

Medicines

After a kidney/pancreas transplant

After a transplant, you will take medicines every day for the rest of your life. This chapter describes many of the drugs and supplements you will be taking. It includes common side effects, doses, and costs.

Getting Started

You will take many medicines after transplant. Before your surgery, learn as much as you can about:

- How each medicine works
- What its side effects are
- When and how to take it
- How you will pay for it

It will be helpful to learn ways to organize your medicines. Before your surgery, set up a system that will help you remember to take each medicine at the right time and in the right way.



You will take many medicines after your transplant.

What medicines will I take after transplant?

After transplant, you will take:

- **Immunosuppressants** to suppress your immune system. These drugs help prevent or treat rejection of your new organ(s). You will take these drugs as long as you have your graft.
- **Antibiotics** to fight infection. The drugs you take to suppress your immune system will increase your risk of infection. You will take antibiotics for 3 to 6 months after your transplant surgery.
- **Antacids** to help prevent upset or excess acid in your stomach. You will take antacids for 2 to 3 months after transplant.
- **Laxatives and stool softeners** to help avoid constipation. You will take these for 2 to 3 months after transplant.

You may also need to take:

- **Pain medicines**, usually for about 1 week after surgery.
- **Aspirin** in small doses to prevent blood clotting.
- **Antihypertensive drugs** to treat high blood pressure.
- **Diuretics** (water pills) to help treat swelling.
- **Iron** to help prevent anemia.
- A **multivitamin** to supplement your diet.
- **Calcium** and **vitamin D** to prevent *osteoporosis* (thin, weak bones).
- **Magnesium** and **phosphate supplements** to make up for the loss of these minerals through urine after transplant.

What about side effects?

Many of the drugs you will take after surgery have side effects. **Keep all of your doctor and clinic appointments.** At your visit, tell us about any side effects you have. We can adjust your medicines and doses as needed.

What will my medicines cost?

Your medicines can cost \$1,000 or more a month. These costs may go down over time, when you no longer need to take some drugs or your doctor lowers the doses.

Medicare, Medicaid, and private health insurance may cover some drug costs. But even with insurance, you may need to pay \$500 to \$2,000 out of your own pocket for drugs every month for the rest of your life.

Before your surgery, talk about transplant medicines with your health insurance company, your local pharmacist, and the social worker or financial counselor who are on your follow-up care team. Find out:

- What transplant medicines are covered by your healthcare plan
- What your co-pays or deductibles will be

Be sure to keep your insurance coverage after transplant. Your medicine costs can be \$12,000 to \$24,000 a year.

Where can I get my prescriptions filled?

Right After Transplant

- If you live in the Seattle area, you can fill your prescriptions at your local or home pharmacy.
- Most patients may be able to fill their prescriptions at the UWMC Pharmacy during the 3 months after transplant.

Long Term

In the long term, you can fill your prescriptions at your local pharmacy or use a mail order pharmacy. Some insurance plans require that transplant patients buy some of their medicines from “specialty pharmacies.”

Tell your health insurance company and local pharmacy that you will be a transplant patient, so they will know your medicine needs. They can help you arrange for buying and refilling your prescriptions.

Always carry your prescription insurance cards in your wallet or purse. Your pharmacy needs to see these cards for billing purposes.

What medical equipment will I need?

You will need some medical equipment to monitor the effects of your medicines. You may need to buy:

- A blood pressure machine that also measures your pulse
- A thermometer
- A scale
- A blood glucose meter

Before your surgery, buy both the blood pressure machine and thermometer and learn how to use them. That way, you can start to use them right after surgery.

At the Hospital

What to Bring

When you come to the hospital for transplant, bring with you:

- **Your current medicines** and a list of their names and doses. Your transplant team needs to know **all** of the medicines and supplements that you are taking.
- **This manual** (*Your Kidney/Pancreas Transplant Guide*)
- Any **equipment** you were asked to buy (see above)

Learning About Your New Medicines

After surgery, you and your caregiver will learn your medicine schedule. You will need to know the names, strengths, doses, purposes, and side effects of each medicine you take.

The hospital pharmacist will teach you about your medicines 1 to 2 days after surgery. It is a good idea for family members and caregivers to learn about your medicines along with you.

At first, taking so many medicines can be overwhelming. But, the number you take will decrease over the next few months. Transplant patients tell us that the best way to learn everything you need to know is to start taking the medicines yourself while you are still in the hospital.

Tips to Help You Keep Track

- Your pharmacist will give you a box called a *mediset*. Use it to keep track of your pills. Store it at room temperature, away from direct light.
- Work with your pharmacist to set up a medicine schedule that will work for you. Try to schedule your medicines so that you take them only 4 times a day, at breakfast, lunch, dinner, and bedtime. This will make it easier to remember to take your pills.
- Carry a 1-day mediset with you during the day to make it easy to take your medicines on time.
- Use your cell phone or get a watch with an alarm. Set the alarm to remind you when it is time to take your medicines.

After Discharge

- **You will receive medicines to last 3 to 5 days when you leave the hospital.** You will also be given prescriptions. Fill these as soon as you can at the pharmacy you have chosen. Make sure you do not run out of your medicines.
- **Keep an up-to-date list of all of your medicines with you. Include the directions for taking them.**
 - Update this list when your drugs change. Use it to refill your mediset.
 - Ask your doctors to print out a current list at your clinic visits.
 - You may want to keep your list on your computer, tablet, or cell phone so that you can update it easily and always have it with you.
- **When you come for clinic visits, bring:**
 - Your mediset
 - Medicine bottles you had filled at your pharmacy
 - Your medicine list
- **If you have problems or questions about your medicines, call your transplant nurse coordinator.**
- **Refill your medicines early.** Do not let your supplies run out.
- **Keep your follow-up appointments** so that your medicines can be checked and adjusted.

- **After 3 months**, you will need to get your prescriptions renewed. This can be done by your primary care provider (PCP) or your nephrologist.

Taking Your Medicines

Here are some basic rules for taking medicines:

- **Take ONLY the medicines your doctor prescribes for you.**
- **Take your medicines exactly as they were prescribed.**
 - Do **not** take more or less than your prescribed dose.
 - Do **not** stop taking a medicine without talking with your doctor or transplant nurse coordinator.
- **Do not take any new medicines or supplements** without first talking with your doctor, transplant nurse coordinator, or pharmacist.
- **If you miss taking a dose:**
 - Do **not** take more than a single dose at a time. Wait until it is time to take your next dose and take your usual amount.
 - Call your transplant nurse coordinator or doctor for instructions.
- **Know the side effects of your drugs.** Tell your doctor or transplant nurse coordinator about any side effects you have. If symptoms bother you too much, your doctor may be able to prescribe a different drug.
- **Tell all of your healthcare providers that you are a transplant patient** and are taking drugs that suppress your immune system. Tell your dentist, optometrist, and all other providers.
- **Keep all medicines out of reach of children and pets.**
- **Do not let anyone else take your medicines.**
- **Do not take herbal, natural, or nutritional supplements** without first talking with your transplant providers (doctors, nurses, pharmacists, and dietitian). This is because these products:
 - May have hidden ingredients that can cause side effects
 - Might interact with your transplant medicines and harm you
 - Can make managing your medicines even more complex
- **Avoid these (if possible) while taking immunosuppressants:**
 - Grapefruit, pomegranate, and star fruit
 - *Non-steroidal anti-inflammatory drugs* (NSAIDs) such as ibuprofen (Advil, Motrin) and naproxen (Aleve, Naprosyn)
 - Aspirin (unless prescribed by your doctor)
 - Herbal or “natural” medicines

- Acetaminophin (Tylenol) – do not take more than 2,000 mg a day (total from all sources)
- Nutritional supplements, unless prescribed by your transplant team

Drugs to Prevent Rejection

These medicines are called *anti-rejection drugs* or *immunosuppressants*.

Why do I have to take these drugs?

After transplant, your immune system will try to protect your body. It will see the new organ as a threat and try to destroy (reject) it.

How do they work?

These drugs weaken (suppress) your immune system by decreasing the effects of *T lymphocytes*, a type of white blood cell.

How many immunosuppressants will I take?

The transplant team will prescribe 3 different anti-rejection drugs for you. Each one affects the immune system in a different way. When these drugs are taken together:

- They are more effective at stopping rejection.
- You can take smaller doses of each drug.
- You will have fewer side effects, and less severe side effects.

Your transplant team will explain the specific drugs you will take.

How long will I need to take them?

You will take anti-rejection drugs for as long as you have your graft.

How well do these drugs work?

Even when you take your anti-rejection drugs as prescribed, rejection may still occur. Rejection most often occurs within 1 year after your transplant. Sometimes it can be reversed by using IV medicines.

Your blood test results will tell us if your body is rejecting your new organ. Be sure to keep all appointments for blood tests.

What should I do if I forget a dose?

It is important that you remember to take these medicines every day as prescribed. **If you forget whether you took your dose:**

- Do **not** double your dose.
- Call your doctor or transplant nurse coordinator for instructions.

What kind of side effects do they cause?

- **Infections:** These drugs may make it easier for you to get colds, flu, and other viral and fungal infections. You can also get infections from germs that usually would not cause illness. These are called *opportunistic* infections.
- **Cancers:** They may cause a higher risk of skin and other cancers.

Immunosuppressant Drugs for Induction

You will receive IV immunosuppressants while you are in the hospital. This process, called *induction*, rapidly lowers your immune system right after transplant surgery.

Costs are not listed for these induction drugs. They are only given while you are in the hospital. You will not need to pay for them long term.

Antithymocyte Globulin

Brand names: *ATG, Thymoglobulin*

Purpose: Antithymocyte globulin (ATG) is a strong anti-rejection drug. It destroys T-lymphocytes. Some patients receive ATG to treat acute rejection episodes.

If you receive ATG:

- It will be given to you by IV infusion over 12 hours, starting right after your transplant surgery.
- You will then have infusions every day or every other day, for a total of at least 3 doses.

Possible side effects: T-lymphocytes release chemicals as they are destroyed. These chemicals can cause allergic or flu-like symptoms. These are more common after the first few doses. You will most likely be given acetaminophen (Tylenol), an *antihistamine* (Benadryl), and a *corticosteroid* (methylprednisolone) before your first 3 doses to prevent some of these side effects.

Side effects of ATG include:

- Flu-like symptoms, such as fever and chills
- Nausea
- Headache
- Shortness of breath
- Low or high blood pressure
- Low counts of white blood cells, platelets, and red blood cells
- Greater risk of infection

Basiliximab

Brand name: *Simulect*

Purpose: Basiliximab is an antibody. It blocks the action of *interleukin-2* (IL-2), a substance in the body that helps activate T-lymphocytes. Blocking IL-2 helps keep your immune system from trying to destroy your transplanted organ(s).

An IV infusion of basiliximab is given right after transplant. A 2nd dose is given 4 days later. Some patients may receive this drug instead of ATG.

Possible side effects: This drug has a very low risk of side effects. Allergy or flu-like symptoms, such as fever or chills, are possible.

Methylprednisolone

Brand name: *Solumedrol*

Purpose: This drug, also known as a steroid or corticosteroid, blocks many types of immune cells. You will receive a large IV dose of methylprednisolone during your transplant surgery. You will receive another IV dose every day for up to 3 more days after surgery. This drug is also used to treat rejection episodes.

Possible side effects: High doses of steroid drugs can cause:

- Higher blood sugar
- Slower wound healing
- Blurred vision
- Muscle aches
- Mood swings
- Insomnia
- Swelling

Long-Term Immunosuppressant Drugs

You will take anti-rejection drugs by mouth for as long as you have your graft. These are called *maintenance* medicines.

Tacrolimus

Brand names: *Prograf, FK-506*

Purpose: Tacrolimus keeps T-lymphocytes from trying to reject the transplanted organ. Most transplant patients start taking tacrolimus about 1 to 3 days after surgery and keep taking it long term.

Forms: Capsules come in 3 sizes: 0.5 mg, 1 mg, and 5 mg. You can combine sizes to make your full dose. The brand name is Prograf, but there are also generic forms.

Usual dose: Your dose of tacrolimus will be between 1 mg to 10 mg taken every 12 hours, usually at 8 a.m. and 8 p.m. You may take it with meals. Your doctor may adjust your dose based on the result of a blood level test.

On clinic days, do not take your dose of tacrolimus until after your blood is drawn.

Possible side effects: The most serious side effects of tacrolimus are injury to the kidney and the nervous system, causing tremor and headache. Your doctor may adjust your dose to reduce these side effects. Tacrolimus interacts with many drugs and some foods (grapefruit, pomegranate, and star fruit). Eating these foods can increase side effects.

Some side effects include:

- Lower kidney function
- Higher blood sugar
- Higher blood pressure
- Higher blood potassium
- Lower blood magnesium
- Shakiness or tremor
- Headache
- Convulsions (seizures)
- Nausea or vomiting
- Hair loss
- Higher cholesterol
- Greater chance of infection

Cost: Tacrolimus costs \$300 to \$500 a month for generic forms. You will take it long-term. Most insurance plans, including Medicare Part B, cover the cost for eligible transplant recipients.

Mycophenolate Mofetil

Brand names: *CellCept, Myfortic*

Purpose: Mycophenolate (MMF) lowers the production of lymphocytes. Patients take this drug while they are also taking tacrolimus.

Forms: MMF comes in 2 different forms:

- CellCept comes as a 250 mg capsule and a 500 mg tablet. It also comes as an oral suspension (liquid).
- Myfortic is enteric-coated and comes in 180 mg and 360 mg tablets.

Usual dose:

- CellCept: 1,000 mg (1 gram) taken by mouth 2 times a day
- Myfortic: 720 mg taken by mouth 2 times a day.

MMF is best taken on an empty stomach, but can be taken with food, if needed, to avoid stomach upset.

Take your doses at the same time every day. Your doctor may adjust your dose based on the result of a blood level test.

Possible side effects:

More common:

- *Leukopenia* (low white blood cell count)
- Nausea or vomiting
- Abdominal pain
- Diarrhea
- Greater risk of infection

Less common:

- *Anemia* (low red blood cell count)
- *Thrombocytopenia* (low platelet count)
- **May cause birth defects, so should not be taken by pregnant women or women who plan to become pregnant**

Cost: Mycophenolate costs \$300 to \$500 a month for generic forms. You will need to take it long term. Most insurance plans, including Medicare Part B, cover the cost for eligible transplant recipients.

Prednisone and Methylprednisolone

(Types of steroids)

Purpose: Prednisone (oral) and methylprednisolone (IV) are also called *steroids* or *corticosteroids*. These drugs lower the function and activity of lymphocytes. They are used to prevent or treat rejection of the graft.

You may receive methylprednisolone in large IV doses (*pulse therapy*) to treat acute rejection of your transplant. If your doctors prescribe this drug to you, you will receive it by IV for several days after your surgery. You will then start taking prednisone by mouth.

Forms: 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 scored, so that they break in half more easily.

Usual dose: 5 to 10 mg a day as a single dose every day. Always take prednisone with food or a snack to avoid stomach upset.

Possible side effects: Higher doses of these drugs cause more side effects. These usually lessen when the doses are reduced.

Other side effects can occur after many months or years of taking the drug at lower doses. It is important to get plenty of exercise and good nutrition to keep your body strong (especially bones and muscles) while you are taking prednisone.

Some patients may need to take insulin to control their blood sugar while taking prednisone. If you have diabetes, you might need higher doses of insulin at first, right after your surgery.

Short-term side effects (at high doses):

- Stomach upset, heartburn, stomach ulcers
- Emotional changes, mood swings, problems sleeping
- Night sweats
- Weight gain and swelling
- Slower wound healing
- Increased appetite, feeling hungry
- Higher blood sugar
- Face swelling (“moon face”)
- Acne
- Blurred vision
- Greater chance of infection
- Muscle aches

Long-term side effects:

- Muscle weakness
- Bone and joint weakness and pain
- *Osteoporosis* (bones become brittle and can break more easily)
- High blood sugar (*diabetes*)
- Stretch marks and weak, dry, thin skin
- Increased or unwanted hair growth
- Rounded shoulders (“buffalo hump”)
- Easy bruising
- Vision changes, cataracts
- Higher cholesterol

- Greater chance of getting certain cancers
- Greater chance of infection

Cost: Prednisone costs \$5 to \$10 a month. You will need to take it long term. There are generic forms.

Other Immunosuppressant Drugs

Cyclosporine

Brand names: *Neoral, Gengraf, Sandimmune*

Purpose: Cyclosporine keeps the T-lymphocytes from trying to reject the transplanted organ. If your doctor prescribes this drug for you, you will take it instead of tacrolimus. Both drugs work the same way on the immune system.

Dose: There are many forms of cyclosporine. Capsules come in 3 sizes: 25 mg, 50 mg, and 100 mg. You may need to mix different sizes of capsules to make your dose. The liquid formula strength is 100 mg/ml.

Special instructions: Cyclosporine capsules are affected by air. Keep them sealed in their package until you are ready to take your dose. The capsules are stable for 7 days after you open the package.

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

Possible side effects: The most serious side effect of cyclosporine is kidney damage. This effect can be avoided by closely monitoring your kidneys. Your doctor will adjust your dose if there are any problems.

Side effects include:

- Lower kidney function
- Higher blood pressure
- Higher blood potassium
- Lower blood magnesium
- Shakiness or tremor
- Burning or tingling in your hands or feet
- Increased or unwanted hair growth
- Increased gum growth
- Mood changes
- Acne
- Lower liver function

- Convulsions (seizures)
- Headache
- Higher cholesterol
- Higher risk of infection

Cost: Cyclosporine costs \$300 to \$500 a month. You will take it long term. There are generic forms.

Sirolimus

Brand name: *Rapamune*

Purpose: Sirolimus keeps T-lymphocytes from destroying the graft. It also has anti-cancer or anti-tumor effects. If your doctor prescribes this drug, you will usually take it while you are also taking tacrolimus or prednisone (or both).

Forms: Sirolimus tablets come in 0.5 mg, 1 mg, and 2 mg. It also comes as a liquid in a strength of 1 mg/ml.

Usual dose: Between 1 mg to 10 mg taken once a day, with or without food. Take your dose at the same time every day. Your doctor may adjust your dose based on the result of a blood level test.

Possible side effects:

- Higher blood cholesterol and triglyceride levels
- Decreased wound healing
- Lower blood platelets, red blood cells, and white blood cells
- Mouth ulcers or sores
- Acne
- Tingling in your hands or feet
- Joint pain
- Higher risk of infection
- **May cause birth defects** – do **not** take if you are pregnant or planning to become pregnant

Cost: Sirolimus costs \$500 to \$1,000 a month. You will take it long-term. There are no generic forms.

Azathioprine

Brand name: *Imuran*

Purpose: Azathioprine affects your bone marrow so that your body produces fewer white blood cells. You may take azathioprine instead of mycophenolate. You will take it long term along with tacrolimus or cyclosporine and steroids.

Forms: Azathioprine comes as a 50 mg tablet. The tablets are scored so they can be broken in half more easily.

Usual dose: 25 mg to 175 mg taken every day in 1 dose, usually in the evening at bedtime.

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

Side effects include:

- Low white blood cell count
- Anemia (low red blood cell count)
- Bleeding (from low platelet count)
- Hair loss
- Nausea
- Jaundice (yellow skin caused by effects on the liver)

Cost: Azathioprine costs \$15 to \$100 a month. You will take it long-term. There are generic forms.

Drugs to Prevent Infections

When your immune system is suppressed, you can get infections more easily and they can be harder to treat. Infections can be caused by germs that:

- Come from your environment
- Come from another person
- Normally live in or on you but usually do not cause infection (*opportunistic infections*)

For the first 3 months after transplant surgery, it is easier to get infections because of the large doses of anti-rejection drugs you are taking.

You will need to take several antibiotics during the first 3 months to prevent infection. The antibiotics you make take include:

Clotrimazole Troche and Fluconazole

Brand names: *Mycelex* and *Diflucan*

Purpose: You will take an *antifungal* (anti-yeast) drug for 3 months after transplant. These drugs help prevent *thrush* (yeast growing in your mouth).

Usual doses:

- Clotrimazole troche (Mycelex) is a 10 mg lozenge that you dissolve in your mouth. Do not eat or drink for at least 30 minutes after each dose.

- Fluconazole (Diflucan) is taken by mouth once a day or once a week. It may be taken with food.

Possible side effects:

- Clotrimazole troche:
 - Bad taste in your mouth
 - Dry or chalky mouth
 - Nausea
- Fluconazole:
 - Nausea
 - Rash
 - Diarrhea
 - Abdominal pain

Cost: Clotrimazole troche costs \$50 a month. Fluconazole costs \$20 a month. There are generic forms of both.

Valganciclovir, Ganciclovir, and Acyclovir

Brand names: *Valcyte*, *Cytovene*, and *Zovirax*

Purpose: These are antiviral drugs. Some viruses that cause infection, such as *herpes* virus, do not leave the body after an infection has healed. These viruses stay *dormant* (not active) until a weakened immune system “wakes them up.”

Viral infections can be severe and life-threatening for people who are immunosuppressed. Valganciclovir, ganciclovir, and acyclovir are used to treat and prevent simple herpes virus infections (such as cold sores) and a more resistant herpes virus called *cytomegalovirus* (CMV).

You will take these drugs for 3 to 6 months after transplant. They do not treat other viruses like cold, flu, or hepatitis.

Usual doses:

- Valganciclovir (Valcyte) is taken by mouth to prevent or treat CMV infections. It can be taken with food. The usual dose:
 - To **prevent** CMV is 450 to 900 mg, taken once a day.
 - To **treat** CMV is 900 mg, taken twice a day.
- Ganciclovir (Cytovene) is a form of valganciclovir. It is given by IV to treat CMV infections, either in the hospital or through home infusion.
- Acyclovir (Zovirax) is used to prevent herpes infections such as cold sores. It is not used to prevent CMV. The usual dose is 400 mg twice a day. It can be taken with food.

Possible side effects:

- Nausea
- Lower kidney function
- Headache
- Low white blood cell count

Costs:

- Valganciclovir can cost up to \$2,000 a month. There is a generic form.
- Ganciclovir cost varies depending on your insurance coverage.
- Acyclovir usually costs less than \$20 a month. There is a generic form.

Trimethoprim/Sulfamethoxazole

Brand names: *Bactrim*, *Septra*, *Cotrimoxazole*, *Trim/Sulfa*, *TMP/SMX*

Alternate non-sulfa drugs: Dapsone and Pentamidine

Purpose: These are *anti-pneumocystis* drugs. Pneumocystis is a fungus that is found in the lungs of healthy people. It usually does not cause illness. But, the fungus can cause a lung infection in someone who has a weak immune system.

These drugs stop this fungus from infecting the lungs. Most transplant patients take Bactrim or Septra, sulfa-based drugs. If you have a sulfa allergy, you may take Dapsone or Pentamidine instead. These drugs are usually taken for 6 months after transplant.

Usual dose:

- Bactrim or Septra are single-strength (SS) tablets (80/400 mg). Take it every day at bedtime with a full glass of water.
- Dapsone is usually taken as 100 mg once a day by mouth.
- Pentamidine is usually taken once a month in an inhaled form (*aerosol*) at the hospital or clinic. The usual dose is 300 mg a month.

Possible side effects:

- Rash (report any rashes to your doctor)
- Nausea
- Lowered white blood cell count
- Lowered red blood cell count (with Dapsone)
- Sensitivity to the sun
- Cough, wheezing (with Pentamidine)

Cost: Bactrim, Septra, and Dapsone cost \$5 to \$25 a month. There are generic forms. Pentamidine cost varies depending on your insurance plan.

Drugs to Prevent Heartburn

Ranitidine, Pantoprazole, Omeprazole, and Lansoprazole

Brand names: *Zantac, Protonix, Prilosec, and Prevacid*

Purpose: Antacids either neutralize stomach acid or stop acid from being secreted. They are taken for about 3 months after transplant to prevent stomach upset, heartburn, or stomach problems caused by other medicines or stress. Take antacids on an empty stomach for the best effect.

Usual doses:

- Ranitidine (Zantac) is taken in a 150 mg dose at bedtime.
- Pantoprazole (Protonix) is taken in a 40 mg dose once a day.
- Omeprazole (Prilosec) is taken in a 20 mg dose once a day.
- Lansoprazole (Prevacid) is taken in a 30 mg dose once a day.

Possible side effects:

- Rash
- Headache
- Dizziness

Cost:

- Ranitidine costs \$10 a month. There are generic forms.
- Omeprazole, pantoprazole, and lansoprazole cost from \$10 to \$100 a month. There are generic forms. You do not need a prescription for these.

Drugs to Prevent Constipation

Laxatives stimulate your intestines to help stool move through your bowel. *Stool softeners* make hard stool softer, so that it is easier to pass.

Docusate, Senna, Polyethylene Glycol, and Bisacodyl

Brand names: *Colace, Senakot, Miralax, and Dulcolax*

Purpose: Straining to have a bowel movement after surgery can keep your incision from healing. Avoid constipation and hard stools after transplant, and keep your stools soft for 3 months after your surgery.

To avoid constipation:

- Reduce your use of prescription pain medicines as soon as you can after surgery. These drugs can cause constipation.
- Drink plenty of fluids.
- Increase your physical activity.
- Eat more foods with fiber.

How they work:

- Docusate (Colace) is a mild stool softener. It is prescribed most often after transplant.
- Polyethylene glycol (PEG or Miralax) helps your stool hold more water, which makes it softer.
- Senna (Senakot) and Bisacodyl (Dulcolax) are stimulant laxatives.

If you have diarrhea while you are taking these medicines, ask your doctor about taking less.

Cost: Laxatives and stool softeners cost \$5 to \$10 a month. There are generic forms. You can buy them without a prescription.

Drugs to Control Blood Pressure

Amlodipine and Metoprolol

Brand names: *Norvasc* and *Lopressor* or *Toprol XL*

Purpose: It is important to control your blood pressure. High blood pressure can harm your new organ. It can also cause stroke, heart disease, and other problems. Some people have high blood pressure before transplant, and it is very common to have high blood pressure after transplant surgery. Some of the anti-rejection drugs can also raise your blood pressure.

To control blood pressure, the transplant team often prescribes both:

- A *calcium-channel blocker* drug such as amlodipine (Norvasc)
- A *beta-blocker* drug such as metoprolol (Lopressor or Toprol XL)

Special instructions:

- Do **not** stop taking your blood pressure medicines unless your doctor tells you it is OK to do so.
- Take your blood pressure and pulse and record the numbers 2 times a day:
 - **Before** your morning dose of blood pressure medicine
 - **Before** your bedtime dose of blood pressure medicine

Bring your record with you to your follow-up clinic visits. Over time, we may adjust your dose of blood pressure medicine to make sure it is at the best level for you.

- Get up slowly after lying or sitting to keep from feeling dizzy or lightheaded.

Possible side effects:

- Dizziness
- Rapid fall in blood pressure
- High or low heart rate
- Flushing
- Headache
- Feeling tired

Cost: Blood pressure medicines cost \$20 to \$50 a month. Many of these drugs have generic forms.

Drugs to Prevent Blood Clots

Aspirin

Purpose: A small dose of aspirin can help keep clots from forming in the blood vessels leading to a new organ. Aspirin may also prevent heart attacks and strokes. It is prescribed for some patients, but not all.

Usual dose: 1 tablet (81 mg or baby aspirin) taken once a day.

Possible side effects:

- Bleeding in your *gastrointestinal* (digestive) tract
- Blood in your urine
- Ringing in your ears

Cost: Aspirin costs \$5 a month. You will take it long term. There are generic forms. You can buy it without a prescription.

Drugs to Treat Swelling

Furosemide and Torsemide

Brand names: *Lasix* and *Demadex*

Purpose: Some of your transplant medicines can cause swelling (*edema*). Drugs called *diuretics* (water pills) help your body excrete the excess water and sodium that cause the swelling. This fluid comes out in your urine.

Diuretics also lower blood pressure and remove potassium and magnesium from the body. You may need supplements if you lose too much of these minerals.

Possible side effects:

- Low blood potassium or magnesium
- Too much water loss (dehydration)

- Dizziness
- The need to urinate more often
- Headache
- Not feeling hungry
- Leg cramps
- Higher heart rate

Drugs to Lower Cholesterol

Atorvastatin, Simvastatin, Pravastatin, Rosuvastatin, and Lovastatin

Brand names: *Lipitor, Zocor, Pravachol, Crestor, and Lovastatin*

Purpose: Most anti-rejection drugs raise cholesterol. High cholesterol is linked to heart disease, blood vessel disease, and damage to your new organ. Some transplant patients need drugs to lower their cholesterol.

Special instructions: Tell your doctor if you have any muscle weakness or pain.

Possible side effects:

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

Vitamins and Minerals

Iron

Forms of iron: *ferrous sulfate* or *ferrous gluconate*

Purpose: After transplant, you may need extra iron to prevent *anemia*. Anemia occurs when there are not enough healthy red blood cells to carry oxygen to your tissues. Blood loss is the most common cause of anemia.

Having anemia may make you feel tired and weak. Iron treats anemia by helping your body build new red blood cells.

Usual dose: 324 mg, taken 1 to 3 times a day. You can buy most iron supplements without a prescription.

Special instructions: Vitamin C helps your body absorb iron. Take your iron supplement at the same time that you eat foods that are high in vitamin C, such as oranges, broccoli, and dark leafy greens.

Multivitamins

Brand names: *Centrum, One a Day, Nature Meds, Theragra, others*

Purpose: We suggest you take a multivitamin with minerals every day after transplant to make sure your body has all the nutrients needed for healing and recovery. You can buy multivitamins without a prescription.

Calcium

Forms of calcium: *Calcium carbonate (Tums, Oscal) and calcium citrate (Citracal)*

Purpose: Most transplant patients have a higher risk of *osteoporosis* (bone weakness) after surgery, especially if they already had bone disease before transplant. This risk is from taking anti-rejection drugs, and from having low levels of vitamin D and sex hormones (estrogen and testosterone) before transplant.

Calcium helps build strong bones. Taking calcium after transplant can help prevent bone disease, bone loss, and fractures.

Your body needs vitamin D to absorb calcium, so you will also need to take a vitamin D supplement (see “Vitamin D” below).

Usual dose: Take 600 to 1,200 mg of calcium each day. The amount you need depends on how much calcium is in the foods you eat.

Dairy foods and dark leafy greens are good sources of calcium. See the “Nutrition” chapter of this guide or talk with your transplant dietitian to learn more about calcium-rich foods.

You can buy calcium supplements without a prescription. Calcium in chewable tablets is often in a form that your body can absorb most easily.

Read labels carefully. A product with 500 mg calcium carbonate, such as Tums 500, may contain only 200 mg calcium that your body can use.

Vitamin D

Forms of vitamin D: *Cholecalciferol (vitamin D3), ergocalciferol (vitamin D2), calcitriol (Rocaltrol), and others*

Purpose: Your body needs vitamin D to absorb calcium. Sunlight is the main source of vitamin D for most people. Transplant patients usually need to take a vitamin D supplement since they must avoid sun exposure to lessen their risk of skin cancer.

Usual dose:

- Most vitamin D in supplements is cholecalciferol (vitamin D3). Take about 1,000 units of cholecalciferol every day. This is in addition to the

vitamin D that is in your multivitamin. You can buy cholecalciferol without a prescription.

- Ergocalciferol and calcitriol are stronger forms of vitamin D. They must be prescribed by your doctor.

Magnesium

Types of magnesium: *Magnesium oxide (Mag-Ox)*, *magnesium amino acid chelate (Mag plus Protein)*, and others

Purpose: Your body needs the mineral magnesium for healthy muscles and nerves. Magnesium also helps some enzymes work. Enzymes are proteins that help speed up important chemical reactions in your body.

Many transplant patients develop low magnesium levels. This may be caused by anti-rejection drugs or from taking diuretics. Your magnesium levels can be measured with a blood test.

You may not be getting enough magnesium from the foods you eat. See the “Nutrition” chapter of this guide or talk with your transplant dietitian to learn more.

Usual dose: 400 to 800 mg, taken twice a day. Magnesium comes in tablet and liquid forms. You can buy it without a prescription.

Phosphate (Phosphorus)

Sodium phosphate (K-Phos Neutral, Phospha 250 Neutral)

Purpose: Your body needs the mineral phosphate for the growth and repair of body tissues, and for healthy bones. Transplant patients sometimes develop low blood phosphate levels. This may be because of a short-term change in how your body handles this mineral.

Fish and dairy products can be a good source of phosphate. See the “Nutrition” chapter of this guide or talk with your transplant dietitian to learn more.

Usual dose: 250 to 500 mg, taken twice a day. You will need a prescription for K Phos Neutral and Phospha 250 Neutral.

Questions?

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

Transplant Services:
206.598.3882