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
- Mood changes
- Increased blood pressure
- Acne
- Increased blood potassium
- Decreased liver function
- Decreased blood magnesium
- Convulsions
- Shakiness or tremor
- Headache
- Burning or tingling in hands or feet
- Increased cholesterol
- Increased or unwanted hair growth
- 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>
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<tr>
<td>- Leukopenia (severe lowering of white blood cells)</td>
<td>- Anemia (severe lowering of red blood cells)</td>
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<tr>
<td>- Nausea or vomiting</td>
<td>- Thrombocytopenia (excessive lowering of platelets)</td>
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<td>- Abdominal pain</td>
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<tr>
<td>- Diarrhea</td>
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<td>- Increased risk of infections</td>
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**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.

**Short-term side effects at high doses:**
- Stomach upset, heartburn, and ulcers
- Emotional changes, mood swings, sleep disturbances
- Night sweats
- Weight gain, swelling
- Slowed wound healing
- Increased appetite, feeling hungry
- Increased blood glucose
- Face swelling (“moon face”)
- Acne
- Blurred vision
- Increased risk of infection

**Long-term side effects:**
- Muscle weakness
- Bone and joint weakness or pain
- Osteoporosis (thinning bones)
- Weak, dry, thin skin; stretch marks
- Increased or unwanted hair growth
- Round shoulders (“buffalo hump”)
- Easy bruising
- Visual changes, cataracts
- Increased cholesterol
- Increased risk of getting certain cancers
- Increased risk of infection

**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
- Decreased blood platelets and white blood cells
- Mouth ulcers or sores

- Acne
- Tingling feeling in hands or feet
- Joint pain
- Increased risk of infection
- 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
- Increased blood glucose
- Increased blood pressure
- Increased blood potassium
- Decreased blood magnesium
- Shakiness or tremor
- Headache
- Nausea or vomiting
- Convulsions
- Hair loss
- Increased cholesterol
- 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
- Dry mouth
- Chalky 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
- Mental changes
- Headache
- 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
- Headache
- Abdominal pain
- 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

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