



# What you need to know about transplant medications

## What this handout includes

---

Section 1. Taking your medications

Section 2. Transplant medications and supplements

Section 3. Tools and resources

## Section 1. Taking your medications

---

### Taking medications as directed

Taking your medications as directed is very important because it lowers the risk that your body will reject the transplant.

#### Things to AVOID:

- Missing a dose
- Taking the wrong dose
- Taking medications at the wrong time or for the wrong length of time
- Taking medications that are not prescribed
- Stopping a medication without asking a doctor

### Handling medication challenges

It can be difficult to take medications as directed. Here are some common challenges and tips to cope with them.

**Confusion**

You might be confused about “the right way” to take your medications. If so, please contact your transplant team.

**Medication cost**

Medications can be expensive, even if you have insurance. If this is a problem for you, please tell your doctor and transplant team.

**Lack of supply**

Transplant medications are not common, and they may not be available at all pharmacies. The OHSU Pharmacy will fill the first month of your medications to make sure you have all of them with you when you go home.

If you get refills from your local pharmacy, let them know at least one week before you run out of pills. This gives them time to get your prescriptions from OHSU, order the medications, and get them ready for you.

When you travel, take at least 7 extra days’ supply of medications with you. This helps make sure you have them in case of problems. Do this when you travel to OHSU for transplant appointments and on any other trips.

**Side effects**

If side effects bother you, call your transplant coordinator. We will talk with you about how to manage them. **Do not** stop taking your medications unless your doctor or transplant team tells you to.

## Section 2. Transplant medications and supplements

---

### Types of medications and supplements

#### Anti-rejection medications

- Mycophenolate
- Prednisone
- Tacrolimus

#### Anti-infection medications

- Anti-fungal
- Antibiotic
- Anti-viral

#### Anti-rejection medications

Anti-rejection medications lower your immune system to keep your body from rejecting your new organ. Without anti-rejection medications, your immune system would naturally attack the new organ. This can make the new organ fail.

Do not stop taking any anti-rejection medications unless your transplant doctor tells you to. The following chart shows the 3 anti-rejection medications you may take, including possible side effects and tips.

Mycophenolate (Cellcept or Myfortic)	
<b>Side Effects</b>	<ul style="list-style-type: none"><li>• Nausea/vomiting, diarrhea</li><li>• Low blood cell count</li><li>• Loss of appetite</li><li>• Stomach cramps</li></ul>
<b>Food</b>	Take with food to help prevent stomach upset.
<b>Special Tips</b>	<ul style="list-style-type: none"><li>• Do not crush, chew or cut mycophenolate pills.</li><li>• Pregnant people should not handle or take this medication. It can harm an unborn baby.</li><li>• If you are taking mycophenolate and could get pregnant, you must use effective birth control. If you want to get pregnant in the future, talk to your doctor.</li></ul>

Prednisone	
<b>Side Effects</b>	<ul style="list-style-type: none"> <li>• High blood pressure</li> <li>• High cholesterol</li> <li>• High blood sugar</li> <li>• Difficulties sleeping</li> <li>• Mood changes</li> <li>• Heartburn</li> <li>• Bone loss</li> </ul>
<b>Food</b>	Take with food to help prevent stomach upset.
<b>Special Tips</b>	<ul style="list-style-type: none"> <li>• Take prednisone in the morning to allow for better sleep at night.</li> </ul>

Tacrolimus (Prograf or Envarsus XR)	
<b>Side Effects</b>	<ul style="list-style-type: none"> <li>• Tremors (shaking)</li> <li>• Headache</li> <li>• Kidney injury, electrolyte problems</li> <li>• Nausea/vomiting, diarrhea</li> <li>• High blood pressure</li> <li>• High cholesterol</li> <li>• High blood sugar</li> </ul>
<b>Food</b>	<ul style="list-style-type: none"> <li>• Take with or without food, but always take it the same way. In other words, if you usually take it with food, do not switch to without food one day.</li> <li>• Avoid grapefruit, mandarins, pomegranates, and juice made from these fruits. These may make the level of tacrolimus in your blood too high.</li> </ul>
<b>Monitoring</b>	You need regular blood tests while taking tacrolimus. The test is done right before your morning dose in order to measure the amount of drug in your body when it is lowest. Do <b>not</b> take your morning dose until <b>after</b> the blood test.
<b>Special Tips</b>	<ul style="list-style-type: none"> <li>• Tell your transplant coordinator if shaking or headaches get worse, or you notice burning in your hands or feet. These things could mean blood levels are too high.</li> </ul>

### Alternative anti-rejection medications

If you cannot take the anti-rejection medications listed above, your doctor can prescribe others. The following chart shows other options.

Azathioprine (Imuran)	
<b>Side Effects</b>	<ul style="list-style-type: none"><li>• Diarrhea</li><li>• Low blood cell count</li><li>• Nausea and vomiting</li></ul>
<b>Food</b>	Take with food to help prevent stomach upset and diarrhea.
<b>Special Tips</b>	<ul style="list-style-type: none"><li>• Tell your transplant coordinator if a doctor prescribes allopurinol or febuxostat for you.<ul style="list-style-type: none"><li>• Do <b>not</b> take these medications before telling your transplant coordinator.</li></ul></li></ul>

Cyclosporine (Neoral or Gengraf)	
<b>Side Effects</b>	<ul style="list-style-type: none"><li>• Hair growth</li><li>• Headache</li><li>• Tremors (shaking)</li><li>• Nausea/vomiting, diarrhea</li><li>• Gum enlargement</li><li>• High blood pressure</li><li>• High cholesterol</li><li>• High blood sugar</li><li>• Kidney injury</li></ul>
<b>Food</b>	<ul style="list-style-type: none"><li>• Take with or without food, but always take it the same way. In other words, if you usually take it with food, do not switch to without food one day.</li><li>• Avoid grapefruit, mandarins, pomegranates, and juice made from these fruits. These make the level of cyclosporine in your blood too high.</li></ul>
<b>Monitoring</b>	You need regular blood tests while taking cyclosporine. The test is done right before your morning dose in order to measure the amount of drug in your body when it is lowest. Do <b>not</b> take your morning dose until <b>after</b> the blood test.

### Anti-infection medications

Why do I need anti-infection medications? The anti-rejection medications lower your immune system, which prevents your body from attacking your new transplant.

However, this raises your risk of getting infections.

Your infection risk is highest soon after the transplant, so you usually take anti-infection medications for a few months afterward to prevent infections.

The following chart shows common anti-infection medications after a transplant, including side effects and how long you usually take them. We will put these medications on your list if we want you to take them.

Medication	Purpose	Side effects	How long taken
<i>Anti-fungal</i>			
<b>Fluconazole (Diflucan)</b>	Prevents fungal infections	Nausea, headache	1-3 months
<i>Anti-bacterial</i>			
<b>Trimethoprim - sulfamethoxazole (Bactrim)</b>	Prevents bacterial infections and pneumonia	Sun sensitivity, nausea, vomiting, diarrhea, rash, high potassium levels	3-12 months
<i>or</i>			
<b>Pentamidine</b> <i>*IV infusion</i>	Alternative to Bactrim to prevent pneumonia	Rash, irritation at infusion site, feeling flushed	3 months
<i>or</i>			
<b>Atovaquone</b>	Alternative to Bactrim to prevent pneumonia	Nausea, vomiting, diarrhea, headache	3-12 months
<i>Anti-viral</i>			
<b>Valganciclovir (Valcyte)</b>	Prevents viral infections (specifically CMV, HSV)	Low white blood cells, headache, nausea	3-6 months
<i>or</i>			
<b>Letermovir (Prevymis)</b>	Prevents viral infections (specifically CMV)	Nausea, vomiting, diarrhea, headache, cough	6 months
<i>or</i>			
<b>Acyclovir (Zovirax)</b>	Prevents viral infections (specifically HSV)	Headache, nausea	3-6 months

## Supplements and other medications

Supplements and other medications help by:

- Preventing problems from your transplant medications
- Helping your general health

Most are available without a prescription. The OHSU Pharmacy will give you a supply when you leave the hospital. Then you usually need to buy your own.

The chart below shows common supplements and non-prescription medications you may take after a transplant. We will put these medications on your list if we want you to take them.

Supplement or Medication	Purpose	Side effects	Tips and comments
<b>Calcium carbonate (Tums &amp; others)</b>	Strengthens your bones.	Constipation, bloating	Do not take within 2 hours of your prednisone dose
<b>Vitamin D</b>	Helps your body absorb calcium.	None	Your doctor might recommend a test of your vitamin D levels. This will help determine the dose of vitamin D you will need.
<b>Famotidine (Pepcid)</b> or <b>Omeprazole (Prilosec)</b> or <b>Pantoprazole (Protonix)</b>	Prevents heartburn, reflux, stomach ulcers, or stomach upset from other medications.	Headache, diarrhea, bone pain, rash	Your prescription insurance may help pay for some of these medications.
<b>Aspirin</b>	Prevents blood clots. Lowers the risk of heart attack and stroke.	Bleeding	If you took aspirin before your transplant, you may need to start taking it again.
<b>Acetaminophen (Tylenol)</b>	Pain relief	Liver injury	Do <b>not</b> take more than 3000 mg per day.
<b>Sunscreen</b> <i>*SPF 30 or higher</i>	Prevents sunburns and skin cancer	None	Reapply at least every two hours. Apply more often if swimming or sweating.

## Managing side effects

This handout does not include every possible side effect or problem from each medication. It does list common side effects for people who had a transplant.

Please remember that you will not necessarily develop every side effect listed. Call your transplant coordinator if you are concerned about possible problems with any of your medications.

## Who should know about my medications?

All your health care providers should know you take anti-rejection medications. This includes:

- Dentists
- Doctors
- Surgeons
- Pharmacists – Use just one pharmacy, if possible.

Ask your health care providers to call the transplant team if they want to change any of your transplant medications.

## Medications to avoid

### **Medications that are not on your medication list**

Always take your medications according to your medication list. We may call you with changes after you get home. Write any changes on your medication list. When you update the list or get a new one, destroy any old lists.

### **Herbals or dietary supplements**

Talk with your transplant team before taking any herbals or dietary supplements. The transplant pharmacist can help you learn if the product you are interested in is safe for you.

Avoid anything that says it will “boost” your immune system, such as vitamin C, echinacea, zinc, or anything else. These products can raise your risk of rejecting the transplant.



## General non-prescription medications

Do **not** take ibuprofen (Motrin, Advil), naproxen (Aleve), or any other oral anti-inflammatory medications you can buy at the store.

Please see the over-the-counter medications handout in this binder for acceptable medication options. If an over-the-counter medication is not on this list, but you would like to take it, please contact the transplant team before starting it.

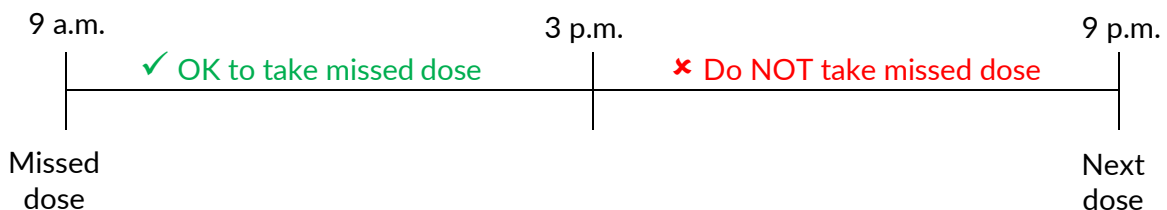
## If you miss a dose of medication

### Follow the halfway rule.

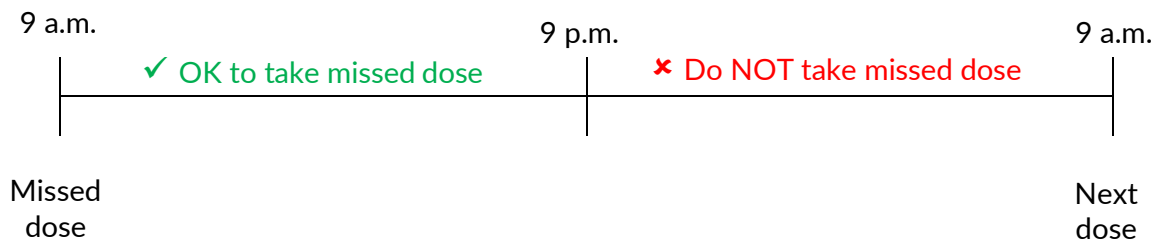
If you are less than halfway to your next dose, take your missed dose. If you are more than halfway to your next dose, skip it, and continue with your next scheduled dose.

- Never take extra medicine to make up for a missed dose. The illustration below gives you an example of how to use the halfway rule.
- If you miss a dose of your anti-rejection medication or are not sure what to do, call your transplant team.

### Example for a pill you normally take at 9 a.m. and 9 p.m. each day



### Example for a pill you normally take 1 time a day at 9 a.m.



## Where to keep your medications

- Keep your medications in a cool, dry place, such as a:
  - Dresser drawer
  - Kitchen cabinet away from the stove, sink, and any hot appliances
  - In a storage box, on a shelf, or in a closet
- Try to avoid keeping medicines in the bathroom or car. These places can be hot or have a lot of moisture in the air, and the temperature can go up and down. This can affect your medication's effectiveness.
- Keep all medications where children cannot reach them.

## Prescription do's and don'ts

### Do

- ✓ Call your regular pharmacy for medication refills.
- ✓ Keep the name and phone number of your local pharmacy handy.
- ✓ Call the transplant office if you have a problem with your anti-rejection medications.
- ✓ Tell the transplant office about any allergies and new medications, prescription or non-prescription medicines.
- ✓ Give your local pharmacist the transplant clinic telephone number for refills.
- ✓ Ask for refills when you are seen in the transplant clinic

### Don't

- ✗ Don't go to the transplant floor of the hospital for refills.
- ✗ Don't run out of medication before getting refills.
- ✗ Don't wait until the weekend or after 4 p.m. to call for refills.

## Section 3. Tool and resources

---

Important phone numbers	
OHSU Physicians Pavilion Pharmacy	503-494-7570
OHSU Creekside Mail Order Pharmacy	503-346-3370
Transplant Clinic	503-494-8500

### Medication tools

#### Medication list

You need an up-to-date medication list that includes:

- Names and doses of medications you take
- How often you take them
- Why you take them

Bring this list to all appointments and hospital visits. Keep it in your wallet or purse so you always have it with you.

#### Pill box

A pill box helps you organize your medications. This makes it much easier to take them as directed.

### Medication resources

#### Transplant coordinator and pharmacists

Questions about your transplant medications? Call your transplant coordinator. They can contact the transplant pharmacist. Transplant coordinators and pharmacists are available Monday through Friday.

**Prescription refill tips**

- If you want to get your medications at your local pharmacy, have them call the OHSU Physicians Pavilion Pharmacy to transfer the refills. You can do this as soon as you get home from the hospital.
- Contact your pharmacy for refills when you have 5-7 days left of your prescription. The pharmacy will contact your transplant doctor if you need a new prescription.
- If you have 1-2 days left of your prescription or run out of medications, call your transplant coordinator as soon as possible.

**OHSU Creekside Mail Service Pharmacy**

If you would like to use OHSU's prescription mail order program, you can call them at 503-346-3370. They will not refill your prescription automatically.



## Over-the-counter medications that are safe to take

Symptoms	Safe over-the-counter choices
<b>Fever</b>	Call your nurse coordinator or on-call nurse if your fever is over 100° F.
<b>Headaches and body aches</b>	Acetaminophen (Tylenol) <b>Take NO more than 3,000mg in 24 hours.</b>
<b>Sneezing, itching or runny nose</b>	Loratadine (Claritin), Cetirizine (Zyrtec), Fexofenadine (Allegra)
<b>Stuffy nose (nasal and sinus congestion)</b>	Nose sprays: Sodium chloride (Ocean), (SinuCleanse)
<b>Chest congestion</b>	Guaifenesin (Robitussin), Coricidin HBP Chest Congestion & Cough
<b>Wet cough (lots of phlegm)</b>	Guaifenesin (Robitussin)
<b>Dry cough (no phlegm)</b>	Dextromethorphan (Delsym), Guaifenesin/ Dextromethorphan (Robitussin DM), Coricidin HBP Chest Congestion & Cough
<b>Sore throat</b>	Lozenges - Benzocaine, Halls
<b>Constipation</b>	Polyethylene glycol (MiraLAX), Psyllium (Metamucil), Docusate (Colace), Docusate with senna (Senokot-S), Bisacodyl (Dulcolax), Senna
<b>Diarrhea</b>	Call your nurse coordinator or on-call nurse right away if you have more than 3 loose stools in one day.
<b>Trouble sleeping (insomnia)</b>	Diphenhydramine (Benadryl), Doxylamine (Unisom), Melatonin
<b>Stomach upset</b>	Calcium carbonate (TUMS)
<b>Heartburn</b>	Ranitidine (Zantac), Famotidine (Pepcid AC), Nizatidine (Axid), Omeprazole (Prilosec), Esomeprazole (Nexium)
<b>Gas</b>	Simethicone (Gas-X)
<b>Dry and irritated eyes</b>	Artificial Tears for dry, irritated eyes Ketotifen Zadiator for eye allergies (allergic conjunctivitis)
<b>Nausea and vomiting</b>	Call your nurse coordinator or on-call nurse right away.
<b>Joint pain and muscle aches</b>	Capsaicin cream (Capzasin-P), Lidocaine (Aspercreme, Icy Hot), Camphor & Menthol (Bengay)
<b>Skin irritation, insect bites, poison ivy</b>	Hydrocortisone (Cortisone-10)