627.

- Only the expenses for pre-approved tests and lab work ordered by the LDP can be submitted for payment.

- Payment of a potential living kidney donor’s medical expenses is limited to tests that are directly related to the required medical workup. If the testing uncovers medical problems that need further evaluation or treatment, the LDP will not cover those costs.

- The medical expenses for the evaluation testing, surgery, and hospital stay for the potential living kidney donor are the responsibility of the recipient’s insurance.

  Most recipients have insurance coverage that will pay these donor expenses. If you are not sure if your insurance will cover this, contact your insurance company or the UWMC Patient Revenue Manager.

What if my donor needs help with travel or housing costs?

If your potential donor cannot afford to travel to Seattle, or cannot drive between home and the medical center, some financial assistance may be available. The National Living Donor Assistance Center may be able to provide financial grants to pay for airline tickets, hotel stays, and gas so that your donor can come to the medical center to be evaluated and, if accepted, to be a donor.
This program will not pay for lost income if your donor has to take time off work without pay. Eligibility is based on both the donor’s family size and income and your family size and income. You can talk with your social worker about how to apply for this assistance.

**Is there a risk of death from donor surgery?**

The risk of death from donor surgery is very low. It occurs 3 times out of 10,000 for all donor operations. UWMC has had no donor deaths. We have done more than 500 living donor surgeries.

**What about after donation?**

Long-term follow-up of all kidney donors has shown no difference in their general health and length of life than that of the general population. After donation, the donor’s remaining kidney will grow to compensate for their removed kidney.

The LDP will contact your donor at 6 months, 1 year, and 2 years after their donor surgery. This is because UWMC will need to provide results of their kidney tests to UNOS for 2 years after their donation.

To learn more about living kidney donation, the Donor Exchange Program, or non-directed donation, call The Living Donor Program at 206-598-3627.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
Waiting for Transplant
For a kidney/pancreas transplant

After you have completed your evaluation, you are ready to be added to the wait list. This chapter explains details about the wait list and things you can do until you get called in for your transplant.

What is the wait list?
The wait list for organ transplants is a national list managed by the United Network for Organ Sharing (UNOS). UNOS is a nonprofit, federally funded organization that maintains the transplant list for the entire country.

If you want a kidney or pancreas transplant from a deceased donor, you must be placed on this list.

This list contains patient data on everyone in the United States who is waiting for a kidney, pancreas, or other organ.

How do I get on the list?
We will enter your specific information – your name, blood type, and tissue type – into the UNOS computer system to add you to the wait list.

How does the list work?
When a kidney or pancreas from a deceased donor becomes available, all patients on the list who are waiting for a kidney or pancreas are compared to that particular donor. The computer makes a list of patients who best match that kidney or pancreas. It also factors in wait time and sensitization (see definition at the bottom of this page).

Who will get the transplant depends on:
- Your blood and tissue type (HLA).
- How long you have been on the list.
- Your age – patients 18 years or older have priority.
- Whether or not you are sensitized. Being sensitized means you have antibodies in your blood that could fight against many potential organ donors. If you are sensitized, you could have a harder time finding a kidney or pancreas that your body will accept. Because of this, you will be given a slight advantage on the wait list over those who are not sensitized.
Where am I on the wait list?

This is not an easy question to answer because there is not a ranking order on the list, such as being first, second, or third. Receiving a transplant depends on the type of donor available. Organs and transplant recipients are matched based on both medical compatibility and how long you have been on the list.

This means you may have waited longer than someone else on the list but will not get the next available kidney or pancreas because it matches best with someone else. It also means you could get transplanted sooner than someone who has waited longer than you because the organ matches best with you.

You will never be removed from the list without written notice.

How long will I wait?

Your transplant team can give you an “average” wait-list time based on your blood type. This estimate does not predict for certain how long your wait will be. Your waiting time may be affected by a number of factors that are explained in “Tissue Matching,” Chapter 5.

Can I be on more than 1 wait list?

Even though you are now on UWMC’s wait list, you may also choose to be listed at other transplant centers. Getting on a wait list at another center in the Seattle or Spokane area will not change your wait time, since all programs in these areas use the same list.

But, being listed with transplant programs in other areas of the U.S. may change your wait time. Check the United Network for Organ Sharing (UNOS) website at www.unos.org to see the wait times for different areas of the country. Listing with other programs may require that you go to these programs to be evaluated for transplant.

Things to Do While Waiting

- Call your transplant nurse coordinator at least once a year (perhaps on your birthday) or whenever there has been a major change in your health status or lifestyle. Also call if your insurance coverage changes.

- Keep your transplant coordinator updated on your contact phone numbers, address, health status (recent hospital stays or infections), financial status (including insurance changes) and when you plan to be out of town.

- Make your own planning checklist as a guide for what to monitor while you are on the waiting list.
• Have yearly medical checkups. These may include a cardiac stress test, heart evaluation, pap smear, mammogram, PSA screening test, and other tests that the transplant team has asked you to have.

**Tests I need at least yearly are:**

_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________

• Keep monthly blood samples for deceased donor crossmatching current. Tubes for this testing will be mailed to you. Take the package to dialysis if you are on dialysis, or to a local lab if you are not on dialysis. It is very important to do this. If the HLA lab does not have your current blood samples, you may miss a chance to have a transplant.

• Stick to the medical regimen you developed with your referring doctor. For example, attend dialysis, have regular doctor visits, and take your medications as prescribed. Also watch fluid gains and phosphorus levels. This will maintain your active status on the list.

**My regimen includes:**

_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________

• Maintain a healthy lifestyle:
  - Eat healthy foods.
  - Get your rest.
  - Manage your stress.
  - Lose weight if you need to.
  - Follow a regular exercise program to keep your body strong.
Staying in great mental and physical shape is very important. The medicines you take may weaken your muscles. You will want to be as healthy and strong as possible if and when you have your transplant.

**My goals to maintain or improve my health are:**

- Learn more about kidney or kidney/pancreas transplantation. Ask questions. Read the handouts you receive. See “Resources,” Chapter 17.

- Decide what pharmacy you will use to get all your medicines. You may want to look into mail order options, since they may save you money.

**My prescription insurance plan:**

**I will get my prescriptions filled at:**

- Assess your insurance coverage and personal finances. Learn about all the costs of having a transplant. Find out the details about what your plan covers, including how your plan works when you are outside of your hometown area.

- If you live outside the Puget Sound region, make a plan for coming to Seattle. Your plan should cover how you will get to Seattle and where you will stay.

**My plan for travel to Seattle:**

**My plan for housing in Seattle:**
• **You will need a support system in Seattle.** If you are from out of town, make plans for family and friends to **stay with you** or **live near you**. Ask our staff for help, if needed. Of course, if you are from Seattle, you will still need a plan for support if and when you have your transplant.

• Be ready when you are called in for transplant. Be prepared if it happens quickly, and be prepared to cope with the wait if it takes longer. Ask for help if you need help coping while you wait.

**Getting Called for Transplant**

You will be called when an organ is available for transplant. This can happen at any time of the day or night, on any day of the week.

We must be able to reach you within 1 hour of an organ becoming available at ALL times. Even if you are out of town, at a party, or at a conference, we **must be able to reach you**.

If there is someone who will always know where you are, give us that contact number as well. We have lots of stories about patients who could not be reached. Do not be one of these stories! Make sure we are able to reach you **AT ALL TIMES**.

Since each patient is unique, what happens after the phone call will vary. You may have been called in as a primary or back-up recipient. We will tell you of the plan as soon as the cross-match results are final.

Once you are called to come in:

• **Do NOT** eat or drink anything, unless instructed otherwise. Your stomach needs to be as empty as possible when you have surgery.

• If you have diabetes and take insulin, and you are told not to eat, take only ½ of the insulin you would usually take. Also, ask the coordinator who has called you if you should take a different amount instead. The amount of insulin you should take will depend on the expected time of your surgery.

• Get to the hospital quickly and safely. You may feel excited and afraid at the same time.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services: 206-598-8881

Have Your Bag Packed

Have your bag packed and ready to go at all times. Include personal items you will need for a hospital stay.

Please also bring:

- Your copy of Guide to Your Kidney/Pancreas Transplant
- Your UWMC clinic card
- Information about your insurance plan
- Photo identification
- A list of emergency contact phone numbers
- All your medicines
- An extra exchange (if you are on peritoneal dialysis)
- Reading glasses, if needed

We also recommend you bring these items with you to the hospital, to make sure they are working properly:

- A blood pressure cuff
- A thermometer
- A blood glucose meter, if you use one

Do not bring:

- Jewelry
- Valuables

If you think you will need money, bring credit cards and photo identification. You can ask the Admitting Office or the admitting nurse to put these items in the hospital safe.
The transplant process can be very stressful. There is no one right way to prepare or cope. The stress can occur at any time before, during, and after your transplant. This chapter offers tips on coping that others have found helpful.

Coping
Before, during, and after your kidney/pancreas transplant

Coping with the Medical Workup
With so many tests, the workup time can be stressful. It is a time when you will see many UWMC staff.

Use this time to gather as much information as you can about what you will go through during transplant. Many people feel more in control when they know more about what to expect and what will happen. Feeling more in control may help you cope better.

Look into all of your medical options. After all, you decide what form of treatment you will have for your kidney disease. Be in control of your pre-transplant workup, and make sure all the tests recommended for you are scheduled. Weigh the risks of each option available to you.

Coping While You Wait
Your wait may be long, and your life does not stop or go on hold during this time. Even after you are approved for transplant and put on the waiting list, be sure to balance all of your needs:

- **Physical**: Keep active. Exercise will help maintain your health. There are special programs for people who are physically disabled. Work or volunteer if you can. Studies show that those who work while waiting do better after transplant.

- **Social**: Stay in touch with family and friends. Keep from getting isolated or lonely. Do your usual activities and maintain your hobbies, or try something new.

- **Emotional**: Make sure you have a safe place where you can express your feelings – the good and the bad. It is OK to feel sad, frustrated, and anxious. You need to be able to share your feelings with a person or group you trust.

- **Intellectual**: Keep your mind active so that you do not lose mental function. Try reading more instead of watching TV. Exercise your mind with a class, games, puzzles, or a book discussion group.

- **Spiritual**: If you are part of a spiritual community, stay involved. Your beliefs can be a source of comfort and strength.
Paying attention to these things will also help you cope while waiting:

- **Attitude:** Stay positive. Positive thinking, humor, and leading a normal life all help people cope during a stressful time.

- **Support:** Be patient and gentle with yourself. You will likely need support more than ever at this time. And, you may need to rely on your support system in ways you never have before. Your personal support group can be very helpful as you go through your transplant. Involve those who will care for you all along the way so they will know what you will be going through. Transplant affects the whole family. It can change a family’s lifestyle as well as your own. Patients often direct their anxiety and frustration at their caregivers. Besides keeping them involved and using their support when you need it, also let them know they are not the cause of your anxiety and frustration. And, always thank them for their support.

- **Relaxation:** There are many healthy ways to relax if you feel anxious or stressed. Your local bookstore will have books and tapes that may be helpful. Contact your social worker if you need help choosing or learning a relaxation technique.

If you are having a hard time coping or feel you cannot handle it on your own, ask for a referral for counseling. Your doctor or social worker can provide a referral.

**Social Work and Care Coordination Services**

Your social worker is a member of your transplant team. Your social worker can provide services from your first visit through your follow-up care.

Social Work and Care Coordination services include:

- **Psychosocial assessment:** This is a time when the social worker meets with you and your support system to help you all prepare for and understand the transplant process. The social worker will ask questions about your lifestyle, support system, and financial and insurance resources. The social worker will also want to learn about what you expect from your transplant team.

- **Supportive counseling and referrals:** Counseling is available for you and your family or support person(s) during the entire transplant process. Your social worker can help with issues such as depression, anxiety, fear, stress, family problems, lifestyle changes, and reactions to medical treatment and being in the hospital. If needed, your social worker will provide referrals to agencies, resources, or therapists.
• **Education:** Your social worker can teach you about or provide information about any psychosocial aspect of transplant.

• **Casework services:** Social Work and Care Coordination can help you find local housing and can help with issues related to discharge from the hospital, including transportation. They can also supply information about fundraising, getting insurance coverage, and working through problems with paperwork and complicated systems.

• **Information and referral to community resources:** Ask your social worker for information and referral to community resources such as Social Security, Washington State Department of Social and Health Services (DSHS), vocational rehabilitation, and local subsidized housing organizations.

### Coping After Transplant

Be patient while you are in the hospital. Focus on going home. Your transplant team will tell you what you need to do to be able to go home and when it is safe to do so.

Mood changes and emotional ups and downs are common after transplant. Sometimes they are caused by side effects of medicines. They can also be caused by the stress of what you have just gone through. Be sure to tell your caregivers that these ups and downs are common.

Some common feelings when going home from the hospital are:

• **Anxiety and depression:** You have had care 24 hours a day in the hospital and now you will have to do things on your own at home. Use your caregivers, ask for support, read over your discharge instructions, ask questions, and always keep in mind that you can talk with someone 24 hours a day by phone, if needed.

• **Guilt:** Some patients have what is called “survivor’s guilt.” This is a guilty feeling that someone had to die so they could receive an organ. Some patients feel guilty knowing that if they got an organ it means someone else who was waiting did not. Others feel they did not deserve the suffering that led to the need for a transplant. These are all normal feelings. If you are bothered by these feelings, please talk with someone on your transplant team.

• **Stress:** The period after transplant can be stressful. Your life can revolve around medicines, clinic visits, lab tests, and worries over organ rejection and infection. This is normal. Most patients report that this gets much easier over time. Ask for help or reassurance if you are concerned about how you are doing.
Give yourself time to recover from surgery and the changes you have gone through. Meeting your goal of returning to a “normal” lifestyle will take time and patience. It may also take friends and family time to adjust to the “new” you as a healthier, more independent person. You can help them by getting better and taking great care of yourself.

**Writing to Donor Families**

Many patients have asked about writing to the family of their organ donor. Most donor families greatly appreciate hearing from transplant recipients. It is your choice whether to write to the donor family.

If you do write, it is helpful to talk about yourself, your family situation, your job or volunteer work, your hobbies and interests, and your transplant experience and how it has changed and improved your life. And of course, thank the donor family for their gift.

To maintain confidentiality, please identify yourself by your first name only and do not include your address, phone number, or other contact information. Give your letter to your social worker or transplant coordinator to send to the donor family.
Transplant Surgery

For a kidney/pancreas transplant

Before Your Surgery

- A UWMC transplant team member will call you when a donor has become available. The team member will give you instructions about when to arrive and where to check in.

- All transplant patients will have more tests (blood tests, chest X-ray, etc.) before surgery. These tests include a final cross-match to determine whether your immune system will accept the kidney and/or pancreas.

- Patients who are on dialysis may need a dialysis treatment before surgery. You may be asked to go to your regular dialysis session or come to UWMC and have dialysis here.

- Your medical team will examine you and review your medical records to determine what you need for a safe operation. At least 3 different doctors (a surgeon, nephrologist, and anesthesiologist) will examine you before your transplant surgery. They will also decide what your transplant medication treatments will be.

- The nurse will tell you what to do before surgery. If there is time, you will be asked to take a shower. You may also be given an enema. You may be given oral or IV (intravenous) medications to prepare you for your surgery.

- Once you get the final clearance to proceed with your transplant, you will be taken to the operating room. Final clearance is determined by your medical condition and a negative cross-match.
Your Family and Support Team

During your surgery, your family or others on your support team may wait in the family waiting room near the operating room or in your hospital room. They need to tell us where they will be waiting so we can stay in touch with them throughout your surgery. They will be able to speak with someone on the team in the operating room by using the phone in the waiting area.

We will tell your support team when your surgery starts. Your surgeon will want to talk with your family or other members of your support team when your surgery is finished.

Your Surgery

- The operating room and the table may feel a bit cold. We will do our best to keep you comfortable.
- You may have a large IV placed in a neck vein to help give you powerful immunosuppression medications.
- You will have a catheter placed in your bladder to drain urine from the new kidney.
- You will be connected to equipment that monitors your body functions and systems.
- Your anesthesiologist will give you medicine that will make you sleep. You will receive this anesthesia by IV and through a mask placed over your nose and mouth.
- The anesthesiologist will also place a tube in your throat (trachea) to help you breathe during surgery. The anesthesiologist will monitor you during the entire surgery to make sure you are asleep and not feeling pain.
- A nasogastric (NG) tube may also be placed to empty your stomach. This tube goes through your nose and into your stomach. If you are having a pancreas transplant, you will have an NG tube.
- The area where the doctor will make your incision and do the surgery is called the operative field. Sterile drapes will be placed around the incision area both to keep you warm and to keep the operative field sterile. Your incision will be on your right or left lower abdomen, or in the middle. Your surgeon will tell you before surgery where your incision will be.
- The surgery takes about 4 to 8 hours. After surgery you will go to the recovery room. You may wake up there or in your hospital room. You will have a bandage over your incision.
These drawings show where the incisions are made and how your new organ(s) is placed and connected.

**Abdominal Incision for a Kidney Transplant**

Your incision will be placed either on the right or the left. This drawing shows an incision for the right kidney.

**Abdominal Midline Incision for Pancreas or Kidney and Pancreas**

You will have one of these incisions for a pancreas or kidney/pancreas transplant.
Surgery for a Kidney Transplant

Your own kidneys will probably not be removed when the new transplant kidney is placed. Sometimes, very large or infected kidneys are removed before or during transplant surgery. But, the new kidney is not placed where your own kidneys are.

These are the usual steps for a kidney transplant:

1. Your surgeon will make an incision in your abdomen and expose your iliac blood vessels. These are blood vessels in your pelvis.
2. Next, the donor kidney will be positioned and the donor kidney blood vessels will be sewn into your iliac blood vessels.
3. After blood starts circulating to the new kidney, your surgeon will connect the donor ureter into your bladder. Your surgeon will decide if you need a ureteral stent (small tube). Some patients need a stent to support the connection of the new ureter to the bladder.

Kidney Transplant

Placement of the donor kidney and ureter and blood vessel connections
Surgery for a Combined Kidney and Pancreas Transplant

Your own pancreas will not be removed during surgery. These are the usual steps for a combined kidney and pancreas transplant:

1. Your surgeon will make a midline abdominal incision and expose your iliac blood vessels (blood vessels in your pelvis).

2. The donor pancreas will be positioned in your pelvis (usually on your right side), and the donor pancreas blood vessels will be sewn into your iliac vessels.

3. After blood starts circulating to the pancreas, a drainage route is created for exocrine secretions the pancreas produces. These are secretions, such as the enzyme amylase, that leave the pancreas. Your surgeon will use either bladder drainage or enteric drainage to create your drainage route. These are described below.

**Bladder Drainage**

In bladder drainage, the surgeon uses a section of the donor duodenum (intestine) to “bridge” and collect the secretions from the pancreas. The duodenum is then connected to your bladder, and the bladder drains the exocrine secretions.

**Pancreas Transplant: Bladder Drainage**

The duodenum collects pancreas secretions, which the bladder then drains.
**Enteric Drainage**

*Enteric drainage* (bowel drained) is another way to drain the pancreas secretions. In this method, the donor duodenal “bridge” is sewn into a loop of your small bowel. Secretions then drain into the bowel.

**Pancreas Transplant: Enteric Drainage (Bowel Drained)**

The duodenum collects pancreas secretions, which drain into the bowel.

4. After the pancreas transplant is done, your surgeon will position the donor kidney into your pelvis, using the same method that is described in the section “Surgery for a Kidney Transplant” on page 9-4.
After Surgery

- You will be taken to the recovery room after surgery. When you are ready, you will be taken to the patient care unit.
- Within a few hours, you may have an ultrasound to look at the blood flow into your transplanted organ(s).
- If you received a pancreas transplant or have heart problems:
  - You may spend the first night after your surgery in the Intensive Care Unit (ICU) so that you can be monitored closely and your blood sugars can be checked often.
  - You will be connected to a heart monitor.

Insulin After Surgery

- If you have diabetes or receive a pancreas transplant, you will receive insulin through your IV after surgery.
- If you do not have diabetes and receive only a kidney transplant, you may also need IV insulin after surgery to control your blood sugar.

Tubes and Devices

You may have some or all of these devices in place after your surgery:

- A bladder catheter (called a Foley catheter). This tube will drain urine from your bladder. It will give the sutures in this area plenty of time to heal before you start urinating normally. It will stay in place for about 3 to 4 days.
- Surgical staples to close your incision. These will be removed 3 weeks after your surgery.
- A ureteral stent, which will be removed about 3 to 6 weeks after your surgery. Plan to be in the hospital for half a day for this non-surgical procedure.
- A tube in your stomach (after a kidney transplant). Most times, this is removed in the operating room.
- A nasogastric (NG) tube, if your pancreas is bowel-drained. This will stay in place until you pass gas.
- A peritoneal dialysis catheter. This is usually removed 3 to 6 weeks after a kidney transplant.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

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Self-care to Speed Your Recovery

- You will have compression stockings on your legs to improve blood flow, which helps prevent blood clots from forming. Keep these stockings on. Your nurse will remove them when it is safe to do so.

- After you are awake, your nurse will teach you to:
  - Do deep-breathing and coughing exercises. Doing these about once every hour will help lower your risk of respiratory (breathing) problems and pneumonia (a lung infection).
  - Use your patient-controlled analgesia (PCA) pump. This device allows you to give yourself pain medicine when needed.

- You also need to walk as soon as you are able. Walking will reduce your risk for developing blood clots, pneumonia, constipation, and bloating. It will also help speed your recovery.

Like all major surgeries, this surgery involves risks. Please talk with your surgeon about these risks and carefully read “Benefits and Risks,” Chapter 2 of this guide.
Recovery in the Hospital

After your kidney/pancreas transplant

Visits with the Transplant Team

Your hospital care team includes:

- Your **attending surgeon, transplant fellow, transplant nephrologists, physician’s assistant (PA), surgical resident, transplant nurse coordinator, pharmacist, dietitian, social worker, and physical or occupational therapists**.

- The **transplant resident doctors** (doctors in training) make care visits called “rounds” on transplant patients every morning. The entire transplant team will make care rounds daily in the afternoon. This is the best time for you and your family to talk with the team. Before they come, it helps to make a list of questions for them.

- The **transplant unit nurses** provide your daily nursing care and are a direct link with the rest of the transplant team. They can communicate your needs and concerns to other members of the transplant team.

We strongly encourage your **personal support team** to visit often and to be an active part of your recovery care.

Interpreters

Tell your nurse or social worker if you will need an interpreter to help you understand medical issues and all of the information you will receive during your recovery time in the hospital. Your English-speaking family or friends are encouraged to visit to help with communication about non-medical issues. You may also ask for an interpreter to be present for your scheduled team visits.

Also, please let us know if you have hearing or vision problems so that we can fully meet your needs.
To Support Your Care

Bring these items to the hospital to support your care:

- **Guide to Your Kidney/Pancreas Transplant** (re-read the Chapters “Recovery in the Hospital” through “Discharge”).
- Your home **blood pressure cuff, thermometer, and blood glucose meter**. Bring these to the hospital to make sure they are working properly.

Tubes After Surgery

After surgery, you may have these tubes in place:

- A **catheter** in your bladder to drain and collect urine. This catheter is usually removed in 3 to 4 days. If you have had bladder problems, the tube may stay in place for up to 10 to 14 days.
- An **IV line** (*intravenous catheter*) for giving fluids and medications. It is usually removed on your day of discharge.
- An **NG** (*nasogastric*) tube to keep your stomach empty. This tube is usually removed in the recovery room, but it will stay in longer if needed or if you are a pancreas recipient. The tube is removed when you have passed gas, a sign that your bowel is working again.
- **Nasal prongs** for giving oxygen, until your oxygen level is normal.
- If you have a **peritoneal dialysis tube**, it will be removed when your kidney function is stable, in about 4 to 8 weeks.
- A **stent** (plastic tube) may be placed to keep your ureter open where it goes into your bladder. As your ureter heals, this stent will be removed, usually 4 to 8 weeks after surgery.

As you recover, your doctor or nurse can give you a better idea about when each tube is likely to be removed.

Pain Management

At first, you will give yourself pain medicine through a **patient-controlled analgesia (PCA)** pump. This pump gives pain medicine through your IV line until you can take medicine by mouth.

Your nurse will explain how to control pain once you are taking oral medications. Keep your pain at a level where you are comfortable enough to participate in your own care.
Physical Activity
You will be expected to become active as soon as possible after surgery. It may be hard at first, but there are many benefits to getting up and moving around right after your surgery:

- Better healing and overall physical recovery
- Better pain control
- Relief of bloating and increased recovery of bowel function
- Lower risk of blood clots
- Lower risk of pneumonia

Your First Goals
Your first goals after surgery will be to:

- Begin doing breathing exercises using the spirometer before you leave the recovery room.
- Get up and stand by your bed the evening after your surgery.
- Walk in your room and the hallway by the next morning.

Dialysis
If your kidney has “delayed graft function,” you may need dialysis for several days to several weeks after your transplant. This is a common situation and does not mean the kidney will not work. About 20% of patients (20 out of 100) who receive a deceased donor kidney need dialysis within the first few weeks after their transplant surgery.

Eating
Your diet may be limited to sips of water or liquids at first to keep you from being nauseated. You will progress from liquids to a soft diet. Then you will add solid foods and eat a more normal diet as your bowel starts working again. For some patients, including those with diabetes, this may take longer and you may be given IV nutrition for several days. Your dietitian will help you decide which foods and snacks are right for you when you start eating again.

Bathing
You may take a sponge bath or a shower about 24 hours after surgery.

Self-Care After Transplant
Your care team will teach you some self-care activities while you are in the hospital. You will learn:
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

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- How to take your medications. This is a good time to read over Chapter 12, “Medications.” A pharmacist will meet with you to go over the details of your medications and your medication schedule. Then, you will be able to start taking your medications yourself during your hospital stay.
- How to take care of your incision.
- About the transplant diet. The dietitian will talk with you about details of your diet, and you will receive a booklet called *Nutrition After Your Transplant*.
- How to keep track of the fluid you drink and the amount of urine you make.
- Which labs and vital signs to check and record in “My Transplant Log,” Chapter 20.
- About the signs and symptoms of rejection and infection.
- About general transplant health practices.

Visitors

Visitors are welcome, but please follow these hospital policies:

- No children under age 6
- No pets
- No live plants or flowers
- No visitors with viral or bacterial infections (colds, flu, etc.)

Personal Items

Feel free to bring items from home to increase your comfort (or have your family or support person bring them for you after surgery).

- Robe
- Pictures of loved ones
- Books, handicrafts, and puzzles
- Music player
- Loose, comfortable clothing to go home in

Discharge

The transplant team will not discharge you until it is medically safe to send you home. If you need further IV medication or dialysis, it will be arranged for you as an outpatient.
Nutrition

After your kidney/pancreas transplant

The Basics

Your basic nutritional guidelines are:

- Eat a variety of foods.
- Reach and stay at a healthy weight.
- Eat plenty of fresh fruits and vegetables, and whole-grain products.
- Eat the right amount of protein for healing and to build muscle.
- Choose foods that are low in fat, saturated fat, and cholesterol.
- Limit salt (sodium) and sugar.
- You may also be asked to limit your potassium intake for a while after your transplant. Ask your dietitian how long you might need to do this.

Before Transplant

Before transplant, limit the amount of salt in your diet:

- Do not add any extra salt to your food.
- Limit your intake of condiments such as mustard, ketchup, relish, soy sauce, Worcestershire sauce, and others.
- Limit fast-food meals. They are high in salt.
- Limit processed meats such as ham, bacon, corned beef, sausage, and packaged lunch meats.
- Choose low-salt, low-fat chips, pretzels, and crackers.
- Learn to read food labels. Look for “sodium free,” “salt free,” “very low in sodium,” and “light in sodium” (which means the sodium is reduced by half).

You may also need to adjust your potassium and phosphorus intake. This will depend on your kidney function and lab values. Your dietitian will help you choose foods that are best for you.
After Transplant

After your transplant, you will want to keep up your healthy eating habits. You will have other special nutritional needs as well. You will receive the detailed booklet *Nutrition After Your Transplant*. It covers:

- Nutritional effects of your medications
- Your protein and calorie needs
- Sodium, potassium, calcium, and magnesium
- Your fluid needs
- Maintaining your weight with diet and exercise
- Blood sugar control
- Food safety

Changes in Your Diet

Even though your kidney may be working properly, your medications may cause side effects that will require you to make changes in your diet.

*These are guidelines only. It is best to talk about your specific dietary needs with a dietitian or diet technician.*

Eat Enough Protein

If you are taking prednisone, you will need extra protein. Prednisone causes you to lose muscle mass, and protein helps build muscle. Protein also promotes wound healing.

Your dietitian will tell you how much protein is right for you and will provide dietary guidelines to help you meet your needs.

Limit Sodium

You will still need to limit the amount of sodium in your diet. How strict you will need to be will depend on your symptoms. Some medications such as prednisone can cause you to retain fluids. Tacrolimus may raise your blood pressure. Limiting sodium will help control these side effects.

Lower Fat and Cholesterol

Both tacrolimus and prednisone will cause your blood cholesterol to rise. You will be given lots of tips about how to lower the fat and cholesterol in your diet. The booklet *Nutrition After Your Transplant* lists helpful cookbooks and websites.
Limit Potassium

Tacrolimus can cause a temporary rise in your potassium level. You will likely need to limit your intake of potassium-rich foods for a short time.

Supplement with Magnesium

The medicines you will be taking can cause magnesium loss. You will be given magnesium tablets, and you can also eat more foods that are rich in magnesium.

Magnesium will likely be a big issue after transplant. Pay close attention to the list of high-magnesium foods you will need. You will need to eat these because the new kidney will excrete extra magnesium from your body, and you will need to replace it.

Supplement with Calcium

A long-term side effect of taking prednisone is bone and joint weakness. You will need to eat plenty of foods rich in calcium to help keep your bones healthy. Also, a calcium supplement will be prescribed for you.

Drink Plenty of Fluids

You will need to increase your fluid intake after your transplant. It is important to stay hydrated to help your new kidney function. Your health care providers will tell you how much water and other fluids you should drink.

If all goes as expected, you should drink 2 to 3 liters of water and other fluids every day.

Watch Your Weight

You will be asked to weigh yourself daily. Weight gain due to fluid retention can be a sign of rejection.

Your appetite may increase as a result of feeling better and taking prednisone. Follow the guidelines in the booklet Nutrition After Your Transplant to help keep your weight in balance. Keep in mind that exercise is a key factor in weight control. Ask to talk with the transplant dietitian if you need help gaining or losing weight.

If you have any questions or concerns about your nutrition and dietary needs, call the transplant dietitian at 206-598-4163.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
Medications
After your kidney/pancreas transplant

Getting Started
Medications and nutritional supplements are vital to your recovery and the success of your transplant operation. Your prescriptions will include:

- **Immunosuppressive drugs** to help prevent or treat rejection of your new organ. At first, the doses will be high and then will be tapered down slowly, based on your blood test results. You will take these drugs as long as you have your transplanted organ(s).
- **Antibiotics** to fight infections during the first 3 to 6 months after surgery. Your immunosuppressive drugs increase your risk of getting infections. Antibiotics will help you fight them.
- **Antacids** for the first 2 to 3 months after transplant to help prevent stomach upset and heartburn.
- **Laxatives** as needed for 2 to 3 months after transplant to help keep you from getting constipated.
- **Aspirin** in small doses to prevent blood clotting.
- **Blood pressure medications** as needed for high blood pressure.
- **Iron** as needed to help treat anemia.
- A **multivitamin** to supplement your diet.
- **Calcium** and **vitamin D** to help prevent osteoporosis (thin, weak bones).
- **Magnesium** and **phosphorus** as needed to make up for the loss of these minerals through urine after transplant.
- **Pain medications**, usually for about 1 week after surgery.

In the first few months after surgery, you will take many medications. There is a potential for many side effects. Keep all of your appointments with your doctor and the Transplant Clinic so that your medications and medication levels can be adjusted when needed.
**Medication Costs**

Medications can cost as much as $3,000 or more each month. The costs may decrease over time as some of the medicines are stopped or your doctor lowers your doses. Medicare, Medicaid, and private insurers may cover part of the costs of medications.

Be sure to verify your medical insurance coverage for transplant medications before your transplant. Call your insurance representative, social worker, local pharmacist, or financial counselor where you will receive your follow-up care. Know what your expected co-pays or deductibles will be. Keep your insurance coverage after transplant since your medication costs can be $12,000 to $36,000 a year.

**Deciding on a Pharmacy**

Before your transplant, decide where you will get your prescriptions filled. You can fill your prescriptions at a local pharmacy or use a mail-order pharmacy. It is a good idea to tell your pharmacy that you will be a transplant patient so that they may anticipate your medication needs and set up billing arrangements.

If you will be staying for a short time in the Seattle area after your transplant, you will need to make a short-term plan for filling your prescriptions. Call your insurance company for a list of participating pharmacies near where you plan to stay after discharge from the hospital. Always carry your prescription insurance card with you so you have it to show it at any pharmacy.

**Medical Equipment**

You may need to buy certain medical equipment to help monitor the effect of your treatment. Some things you might need are a blood pressure cuff, scale, thermometer, and blood glucose meter. It is a good idea to buy and learn how to use these items before your transplant.

**At the Hospital**

_When you are called in for transplant, bring the medications you already take with you._ This will give your transplant team accurate information. By this time you should have a pharmacy plan in place for getting your medicines after your transplant.

After surgery, you will begin to learn about your new medication regimen. You will need to know the name, strength, dose, purpose, and side effects of each medicine you take. The pharmacist will begin teaching you about your medications about 1 to 2 days after surgery.
At first, the number of medications may seem overwhelming, but they will be decreased over the next several months. Patients have told us that the best way to learn all of this information is to start taking the medications yourself while still in the hospital.

The pharmacist will give you a box called a mediset to help you organize your medicines. It is a very good idea for family members and others on your support team to learn along with you if you need help managing your medications.

**Tips to Help Organize Your Medications**

- Try to organize your dosing schedule so that you take medicines only 4 times a day – at breakfast, lunch, dinner, and bedtime.
- Work with your pharmacist to plan a good schedule for you.
- Use your mediset box. Store it at room temperature away from direct light.
- You may want to carry a 1-day mediset box with you during the day.
- You may want to get a watch with an alarm to remind you when it is time to take your medications.

**After Discharge**

- When you leave the hospital, you will be given prescriptions to fill at your chosen pharmacy. Have these prescriptions filled as soon as possible after discharge so that you do not run out.
- Keep an up-to-date list of all of your medications – often called a profile – with you, along with the directions for taking them. Update your profile as needed and use it to restock your mediset. There is a blank profile in Chapter 20, “My Transplant Log.”
- When you need refills on your prescriptions, contact your pharmacy. If your refills have run out and you need to renew your prescriptions, your primary care doctor or nephrologist can write new prescriptions for you.
- When you come for clinic visits, bring your mediset, your medication list, the medications you have filled at your pharmacy, and your records. Always keep a written list of medications with you. If you have problems or questions about your medications after you are discharged, call your transplant nurse coordinator.
- Keep your appointments so that your medications can be checked and adjusted if needed.
- Refill your prescriptions early, so you do not run out.
Guidelines for Taking Medications

Here are some basic guidelines for taking medications:

- Take only the medications your doctor prescribed for you.
- Take your medications only as prescribed. Do not increase or decrease your dose or stop taking a medication without consulting your doctor or transplant coordinator.
- If you miss a dose of medication, do not take 2 doses when it is time for your next dose. Call your transplant coordinator or doctor for further instructions if you miss a dose.
- Check with your doctor or pharmacist before you take any new medications, including over-the-counter medicines, herbal or natural remedies or supplements, or vitamins.
- Know the side effects of your medications. Tell your doctor or transplant nurse coordinator if you have any side effects.
- Tell your other health care providers (doctor, dentist, optometrist, etc.) about any new medications that you are taking, including over-the-counter products, herbal or natural remedies, and vitamin or mineral supplements. Be sure to tell them you have had a transplant and that you are taking immunosuppressive drugs.
- Carry a list of your current medications and doses with you.
- Keep all medications out of reach of children and pets.
- Do not give your medications to anyone else.
- Do not let your medication supplies run out.

What to Avoid

Avoid these items when taking immunosuppressive drugs (unless your doctor says you may use them):

- Grapefruit and grapefruit juice
- Non-steroidal anti-inflammatories, such as ibuprofen, (Advil, Nuprin) and naproxen (Aleve, Naprosyn)
- Aspirin in large quantities
- Erythromycin
- Clarithromycin
- Itraconazole
- Voriconazole
- Ketoconazole
- Diltiazem
- Verapamil
- Dilantin
- Phenobarbital
- Rifampin
- St. John’s Wort (hypericum perforatum)

**Herbal and Natural Medicines**

You will also need to avoid all other herbal and natural medicines or supplements. They may cause adverse drug interactions and toxicities, they are often costly, and they make managing your transplant regimen more complex. Always check with your doctor before taking any herbal medicines or supplements.

**Immunosuppressants**

*Immunosuppressants,* or anti-rejection drugs, suppress the body’s immune system by decreasing the effects of lymphocytes (a type of white blood cell). They are taken so that your body’s immune system does not see your new organ as “foreign” and then defend your body by attacking the organ with white blood cells.

Immunosuppressants may make your body more likely to get infections from organisms that normally do not cause infections (called “opportunistic” infections), as well as from organisms in your environment such as cold and flu viruses. Immunosuppressants may also increase your risk of developing tumors.

The transplant team uses a combination of 2 to 4 immunosuppressants. Each drug works by blocking a different pathway in your immune system. Working together, they produce better immunosuppression and allow you to take smaller doses of each drug. Taking smaller doses also reduces the number and severity of side effects caused by the drugs. The specific immunosuppressants and protocol for your type of transplant will be explained by your transplant doctor and in the class or the DVD.

You must remember to take your immunosuppressants every day as prescribed by your doctor to prevent rejection. **If you forget whether you took your dose on a given day,** call your doctor or transplant nurse coordinator for instructions. Do **not** double your dose if you think you missed a dose.

Even though you are taking your immunosuppressants, rejection may still occur. Acute rejection most often occurs within the first year after transplant. It may be successfully reversed by using medication. It is important for you to recognize the signs and symptoms of rejection so that we can start treatment right away.
This is a list of the more common immunosuppressant (anti-rejection) drugs that you may take or receive:

- Antithymocyte globulin (ATG, Thymoglobulin)
- Simulect
- Prograf
- Myfortic and Cellcept
- Prednisone

These immunosuppressant drugs are less common:

- Cyclosporine
- Sirolimus
- Azathioprine
- Leflunomide

**Antithymocyte globulin (ATG, Thymoglobulin)**

ATG is a strong anti-rejection drug. It is made from antibodies that are made in animals. ATG destroys white blood cells. If you receive ATG, you will have a 12-hour infusion of it starting just before your transplant, and then daily or every other day for at least 3 doses.

Some patients receive ATG to treat acute rejection episodes.

**Potential Side Effects**

As lymphocytes (white blood cells) are destroyed in your body, they release chemicals that can cause allergic or flu-like symptoms. These symptoms are more common after the first few doses. Steroids, acetaminophen (Tylenol), and an antihistamine (Benadryl) are usually given before your doses to prevent some of the allergic side effects.

Some side effects include:

- Flu-like symptoms
- Fever
- Chills
- Nausea
- Headache, muscle aches, and backache
- Shortness of breath
- Lowered or elevated blood pressure
- Severe lowering of white blood cells
- Lowered platelets and red blood cells
- Increased risk of infection
Azathioprine (Imuran)

Azathioprine is an immunosuppressant drug that helps prevent rejection. It affects the bone marrow and decreases the number of white blood cells the body produces. It replaces mycophenolate in your immunosuppressant plan. It is used with cyclosporine or tacrolimus and steroids.

**Dose**

Azathioprine is available as a 50 mg yellow tablet (Imuran brand). It has a “score” or line in the center that makes it easy to break in half. The usual maintenance dose is 25 mg to 175 mg taken 1 time a day, usually in the evening at bedtime.

**Potential Side Effects**

Azathioprine affects cells that grow rapidly, such as white blood cells, red blood cells, platelets, and hair cells. The effects on blood cells can usually be reversed by lowering the dose.

Some side effects include:

- Severe lowering of white blood cells
- Mild hair loss
- Bleeding (lowered platelets)
- Nausea
- Anemia (lowered red blood cells)
- Jaundice (yellow skin caused by effects on the liver)

**Cost**

Azathioprine usually costs about $15 to $100 a month, and it is taken indefinitely. Generics are available. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

Basiliximab (Simulect)

Simulect is an antibody that blocks the action of interleukin-2 (IL-2). IL-2 is a hormone-like substance (cytokine) in the body that helps activate T-lymphocytes, a type of white blood cell that is thought to attack the graft and destroy it. Some patients may receive an IV infusion of this drug at the time of transplant. A second dose is given before discharge from the hospital.

**Potential Side Effects**

Simulect does not cause side effects in most patients. There is a possibility of allergy symptoms such as fever or chills.
Cyclosporine (Neoral, Gengraf, Sandimmune)

Cyclosporine is an immunosuppressant drug that helps prevent rejection. It decreases the activation, growth, and function of lymphocytes (white blood cells). It replaces tacrolimus in the immunosuppressant plan. It is used with mycophenolate and steroids. If cyclosporine is part of your immunosuppressant drug regimen, you will start to receive it about 1 to 3 days after your transplant.

**Dose**

There are several forms of oral cyclosporine available, including a liquid solution. Capsules may be available in 2 sizes: 25 mg and 100 mg. The strength of the liquid solution is 100 mg/ml. You will use a combination of sizes for your dose. Use the smallest number of capsules possible to make up your dose.

**Example:**

- For a 225 mg dose: take 2 of the 100 mg capsules plus 1 of the 25 mg capsules.
- For a 175 mg dose: take 1 of the 100 mg capsule plus 3 of the 25 mg capsules.

The capsules are sensitive to air and come in a special blister-seal packaging. Keep them in the blisters until you are ready to take your dose. They are stable for 7 days outside the blister packaging.

Usual maintenance dose is 100 mg to 500 mg taken every 12 hours, usually at 8 a.m. and 8 p.m., with or without food. Take it at the same time every day. Your doctor will adjust your dose based on the result of a cyclosporine blood test.

**Potential Side Effects**

The most serious side effect of cyclosporine is toxicity or injury to the kidney. This effect can be avoided or reversed by close monitoring of your kidney function and proper adjustment of your dose.

Some side effects are:

- Decreased kidney function
- Increased blood pressure
- Increased blood potassium
- Decreased blood magnesium
- Shakiness or tremor
- Burning or tingling in hands or feet
- Increased or unwanted hair growth
- Increased gum growth
- Mood changes
- Acne
- Decreased liver function
- Convulsions
- Headache
- Increased cholesterol
- Increased risk of infection
- Increased gum growth
Cost

Cyclosporine usually costs about $750 to $1,500 a month. You will take this drug indefinitely. Generics are available. Medicare Part B may cover 80% of cost for eligible transplant recipients.

Leflunomide (Arava)

Leflunomide is an immunosuppressant drug that helps prevent organ rejection. It is also used to treat certain types of viral infections, called BK virus. It works by blocking the production of immune cells that can cause rejection. It replaces mycophenolate or azathioprine as part of your immunosuppressant regimen. It is used together with tacrolimus and prednisone.

Dose

Leflunomide is available in 10 mg and 20 mg tablets.

The usual maintenance dose is 10 mg to 40 mg taken once a day. Your doctor may adjust your dose based on the result of a blood test.

Potential Side Effects

Some side effects include:

- Anemia
- Diarrhea
- Lowered white blood cells
- Decreased liver function
- Increased hair loss

Cost

Leflunomide costs about $20 to $150 a month. Generics are available.

Mycophenolate (Myfortic, CellCept)

Mycophenolate is an immunosuppressant drug that helps prevent rejection. It decreases the production of lymphocytes (white blood cells) in the body. It is used with tacrolimus and prednisone. As part of your transplant immunosuppressant regimen, you will take it orally 2 times a day. It is available in 2 different forms at most pharmacies.

Dose

Myfortic is available in 2 sizes: 360 mg and 180 mg tablets. Myfortic has delayed absorption.

CellCept is available in 2 sizes: a 250 mg capsule and a 500 mg tablet. It is also available as an oral suspension with a strength of 1gm/5ml (teaspoonful).
Usual maintenance dose is 720 mg of Myfortic or 1,000 mg (1 gm) of CellCept, taken orally 2 times a day. It is best taken on an empty stomach. Do not take with liquid antacids such as Maalox and Mylanta, since they can affect how well your body absorbs mycophenolate. Take your doses at the same time every day. Your doctor may adjust your dose based on the result of a blood test.

**Potential Side Effects**

<table>
<thead>
<tr>
<th>More common:</th>
<th>Less common:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Leukopenia (severe lowering of white blood cells)</td>
<td>- Anemia (severe lowering of red blood cells)</td>
</tr>
<tr>
<td>- Nausea or vomiting</td>
<td>- Thrombocytopenia (excessive lowering of platelets)</td>
</tr>
<tr>
<td>- Abdominal pain</td>
<td></td>
</tr>
<tr>
<td>- Diarrhea</td>
<td></td>
</tr>
<tr>
<td>- Increased risk of infections</td>
<td></td>
</tr>
</tbody>
</table>

**Cost**

Mycophenolate usually costs $500 to $700 a month. You will take this drug indefinitely. Generic CellCept is available. There is no generic form of Myfortic available. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

**Prednisone (Deltasone), Methylprednisolone (Solumedrol)**

Prednisone (oral) and methylprednisolone (intravenous) are also known as steroids or corticosteroid hormones. These immunosuppressant drugs are used to prevent or treat rejection of the transplanted organ.

These drugs are related to a natural hormone in your body called cortisol. They decrease the function and activity of white blood cells (lymphocytes). You will be given methylprednisolone by IV injection shortly before and for several days after your surgery.

After that, some patients will take prednisone orally as part of their long-term immunosuppressant regimen.

Methylprednisolone in large IV doses (called “pulse therapy”) may be used later as needed to treat acute rejection. After pulse therapy, you will be placed on oral prednisone as part of your long-term immunosuppressant regimen.

**Dose**

Prednisone tablets are available in 6 different sizes: 1 mg, 2.5 mg, 5 mg, 10 mg, 20 mg, and 50 mg. The tablets are usually white and are scored, which allows them to be broken in half easily.

Usual maintenance dose is 5 mg to 10 mg a day as a single dose. Always take prednisone with food.
Potential Side Effects

Some of the side effects of prednisone and methylprednisolone are linked with higher doses (dose-related). They decrease when the doses are reduced. Other side effects occur after many months or years of taking the drug at usual doses.

Exercise and good nutrition help keep your body strong (especially bones and muscles) while taking prednisone. Some patients who do not have diabetes will need to take insulin to manage high blood glucose caused by these medications. If you have diabetes, you may need to take higher doses of insulin right after your surgery.

<table>
<thead>
<tr>
<th>Short-term side effects at high doses:</th>
<th>Long-term side effects:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Stomach upset, heartburn, and ulcers</td>
<td>- Muscle weakness</td>
</tr>
<tr>
<td>- Emotional changes, mood swings, sleep disturbances</td>
<td>- Bone and joint weakness or pain</td>
</tr>
<tr>
<td>- Night sweats</td>
<td>- Osteoporosis (thinning bones)</td>
</tr>
<tr>
<td>- Weight gain, swelling</td>
<td>- Weak, dry, thin skin; stretch marks</td>
</tr>
<tr>
<td>- Slowed wound healing</td>
<td>- Increased or unwanted hair growth</td>
</tr>
<tr>
<td>- Increased appetite, feeling hungry</td>
<td>- Round shoulders (“buffalo hump”)</td>
</tr>
<tr>
<td>- Increased blood glucose</td>
<td>- Easy bruising</td>
</tr>
<tr>
<td>- Face swelling (“moon face”)</td>
<td>- Visual changes, cataracts</td>
</tr>
<tr>
<td>- Acne</td>
<td>- Increased cholesterol</td>
</tr>
<tr>
<td>- Blurred vision</td>
<td>- Increased risk of getting certain cancers</td>
</tr>
<tr>
<td>- Increased risk of infection</td>
<td>- Increased risk of infection</td>
</tr>
</tbody>
</table>

Cost

Prednisone costs $5 to $10 a month. You will take the drug indefinitely. Generics are available. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

Sirolimus (Rapamune)

Sirolimus is an immunosuppressant drug that is used to help prevent rejection. It blocks the function of immune cells (T-lymphocyte white blood cells) and prevents them from destroying the transplanted organ. It is taken with tacrolimus or cyclosporine, mycophenolate, and prednisone. If it is used as part of your immunosuppressant regimen, you may receive an oral dose before transplant and then continue taking 1 oral dose daily.
Dose

Rapamune is available in 1 mg and 2 mg tablets, and as an oral solution in a strength of 1 mg/ml.

The usual maintenance dose is 1 mg to 10 mg taken once a day in the morning, with or without food. Take your dose at the same time every day. Also take it the same way every day – with or without food. Your doctor might adjust your doses based on the result of a blood test.

Potential Side Effects

- Increased blood cholesterol and triglyceride levels
- Acne
- Tingling feeling in hands or feet
- Decreased blood platelets and white blood cells
- Joint pain
- Increased risk of infection
- Mouth ulcers or sores
- Shortness of breath (rare)

Cost

Sirolimus usually costs $500 to $1,200 a month. You will take the drug indefinitely. No generic form is available. Medicare Part B may cover 80% of cost for eligible transplant recipients.

Tacrolimus (Prograf, FK-506)

Tacrolimus is an immunosuppressant drug that helps prevent rejection. It decreases activation, growth, and function of lymphocytes (white blood cells). It is taken with mycophenolate and prednisone. It is usually started about 1 to 3 days after transplant surgery.

Dose

Tacrolimus capsules are available in 3 sizes: 0.5 mg, 1 mg, and 5 mg. You can use a combination of different sizes to make your dose. Generic forms are available.

The usual maintenance dose is 1 mg to 10 mg taken every 12 hours, usually at 8 a.m. and 8 p.m. You may take it with or without food. Your doctor might adjust your dose based on the result of a blood test.

Potential Side Effects

The most serious side effects of tacrolimus are injury to the kidney (nephrotoxicity) and damage to the nerves (neurotoxicity). This damage may cause tremor and headache. These side effects may be reduced by adjusting your dose based on results of a tacrolimus blood-level test.
Some side effects are:

- Decreased kidney function  - Headache
- Increased blood glucose   - Nausea or vomiting
- Increased blood pressure  - Convulsions
- Increased blood potassium - Hair loss
- Decreased blood magnesium - Increased cholesterol
- Shakiness or tremor       - Increased risk of infection

**Cost**

Tacrolimus usually costs $500 to $1,000 a month. You will take this drug indefinitely. Medicare Part B may cover 80% of cost for eligible transplant recipients. Generic forms are available.

**Antibiotics**

When your body’s immune system has been suppressed, you are at higher risk of getting infections. Infections can be caused by organisms (germs) that come from your environment or another person. They can also be caused by organisms that live in or on you but that normally do not cause infection.

During the first 3 months after your transplant surgery, you are at especially high risk of infections because of the large doses of immunosuppressant drugs you are taking to prevent rejection. These infections can be more severe and harder to treat in a person who is immunosuppressed. It is important that you take several antibiotics during this period to prevent infection.

**Clotrimazole Troche (Mycelex)**

Kidney transplant patients will take an antifungal (anti-yeast) drug to prevent an overgrowth of yeast in the mouth (thrush) for 3 months after transplant.

**Dose**

The 10 mg clotrimazole troche (lozenge) should be dissolved in the mouth. Do not eat or drink for at least 30 minutes after each dose.

**Potential Side Effects**

- Unpleasant taste in mouth - Chalky mouth
- Dry mouth                - Nausea

**Cost**

The cost is about $100 a month. You will usually take clotrimazole for 3 months after transplant. Generics are available.
Fluconazole (Diflucan)

Fluconazole is an antifungal antibiotic used to treat or prevent yeast infections. Pancreas or kidney/pancreas transplant patients will take fluconazole for up to 3 months after transplant to prevent infections in the mouth, surgical site, and urinary tract.

**Dose**

The usual dose is 100 mg taken orally 1 time a day. It can be taken with or without food.

**Potential Side Effects**

- Nausea
- Diarrhea
- Rash
- Abdominal pain

**Cost**

Fluconazole costs about $20 to $200 a month. A generic form is available. This drug is not covered by Medicare.

Valganciclovir (Valcyte), Ganciclovir (Cytovene), Acyclovir (Zovirax)

Valganciclovir, ganciclovir, and acyclovir are antiviral drugs used to treat and prevent herpes infections and to prevent cytomegalovirus (CMV) infections, a type of herpes infection. Most patients will take 1 of these for 3 months after transplant.

**Dose**

The usual dose of valganciclovir is 900 mg once a day, and the usual dose of ganciclovir is 1,000 mg (1 gm) 3 times a day to prevent CMV infections.

The usual dose of acyclovir for preventing herpes is 400 mg 2 times a day. These drugs can be taken with or without food.

**Potential Side Effects**

- Nausea
- Headache
- Decreased kidney function
- Decreased white blood cells

**Cost**

Valganciclovir and ganciclovir cost about $2,000 to $2,500 a month. Acyclovir costs about $20 to $100 a month. Acyclovir and ganciclovir are available as generics. No generics are available for valganciclovir.
**Trimethoprim/Sulfamethoxazole (Bactrim, Septra, Cotrimoxazole, Trim/Sulfa, TMP/SMX)**

Trimethoprim/sulfamethoxazole is an antibacterial sulfa drug used to treat or prevent bacterial infections in the bladder. It also helps prevent or treat lung infections caused by too much of the fungus *pneumocystis*. This fungus occurs naturally in the body, but a weakened immune system can cause it to overgrow.

**Dose**

Most patients will take a single strength (SS) tablet daily, usually at bedtime, for 6 months. Take with a full glass of water.

**Potential Side Effects**

- Rash (report any rashes to your doctor)
- Lowered white blood cell count
- Sensitivity to the sun
- Nausea

**Cost**

This drug costs $5 to 10 a month. It is taken for 6 months to indefinitely after transplant. Generics are available.

**Dapsone**

Dapsone is used to treat pneumocystis lung infections. It may be used instead of trimethoprim/sulfamethoxazole in patients who are allergic to sulfa drugs.

**Dose**

Patients will take 1 tablet (100 mg) daily for 6 months.

**Potential Side Effect**

- Lowered red blood cell count

**Pentamidine (Pentam)**

Pentamidine is an antibiotic that may be used instead of trimethoprim/sulfamethoxazole to prevent or treat infections with pneumocystis.

**Dose**

Patients will receive an inhaled treatment of 300 mg once a month for 6 months.

**Potential Side Effects**

- Unpleasant taste
- Cough
Antacids

Antacids coat the stomach, neutralize acid, or prevent acid secretion. They are needed at first after transplant to prevent upset stomach or stomach injury caused by high doses of your immunosuppressants or by stress. Usually, these are taken routinely for 3 months after transplant unless you have a history of stomach ulcers or severe heartburn.

You will be prescribed one of these antacid medications:

Ranitidine (Zantac)

Ranitidine is a drug that decreases the output of the stomach acid. This drug may be used alone or along with liquid antacids.

Dose

The usual dose for ulcer prevention is 150 mg at bedtime.

Potential Side Effects

- Rash
- Headache
- Mental changes
- Dizziness

Cost

Ranitidine costs $10 a month. It is taken for 3 months after transplant. Generics are available. It is available over-the-counter (without a prescription).

Pantoprazole (Protonix), Omeprazole (Prilosec), Lansoprazole (Prevacid)

Pantoprazole, omeprazole, and lansoprazole are potent drugs that prevent the stomach from making acid. They are used to prevent and treat stomach ulcers and heartburn. They can be used instead of ranitidine.

Dose

For best results, these drugs should be taken on an empty stomach 30 minutes before a meal. The usual doses of these drugs are:

- Protonix – 40 mg taken once a day
- Prilosec – 20 mg taken once a day
- Prevacid – 30 mg once a day

Potential Side Effects

- Nausea
- Abdominal pain
- Headache
- Dizziness
- Constipation
Cost

These drugs cost about $20 to $100 a month. They are taken for 3 months after transplant. Generics are available.

Laxatives and Stool Softeners

These products will make your stools softer or stimulate your bowel to help you have comfortable bowel movements. Constipation and hard stools should be avoided after surgery. Straining to have a bowel movement can lead to problems with your wound.

It is important to reduce your use of medications that can cause constipation, such as pain medicines, as soon as possible after surgery. Drinking plenty of fluids, increasing your activity, and increasing the fiber in your diet can also help.

Docusate (Colace) is a mild stool softener that is used most often. Senna and bisacodyl (Dulcolax) are stimulant laxatives that may also be prescribed for some patients. If you have diarrhea while taking them, you should decrease your dose or stop taking them.

Some common laxatives are:

- Bisacodyl (Dulcolax)
- Senna (Senokot)
- Psyllium (Metamucil)
- Citrucel
- Cascara
- Milk of Magnesia

Some common stool softeners are:

- Docusate (Colace, DOSS)
- Lactulose (Cephulac)
- Miralax

Cost

These products cost about $5 to $10 a month. You will take them for about 3 months after transplant. Generics are available. These are available over-the-counter (without a prescription).
High Blood Pressure Medications
(Antihypertensives)

High blood pressure (*hypertension*) is common after transplant. Some transplant patients may need to take drugs to treat the high blood pressure they had before surgery. High blood pressure can also be caused by some of the immunosuppressant drugs. Controlling blood pressure will prevent damage to your new organ(s) and will help prevent other problems, such as stroke and heart disease.

Some blood pressure medications can also help the organ recover by protecting it from the toxic effects of some anti-rejection medications (cyclosporine, tacrolimus). We suggest you monitor and record your blood pressure and pulse at home so we can adjust the dose of your high blood pressure medicine, if needed. The transplant team often prescribes a combination of a calcium-channel blocker drug, such as amlodipine (Norvasc), and a beta-blocker drug, such as metoprolol, to control blood pressure.

Some common antihypertensives used by the transplant team include:

- Amlodipine (Norvasc)
- Nifedipine (Procardia, Procardia-XL, Adalat)
- Felodipine (Plendil)
- Metoprolol (Lopressor, Toprol XL)
- Labetalol (Normodyne, Trandate)
- Atenolol (Tenormin)
- Clonidine (Catapres)
- Doxazosin (Cardura)
- Valsartan (Diovan)
- Losartan (Cozaar)
- Enalapril (Vasotec)
- Lisinopril (Zestril, Prinivil)

**Special Instructions**

- Do **not** stop taking blood pressure medicine before talking with your doctor.
- Monitor and record your blood pressure and pulse before taking your morning and bedtime doses.
- Rise slowly from lying or sitting positions. This helps lessen feeling dizzy or lightheaded.
**Potential Side Effects**

- Dizziness
- Rapid lowering of blood pressure
- Increased or decreased heart rate
- Flushing
- Headache
- Feeling tired

**Cost**

Blood pressure medicines cost at least $20 to $50 a month. Some patients take them indefinitely. Many are available in generic form.

**Clot Prevention**

A small dose of aspirin can help prevent blood clots in blood vessels that lead to your new organ. It might also prevent heart attacks and strokes.

**Dose**

The transplant team may prescribe a dose of 1 tablet (81 mg, or baby aspirin) a day. Not all patients will need this.

**Potential Side Effects**

- Bleeding of the soft tissues or gastrointestinal tract
- Blood in the urine
- Ringing in the ears
- Nausea
- Headache
- Abdominal cramps
- Rash
- Muscle aches

**Cost**

Aspirin costs $5 a month. Some patients will take it indefinitely. Generic forms are available. It is an over-the-counter drug (no prescription needed).

**Cholesterol-Lowering Drugs**

Some patients may need medicines to lower cholesterol. Some common cholesterol-lowering drugs are:

- Atorvastatin (Lipitor)
- Simvastatin (Zocor)
- Pravastatin (Pravachol)
- Lovastatin (Altocor, Altoprev, Mevacor)

**Special Instructions**

Report any unexplained muscle weakness or pain to your doctor.

**Potential Side Effects**

- Dizziness
- Headache
- Rash
- Nausea
- Abdominal cramps
- Muscle aches
Vitamin and Mineral Supplements

Iron (ferrous sulfate, ferrous gluconate)
Iron helps the body build new red blood cells. Some transplant patients may need iron supplements if they are anemic (have a low red blood cell count).

**Dose**
The usual dose is between 1 and 3 tablets a day.

Multivitamins
We recommend taking 1 multivitamin every day to supplement your diet. We often suggest prenatal vitamins because they contain the amounts of vitamins and minerals transplant patients need.

Calcium
Most transplant patients need extra calcium to help prevent bone disease and osteoporosis (thinning of the bones). Some common calcium supplements are:
- Calcium carbonate (TUMS and Oscal)
- Calcium citrate (Citracal)

**Dose**
We recommend taking 600 mg to 1,200 mg of calcium a day, depending on how much calcium you get in your diet. Dairy foods are a good source of calcium. See Chapter 11, “Nutrition,” or talk with your transplant dietitian for more information.

Vitamin D
Vitamin D is needed to help the body absorb the calcium from your diet or supplements. Some common vitamin D supplements are:
- Cholecalciferol
- Calcitriol (Rocaltrol)
- Ergocalciferal

**Dose**
We recommend taking about 1,000 units of cholecalciferol or 0.25 mcg of Rocaltrol every day, in addition to the vitamin D that is in your multivitamin. Ergocalciferal is a potent form of vitamin D that may be prescribed after your doctor has checked the vitamin D levels in your blood.
Magnesium

Our bodies need magnesium to keep our muscles and nerves healthy. Magnesium also helps some enzymes work. (An enzyme is something that helps speed up a chemical reaction in your body.)

Many transplant patients have low magnesium levels. This may be caused by some of the antirejection drugs (tacrolimus, cyclosporine). It may be hard to get enough magnesium in your diet. See Chapter 11, “Nutrition,” or talk with your transplant dietitian for more information.

Magnesium is available as a tablet. A common magnesium supplement is:
- Magnesium oxide (MagOx)

Phosphate

Phosphate, or phosphorous, is a mineral that is needed for cell function and energy. It is also an important part of bones.

Some transplant patients develop low blood-phosphate levels. This may be a short-term problem. Dairy products are a dietary source of phosphate. See Chapter 11, “Nutrition,” or talk with your transplant dietitian for more information.

Some common phosphate supplements are:
- Sodium phosphate (K-Phos Neutral)
- Phosphosoda
- Neutra-Phos

Sodium Bicarbonate

Patients who receive a pancreas or kidney/pancreas transplant and have bladder drainage of the pancreas need to take a bicarbonate supplement (see Chapter 9, “Surgery”). Bicarbonate helps prevent acidosis (increased acidity of the blood), which can result in nausea and shortness of breath.

**Dose**

The usual dose of bicarbonate is 4 tablets of 650 mg each, 4 times a day.

**Cost**

Bicarbonate costs $40 a month. Pancreas transplant patients will take it indefinitely. Generic forms are available. It is available over-the-counter (without a prescription).
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
Discharge Checklist

After a kidney/pancreas transplant

Handling Your Questions and Concerns

I will be able to leave the hospital when I know:

☐ When to call with questions and concerns

An experienced transplant team member is on call 24 hours a day. You may have questions or need to report a problem after you arrive home. Call one of the phone numbers listed on page 13-2 under “Whom to call with questions and concerns” if you have:

- Fever: Temperature higher than 100°F (37.8°C)
- Pain: Increasing pain, especially abdominal pain or pain over your kidney area
- Signs of infection in your wound:
  - Redness
  - Tenderness
  - Swelling
  - Drainage from incision
- Nausea, vomiting, or diarrhea
- Urine changes:
  - Pain with urination
  - Bloody urine
  - If you had a kidney transplant: a sudden decrease in the amount of urine you are producing
  - You are not able to pass urine
• High blood glucose:
  - *If you had a pancreas transplant:* blood glucose over 250 mg/dl
  - Blood glucose regularly over 300 mg/dl

• Bowel changes:
  - No bowel movement for over 48 hours
  - Blood in your bowel movements

• Questions about your medications:
  - Dose instructions
  - What to do about missed doses
  - Other concerns

☐ Whom to call for questions and concerns

For **life-threatening emergencies** at any time:

• Call 9-1-1.

For other questions and concerns:

• **Weekdays** from 8 a.m. to 5 p.m., call your transplant coordinator.
  
  Your transplant coordinator is: ___________________________
  
  Phone number: 206-598-________________________

• **After hours and on weekends and holidays:** Call 206-598-6190 and ask for the kidney or pancreas transplant doctor on call to be paged.

For help with **housing, transportation, or emotional support:**

• Weekdays from 8 a.m. to 4:30 p.m., call the Transplant Social Worker at 206-598-4676.

• After hours and on weekends and holidays, call 206-598-6190 and ask for the Social Worker on call to be paged.

**Housing**

I will be able to leave the hospital when I know:

☐ **Where I will stay**

• At my home

• Or, I will be staying with or at: ___________________________

• Phone number: ___________________________
Transportation

I will be able to leave the hospital when I know:

☐ Who will drive me to and from my appointments

My Appointments After Discharge

I will be able to leave the hospital when I know:

☐ How to get blood draws at the lab

The lab is located on the 3rd floor of the hospital. You do not need an appointment for lab visits. Lab request slips will be given to you or called to the lab. The lab is open weekdays, 6:30 a.m. to 6 p.m.

Have your blood drawn on clinic appointment days (Mondays, Wednesdays, and Thursdays) between 6:30 and 8 a.m. If your transplant coordinator asks you to have blood drawn after hours, you will need to go to the Evening Blood Draw lab on the 2nd floor of the hospital.

☐ How to set up follow-up appointments at the Transplant Clinic

Your transplant coordinator or transplant resident will set up your first follow-up appointment for you. After that, you will make your return appointments at the clinic reception desk or by calling 206-598-6700 or your transplant coordinator.

Signs and Symptoms

I will be able to leave the hospital when I know:

☐ Signs and symptoms of kidney transplant rejection

- Weight gain
- Fluid retention (swelling of your feet)
- Decrease in the amount of urine you are producing
- Fever
- Pain or swelling over the transplant site
- Flu-like symptoms or just feeling unwell (fatigue, aches, fever)
- Increased levels of creatinine in your blood
□ Signs and symptoms of pancreas transplant rejection
  • Increased levels of serum amylase or lipase
  • *If bladder is being drained:* A decrease in urinary amylase
  • Flu-like symptoms: fatigue, aches, and fever
  • Elevated blood glucose levels

□ Signs and symptoms of infection
  • Fever and chills
  • Sore throat
  • Burning or pain with urination
  • Shortness of breath or coughing
  • Nausea or vomiting
  • Fatigue
  • Congestion
  • Areas of red skin

General Self-care
I will be able to leave the hospital when I can:

□ Care for my physical needs
  • Have a bowel movement (must have 1 before discharge)
  • Empty my bladder (if not on dialysis)
  • Properly care for my wound
  • Properly care for my vascular access site
  • *For patients who have diabetes or high blood glucose levels:* Demonstrate how to manage my blood glucose and give myself insulin shots

□ Exercise responsibly
  • Walk in the hallway 3 to 4 times a day
  • *If you have stairs at home:* Go up and down stairs
  • Know my physical activity limits
Monitor my progress

- Have a scale to check my weight
- Have a thermometer to take my body temperature
- Have a blood pressure machine/cuff to measure my blood pressure (may also measure pulse)
- *If you have diabetes or high blood glucose levels:* have a blood glucose meter to measure my blood sugar

Keep records

- Take and record my blood pressure, temperature, and pulse ______ times every day
- *If you had a pancreas transplant or have diabetes:* Check and record my blood glucose ______ times every day
- Weigh myself every morning
- Record my intake of fluids and how much I am urinating (total for each day):
  - 30 cc = 1 ounce
  - 240 cc = 8 ounces (1 cup)
  - 1,000 cc = 32 ounces (1 quart)
- Record my labs:
  - Creatinine (Cr)
  - Potassium (K)
  - *For pancreas transplant patients:* Blood and urine amylase
  - Anti-rejection drug levels
- *For pancreas transplant patients:* Collect 12-hour urine samples
- *If you have elevated blood glucose levels:* Record my insulin doses and adjust them, if needed
- Record my food or protein intake, if instructed by dietitian
- Keep track of medication changes and make changes to my medication box (mediset)
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881

If you have diabetes: Monitor my blood glucose and adjust insulin

- Check and record my blood glucose at least 2 times a day
- Give myself insulin injections
- Record insulin doses and adjust them if needed
- Know the signs and symptoms of hyperglycemia (high blood glucose) and hypoglycemia (low blood glucose)

Manage my diet

- Keep food and liquids down without vomiting
- Eat enough food to help my body heal after surgery
- Discuss dietary needs and foods to avoid or limit
- Make a diet plan

Manage my medications

- State the name and doses of the anti-rejection medications I am taking
- Adjust the doses of my medications as directed by my doctor
- Fill my medication box (mediset) and take medications on my own
- Receive my discharge medication prescriptions
- Have a plan for filling my discharge medication prescriptions
After you are discharged from the hospital, you will be in the outpatient phase of transplant care. You will have many visits with your transplant team at the outpatient Transplant Clinic. Your first visit will be scheduled for you before you leave the hospital.

Why do I need follow-up care at UWMC’s Transplant Clinic?

You will need to be assessed by the UWMC transplant team 4 to 6 weeks after your transplant. This is the most common time for complications and rejection to occur. The transplant team will check you closely and can diagnose and promptly treat transplant complications.

You will go back to your referring doctor’s care after:

- Your lab results and drug levels have stabilized
- Your stent has been removed (if you have one)
- A biopsy is done (if needed)

What should I be doing at home to help prepare for these visits?

- **Fill your discharge prescriptions** at the pharmacy of your choice as soon as possible after leaving the hospital.
- **Take your medications as prescribed.** Keep learning their names, functions, and doses. Update your mediset and medication profile when changes are made.
- **Refill your mediset** at least once a week.
- **Do not take over-the-counter, herbal, or natural medicines or supplements** without your doctor’s approval.
- **Do not take non-steroidal anti-inflammatory drugs.** Some of these are ibuprofen (Motrin, Advil, Nuprin), naproxen (Aleve, Naprosyn), indomethacin (Indocin), large doses of aspirin, and menstrual cramp medicines. You may use acetaminophen (Tylenol) for headache, fever, or pain.
Watch for signs and symptoms of rejection or infection. See Chapter 13, “Discharge Checklist,” for a list of what to look for.

Take your blood pressure, pulse, and temperature 2 times a day.

Weigh yourself once a day and record these numbers in Chapter 20, “My Transplant Log.”

If you have diabetes or are a pancreas transplant patient: Check your blood glucose at least 2 times a day. Record your results in “My Transplant Log.” It is better to check your blood sugars more often. Before each meal and at bedtime are the best times to check.

Measure your daily fluid intake and the amount you are urinating. Record these amounts in Chapter 20, “My Transplant Log.”

Note any vomiting or diarrhea in Chapter 20, “My Transplant Log.”

Collect urine (if asked to do so).

Change the dressings on your wound (if asked to do so). After bathing, make sure your wound is dry. Use a clean towel and blot dry.

Care for your wound. Wear loose clothing to prevent rubbing on the incision, which could cause irritation. If you see any signs of infection, call one of the numbers listed on page 13-2 under “Whom to call for questions and concerns” in Chapter 13, “Discharge Checklist.”

For kidney transplant patients: Try to empty your bladder at least every 3 to 4 hours. You will need to urinate more often and in larger amounts, especially at night. Within the next few weeks, your bladder will get bigger and you will not have to urinate so often.

Never go longer than 48 hours without a bowel movement. Constipation can be serious. To help avoid constipation:

- Increase your physical activity
- Drink enough fluids
- Reduce your pain medication
- Add fiber to your diet

Continue to monitor your catheter for infection. Also, it is recommended you flush your catheter once a week until it is removed. Peritoneal dialysis catheters are usually removed 6 weeks after transplant. This can be done during a clinic visit.

Arrange transportation to and from clinic.

Slowly increase your activity at home.

- Do not lift anything over 10 pounds for the first 6 weeks after surgery. Do not lift anything over 15 pounds for 6 weeks after that.
● You may shower every day. Do not take a bath, sit in a hot tub, or swim until your incisions are healed. This will take about 4 weeks.

● Do **not** drive until 6 weeks after your transplant unless your doctor tells you it is OK.

● We encourage you to walk and take part in the basic activities of daily living, such as cooking and doing light household chores.

● Do **not** do any high-impact exercise such as jogging, aerobics, hiking with a heavy pack, playing basketball, etc. for 6 months after transplant.

● Do **not** do any exercise that twists your body, such as golf or tennis, for 3 months after your transplant.

● Transplant patients can usually return to work part-time in about 4 weeks. If you have a job that requires you to be physically active, you should probably wait about 6 weeks to go back to work. Talk with your doctor about the best plan for you based on your recovery and your job.

● It is OK to resume sexual activities slowly, as you desire. Use birth control. This is **not** the best time to start a family. We recommend that women wait 2 years after transplant to get pregnant.

● We recommend not traveling long distances from home for the first 12 weeks after your transplant surgery.

- **Avoid the risk of infection.**

  ● Stay away from crowds. Avoid shopping at malls and going to movie theatres and other crowded places for about 3 months.

  ● Avoid handling pets, and do not empty litter boxes.

  ● Wash your hands often to lessen the risk of infection.

  ● You do not need to wear a mask all the time, but we advise wearing one if you must be around dust or anyone who is sick.

- **Talk with your surgeon about your peritoneal dialysis catheter.**
  Your fistula or graft will not be removed. If it clotted during or after surgery, it may need to be opened up.

- **Eat healthy foods.** Refer to the booklet “Nutrition After Your Transplant.” Keep a food log if your dietitian asks you to. There are usually few, if any, diet or fluid restrictions after transplant surgery. Sometimes you may need to continue to watch your potassium or fluid intake.
Do not eat grapefruit or drink grapefruit juice. This fruit affects how your immunosuppressant medications work.

Review your **Guide to Your Kidney/Pancreas Transplant**.

Call 9-1-1 right away if you have a life-threatening emergency.

**When should I call the transplant coordinator?**

*Weekdays:*
My transplant coordinator is: _________________________________

Phone number: 206-598- __________

*After hours and on weekends and holidays:*
Call 206-598-6190. Ask for the kidney or pancreas transplant doctor on call to be paged.

**Call if you have:**
- **Fever:** Temperature higher than 100°F (37.8°C)
- **Pain:** Increasing pain, especially abdominal pain or pain over your kidney area
- **Signs of infection in your wound:**
  - Redness
  - Tenderness
  - Swelling
  - Drainage from incision
- **Nausea, vomiting, or diarrhea**
- **Urine changes:**
  - Pain with urination
  - Bloody urine
  - *If you had a kidney transplant:* A sudden decrease in how much you are urinating
  - Not able to pass urine
- **High blood glucose:**
  - *If you had a pancreas transplant:* Blood glucose is over 250 mg/dl
  - Blood glucose is regularly over 300 mg/dl
• **Bowel changes:**
  - No bowel movement for over 48 hours
  - Blood in your bowel movements

• **Questions about your medications:**
  - Dose instructions
  - What to do about missed doses
  - Other concerns

**What do I bring to my clinic visits?**

• Your *Guide to Your Kidney/Pancreas Transplant*, in case you need to review it or refer to it.
  
  Be sure to include Chapter 20, “My Transplant Log.”

• **All other records** you have been keeping at home.

• **Urine collections** (take to the lab) if you were asked to do so.

• **Your medication profile or list and mediset**, filled with your medications.

• **Your filled prescriptions** in their original containers.

• **Family member or friend.**

• **Something to do while waiting.**

• **Your questions for the transplant team.**

**What will the clinic day be like?**

*Before You Arrive at the Medical Center*

• You may eat breakfast before your clinic visit unless you were told not to do so (you may be asked to fast).

• You may take all morning medications except your immunosuppressive medications.

• Plan to arrive at the lab for a blood draw between 7:30 and 8 a.m.

*At the Medical Center*

• First, go to the lab for your blood draw.

• **After your blood draw:** Take your morning immunosuppressive medication doses with a snack or beverage.
Check in at the front desk of the Transplant Clinic at your scheduled appointment time. Clinic visits usually start between 8:30 a.m. and 1 p.m.

How long you spend at the medical center will depend on:
- How early your clinic visit is
- How many people you need to see
- Whether you need any other procedures, such as removal of surgical staples or stent, or an IV infusion

Your transplant coordinator may call you at home to talk about your lab results (drug blood levels) that came in after you left. Be sure to tell your transplant coordinator how to reach you, especially if you are from out of town and not staying at your own home.

Your transplant coordinator will also advise you of any changes in your medication doses. Stay on your current medication doses and schedules unless you are told to change them.

What will these clinic visits involve?

You can expect these things to happen at your clinic visit:

- Blood draws to check medication levels
- Blood draws to check your kidney or pancreas function
- Visits with the transplant doctors and coordinators that include:
  - Checking your surgical incision to make sure it is healing well
  - A physical exam to find out how well you are recovering from surgery, including taking your vital signs (blood pressure, weight, temperature) and checking you for signs of rejection or infection
- A review of your medications
- A review of your lab results
- Possible visits with other transplant team members such as your social worker, diettitian, and pharmacist
- Procedures such as stent removal, wound staple removal, and biopsies
- Possible admission to the hospital if you need inpatient treatment for complications
How often will I visit the clinic?

You will have regular visits at the Transplant Clinic for 4 to 6 weeks after your transplant surgery. After that, you will be cleared by the transplant team to return to the care of your primary care provider or nephrologist. This is called a “transfer of care.” From time to time, you will still return to UWMC’s Transplant Clinic for follow-up visits.

The timing of this transfer of care depends on how well your new kidney or pancreas is working and whether you have any complications that must be watched closely. After transfer of care occurs, your general medical care as well as all transplant issues will be managed by your nephrologist or primary care provider.

Recommended Test and Visit Schedule

This is the recommended schedule of lab tests and clinic visits after transplant. You will have these tests and visits at the UWMC Transplant Clinic, even after you have returned to the care of your primary care provider or nephrologist.

<table>
<thead>
<tr>
<th>Time After Surgery</th>
<th>Labs</th>
<th>Clinic Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5 weeks:</td>
<td>3 times a week</td>
<td>2 to 3 times a week</td>
</tr>
<tr>
<td>6 to 12 weeks:</td>
<td>2 times a week</td>
<td>1 time a week</td>
</tr>
<tr>
<td>3 to 6 months:</td>
<td>1 time a week</td>
<td>2 times a month</td>
</tr>
<tr>
<td>6 to 12 months:</td>
<td>2 times a month</td>
<td>1 time a month</td>
</tr>
<tr>
<td>After 12 months:</td>
<td>1 time a month</td>
<td>1 time a month</td>
</tr>
</tbody>
</table>
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881
In time, your care will be transferred from the Transplant Clinic back to your primary care provider or nephrologist who referred you for your transplant. When this transfer of care happens depends on how well your new kidney or pancreas is working.

Even after your care is transferred, you will still be seen in the Transplant Clinic during the first year after your transplant. But, these visits will be less often than they have been. After the first year, you will be seen once a year in the Long-Term Follow-up Clinic.

Your Long-Term Self-care and Follow-up

The goal of a kidney or pancreas transplant is to allow you to have a better quality of life and a more normal lifestyle. But, transplants are a treatment for renal failure or diabetes, not a cure. This means that you will have some new lifelong responsibilities in caring for your new kidney or pancreas. Over time, your new routines and lifestyle will feel normal to you.

Here are some common transplant-related responsibilities to consider:

**Doctor Visits**

- Report a fever or illnesses to your doctor **right away**. If your doctor is out of town, ask to talk with the doctor who is covering for your doctor. You must talk with your regular doctor or the doctor who is covering for your doctor **before** you call the transplant center.

- See your doctor on a regular basis to check the function of your new kidney or pancreas.

- Report any health problems to your doctor. Be open and honest with your doctor when talking about your health issues.

- Have blood draws to check kidney and pancreas function and anti-rejection medication levels on a regular basis.

- Maintain your vaccination schedules. This includes getting a yearly flu shot and a tetanus booster every 10 years.

- Do **not** ever get live virus vaccines.

- Have your body systems checked regularly. This includes eye exams and dental exams. Ask for tests to check your bone density, heart health, and skin (for skin cancer).
• Visit your dentist for a checkup twice a year.
• Women: Have screening tests for breast cancer (mammogram) and cervical cancer (Pap smear).
• Men: Have screening tests for prostate and testicular health.
• If you plan to travel outside the United States: Go to a travel medicine clinic before your trip. Be sure to tell the clinic staff that you have had a kidney or pancreas transplant.

**Take Your Medications**

You will take anti-rejection medications on a strict schedule for the life of your new pancreas and/or kidney. If you miss a dose, it can lead to rejection.

• Take all your medications as prescribed.
• Plan ahead to get refills of your medications so you do not run out.
• If any of your medications make you ill, keep taking them as prescribed and call your doctor before making any changes in your medication plan.
• Do not take any medications prescribed for other family members or friends, or any of your pre-transplant medications. Do not take herbal products or any other medicines without first checking with your doctor.

**Rejection**

Rejection of the graft (organ) is a process of your natural immune defense system. Your immune system tries to destroy the new organ because it does not recognize it as being a part of you. Anti-rejection medications interfere with your body’s natural rejection process by blocking the work of the lymphocytes (white blood cells in your immune system that “fight” your graft). The body’s immune system is so strong that even with today’s strong anti-rejection medications, rejection can still occur.

**Types of Rejection**

Most rejections occur in the first 6 months after transplant. These are called acute rejections. Usually, acute rejections can be reversed by taking intravenous (IV) medications.

But, late rejections can also occur. These are called chronic rejections. Chronic rejections occur 1 or more years after transplant, develop more slowly, and can cause damage that cannot be repaired. This may lead to graft loss. Signs of chronic rejection are usually subtle, such as a slow
rise in creatinine. Chronic rejection may be caused by infections, not taking medications as prescribed, or a change in drug levels for some other reason. Late rejections are hard to treat.

Rejection does not mean for sure that you have lost your kidney or pancreas graft, but it is an emergency that needs treatment right away. A treated and reversed rejection is known as a rejection episode.

When a rejection episode starts, you may feel fine or you may have symptoms such as fever, muscle aches, fluid retention, or pain or swelling over your kidney or pancreas. Your serum creatinine or other lab results may or may not change. Regular doctor visits and lab tests are important to help detect possible signs of rejection.

**Preventing Rejection**

The best defense against rejection is prevention. To prevent rejection:

- Take your anti-rejection medications as prescribed by your doctor, in the right amounts and at the right times.
- Tell your doctor or the transplant team if you run out of your medications or if you are unable to buy them for any reason.
- Have your lab tests done on the recommended schedule.
- Tell your doctor right away if you notice a change in how you are feeling or there is a change in your lab results.
- Keep all your routine doctor visits, even if you feel fine.

**Diagnosing Rejection**

Biopsy is sometimes the only way to diagnose rejection. If rejection is suspected, your doctor will order a biopsy to confirm the diagnosis. The results will tell the type of rejection, which can be acute or chronic, and the grade of rejection, which can be mild, moderate, or severe. See Chapter 16, “Transplant Renal Biopsy,” to learn more.

To do the biopsy, the doctor will inject a local anesthetic into your skin above your graft. A needle is quickly passed in and out of your organ to take a small tissue sample. This process is done 2 to 4 times.

The tissue taken during the biopsy is sent to the pathology department, where it is checked under a microscope for signs of rejection or other problems. Your doctor will receive your biopsy test results in 1 to 5 days.

Based on the type of rejection and how severe it is, your doctor will plan your treatment. This may require a hospital stay or many outpatient visits. After your treatment is finished, you may have a follow-up biopsy to check on your progress.
Graft Loss

Sometimes, your organ cannot be rescued from rejection, infection, or recurrent disease. Graft loss is emotionally hard, and it is normal to feel angry if it happens. The transplant team will help you. It may be possible to get another transplant. This will take some time and planning. In the meantime, you will return to dialysis for kidney loss and to insulin for pancreas loss.

Kidney Retransplant

If you lose your new kidney, you may be able to have another transplant. This is called retransplantation. But, you will need to meet the eligibility requirements to be listed for retransplant.

If you request retransplant, the transplant team will review your actions after your first transplant. We will check to see if you have taken your medicines as prescribed, had the required lab tests, gone to health care visits, and done dialysis as needed. If the transplant team decides you have not complied with your care plan or if you are actively smoking, you will be denied retransplant at our center.

Insurance Coverage

Be sure to maintain your insurance coverage for prescription medications. The anti-rejection medications typically cost over $1,000 a month and must be taken regularly. If paying for them is an issue, the transplant team social worker can help you.

The medicines your insurance covers can change often. Check your plan every year for changes.

Medicare coverage for medicines ends at 3 years after transplant if you do not qualify for Medicare because of your age or if you have conditions other than kidney failure.

Call a member of your transplant team if you cannot find insurance coverage for your medications.

Your New Lifestyle

Stay Healthy and Active

Once your doctor tells you it is OK, you may do all your usual activities. This will help with your long-term recovery and improve your mental and physical health.

Take good care of yourself. This means staying active and getting regular exercise, eating a healthy diet, and limiting how much alcohol you drink.
Remember, smoking or using any tobacco product will make you ineligible for a retransplant. Tobacco increases your risk for heart attack, infection, and cancer.

Keeping up with your health also involves getting yearly flu shots and other vaccinations.

**Rethink Your Self Image**

Start thinking of yourself as a healthy person again, not as a “patient.” Even though you will never get away from medical management, you can still lead a normal life that includes work, school, volunteer work, family, and friends.

**Get Support**

You will still need the support of your family and loved ones. As you get healthier after your transplant, your lifestyle and your relationships with others may change. Keep the people who care about you involved and use their support when you need it.

Talking with others who have had a transplant can be very helpful. Your transplant social worker has a list of transplant patients you can talk with for support.

**For Women**

**Menstruation, Contraception, and Pregnancy**

It is common not to have your periods or to have them off and on during chronic illness such as renal failure. After transplant, menstruation often returns. Your periods may be irregular, light or heavy, and short or long. Tell your doctor about any changes in your periods.

- It is possible to become pregnant at any time after transplant. You must have a plan for birth control in place before your transplant surgery. See a gynecologist to help you choose a birth control method.
- If you are planning to have a tubal ligation, it can be done at any time, but it is best to have it done before your transplant.
- If you are on birth control pills, tell your surgeon at the time of your transplant. You may or may not be able to keep taking them.
- Intrauterine devices (IUDs) may increase your risk of infection.
- If you find out you are pregnant, tell your transplant doctor right away.

Women can still have children after transplant, but we advise waiting at least 2 years after transplant surgery before getting pregnant. Waiting to get pregnant will lower your risk of kidney rejection. It also allows time to ensure that kidney function is stable and that your maintenance immunosuppressive medications are working well.
Pregnancy makes your new kidney work harder, and it also increases your risk of losing your graft. Pregnancies are considered “high risk” for transplant patients. It is common for the baby to be premature and require a hospital stay. We recommend you see an obstetrician who specializes in high-risk pregnancies if you are planning to have children, or if you find out you are pregnant.

**Sexually Transmitted Infections and Diseases (STIs and STDs)**

Casual sexual activity – whether homosexual, heterosexual, or bisexual – can increase your risk of getting an infectious disease such as HIV/AIDS, hepatitis, genital herpes, gonorrhea, and other genital infections. Even if you consider yourself to be in a monogamous relationship, your partner may not be.

The best way to prevent these infections and diseases is to practice safe sex and use condoms in addition to your usual birth control. **Only condoms provide protection against STIs.** If you get an infection, tell your doctor right away.

**Infections**

The medicines you take to prevent rejection of your new organ weaken your body’s ability to fight infections caused by viruses and bacteria. Common infections that may occur during the first several months after transplant are:

- Respiratory infections such as colds and flu
- Urinary tract infections
- Wound infections
- Certain viral infections

These and other less common infections can show up in your bloodstream, or anywhere in your body. Infections can be spread from the environment, from sexual contact, from your donor organ, and from inactive viruses already in your body that become active.

You will take many antibacterial and antiviral medications to help prevent infections. If you develop an infection, more medications are often prescribed. Treatment for some infections requires a hospital stay. Sometimes, severe infections can lead to loss of your transplant.
### Common Infections in Transplant Patients

<table>
<thead>
<tr>
<th>Infection</th>
<th>Cause</th>
<th>How to Prevent</th>
<th>How to Treat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colds and flu</strong></td>
<td>• Virus</td>
<td>• Good hand washing</td>
<td>• Drink plenty of fluids</td>
</tr>
<tr>
<td></td>
<td>• Being in contact with others who are ill</td>
<td>• Yearly flu shot</td>
<td>• Rest</td>
</tr>
<tr>
<td></td>
<td>• Environmental or hand-to-eye contamination</td>
<td>• Keeping your hands away from your face</td>
<td>• Take antihistamines or decongestants if your doctor says they are OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Call your doctor if you have vomiting or diarrhea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Take acetaminophen, but avoid ibuprofen (Advil, Motrin) and products that contain aspirin</td>
</tr>
<tr>
<td><strong>Urinary tract infections (UTIs)</strong></td>
<td>• Bacteria entering the bladder (which is usually free of bacteria)</td>
<td>• Shower every day</td>
<td>• Drink plenty of fluids</td>
</tr>
<tr>
<td></td>
<td>• Catherization, poor hygiene, or not emptying bladder completely when voiding</td>
<td>• Wear clean underwear</td>
<td>• Urinate often and empty your bladder completely each time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wipe from front to back</td>
<td>• Take antibiotics as prescribed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Avoid tub baths and hot tubs</td>
<td>• Take cranberry tablets to block bacteria growth in the urinary tract</td>
</tr>
<tr>
<td><strong>Wound infections</strong></td>
<td>• Bacterial contamination</td>
<td>• Keep wounds clean</td>
<td>• Take antibiotics as prescribed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Keep wounds covered when bathing</td>
<td>• Incision may need to be opened, and dressing may need to be applied</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Change dressing often</td>
<td></td>
</tr>
<tr>
<td><strong>Pneumocystis</strong></td>
<td>• Environmental exposure</td>
<td>• Trim/Sulfa</td>
<td>Trim/Sulfa</td>
</tr>
<tr>
<td><strong>Cytomegalovirus</strong></td>
<td>• Virus</td>
<td>• Antiviral medicines such as valganciclovir</td>
<td>If severe, hospital stay and antiviral medication given by IV</td>
</tr>
<tr>
<td><strong>Chicken pox and shingles</strong></td>
<td>• Droplets from direct contact with an infected person</td>
<td>• Vaccine before transplant</td>
<td>Antiviral medications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Immunity from childhood episode of chicken pox</td>
<td>• Tell your doctor if you have a fever, skin pain, or a rash or itching (avoid scratching)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Antiviral medications</td>
<td>• If you have immunity, you are at low risk to develop chickenpox</td>
</tr>
<tr>
<td><strong>Other viruses and bacterial infections</strong></td>
<td>• Environmental exposure</td>
<td>• Good personal hygiene</td>
<td>Antiviral medications</td>
</tr>
<tr>
<td></td>
<td>• Secondary infections from antibiotic resistance, dormant virus, or donor</td>
<td>• Avoid being around people who are ill</td>
<td>• Antibacterial medicines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Experimental medications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Take entire prescription of antibiotics as directed</td>
</tr>
</tbody>
</table>
Protect Yourself from Infections

Hygiene
- Wash your hands often.
- Shower every day.
- Avoid tub baths and hot tubs.

In Your Home
- Reduce dust and clutter in your home. Your house does not need to be sterile, but it should be clean.
- Wash your bed linens, towels, and clothes often.
- Clean your computer keyboard and mouse, and the mouthpieces of your phones every day.

Food
- Do not eat food that has been sitting at room temperature or outside.
- Do not eat food if you do not know who prepared it.
- Avoid potluck meals.

Outside Activities
- Do not garden for at least 6 months after your transplant. After that, wear thick leather garden gloves and a facemask.
- Avoid construction sites and construction dust.
- Avoid crowded places during flu season. If you can, sit apart from most of the crowd.

Skin Cancer Risks
Immunosuppressive medications and certain antibiotics may make your skin more sensitive to the sun. Long and repeated exposure to the sun’s rays may cause permanent skin changes over time. Skin and lip cancers occur more often in those who have long exposures to the sun.

Transplant recipients are 10 times more likely to develop these cancers than the general population. This risk increases with time after transplant.

To reduce your risk of skin cancer, always protect your skin from sun exposure. Follow these guidelines:
- Use sunscreen and lip balm with a sun protective factor (SPF) of at least 30 every day, rain or shine. Reapply sun protection often, especially after swimming or sweating.
• Use sun protection on your:
  - Face, nose, and lips
  - Tops of your ears
  - Backs of your hands
  - Tops of your feet if you wear sandals
  - Hair part, and on top of your head if you are bald
• For extra protection, wear hats with brims, long sleeve shirts, gloves, and long pants when you are outdoors.
• If possible, avoid the midday sun (10 a.m. to 2 p.m.), since ultraviolet rays are strongest at that time.
• Check your skin once a month for changes in existing moles and lesions, and for new moles and lesions.
• Visit a dermatologist (skin doctor) every year to have your skin checked.

Travel
• Check with your doctor to make sure your travel plans are safe for you medically.
• Pack your medicines in your carry-on bag.
• Carry your medicines in their original containers. You can transfer them to a mediset when you get to your destination. Put them back in their original containers for your return trip.
• Be sure to bring enough supplies and medicines so that you do not run out during your trip. Do not plan on being able to buy extra supplies when you travel to other countries.
• Vaccinations for travel must not include live virus vaccines (measles, smallpox, rubella, chickenpox, yellow fever, or Japanese encephalitis).
• If you have diabetes, before you travel:
  - Call the airlines or visit their website to learn about travel regulations for supplies and equipment (needles, lancets).
  - You may need a letter from your doctor that says you have diabetes and that you need insulin shots.
  - Ask for a copy of the handout “Travel Tips: For people with diabetes.”

Hair and Skin Care
Immunosuppressant medicines may affect the condition of your hair. Prednisone or cyclosporine may cause increased or unwanted hair growth.
This may be especially troubling to women if facial hair increases. Perms, foils, dyes, and bleaching may make hair break. Wait for several months after your transplant before coloring or perming your hair.

Some other hair and skin care tips are:

- Take a shower every day to keep your skin clean.
- Use soaps with anti-drying agents. These will keep your skin moist without removing healthy oils.
- Do not use special skin products unless you have problems with acne or dry skin.
- Talk with your doctor about removing or bleaching excess hair.
  - Waxing or laser treatments done by a professional are the best way to remove unwanted hair.
  - Electrolysis is not recommended because your skin may be weak and sensitive.

**Dental Care**

- Brush and floss your teeth 2 times every day.
- Get a dental checkup every 6 months.
- Wait 3 to 6 months after your transplant before your first dental checkup. Bacteria in your mouth may cause infection if dental work accidentally injures your mouth or gum tissue.

For **all** visits to the dentist:

- Tell your dentist that you are a transplant recipient.
- **Do not allow the dentist or hygienist to pick, clean, or polish your teeth at first.** When you have any dental work done, including cleaning and polishing, you will need to take an antibiotic before the work is done to prevent infection. Your dentist may write a prescription for 2 gm Amoxicillin to take 1 hour before your procedure. Tell your dentist if you are allergic to penicillin.
- The dentist may take X-rays if needed.
- Have the dentist examine your mouth and teeth.
- When the dentist knows what work must be done, schedule another visit. If several visits are needed, schedule them as closely together as possible.
Transplant Renal Biopsy
For a kidney/pancreas transplant

A biopsy is the only way to know what is going on inside your transplanted kidney. You are having this done to find out either why there is a problem with your transplant function, or what changes need to be made to your transplant medicines.

The biopsy results will show if you have rejection, an infection, injury from medicines, injury from other causes, or a new kidney disease. This information may be used to change your medicines or your treatment plan.

How to Prepare for Your Biopsy

Medicines
Your doctor will review the medicines you are taking. If you are on blood-thinning medicines, you will stop taking them several days before the procedure. Blood-thinning medicines are aspirin, Coumadin (warfarin), Persantine (dipyridamole), Plavix, Ticlid, Pletal, Agrylin, Lovenox, Fragmin, Innohep, Orgaran, Argatroban, Refludan, Iprivask, Angiomax, ximelagatran, Remodulin, Aggrastat, Integrin, ReoPro, Arixtra, and Trental.

Be sure to tell your doctor if you are allergic to iodine, lidocaine, or novacaine. These will be used during your biopsy.

Eating
Eating before a transplant kidney biopsy is OK as long as you do not need medicines to help you relax during the procedure. Most times, the biopsy is done quickly and the only medicine you receive is an injection to numb the skin and tissues around your kidney transplant. Transplant biopsies are usually done without sedation. Sedation will increase the time you need to wait before you can go home.

If you will need sedation to help you relax:
- Do not eat or drink after midnight the night before your procedure.
- You will need to arrange for someone to drive or accompany you home after your procedure. You will not be allowed to drive yourself or travel alone in a bus or taxi after sedation.

Arriving at the Hospital
Blood and urine will be collected before your biopsy. When you arrive at the hospital, go to the laboratory on the 3rd floor for these pre-biopsy lab tests unless your patient care coordinator has told you otherwise.
### The Transplant Biopsy

After your tests, you will go to Radiology/Imaging Services. The *sonographer* (ultrasound technologist) will do an ultrasound of your transplant to check blood and urine flow.

If there are no problems, your abdomen will be cleaned with Betadine or Chlorhexidine. Sterile paper drapes will be placed over your biopsy site. A numbing medicine (lidocaine or novacaine) will be injected into your skin over your transplant.

After you are numb, a very small cut is made in your skin and the biopsy needle is placed through this cut. Under ultrasound guidance, the needle is advanced to your kidney transplant. Once the needle is just outside your transplant, a biopsy is taken. You will hear a snapping sound when this is done. At least 2 passes with the needle may be needed to get enough tissue to make a diagnosis.

Sometimes the tissue around a kidney transplant gets very hard. You may feel a lot of pushing, but you should not feel any sharp pain.

### After Your Biopsy

You will return to 4-South after your biopsy. You will stay in bed for at least 2 hours and will be asked to urinate before you leave. If you need to urinate before that, you may use a bedpan. If you cannot urinate lying down, a nurse will help you use the restroom.

You will be able to go home after 2 hours or more of being watched. Before you go home, you must:

- Have no bleeding
- Have stable blood pressure
- Be comfortable

### At Home

When you are home, call your doctor if you:

- Pass very red urine
- Have blood clots in your urine
- Have pain

If your urine is red, drink plenty of fluids to help pass the blood.
Risks

No procedure is risk-free, and there are some risks involved with having a transplant renal biopsy. Ask your doctor if you have any questions or concerns.

On average, **more than 1 out of 100 patients** who have this type of biopsy will have:

- Blood in their urine (10%, or 10 out of 100)
- Loss of blood severe enough to require a blood transfusion (1%, or 1 out of 100)
- A *fistula* (an abnormal connection of an artery and a vein) that forms inside the kidney that may cause bleeding or higher blood pressure
  - Fistula formation: 15%, or 15 out of 100
  - Problems from fistula: less than 1%, or fewer than 1 out of 100

On average, **fewer than 1 out of 100 patients** who have this type of biopsy will have:

- Blockage of urine flow caused by a blood clot
- The need to unblock the urine with a *stent* (plastic tube) placed in the *ureter* (the tube that connects the kidney and bladder)
- A blood clot around the kidney that puts pressure on the kidney, causing reduced kidney function and an increase in blood pressure
- A hole in the kidney that is bleeding and needs to be plugged
  This requires a *catheter* (a thin, flexible tube) to be inserted into the groin and up to the kidney. A plug called a coil is then placed in the hole to stop the bleeding.
- Loss of kidney function
- Loss of the kidney
- Infection in the skin, muscles, or kidney
- Puncture of another abdominal organ
- Nerve injury between the skin and the kidney that causes pain or loss of sensation
- Nausea or vomiting
- Leaking of urine around the kidney
- Death
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services: 206-598-8881

Getting Your Results

First results of your biopsy will be available within 48 hours if your biopsy is done early or midweek, and late on Monday if it is done on a Friday. Final results take at least 5 days because of the special testing that is done on the tissue samples. If more special tests are needed to help with a diagnosis or if more evaluation is needed, it may take more time to receive your final results.

Your nephrologist may call you with the first results, but usually patients meet with their doctor in person to talk about the final results and any changes to their care plan.

Parking in the Triangle Parking Garage

The Triangle Garage is on N.E. Pacific Place, across the street from the medical center. The garage has 500 parking stalls with 67 disability-parking stalls and 9 wheelchair-accessible parking stalls. There is direct access to the 3rd floor (main entrance) of the hospital through an underground tunnel.

Driving Directions to the Triangle Parking Garage

- Driving north on Montlake Blvd., turn left onto N.E. Pacific Street and then right onto N.E. Pacific Place. Take a quick right into the garage.

- Driving east on N.E. Pacific Street, turn left onto N.E. Pacific Place. Take a quick right into the garage.

Hours

Staff are on duty at the Triangle Garage weekdays from 6 a.m. to 12 midnight and on Saturdays from 7 a.m. to 4 p.m. Garage parking is free on Sundays and after 4 p.m. on Saturdays.

Parking for Oversized Vehicles

The Triangle Garage has a height restriction of 6 feet, 8 inches. Parking for oversized vehicles is available in the S-1 lot behind the hospital.
Resources
For a kidney/pancreas transplant

How to Check Online Health Information
Most of the resources in this chapter include an Internet address. When searching for medical information on the Internet or visiting websites, please keep these guidelines in mind:

- It should be clear who is providing the medical data. Their qualifications should be included.
- Find out who owns the site and consider possible biases, such as a company that wants to sell a product.
- Look for sites with recent postings. Health information does get outdated.
- If you have questions about something you find online, ask your health care provider about it.

About this Chapter
The resources in this chapter are listed alphabetically. They include:

- Government agencies
- Community resources
- Printed resources
- Fundraising resources

If you want more information than you can find from these sources, ask someone on your transplant team for help. They will be glad to see if they can find more information on any transplant topic.
Resource List

American Association of Kidney Patients
www.aakp.org
800-749-2257
3505 E. Frontage Rd., Suite 315, Tampa, FL 33607
Provides information, referral, and advocacy for people with chronic kidney disease.

American Kidney Fund
www.kidneyfund.org
800-638-8299
6110 Executive Blvd., Suite 1010, Rockville, MD 20852
Provides limited financial grants to needy transplant recipients and living kidney donors.

American Organ Transplant Association
www.a-o-t-a.org
800-373-1646
Provides fundraising assistance to transplant patients.

Coping with an Organ Transplant
By Elizabeth Parr, PhD, and Janet Mize, RN
This book was written by an organ transplant recipient and a transplant nurse. You are most likely to find this book through an Internet site such as www.amazon.com or www.barnesandnoble.com, or through the publisher at www.penguin.com.

Department of Social and Health Services (DSHS)
www.dshs.wa.gov
This state agency runs programs such as Medicaid (medical coverage for the disabled and low-income), cash benefits for the disabled, and assistance to low-income and single parents.

You can also find information about your local DSHS office online. From the home page, click on “Find a local service office” then enter your zip code under “Find an office.”

Financing Transplantation – What Every Patient Should Know
By the United Network for Organ Sharing
A brochure available from United Network for Organ Sharing (UNOS). See the UNOS listing on page 18-4 of this chapter.
LifeOptions Rehabilitation Council
www.lifeoptions.org
A nonprofit agency that provides educational material for people who want to learn more about rehabilitation and returning to work, either while on dialysis or after a transplant.

Medicare
www.medicare.gov
800-MEDICARE
This federal agency provides health insurance for senior citizens. It also administers the Medicare insurance program for End Stage Renal Disease.

National Family Caregivers Association
www.nfcacares.org
800-896-3650
10400 Connecticut Avenue, #500, Kensington, MD 20895-3944
Provides education, support and advocacy for caregivers of people who have a chronic illness.

National Foundation for Transplants
www.transplants.org
800-489-3863
Assists patients in fundraising to cover expenses of organ transplants.

National Kidney Foundation
www.kidney.org
800-622-9010
30 East 33rd Street, Suite 1100, New York, NY 10016
Provides educational materials on almost all aspects of kidney disease. Also provides information and advocacy for issues that are important to transplant recipients. Call the number for a list of materials, or visit the “Patients” section of their website.

National Transplant Assistant Fund
www.ntafund.org
Assists patients in fundraising to cover expenses of organ transplants.

Organ Donor Information
www.organdonor.gov
Information about the need for both living and deceased organ donors.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services: 206-598-8881

Social Security Administration
800-772-1213
www.ssa.gov

This federal agency runs programs such as Social Security Disability, Supplemental Security Income (SSI), Social Security Retirement, and Medicare.

Team Transplant
Contact: Alysun Deckert, MSRD, CD, 206-598-6351

This UWMC-affiliated running and walking group is for all transplant recipients (any organ) and interested staff. Team Transplant promotes organ donation and serves as an informal support network. Special workshops are held on topics such as nutrition, stretching, and footwear. The group enters at least 1 half-marathon event each year, and other local events from time to time.

Transplant Recipients International Organization
206-364-0813
Local contact: Irwin Etter

TransWeb
www.transweb.org

An Internet-based organization that provides information about transplants. This site can link you to an Internet discussion list for transplant patients and those waiting for transplant.

United Network for Organ Sharing (UNOS)
www.unos.org
888-894-6361

UNOS is a federally chartered organization that sets policy and procedures for transplant organ distribution in the United States. The website contains detailed information on success rates for organ transplant listed by region and specific transplant centers. The site also has a lot of information for transplant patients.
Financial Planning
For a kidney/pancreas transplant

Short-term Issues
- Paying for transplant surgery
- Covering living expenses while you are off work
- If you live out of the area, living expenses while you are staying close to Seattle

Long-term Issues
- Paying for the many medicines you will take after transplant

Paying for the Transplant

Commercial Group and Individual Policies

Most insurance plans will pay for a kidney or pancreas transplant. But, they have different levels of coverage and restrictions. Some do a good job of covering your transplant, but others may leave you with big gaps in coverage. Check your plan carefully to find out if it covers:

- Inpatient hospital stay. Does your policy cover inpatient charges at a certain percentage (such as 80% or 90%)? Or, do you pay a set co-pay for every day while in the hospital (such as $100 a day up to a certain maximum, such as $300)? Policies that pay a percentage of the costs will leave you with a larger bill to pay.

- Waiting periods. Most insurance plans require that you have the plan for at least 1 year before it will cover transplant-related expenses. Consider these transplant waiting periods any time you change insurance carriers.

- Coordination of benefits. If you are covered by more than one commercial insurance plan, such as through your own employer and your spouse’s employer, check with the secondary policy to find out its rules on coordination of benefits. This will help you find out how and if the secondary policy will cover expenses that are left over after your primary insurance pays.
Medicare

Medicare is a health insurance plan that is run by the federal government. It covers people who are on dialysis, have had a kidney transplant, have been on Social Security Disability for at least 2 years, or are at least 65 years old. There are 2 basic parts of Medicare:

- Part A covers hospital stays, including a kidney transplant.
- Part B covers doctor fees, both inpatient and outpatient, as well as all approved outpatient expenses.

Medicare has many deductibles and co-pays. With a kidney transplant, these can add up to thousands of dollars. Most people cannot afford a kidney transplant with Medicare coverage only and will also need other insurance.

Medicare Supplements or “Medigap” Policies

These policies supplement your Medicare coverage. Most times, they pay the Medicare co-pays and deductibles, but nothing more. Having Medicare and a supplement will likely cover most costs of a kidney transplant.

Medicare Part D

If you have Medicare Part A, or A and B, you can also sign up for Medicare Part D. This is also called the Medicare Prescription Drug Program. Part D has a separate monthly premium in addition to any premium you already pay for Medicare Part B. Part D will not pay for your immunosuppressive drugs – those are covered under Part B of Medicare. But, Part D can cover the many other medications you will take after a kidney transplant.

If you are on both Medicare and Medicaid, you will automatically be enrolled in Part D. You will not pay any monthly premium or deductibles for Part D. You might have a small co-pay for some medications.

If you are not on Medicaid, you may have to pay a monthly premium and annual deductible, plus co-pays for each prescription drug. If you are low-income but not on Medicaid, Medicare can provide a subsidy that pays the premium, deductibles, and co-pays. Call Social Security at 800-772-1213 or visit www.ssa.gov to apply for the low-income subsidy.
**Medicaid**

Medicaid is a health insurance plan that is paid for by the federal government and individual states. It is for people who are very low-income and medically disabled. It will pay 100% of covered medical expenses. Talk with your social worker to see if you qualify.

**Basic Health Plan**

This is a health insurance plan sponsored by the State of Washington. It has limited coverage and is not recommended for most transplant patients. You cannot be enrolled in the Basic Health Plan if you are eligible for Medicare or Medicaid.

The Basic Health Plan plan has limited enrollment and is often full, and it may not be accepting new patients. To find out if the plan is accepting new patients, or to get your name on the waiting list, call 800-660-9840 or go to [www.basichealth.hca.wa.gov](http://www.basichealth.hca.wa.gov).

**Washington State Health Insurance Pool (WSHIP)**

WSHIP is also a health insurance plan that is sponsored by the State of Washington. You must be rejected by another insurance plan, or have had your insurance cancelled, before you can enroll in this coverage. You can also enroll in WSHIP if your only insurance is Medicare.

In most cases, WSHIP has very good coverage. The cost can be high for people who are not on Medicare. If you are on Medicare, the cost is less. This is a good insurance plan for transplant patients who only have Medicare, or who are not eligible for Medicaid.

**Review Your Coverage**

If you have not already done so, review your medical insurance coverage with your transplant social worker. Your social worker can make sure you have enough coverage for your transplant.

**Paying for Medications**

Most times, the costs of medications are too high for patients to afford without the help of medical insurance. Check your prescription insurance coverage and know what your expected co-pays or deductibles will be. You will be on many medications post-transplant, and each one will have a co-pay.

It is also important to maintain coverage after your transplant because medication costs can be $12,000 to $15,000 every year. Even with medical insurance, you may have to pay part of the cost of prescription drugs.
Here are some questions to ask about your prescription drug coverage:

- Does your insurance cover prescriptions at a certain percentage (such as 50%, 80%, or 90%)? Or, do you pay a set co-pay per prescription (such as $10 per prescription for a month’s supply of the drug)?

- Does your insurance provide different coverage based on whether the drug is a generic or a name brand? People with transplants are often prescribed name-brand medicines that do not have generic options. These can be some of the most costly medicines that are prescribed. So, be aware if your policy requires you to pay a higher co-pay or percentage for name-brand medicines.

- Does your insurance offer a mail-order pharmacy? These mail-order pharmacies may allow you to get a 3-month supply of medicines for a lower co-pay than if you fill your prescriptions at a local pharmacy and can get only a 1-month supply.

### Medicaid

Medicaid covers the total cost of most prescriptions. But, if you are on both Medicare and Medicaid, your prescription medications will be covered under Medicare Part D Prescription Drug Program and not Medicaid. Talk with your social worker if you are not sure if you qualify for Medicaid, or if you have questions about what program will pay for your medications.

### Medicare

If you are on Medicare and have signed up for Part B, you will have limited outpatient prescription drug coverage after a transplant. Here are some rules for how prescription coverage under Part B works:

- Medicare Part B covers the immunosuppressive drugs at 80% for at least 3 years after a transplant. You (or your other insurance if you have it) will pay the 20% co-payment. Medicare will not cover any other outpatient medications.

- At 3 years after a transplant, your Medicare outpatient prescription drug coverage will end unless you:
  - Are at least 65
  - Or:
    - Have been on Social Security Disability (SSD) for at least 2 years

If you meet either of these 2 conditions, your Medicare outpatient immunosuppressive drug coverage will continue after 3 years post-transplant. Medicare drug coverage will not continue more than 3 years after a transplant if you are on Supplemental Security Income (SSI), unless you are at least 65. SSI is a different program than SSD (see the last page of this section).
Medicare Part D Prescription Drug Program will not cover your immunosuppressive medications. But, it will cover the many other medications you will take after a kidney transplant. Medicare Part D will last as long as you are eligible for Medicare. This means that if your Medicare Parts A and B end at 3 years after a transplant, your drug coverage under Medicare Part D will also end at that time.

If you have other insurance coverage, such as insurance through an employer or a spouse, Medicare will be your “secondary” insurance for the first 30 months of Medicare coverage. This means your other insurance pays first. If part of the medication bill is still left, that part can be billed to Medicare.

Medicare is always the primary insurance if you have an individual health insurance policy.

After 30 months of Medicare coverage, Medicare will become your “primary” coverage. This means all your medical bills will need to be billed to Medicare first, and any left-over parts of the bill can be sent to your other insurance.

Many community pharmacies are not set up to bill Medicare Part B for prescription medicines. But, most pharmacies are able to bill Part D drug plans. If your pharmacy cannot bill Part B, please talk with your transplant social worker or pharmacist about different pharmacy options.

Mail-order pharmacies that specialize in transplant medicines will do all your billing for you, including billing Medicare. If you have other insurance in addition to Medicare, the mail order pharmacies will check to see if they can bill that insurance for you, too.

If you have no insurance coverage for certain medicines, some financial assistance programs through the drug companies may be able to help you. Check with your pharmacist or social worker for help with these programs.

There may be many changes to health care insurance and the options that are available because of federal health care reform laws. There are too many changes to list here, and some of them will not go into effect until after this guidebook is published. Please talk with your transplant financial counselor or transplant social worker for the latest information about what insurance options are available for you.

**Income While Off Work**

If you are working, your employer might provide disability income insurance. There are 2 types of income insurance: short-term and long-term.
Questions?

Your questions are important. Call your doctor or health care provider if you have questions or concerns. UWMC clinic staff are also available to help.

Transplant Services:
206-598-8881

________________________________________________________________________

Short-term Disability

This pays part of your salary, often around 60%, while you are off work for a medical reason. Short-term disability usually covers your salary for 3 to 6 months.

Long-term Disability

This insurance pays part of your salary, often 60%, for as long as you are considered disabled and unable to work. But, you will usually need to be disabled for a minimum length of time, such as 90 days, before benefits will begin.

- Social Security Disability (SSD) – The Social Security Administration (SSA) has its own definition of disability for various illnesses, such as kidney disease or diabetes. The application process can take many months. If you are approved, the monthly amount you receive is based on how much money you have paid into the Social Security system through payroll taxes. SSA must consider you disabled for at least 5 months before benefits can begin. Also, your disabling condition must have lasted at least 1 year already, or be expected to last at least 1 year, to be eligible for SSD. Most transplant patients are not disabled for that long and should not rely on SSD to provide income while off work after a transplant.

- Supplemental Security Income (SSI) – This is a disability income program through the SSA. It is for disabled people who have not worked enough to pay much into the Social Security System and so are not eligible for SSD. The disability rules are the same as for SSD. But, SSI has strict income and financial limits.

If you are already on SSD or SSI before your transplant, there is a chance you will lose these benefits afterward. Depending on why you were first declared disabled, Social Security could decide you have recovered enough after your transplant to return to work. This would not happen without a formal review by Social Security.

Contact your transplant social worker or primary physician if Social Security starts an eligibility review.

If you are not eligible for any of the above resources, you will need to plan ahead for the time after a transplant when you are off work. Many people put aside money to help pay bills. Others borrow money from friends and family. Fundraising is also an option. There are charitable organizations that help transplant patients raise money for uncovered expenses such as medical co-pays, travel, lodging, or lost income. If you want to try fundraising, talk with your social worker for ideas.
**Glossary of Terms**

*For a kidney/pancreas transplant*

You may hear many words and expressions that may be new to you as you learn more about the transplant process. The list of terms in this chapter may be helpful to transplant patients, their families or support persons, and living donors.

**Antibody**
A protein substance made by the body’s immune system in response to a foreign substance (called an *antigen*, see below). Antibodies help the body fight off antigens and make them inactive. This can include transplanted organs.

**Allograft**
A transplanted organ between 2 individuals of the same species (such as human), but with genetic differences.

**Antigen**
A foreign substance, such as a transplanted organ or a virus or bacteria from an infection, that triggers an immune response. This response stimulates antibody production and activates other cells that fight off the foreign substance.

**Amylase**
An enzyme produced by the pancreas. Amylase is measured to monitor how well a transplanted pancreas is functioning. Normally found primarily in the blood, it is also found and measured in the urine in bladder-drained pancreas transplant patients.

**Bicarbonate**
A chemical of your blood involved in acid-base balance. It is a base, or alkali, of your blood and is also called HCO₃. Patients who have a bladder-drained pancreas may lose excess amounts of bicarbonate in the urine, which can lead to acidosis (excess acid in the blood). Patients with a bladder-drained pancreas usually need supplements of sodium bicarbonate.
Biopsy
A procedure in which a small sample of a tissue or organ is removed and examined under a microscope to detect diseases or conditions such as rejection.

BUN
Stands for Blood Urea Nitrogen, a waste product normally excreted by the kidney. The BUN level in your blood is an indication of all waste products being generated by your body and how well your kidney is able to get rid of them. Your BUN level shows how well your kidney is working. It is also a marker of your nutritional status and how much fluid you have in your body.

Cadaveric donor
A person who has died recently and whose family has consented to donating their loved one’s organs for transplant.

Caregiver
The support person or persons who will help guide a transplant patient through the transplant process. Caregivers must be prepared to provide physical and emotional support to a patient before and after the transplant. They could be a family member, partner, or friend.

Catheter
A plastic or rubber tube passed into the body. One type may be used to drain urine from the bladder. Another type may be inserted into a blood vessel to allow access to the circulatory system.

Chronic allograft nephropathy
Also called chronic rejection. The gradual decline in kidney graft function that occurs after transplant. The cause is generally not specific; there are often several reasons for this gradual loss of kidney function.

Chronic renal failure
Permanent damage to both kidneys that cannot be reversed. It is treated by dialysis or transplantation.

CMV (Cytomegalovirus)
A virus that is common in the general population. Most adults who have been exposed to the virus do not develop CMV disease. The virus can become active if a person’s ability to fight infection is reduced (See “Immunosuppression.”) A transplant patient may develop fever, low white blood cell count, stomach problems, and other illnesses due to CMV.
Creatinine
A byproduct of muscle metabolism. Since your kidneys eliminate creatinine from your body, your creatinine level can be used to indicate how well your kidney is working. The creatinine value of your blood is watched closely after transplant as a marker of kidney function.

Cross-matching
A blood test of compatibility between the potential donor’s blood and a prospective recipient’s blood. A positive cross-match shows that the donor and patient are incompatible. This means the recipient’s body would reject the transplant. A negative cross-match means there is no reaction between donor and patient and that the transplant may proceed.

Delayed graft function
The slow recovery (“waking-up”) of a transplanted organ. This process may take days to weeks.

Diastolic
The bottom number of the 2 numbers in a blood-pressure reading.

Endocrinologist
A doctor who specializes in treating patients with diabetes and other hormonal diseases.

Graft
A transplanted organ or tissue (such as a kidney or pancreas).

Glucose
The type of sugar that the body uses for energy.

HLA
Stands for Human Leukocyte Antigen. HLAs are proteins found on the surface of all cells. They play a major role in allowing your immune system to identify what is yourself and what is foreign.

Hypertension
Another word for high blood pressure.

Immunosuppression
The process of reducing the body’s immune system responses to foreign objects or organisms such as bacteria, viruses, or transplanted organs or tissue.

Immunosuppressives or Immunosuppressants
Usually refers to the type of drugs used to artificially suppress the body’s immune system. They are also called anti-rejection medications.
**Intravenous**
Also abbreviated “IV.” Refers to fluids or medications that are injected into a vein through a needle or catheter.

**Lymphocele**
Lymph fluid that may collect near the transplanted organ. It is caused by lymph vessels that are damaged (usually from surgery) and cannot return lymph fluid back to the veins.

**Lymphoma**
A type of cancer of the lymph system.

**Malignancy**
Another term for cancer.

**Mediset**
A medication reminder system. Usually it is a box that is set up like a calendar, allowing you to organize your medications in advance to help you remember to take them.

**Nephrologist**
A doctor who specializes in diagnosing and treating kidney disease.

**Noncompliance**
Failure to take medication or follow medical instructions. It may shorten the time a graft is able to work.

**Patient Care Coordinator/Patient Services Specialist/Program Coordinator**
Transplant team members who schedule pre- and post-transplant tests and appointments and can answer questions about your evaluation.

**PCA**
Stands for Patient Controlled Analgesia. A type of pain management used for a short time post-surgery. PCA uses a special IV pump that delivers pain medication on demand.

**PRA**
Stands for Panel of Reactive Antibodies. A blood test done before transplant in the recipient to test for “reactivity” to donor tissues. It helps indicate if there might be a problem finding a transplant donor. This may mean it will take longer to find a transplant.

**Primary care provider (PCP)**
Usually a non-specialist doctor who manages all of your medical problems. Your PCP may refer you to various specialists.
PTLD
Stands for post-transplant lymphoproliferative disease. A cancer of the lymph node or a lymphoma, most often seen in transplant recipients.

Rejection
The destruction of the graft by your immune system.

Renal
Having to do with or referring to the kidneys.

Stenosis
A narrowing of a blood vessel or drainage tube in the body.

Stent
An artificial tube or device placed in a vessel to keep it open or draining, such as a ureteral stent.

Systolic
The top number of the 2 numbers in a blood-pressure reading.

T-cell
A name for a specialized white blood cell that is involved in the rejection of a graft. Also known as a T-lymphocyte.

Tissue typing
A blood test that evaluates the closeness of the tissue match between an organ donor and an organ recipient. It is done before transplant.

Thrombosis
The formation or presence of a blood clot.

Transplant attending
The transplant surgeon (doctor) who is the primary surgeon who does transplant surgery. This person is responsible for the management and care of transplant patients.

Transplant coordinator
The transplant coordinator is a nurse who has specialized transplant training and skills. Your transplant coordinator is your resource for education, health care, and transplant care. This person helps the transplant team manage your care, from referral to the care you receive after your transplant.

Transplant nephrologist
A nephrologist (a doctor who specializes in treating kidney disease) who has specialized knowledge in transplantation. This team member helps manage transplant patients.
Transplant renal fellow
A nephrologist (a doctor who specializes in treating kidney disease) who has completed their medical residency and is getting extra training in transplant medicine.

Transplant surgery resident
A surgeon (doctor) who provides most of the day-to-day medical care in the hospital after surgery.

Transplant fellow
A surgeon (doctor) who is receiving specialized training in transplant surgery. This doctor will help with your care in the hospital after the surgery.

UNOS
Stands for United Network for Organ Sharing. An organization that provides education about transplant and manages the waiting list for cadaveric organs. See page 17-4 in Chapter 17, “Resources,” for contact information.

Ureter
One of the 2 drainage tubes in your body that carries urine from each kidney to your bladder.

Urethra
The drainage tube in your body that carries urine from your bladder out of your body.

Waiting List
The national list of people who have been evaluated for transplant and are actively waiting for cadaveric organs.
My Transplant Log

After a kidney/pancreas transplant

Self-care after your kidney or pancreas transplant is very important. You will need to:

- Check your vital signs (temperature, weight, blood pressure (BP), and pulse) every day
- Measure your fluid intake and urine output every day
- Have lab tests done regularly

Problems with the kidney or pancreas graft show up as changes in your labs or vital signs. The transplant team watches closely for such changes so they can take action before problems get out of hand.

At first, lab tests will be done quite often. As the function of your organ stabilizes, tests and monitoring of your vital signs will be needed less often.

Vital Signs

Record your vital signs every day on the “Health Log Record” on page 20-7. The vital signs you will need to check and record every day are temperature, weight, blood pressure, and pulse.

Temperature

Take your temperature at least once a day, and any time you feel ill with chills or fever. Normal body temperature is 98.6°F (36.9°C). A temperature conversion chart is on page 20-5.

Call your doctor or transplant coordinator if you have:

- Fever higher than 100°F (37.8°C)
- Any fever for more than 1 day
Weight

Weigh yourself every morning after going to the bathroom and before you eat breakfast. Sudden weight gain can mean your kidney function has decreased and you are retaining fluid. Rapid weight loss can be a sign of dehydration. Report sudden changes in your weight to your transplant coordinator or doctor.

Blood Pressure

High blood pressure can damage your kidney. *Systolic pressure* (upper number) is the pressure created when your heart squeezes blood into your circulatory system. *Diastolic pressure* (lower number) is when the heart relaxes between beats. Normal blood pressure is about 130 (or less) over 80 (or less). Your goal BP is:_______________.

Take your blood pressure 2 times a day or before taking any blood pressure medications, and at other times as directed by your transplant coordinator or doctors. Obtain a blood pressure machine and, if possible, one that also records your pulse. Check its accuracy with the one your doctor uses.

Pulse

Your pulse rate is also known as your heartbeat. It is usually measured as beats per minute. Take your pulse in your wrist or neck, or record the number from your blood pressure machine, 2 times a day or before you take any blood pressure medications.

Symptoms

Just after your transplant, it is also helpful to record any unusual symptoms or feelings you may have. Some symptoms to watch for are:

- Flu-like symptoms such as aches, chills, fever, and fatigue
- Nausea or vomiting
- Headaches
- Chest pains
- Stomach cramps
- Muscle aches or pains
- Breathing problems
- Skin rash
- Swelling, warmth, or tenderness over your transplant incision area
- Swollen ankles or legs
- Decreasing amounts of urine
- Burning feeling when you urinate
- Change in the color or smell of your urine
Lab Tests

A list of common lab tests used by the transplant team to monitor the function of your kidney or pancreas grafts is on page 20-4. The normal range for each test result is also listed. There is space on the “Health Log Record” to record some of the common lab tests so that you can track your own progress. What is normal for you may not be normal for someone else. Ask your transplant team for your own personal target values.

At your clinic visits, you will also be given copies of all your lab tests and other studies. If you would like, you can also sign up to receive these online.

Fluid Intake and Urine Output

Keeping up with the increased urine output made by your new kidney can be hard! Monitoring the amount of fluid you drink and the amount of urine you make helps make the job easier. When fluid intake is a lot less than urine output, you can become dehydrated. This can strain your new kidney.

Keep track of the time of day and the amounts of your fluid intake and urine output using the “Fluid Intake and Urine Output Record.” See the sample record on page 20-8. Add up your amounts and record them on the “Health Log Record.” A fluid conversion chart from ounces to metric (cc) is given on page 20-4.

Medications

It is important to know what medications you are taking and to keep track of them. The best way to do this is to keep a written list. This helps the transplant team adjust your medications when needed.

Keep track of your medications with the profiles provided in this manual. See the sample profile on page 20-9. Remember to include over-the-counter (OTC), dietary supplements, and herbal or natural medications.

Blood Sugar

Most patients will keep track of their blood sugars and insulin doses. There is room on the daily “Health Log Record” to record 4 blood sugars each day.
### Labs

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<tr>
<td>Cr</td>
<td>Creatinine</td>
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<td>BUN</td>
<td>Blood urea nitrogen</td>
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<td>WBC</td>
<td>White blood cell count</td>
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<tr>
<td>HCT</td>
<td>Hematocrit</td>
<td>Men: 39% to 55%</td>
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<td></td>
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<td>Women: 36% to 46%</td>
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<td>CO₂</td>
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<td>Glucose</td>
<td>Blood sugar</td>
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### Fluid Volumes

$\frac{1}{3}$ ounce = 1 ml = 1 cc

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# Health Log Record

For Week ____________________ to ____________________

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## Vital Signs

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## Intake and Output (Totals)

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## Labs

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## Fluid Intake and Urine Output Record

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### 24-Hour Totals
**Medication Profile**

List all medications that you use, including prescription, non-prescription (OTC), dietary supplements, and herbal medicines.

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<th>Medication Name and Dose</th>
<th>What do I use it for?</th>
<th>How many do I take and at what times?</th>
<th>Special Directions</th>
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<td>11 a.m.-1 p.m.</td>
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Questions?

Your questions are important. Call your transplant coordinator during business hours.

Transplant Services:
206-598-8881

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