

Medicines

After your lung transplant

Medicines and nutritional supplements are vital to your recovery and the success of your transplant. After your transplant, you will take medicines every day for the rest of your life.

Now is the time to think about your medicine needs after transplant. Find out as much as you can about all the medicines you will take. Learn their names, how they work, and what their side effects are. Decide what pharmacy you will use and how you will pay for each medicine. Learn tips that will help you remember to take them at the right time and in the right way.



You will take many different medicines after your transplant.

Getting Started

Medicines after your transplant will include:

- **Immunosuppressive drugs** to help prevent or treat rejection of your new organ. At first, your doses of these drugs will be high. They will then be tapered slowly, based on your blood test results. You will take these drugs as long as you have your transplanted organ.
- **Antibiotics** and **antivirals**, some taken for 3 to 6 months after surgery, and others that you will take for the rest of your life. Taking immunosuppressants increases your risk of getting infections. Antibiotics and antivirals will help you fight them.
- **Antacids**, taken for as long as you have your transplanted organ to help prevent stomach upset, heartburn, and lung damage.
- **Laxatives**, as needed for 2 to 3 months after transplant to help keep you from getting constipated.
- **Aspirin** in small doses to prevent blood clots.
- **Blood pressure medicines**, as needed for high blood pressure.
- A **multivitamin** to supplement your diet.
- **Calcium** and **vitamin D₃** to help prevent *osteoporosis* (thin bones).
- **Magnesium**, to make up for the loss of this mineral through urine after transplant.
- **Pain medicines**, usually for about 8 weeks after surgery.



Before your transplant, decide where you will get your prescriptions filled.

In the first few months after surgery, you will be taking medicines that may have many side effects. **Keep all of your appointments with your doctor and the Transplant Clinic.** When needed, we may adjust your medicines and doses to help manage side effects.

Medicine Costs

Medicines can cost as much as \$4,000 or more a 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 medicines.

Before your transplant, be sure to check what transplant medicines your medical insurance covers. Call your insurance representative, social worker, local pharmacist, or financial counselor where you will receive your follow-up care. Know what your expected copays or deductibles will be. Keep your insurance coverage after transplant, since your medicine costs can be \$12,000 to \$48,000 a year or more.

Choosing a Pharmacy

Before your transplant, decide where you will get your prescriptions filled. You can fill your prescriptions at UWMC Outpatient Pharmacy, another local pharmacy, or 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 medicine needs and set up billing arrangements.

You will need to stay in the Seattle area for about 3 months after your transplant. During this time, you will need to make a short-term plan for filling your prescriptions:

- For the first month, you will need to use a pharmacy in the Seattle area, near where you are staying.
- After the first month, you can use a mail order pharmacy or your usual pharmacy.

Ask your insurance company for a list of participating pharmacies near where you plan to stay after you leave the hospital. Always carry your prescription insurance card with you so you can show it at any pharmacy.

Medical Equipment

You may need to buy some medical equipment to help monitor how your body responds to the transplant and the medicines. It is a good idea to buy and learn how to use these items before your transplant.

You will need a blood pressure cuff, scale, and thermometer. You may also need a blood glucose meter, but wait to buy this until after your transplant.

At the Hospital

When you are called in for transplant, bring a list of the medicines you already take. Your transplant team needs accurate, current information. By this time, you should have a pharmacy plan in place for getting your medicines after your transplant.

After surgery, you will learn more about your new medicines. The pharmacist will begin teaching you and your caregiver(s) about your medicines about 4 to 6 days after surgery. You will need to know the name, strength, dose, directions, purpose, and side effects of each medicine you take.

At first, the number of medicines may seem overwhelming, but the number will decrease over the next several months. Transplant patients tell us that the best way to feel in charge of your medicines is to start learning about them for yourself while you are still in the hospital.

Organizing Your Medicines

The pharmacist will give you a *mediset* box to help you organize your medicines. We require family members and others on your support team to also learn how to help you manage your medicines.

Tips

- 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 and high humidity.
- You may want to carry a 1-day mediset 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 medicines.

After Discharge

- When you leave the hospital, you will fill your mediset with the first week's supply and a pharmacist will check it.
- Keep an up-to-date list of all of your medicines – often called a *medicine calendar* – with you. Include the directions for taking each of your medicines. Update your medicine calendar as needed and use it to restock your mediset. There is a blank calendar page in your lung transplant information binder you can use for this.

- When you need prescription refills, contact your pharmacy. If your refills run out and you need to renew your prescriptions, ask your primary care provider or pulmonologist for new prescriptions.
- When you come for clinic visits, bring your mediset, your medicine list, the medicines you have filled at your pharmacy, and your records. Always keep a written list of medicines with you. If you have problems or questions about your medicines after you are discharged, call your transplant nurse coordinator.
- Keep your appointments so that your medicines can be checked and adjusted if needed.
- Refill your prescriptions early, so you do not run out. If you are having trouble obtaining any of your medicines, call Post Lung Transplant Services at 206.598.5668 at least 48 hours before you will run out.



Take **only** the medicines your doctor prescribed for you.

Guidelines for Taking Medicines

Here are some basic guidelines for taking medicines:

- Take **only** the medicines your doctor prescribed for you.
- Take your medicines only as prescribed. Do not increase or decrease your dose or stop taking a medicine without consulting your doctor or transplant coordinator.
- If you miss a dose of medicine, do **not** take 2 doses when it is time for your next dose. Call your transplant coordinator or doctor for more instructions if you miss a dose.
- Check with your doctor or pharmacist **before** you take any new medicines, including over-the-counter medicines, herbal or natural remedies or supplements, or vitamins.
- Know the side effects of your medicines. Tell your doctor or transplant nurse coordinator if you have any side effects.
- Tell your other healthcare providers (doctor, dentist, optometrist, etc.) about any new medicines 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 medicines and doses with you.
- Keep all medicines out of reach of children and pets.
- Do not give your medicines to anyone else.
- Do not let your medicine supplies run out.



Do not eat grapefruit or drink grapefruit juice when taking drugs that suppress your immune system.

What to Avoid

Avoid these items when taking immunosuppressive drugs (unless your doctor says they are OK):

- Grapefruit, grapefruit juice, pomegranate, and starfruit
- *Nonsteroidal anti-inflammatory drugs* (NSAIDs) such as ibuprofen, (Advil, Nuprin, and others) and naproxen (Aleve, Naprosyn, and others)
- Aspirin in larger quantities than prescribed
- Erythromycin
- Clarithromycin
- Itraconazole
- Voriconazole
- Ketoconazole
- Diltiazem
- Verapamil
- Dilantin (phenytoin)
- 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. This is because they may:

- Cause adverse drug interactions and toxicities
- Make managing your transplant regimen more complex

Always check with Post Lung Transplant Services at 206.598.5668 before taking **any** herbal medicines or supplements.

Immunosuppressants

Immunosuppressants, or anti-rejection drugs, suppress your body's immune system by decreasing the effects of *lymphocytes* (a type of white blood cell). These drugs 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



You must take your immunosuppressants every day as prescribed by your doctor to prevent rejection.

environment such as cold and flu viruses. Immunosuppressants may also increase your risk of developing some types of cancer or tumors.

You will take 2 to 4 different immunosuppressant drugs. Each one blocks a different pathway in your immune system. They work better together than one by itself. Taking more than one drug allows you to take smaller doses of each. This reduces the number and severity of side effects. Your transplant doctor will explain the drugs and protocol for your type of transplant. This will also be covered in the class.

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 take immunosuppressants, rejection may still occur. Acute rejection most often occurs within the first year after transplant. It may be successfully reversed by using medicine. It is important for you to recognize the signs of rejection so that we can start treatment right away. The lung transplant nurses and doctors will talk with you about signs of rejection and infection before you leave the hospital after your transplant.

Here are the more common immunosuppressant (anti-rejection) drugs that you may take or receive:

- Basiliximab (Simulect)
- Tacrolimus (Prograf)
- Mycophenolate (Myfortic and Cellcept)
- Prednisone (Deltasone), Methylprednisolone (Solumedrol)

These immunosuppressant drugs are used less often:

- Antithymocyte globulin (ATG, Thymoglobulin)
- Cyclosporine (Neoral, Gengraf, Sandimmune)
- Sirolimus (Rapamune)
- Azathioprine (Imuran)

Basiliximab (Simulect)

Basiliximab 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 (transplanted organ) and destroy it. You will receive an IV infusion of this drug at the time of your transplant. You will receive a 2nd dose 4 days after your transplant, before you leave the hospital.

Potential Side Effects

Basiliximab does not cause side effects in most patients. You may have allergy symptoms such as fever or chills.

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 come in 3 sizes: 0.5 mg, 1 mg, and 5 mg. You can use a combination of different sizes to make your dose. Use the smallest number of capsules you can to make up your dose.

Examples:

- **For a 2.5 mg dose:** Take 2 of the 1 mg capsules and 1 of the 0.5 mg capsules.
- **For an 8 mg dose:** Take 1 of the 5 mg capsules and 3 of the 1 mg capsules.

The usual maintenance dose is 1 mg to 10 mg taken every 12 hours, usually at 9 a.m. and 9 p.m. You may take it with or without food. Your doctor might adjust your dose based on the result of a blood test. Your blood test will be scheduled for 8:30 a.m. Do **not** take your morning dose of tacrolimus before your blood draw. Wait and take it after the blood has been drawn.

Potential Side Effects

The most serious side effects of tacrolimus are injury to the kidney (*nephrotoxicity*) and damage to the nerves (*neurotoxicity*). This type of nerve 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
- *Gingival* (gum) growth
- Headache
- Nausea or vomiting
- Convulsions
- Hair loss
- Increased cholesterol
- Increased risk of infection
- Increased or unwanted hair growth

Cost

Tacrolimus usually costs \$100 to \$400 a month. You will take this drug indefinitely. Medicare Part B may cover 80% of the cost for eligible transplant recipients. You may buy either the brand or generic form.

Mycophenolate (CellCept, Myfortic)

Mycophenolate is an immunosuppressant that helps prevent rejection. It decreases the production of lymphocytes (white blood cells) in the body. It is used with tacrolimus and prednisone. You will take it by mouth 2 times a day. It comes in 2 different forms.

You will take mycophenolate indefinitely.

Dose

- CellCept comes as a 250 mg capsule and a 500 mg tablet. It also comes as a liquid in a strength of 1,000 mg/5 ml (teaspoonful). Usual maintenance dose is 1,000 mg (1 gm), taken by mouth 2 times a day.
- Myfortic comes as 360 mg and 180 mg tablets. It has delayed absorption. Usual maintenance dose is 720 mg, taken by mouth 2 times a day.

It is best to take these drugs with food to prevent stomach upset. 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

More common:

- *Leukopenia* (severe low white blood cells)
- Belly pain, nausea, or vomiting
- Diarrhea
- Increased risk of infections

Less common:

- *Anemia* (severe low red blood cells)
- *Thrombocytopenia* (lower than normal platelets)

Cost

Mycophenolate usually costs \$150 to \$625 a month. You may buy either the brand or generic form of CellCept or Myfortic. 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 lung.

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

You will take prednisone by mouth shortly before your surgery and as part of your long-term plan. Methylprednisolone in large IV doses (*pulse therapy*) may be used later as needed to treat acute rejection. After pulse therapy, you will keep taking prednisone as part of your long-term immunosuppressant regimen. You will take this drug indefinitely.

Dose

Prednisone tablets come in 6 sizes: 1 mg, 2.5 mg, 5 mg, 10 mg, 20 mg, and 50 mg. The tablets are usually white and have an indented line (*score*) in the middle. This makes it easy to break them in half.

After your transplant surgery, your prednisone dose will be decreased about every 2 weeks until you are taking the usual maintenance dose of about 10 mg, taken once a day. Always take prednisone with food.

Potential Side Effects

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

Some patients who did not have diabetes before transplant need to take insulin to manage high blood glucose caused by prednisone. If you already have diabetes, you may need to take higher doses of insulin right after your surgery.

Regular exercise and good nutrition will help keep your bones, muscles, and body strong while you are taking prednisone.

Short-term side effects at high doses include:

- Stomach upset, heartburn, ulcers
- Emotional changes, mood swings, sleep disturbances
- Night sweats
- Weight gain, swelling
- Slower wound healing
- Greater appetite, feeling hungry
- Higher blood glucose
- Face swelling (*moon face*)
- Acne
- Blurred vision
- Greater risk of infection

Long-term side effects, which may be worse with higher doses, include:

- Muscle, bone, and joint weakness and pain
- *Osteoporosis* (thinning bones)
- Weak, dry, thin skin; stretch marks
- Increased or unwanted hair growth
- Round shoulders (*buffalo hump*)
- Easy bruising
- Visual changes, cataracts
- Higher cholesterol
- Greater risk of getting certain cancers
- Greater risk of infection

Cost

Prednisone costs \$15 to \$30 a month. You may buy either the brand or generic form. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

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. Some patients receive ATG to treat 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 diphenhydramine (Benadryl) are usually given before your doses to prevent some of the side effects. Some side effects include:

- Flu-like symptoms: fever, chills, nausea
- Headache, muscle aches, 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

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 may replace tacrolimus in the immunosuppressant plan. It is used with mycophenolate and steroids. You will receive cyclosporine just before surgery (with prednisone).

You may be switched to cyclosporine by your transplant pulmonologist if you cannot handle tacrolimus after surgery. If you are switched to cyclosporine from tacrolimus, you will take this drug indefinitely.

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 you can to make up your dose.

Examples:

- 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.

Cyclosporine capsules are sensitive to air and come in special blister-seal packages. Keep them sealed until you are ready to take your dose. They are stable for 7 days outside the blister package.

Usual maintenance dose is 100 mg to 500 mg taken every 12 hours, usually at 9 a.m. and 9 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 blood test. Blood for the test should be drawn right before your next dose of cyclosporine is due (12 hours after your last dose), so do not take your cyclosporine before your blood draw on clinic visit days.

Different brands of cyclosporine are absorbed differently. If your cyclosporine refill looks different than usual, ask your pharmacist if you received the right product. Tell Post Lung Transplant Services if your brand changes.

Potential Side Effects

The most serious side effect of cyclosporine is toxicity or injury to the kidney. Often this effect can be avoided or reversed by closely monitoring your kidney function and properly adjusting your dose.

Some side effects are:

- Mood changes
- Acne
- Decreased liver function
- Convulsions
- Headache
- Higher cholesterol
- Greater risk of infection
- Higher blood pressure

Cost

Cyclosporine usually costs about \$350 to \$1,600 a month. You may buy either the brand or generic form. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

Sirolimus (Rapamune)

Sirolimus is an immunosuppressant that is used to help prevent rejection. It blocks the function of immune cells (T-lymphocyte white blood cells) and keeps them from destroying the transplanted organ. It is usually taken with tacrolimus or cyclosporine, mycophenolate, and prednisone. You will take this drug indefinitely.

Dose

Sirolimus comes in 1 mg and 2 mg tablets, and as a liquid in a strength of 1 mg/ml. The usual maintenance dose is 1 mg to 10 mg taken once a day.

Take your dose at the same time every day, with or without food. 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.

If you take both cyclosporine and sirolimus, you **must** take the sirolimus 4 hours **after** the cyclosporine. Your body cannot fully absorb and use these medicines if you take them at the same time.

Potential Side Effects

- Increased blood cholesterol and triglyceride levels
- Fewer red blood cells, blood platelets, and white blood cells
- Mouth ulcers or sores
- Acne
- Joint pain
- Tingling feeling in hands or feet
- Increased risk of infection
- Shortness of breath (rare)
- Decreased kidney function
- Slower wound healing

Cost

Sirolimus usually costs \$500 to \$1,000 a month. You may buy either a brand or generic form. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

Azathioprine (Imuran)

Azathioprine is an immunosuppressant that helps prevent rejection. It affects the bone marrow and decreases the number of white blood cells the body produces. It can replace mycophenolate in your medicine plan.

Azathioprine is used with cyclosporine or tacrolimus and steroids. This drug is taken indefinitely.

Dose

Azathioprine comes as a 50 mg yellow tablet (Imuran brand) or as a generic. It has a score 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
- Bleeding (lowered platelets)
- *Anemia* (lowered red blood cells)
- Mild hair loss
- Nausea
- *Jaundice* (yellow skin caused by effects on the liver)
- Fever

Cost

Azathioprine usually costs about \$40 a month. You may buy either the brand or generic form. Medicare Part B may cover 80% of the cost for eligible transplant recipients.

Antibiotics and Antivirals

When your body's immune system has been suppressed, you have a 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 very 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 to prevent infection.

Antibiotics you may be prescribed include:

- Nystatin liquid
- Clotrimazole troche (Mycelex)
- Fluconazole (Diflucan)

- Posaconazole (Noxifil)
- Valganciclovir (Valcyte), ganciclovir (Cytovene), or acyclovir (Zovirax)
- Trimethoprim/sulfamethoxazole (Bactrim, Septra, cotrimoxazole, trim/sulfa, TMP/SMX)
- Dapsone
- Pentamidine (Pentam)

Nystatin Suspension (Nilstat)

Lung transplant patients take an *antifungal* (anti-yeast) drug such as nystatin to prevent too much yeast growth in the mouth and throat (*thrush*). You will usually take nystatin for 3 months after transplant.

Dose

Swish the liquid around in your mouth for 60 seconds then swallow it. Do **not** eat or drink for 15 to 30 minutes after each dose.

Potential Side Effects

- Unpleasant taste
- Irritated lining of mouth
- Dry mouth
- Nausea

Cost

The cost is about \$45 to \$90 a month. You may buy either the brand or generic form.

Clotrimazole Troche (Mycelex)

Lung transplant patients will take an *antifungal* (anti-yeast) drug such as clotrimazole to prevent too much yeast growth in the mouth and throat (*thrush*). If you do not tolerate nystatin, you may take clotrimazole for 3 to 6 months after transplant.

Dose

Dissolve the 10 mg clotrimazole *troche* (lozenge) in the mouth. Do **not** eat or drink for 15 to 30 minutes after each dose.

Potential Side Effects

- Unpleasant taste
- Chalky mouth
- Dry mouth
- Nausea

Cost

The cost is about \$125 to \$250 a month. You may buy either the brand or generic form.

Fluconazole (Diflucan)

Some lung transplant patients will take an *antifungal* (anti-yeast) drug called fluconazole to prevent yeast growth in the mouth, throat, and lungs, if yeast is found in their cultures. Patients usually take fluconazole for 4 weeks after transplant, then change to nystatin.

Dose

The usual dose of fluconazole is two 200 mg tablets 1 time each day.

Potential Side Effects

- Headache
- Diarrhea
- Unpleasant taste
- Nausea

Cost

The cost is about \$45 to \$175 a month. You may buy either the brand or generic form.

Posaconazole (Noxafil)

Lung transplant patients who have had a fungus called *Aspergillus* in a culture will take an *antifungal* (anti-yeast) drug called posaconazole to prevent mold growth in the lungs. You may take posaconazole for 3 months after transplant.

Dose

Take 3 tablets by mouth once each day. Take the tablets with food or a carbonated beverage.

Potential Side Effects

- Diarrhea
- Fever
- Headache
- Nausea

Cost

The cost is about \$5800 a month. You may buy either the brand or generic form.

Valganciclovir (Valcyte) or Acyclovir (Zovirax)

Valganciclovir and acyclovir are antiviral drugs used to treat and prevent herpes infections. Valganciclovir is used to prevent *cytomegalovirus* (CMV) infections, a type of herpes infection. You will take 1 of these drugs for 3 months after transplant. If you develop a CMV infection after transplant, you will restart valganciclovir or take an IV drug called *ganciclovir* to treat the CMV infection.

Dose

- The usual dose of valganciclovir to prevent CMV infections is 900 mg, once a day.
- The usual dose of acyclovir to prevent herpes infections is 400 mg, 2 times a day.

Both drugs can be taken with or without food.

Potential Side Effects

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

Cost

- Valganciclovir costs about \$600 to \$1,200 a month. You may buy either the brand or generic form.
- Acyclovir costs about \$10 a month. You may buy either the brand or generic form.

Trimethoprim/Sulfamethoxazole (Bactrim, Septra, Cotrimoxazole, Trim/Sulfa, TMP/SMX)

Trimethoprim/sulfamethoxazole is an antibacterial sulfa drug used to treat or prevent lung infections that are caused by a fungus called *pneumocystis*. This fungus occurs naturally in the environment. It does not cause illness in healthy people, but in people with a weakened immune system it can cause a lung infection.

This drug is taken indefinitely after transplant.

Dose

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

Potential Side Effects

- Rash (report any rashes to your doctor)
- Nausea
- Lowered white blood cell count (rare and unlikely)
- More likely to sunburn (wear sunscreen if you are going to be in the sun for a long time)

Cost

This drug costs \$10 a month. You may buy the brand or generic form.

Dapsone

Dapsone is used to prevent *pneumocystis* lung infections. It may be used instead of trimethoprim/sulfamethoxazole if you are allergic to sulfa drugs.

This drug is taken indefinitely after transplant.

Dose

Patients take 1 tablet (100 mg) daily.

Potential Side Effect

- Lowered red blood cell count

Cost

This drug costs about \$100 a month.

Pentamidine (Pentam)

Pentamidine is an antimicrobial drug. It may be used to prevent or treat pneumocystis instead of trimethoprim/sulfamethoxazole.

Dose

Patients receive an inhaled treatment of 300 mg, once a month.

This drug is taken indefinitely after transplant.

Potential Side Effects

- Unpleasant taste
- Cough

Medicines to Prevent Stomach Acid Secretion

Medicines called *proton pump inhibitors* prevent acid secretion. They help prevent stomach injury caused by stress or by high doses of your immunosuppressants. They may help protect your lung function. Talk with your healthcare provider before stopping these medicines. You may need to taper the drug slowly.

Usually, these medicines are taken after transplant indefinitely.

You will be prescribed one of these medicines:

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

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

Pantoprazole, omeprazole, and lansoprazole are strong drugs that stop the stomach from making acid. They are used to prevent and treat stomach ulcers and heartburn.

Dose

These drugs should be taken on an empty stomach 30 minutes before a meal. They are usually taken once a day, in these doses:

- Pantoprazole, 40 mg
- Omeprazole, 20 mg
- Lansoprazole, 30 mg

Potential Side Effects

- Nausea
- Constipation
- Dizziness
- Belly pain
- Headache

Cost

These drugs cost about \$10 to \$50 a month. You may buy the brand or generic form, or over-the-counter (without a prescription).

Laxatives and Stool Softeners

These products 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 cause problems with your wound.

It is important to reduce your use of medicines that can cause constipation, such as pain medicines, as soon as you can after surgery. It will also help to drink plenty of fluids, increase your physical activity, and increase the fiber in your diet.

Polyethylene glycol (Miralax) 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.

You will take these medicines for about 3 months after transplant. If you have diarrhea while taking them, decrease your dose or stop taking them.

Some common laxatives are:

- Bisacodyl (Dulcolax)
- Senna (Senokot)
- Milk of Magnesia (MOM)

Some common stool softeners are:

- Docusate (Colace, DOSS)
- Polyethylene glycol (Miralax)

Cost

These products cost about \$5 to \$20 a month. You may buy either the brand or generic form over-the-counter (without a prescription).

High Blood Pressure Medicines (Antihypertensives)

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

We suggest you monitor and record your blood pressure and pulse at home. Bring this record to your clinic visit so we can adjust the dose of your high blood pressure medicine, if needed. Some patients take these medicines indefinitely.

Some common antihypertensives used by the transplant team include:

- Amlodipine (Norvasc)
- Felodipine (Plendil)
- Metoprolol (Lopressor, Toprol XL)
- Atenolol (Tenormin)
- Clonidine (Catapres)
- Valsartan (Diovan)
- Losartan (Cozaar)
- Enalapril (Vasotec)
- Lisinopril (Zestril, Prinivil)
- Hydrochlorothiazide

Special Instructions

- Do **not** stop taking blood pressure medicine before talking with your doctor and Post Lung Transplant Services. Some of these medicines may interact with your immunosuppressants, and your doses of immunosuppressants may need to be adjusted.
- Monitor and record your blood pressure and pulse before taking your morning and bedtime doses.
- Get up slowly from lying or sitting positions to help lessen dizziness or lightheadedness.

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 \$10 to \$50 a month. Many come in generic form.

Aspirin for 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. Some patients will take it indefinitely.

Dose

The transplant team may prescribe a dose of 1 tablet (81 mg, or 1 baby aspirin) a day. Always take aspirin with food, even if it is enteric coated.

Potential Side Effects

- Bleeding of your soft tissues or gastrointestinal tract
- Blood in your urine
- Ringing in your ears

Cost

Aspirin costs \$5 a month. You may buy either the brand or generic form over-the-counter (no prescription needed).

Cholesterol-Lowering Drugs

Cholesterol-lowering drugs are used for some lung transplant patients to decrease inflammation of the new lungs and prolong graft survival. Some common cholesterol-lowering drugs are:

- Simvastatin (Zocor)
- Pravastatin (Pravachol)
- Rosuvastatin (Crestor)
- Atorvastatin (Lipitor)

Special Instructions

Tell your doctor if you have any muscle weakness or pain that you cannot explain.

Potential Side Effects

- Dizziness
- Headache
- Rash
- Nausea
- Belly cramps
- Muscle aches

Cost

Atorvastatin and pravastatin cost \$10 a month. You may buy either the brand or generic form

Vitamin and Mineral Supplements

Multivitamins

We advise taking 1 multivitamin every day to supplement your diet. If you have cystic fibrosis, we will adjust your vitamin regimen based on levels of vitamins in your blood.

Calcium

Most transplant patients need extra calcium to help prevent bone disease and *osteoporosis* (thinning of the bones). Some common supplements are:

- Calcium carbonate (TUMS and Oscal)
- Calcium citrate (Citracal)

Dose

We advise taking 600 mg to 1,200 mg of elemental (active) calcium a day, depending on how much calcium you get in your diet. Dairy foods are a good source of calcium. See the “Nutrition” section of this manual, 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 (vitamin D3)
- Ergocalciferol (vitamin D2)

Dose

We will check your blood levels and adjust the dose of vitamin D that you take in addition to the amount in your multivitamin.

Ergocalciferol is a potent form of vitamin D that your doctor may prescribe.

Magnesium

Our bodies need magnesium to keep our muscles and nerves healthy. Magnesium also helps some *enzymes* work. (An enzyme is a type of protein 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. Talk with your transplant dietitian for more information.

A common magnesium supplement is:

- Magnesium oxide (MagOx). It comes as a tablet or capsule.

Dose

The usual dose of magnesium is 400 mg twice a day.

Potential Side Effects

Magnesium may cause diarrhea. Talk with your doctor if you have diarrhea.

Will my insurance cover medicines I buy without a prescription?

Most insurance companies do not pay for medicines you can buy over the counter (without a prescription). These include multivitamins, calcium, magnesium oxide, vitamin D, and aspirin.

Notes

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

Post Lung Transplant
Services: 206.598.5668