

# Medications after transplant

## Medications after transplant

Medications play an important role after transplant. Some of them will be taken for the rest of your life to prevent your body from rejecting your new heart and to treat any other medical conditions you may have. Always continue to take your medications as directed, never stop or start a medication or change your dose without approval from the transplant team. If you miss a dose of medication always let the the transplant team know as soon as possible.

The next pages will describe some medications that are commonly used after transplant. The information is to be used as a learning guide only and should not replace advice from your transplant physician. It is an overview of the medications, and does not include every detail about each medication. Make sure to follow the dos and don'ts that are listed on the last page. These important reminders will help you to use medications effectively and keep you and your new heart safe.

### Before leaving the hospital you should know:

- *The names of the medications*
- *How they look*
- *The dose of each medication*
- *When to take each medication*
- *What each medication is used for*
- *Possible side effects*
- *Inspect your medications each time you get your prescriptions filled*

## Medications to prevent rejection (also called Immunosuppressants or Anti-rejection Medications)

These are a group of medications that will keep your new heart from being rejected as a foreign object by your body's natural immune system. They are essential to keep your new heart alive. You will take three medications to prevent rejection.

- *Prograf (Tacrolimus) or Neoral (Cyclosporine)*
- *Prednisone (Deltasone)*
- *Cellcept (Mycophenolate) or Imuran (Azathioprine)*



## Medications to prevent infection

These are a group of medications that help to prevent infections in your body. They are given because your body's immune system will not be able to fight off infection as well while you are taking anti-rejection medications. You will take two medications to prevent infection; one to prevent fungal infections, one to prevent viral infections.

## Medications, continued

### IV medications to prevent rejection

Initially, you will be given IV medications to prevent acute rejection. These medications will protect you and your new heart during the initial time after transplant until oral medications are started.

The two most commonly used IV medications are basiliximab (Simulect) and methylprednisolone (Solu-Medrol) which will be given until you are taking oral prednisone, which is a steroid. Both of the medications prevent your immune system from attacking your new heart as a foreign object. The basiliximab (Simulect) will be given on the day of your transplant and again four days after your transplant. The methylprednisolone (Solu-Medrol) will be given for three days or until you are able to take oral prednisone.

## Medications, continued

### Tacrolimus (Prograf, also called “FK” or “FK-506”)

#### Uses

Prograf is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart.

#### Schedule

Prograf is taken twice a day. Each dose should be taken 12 hours apart. For example, you should take your morning dose at 8 a.m. and your evening dose at 8 p.m.

#### Dose Changes and Lab Monitoring

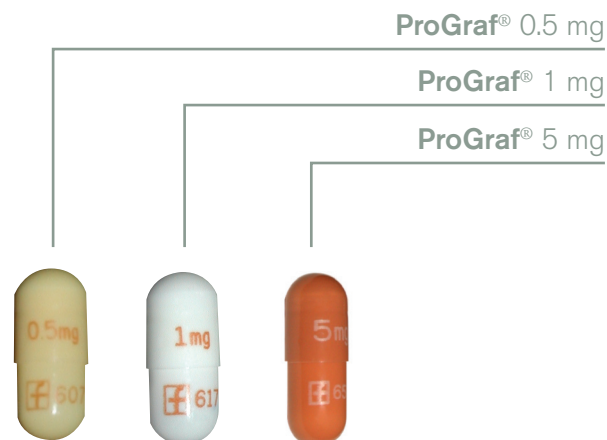
Your dose of Prograf will change based on a blood level drawn by the lab, called a Prograf blood level. If you have an appointment scheduled for a lab draw, do not take your dose before your blood is drawn, because the transplant team wants to see the “trough” or “valley” level, which occurs about 30 minutes before you would take your next dose. You may take your prescribed dose after your blood is drawn. When your transplant physician evaluates the result of the Prograf blood level, he/she will let you know if you should change your dose. The transplant team may also change your dose based on other factors, such as your other lab tests or possible side effects.

#### Possible Side Effects of Prograf

- Headaches
- Tremors
- Numb or tingling hands/feet
- Hair loss
- Trouble sleeping
- Increased risk of infection
- High blood pressure
- High blood sugar
- Increase in cholesterol levels
- Decrease in magnesium levels
- Increase in potassium levels
- Abnormal kidney function
- Stomach discomfort

#### Special Notes

Do not drink grapefruit juice. Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### Cyclosporine (Neoral, Sandimmune, Gengraf)

#### Uses

Cyclosporine is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart. This drug is an alternative to tacrolimus (Prograf).

#### Schedule

Cyclosporine is taken twice a day. Each dose should be taken 12 hours apart. For example, you should take your morning dose at 8 a.m. and your evening dose at 8 p.m.

#### Dose Changes and Lab Monitoring

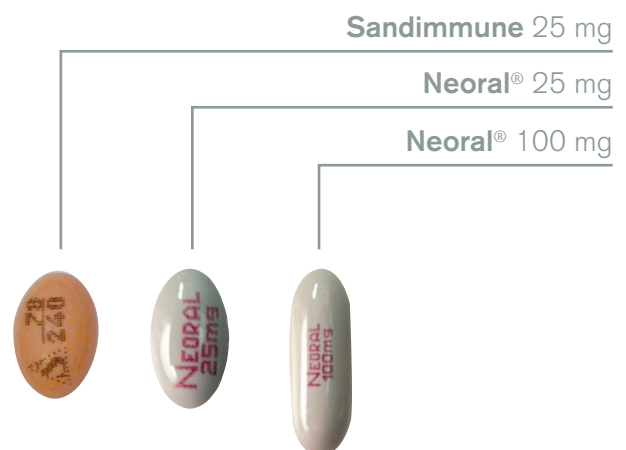
Your dose of Cyclosporine will change based on a blood level drawn by the lab, called a Cyclosporine blood level. If you have an appointment scheduled for a lab draw, do not take your dose before your blood is drawn, because the transplant team wants to see the "trough" or "valley" level, which occurs about 30 minutes before you would take your next dose. You may take your prescribed dose after your blood is drawn. When your transplant physician evaluates the result of the Cyclosporine blood level, he/she will let you know if you should change your dose. The transplant team may also change your dose based on other factors, such as your other lab tests or possible side effects.

#### Possible Side Effects of Cyclosporine

- Headaches
- Tremors
- Numb or tingling hands/feet
- Excessive hair growth
- Swelling or overgrowth of gums
- Trouble sleeping
- Increased risk of infection
- High blood pressure
- High blood sugar
- Increase in cholesterol levels
- Decrease in magnesium levels
- Abnormal kidney function
- Stomach discomfort

#### Special Notes

Do not drink grapefruit juice. Do not interchange different formulations of Cyclosporine. For example, if you start taking Neoral, do not switch to Sandimmune unless your transplant physician decides to do so. Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### **Prednisone** (Deltasone)

#### Uses

Prednisone is a steroid and is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart.

#### Schedule

Shortly after transplant, Prednisone is usually taken twice a day and should be taken with food. For example, you should take your morning dose with breakfast and your evening dose at suppertime. As you are further from transplant, Prednisone may be changed to once a day in the morning instead of twice a day.

#### Dose Changes and Lab Monitoring

Your Prednisone dose will change based on your biopsies. If your biopsy shows no rejection, the transplant team will lower your Prednisone dose. Likewise, if your biopsy shows rejection, your Prednisone dose may be increased

#### Possible Side Effects of Prednisone

- *Increase in appetite*
- *Weight gain*
- *Water retention (swelling in ankles/feet)*
- *Round face or "chubby cheeks"*
- *Mood changes or anxiety*
- *Trouble sleeping*
- *Night sweats*
- *Pimples*
- *Purple or red bruising*
- *Vision changes and cataracts*
- *Osteoporosis*
- *Increased risk of infection*
- *Increase in cholesterol levels*
- *High blood sugar*
- *Stomach irritation/ulcers*

#### Special Notes

It is dangerous to stop taking Prednisone all at once. Be alert for infections and report any black tarry stools or abdominal pain. Check with transplant team for any drug interactions before taking any new medications, including herbals.

## Medications, continued

### Uses

Cellcept is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart.

### Schedule

Cellcept is usually taken twice a day, schedule doses about 12 hours apart. It is absorbed better on an empty stomach. For example, you may take your morning dose at 7 a.m. before breakfast and your evening dose at 8 p.m., a couple hours after supper. After discharge to home, you may take your Cellcept at the same time you take your Prograf, even if this means taking it with food. This may make remembering to take your medications easier.

### Dose Changes and Lab Monitoring

Your Cellcept dose will generally not change unless you are having intolerable side effects.

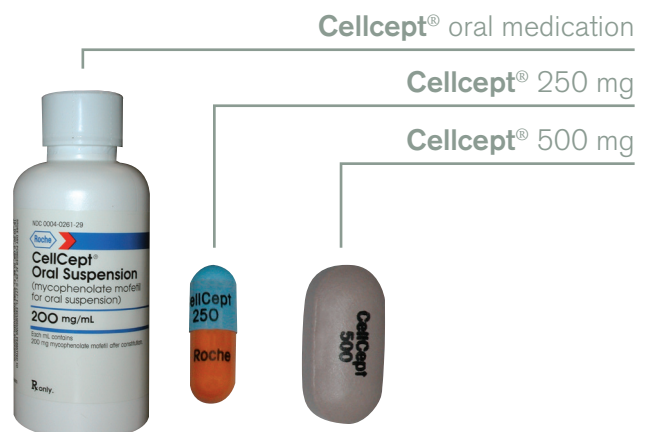
## Mycophenolate mofetil (Cellcept, Myfortic, also called "MMF")

### Possible Side Effects of Cellcept

- *Stomach discomfort*
- *Diarrhea*
- *Nausea/vomiting*
- *Decrease in platelets*
- *Increase or decrease in white blood cells*
- *Decrease in red blood cells*
- *Increase risk of infection*
- *Increase in cholesterol levels*
- *Increase in blood sugar*
- *Electrolyte abnormalities: decrease in magnesium and calcium levels*

### Special Notes

Cellcept comes in gelatin capsules, tablets or suspension. The capsules and tablets should not be opened or crushed. Wash with soap and water if contents of capsules come into contact with skin. Women of childbearing age should use birth control while taking Cellcept and for six weeks after stopping the medication. Always check with the transplant team before planning a pregnancy. Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### Sirolimus (Rapamune)

#### Uses

Rapamune is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart.

#### Schedule

Rapamune is usually taken once a day. If you take Prograf, you can take Rapamune at the same time. However, if you take Cyclosporine, you should take Rapamune four hours apart from your Cyclosporine doses.

#### Dose Changes and Lab Monitoring

Your dose of Rapamune will change based on a blood level drawn by the lab, called a Rapamune blood level. If you have an appointment scheduled for a lab draw, do not take your dose before your blood is drawn, because the transplant team wants to see the "trough" or "valley" level, which occurs about 30 minutes before you would take your next dose. You may take your prescribed dose after your blood is drawn. When your transplant physician evaluates the result of the Rapamune blood level, he/she will let you know if you should change your dose. The transplant team may also change your dose based on other factors, such as your other lab tests or possible side effects.

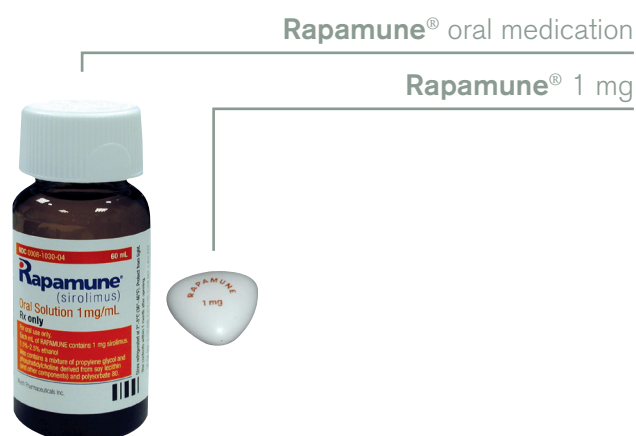
#### Possible Side Effects of Rapamune

- *Stomach discomfort or heartburn*
- *Nausea*
- *Diarrhea*
- *Headaches*
- *Tremors*
- *High blood pressure*
- *Water retention (swelling in ankles/feet)*
- *Abnormal kidney function*
- *Increased risk of infection*
- *Increase in cholesterol and triglyceride levels*

#### Special Notes

Do not drink grapefruit juice.

Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### Azathioprine (Imuran)

#### Uses

Azathioprine is used to prevent or treat rejection. It suppresses the body's immune response to the transplanted heart.

#### Schedule

Azathioprine is usually taken once a day.

#### Dose Changes and Lab Monitoring

The transplant team will determine your dose of Azathioprine based on your weight, white blood cell count and renal function. Your dose may also change based on other factors, such as your other lab tests or possible side effects.

#### Possible Side Effects of Azathioprine

- *Nausea or vomiting*
- *Increased risk of infection*
- *Decrease in white blood cell count*
- *Decrease in platelets*
- *Bone marrow suppression*

#### Special Notes

Report any unusual bleeding or bruising. Also report any rash or yellowing of skin or whites of eyes.

Allopurinol, a medication used for gout, should not be taken when on Azathioprine; as it can over suppress your bone marrow. Azathioprine should not be taken during pregnancy, unless the benefit outweighs the risk to the unborn baby, always check with the transplant team before planning a pregnancy.

Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### **Trimethoprim/Sulfamethoxazole DS** (Bactrim DS, Septra DS, "SMZ-TMP", Co-trimazole, Cotrim)

#### Uses

Bactrim is a combination of two antibacterial agents. It is used to prevent bacterial and fungal infections, including *Pneumocystis carinii* pneumonia (PCP). DS stands for double strength because Bactrim is also available in a single strength formulation. Bactrim is a sulfa drug; the transplant team will determine a different medication for you if you are allergic to sulfa medications.

#### Schedule

Bactrim is usually taken once a day for three days of the week. For example, you will take Bactrim on Monday, Wednesday and Friday.

#### Dose Changes and Lab Monitoring

Your Bactrim DS dose will generally not change during the course of therapy.

Your medical team may decide to have you take a single strength tablet, depending on your kidney function.

#### Possible Side Effects of Bactrim DS

- *Nausea*
- *Rash/Itching*
- *Increase in sensitivity to sunlight*

#### Special Notes

Do not take Bactrim if you are allergic to sulfa medications. Always take Bactrim with a full glass of water to protect your kidneys.

Wear sunscreen to protect your skin from sunburn.

Check with transplant team for any drug interactions before taking any new medications, including herbals.

## Medications, continued

### Valganciclovir (Valcyte)

#### Uses

Valcyte is used to prevent viral infections, including a virus called cytomegalovirus (CMV). Transplant patients are more susceptible to developing this infection if they or their donors have had CMV in the past. Valcyte is also used to prevent herpes simplex viruses and shingles.

#### Schedule

Valcyte is usually taken once daily with food. However, the dose or schedule may be adjusted for patients with abnormal kidney function.

#### Dose Changes and Lab Monitoring

Your Valcyte dose will generally not change during the course of therapy unless you are having intolerable side effects or your kidney function changes.

#### Possible Side Effects of Valcyte

- *Nausea*
- *Headache*
- *Diarrhea*
- *Dizziness*
- *Numbness or tingling in hands or feet*
- *Decrease in white blood cell count*
- *Decrease in red blood cell count*
- *Decrease in platelets*
- *Increase risk for infection*

#### Special Notes

Your transplant team will monitor your blood cell counts while you take this medication. Report any unusual bleeding or bruising.

Do not crush, chew or cut tablets before swallowing. Avoid direct contact of broken or crushed tablets with the skin or mucous membranes because Valcyte may increase your risk for cancer. Valcyte may cause birth defects and impaired fertility. Men and women of childbearing age should use birth control during, and for 90 days following, Valcyte use. Check with transplant team for any drug interactions before taking any new medications, including herbals.

Valcyte® 450 mg



## Medications, continued

### Ganciclovir (Cytovene)

#### Uses

Cytovene is used to prevent or treat viral infections, including a virus called Cytomegalovirus (CMV). Transplant patients are more susceptible to developing this infection if they or their donors have had CMV in the past. Cytovene is also used to prevent herpes simplex viruses and shingles.

#### Schedule

Cytovene is usually taken orally with food. It may also be administered via IV. Your dose and schedule will be determined by the transplant team, and may be adjusted for patients with abnormal kidney function.

#### Dose Changes and Lab Monitoring

Your Cytovene dose will generally not change during the course of therapy unless you are having intolerable side effects or your kidney function changes.

#### Possible Side Effects of Cytovene

- *Nausea/Vomiting*
- *Headache*
- *Diarrhea*
- *Numbness or tingling in hands or feet*
- *Decrease in white blood cell count*
- *Decrease in red blood cell count*
- *Decrease in platelets*
- *Increase risk for infection*
- *Dizziness*
- *Confusion or mood changes*

#### Special Notes

Your transplant team will monitor your blood cell counts while you take this medication. Report any unusual bleeding or bruising.

Do not crush, chew or cut tablets before swallowing. Avoid direct contact of broken or crushed tablets with the skin or mucous membranes because Cytovene can increase your risk for cancer.

Cytovene may cause birth defects and impaired fertility; men and women of childbearing age should use birth control during, and for 90 days following, Cytovene use.

Check with transplant team for any drug interactions before taking any new medications, including herbals.

## Medications, continued

### Acyclovir or Valacyclovir (Zovirax) (Valtrex)

#### Uses

Acyclovir is used to prevent viral infections, including herpes simplex viruses and shingles.

#### Schedule

Acyclovir is usually taken with food and should be taken with plenty of water. Your dose and schedule will be determined by the transplant team, and may be adjusted for patients with abnormal kidney function.

#### Dose Changes and Lab Monitoring

Your Acyclovir dose will generally not change during the course of therapy unless you are having intolerable side effects or your kidney function changes.

#### Possible Side Effects of Acyclovir or Valacyclovir (Valtrex)

- *Headaches*
- *Nausea/Vomiting*
- *Diarrhea*
- *Dizziness/Fatigue*
- *Confusion or Mood Changes*

#### Special Notes

Check with transplant team for any drug interactions before taking any new medications, including herbals.

## Medications, continued

### Nystatin liquid (Mycostatin)

#### Uses

Nystatin liquid is used to treat oral thrush, which are white, patchy areas in the mouth or on the tongue due to a fungus (yeast). Sometimes this yeast can also be found in the esophagus.

#### Schedule

Nystatin liquid should be used four times a day and is usually used after eating, because you should not eat or drink for at least 15 minutes after using. Usually patients swish the medicine in the mouth and then spit it out, allowing it to coat the surfaces of the mouth. Sometimes patients swish the medicine in the mouth and then swallow it.

#### Dose Changes and Lab Monitoring

Your Nystatin dose will not change during the course of therapy. Remember that the dose of 5 mL (measured in a dose cup) is equal to one teaspoonful.

#### Possible Side Effects of Nystatin Liquid

- *Unpleasant taste*
- *Nausea/Vomiting*
- *Diarrhea*

#### Special Notes

Check with transplant team for any drug interactions before taking any new medications, including herbals.

## Medications, continued

### Voriconazole (Vfend)

#### Uses

Vfend is used to prevent fungal (yeast) infections, including aspergillosis.

#### Schedule

Vfend is usually taken twice a day on an empty stomach. However, the dose or schedule may change for patient with abnormal liver function.

#### Dose Changes and Lab Monitoring

Your Vfend dose will generally not change during the course of therapy unless you are having intolerable side effects or your liver function changes.

#### Possible Side Effects of Vfend

- *Swelling in the legs or arms*
- *Nausea/Vomiting*
- *Headache*
- *Vision changes (blurred vision, color changes, wavy lines, sensitivity to light)*
- *Rash*

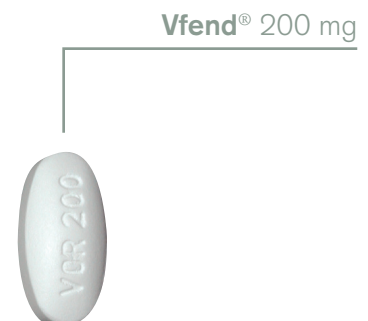
#### Special Notes

Vfend causes sensitivity to sunlight. Wear sunscreen to protect your skin from sunburn.

Vfend may cause birth defects; women of childbearing age should use birth control during Vfend use.

Vfend may change Cyclosporine or Prograf levels so do not stop taking Vfend without your transplant physician supervision.

Do not drink grapefruit juice. Check with transplant team for any drug interactions before taking any new medications, including herbals.



## Medications, continued

### High blood pressure medications

The medications that you take to prevent rejection can cause high blood pressure as a side effect. The transplant team will determine if you need a medication for high blood pressure and which one is right for you.

### High blood sugar medications

The medications that you take to prevent rejection can also cause high blood sugar levels. It is not unusual for a transplant patient to need one or two doses of a long-acting insulin each day and meal-time doses of a short-acting insulin. Sometimes oral medications are used to treat high blood sugars. Refer to section on blood sugar covered on pages B1–B2.

### Antacids/anti-ulcer medications

These medications are important because you are taking many medications that can cause stomach irritation, especially Prednisone. You will usually be prescribed one of the following medications to protect your stomach: esomeprazole (Nexium), lansoprazole (Prevacid), rabeprazole (Aciphex) or omeprazole (Prilosec). Other medications that could be used are ranitidine (Zantac) or famotidine (Pepcid).

## Other Routine Medications

### Vitamins and Supplements

The medications that you take to prevent rejection can also cause low magnesium levels in the blood stream. The transplant team may prescribe a magnesium supplement to boost your magnesium levels. Also, the prednisone can increase the risk of osteoporosis; therefore, the transplant team may prescribe a calcium supplement with vitamin D to promote healthy bones. A daily multi-vitamin is another common medication.

### Aspirin

Most transplant patients will need to take a baby strength aspirin each day to promote a healthy heart.

### Anxiety or Depression Medications

The transplant team will help you decide if you would benefit from a medication that treats anxiety or depression. Patients who already take these medications prior to transplant should continue to take them after transplant unless instructed otherwise by your transplant team.

### Cholesterol-Lowering Medications

All transplant patients will take a medication to lower cholesterol, which can lower the risk of heart attack and stroke and help prevent cholesterol buildup in arteries. These medications also help prevent long term rejection.

## Medications, continued

### Headache or Muscle Aches or Pains

You may take Tylenol (acetaminophen) or a pain medication that is prescribed by the transplant team. **Do not take** more than 3000 mg of Tylenol per 24 hours, which is no more than four double-strength (500mg) tablets OR no more than six regular strength (325mg) tablets. **Do not take** Motrin (ibuprofen), Advil (ibuprofen) Aleve (naproxen) or any other non-steroidal anti-inflammatory (NSAID) medication. These medications can interact with your transplant medications or harm your kidneys.

### Constipation

You may take docusate (Colace), Metamucil, Fiber-Con or Senokot for constipation. Exercising, drinking plenty of water and increasing fiber in your diet are other remedies to help constipation. Contact the transplant team if constipation persists.

### Diarrhea

You may take Imodium, also called loperamide, for diarrhea. Always drink enough fluid to prevent dehydration and call the transplant team if the diarrhea does not go away within two days.

### Allergy/Cold Symptoms

You may take dextromethorphan for cough or guaifenesin to loosen thick secretions. You may take the following antihistamines for runny or stuffy nose and itchy or watery eyes: loratadine (Claritin or Alavert), desloratadine (Clarinex), or diphenhydramine (Benadryl). You may also use a

## Over-the-counter Medications

saline nasal spray for nasal congestion. **Do not use** Afrin nasal spray. **Do not use** any medications with a decongestant because they can increase blood pressure. Common decongestants are pseudoephedrine (Sudafed), phenylephrine or products that have D attached to the name, such as Claritin-D. Call the transplant team immediately if you have persistent, cough/cold symptoms, fever, increased shortness of breath or yellow/green drainage because you may have an infection that requires antibiotics.

### Indigestion and Heartburn

You are sent home with a medicine to prevent heartburn and ulcer formation. Usually this medicine is pantoprazole (protonix) or omeprazole (Prilosec). ALWAYS call your transplant team if you develop new symptoms or want to switch to a different medicine.

### Other Ailments

Please contact the transplant team before choosing an over-the-counter medication that has not been discussed in this section.

### Herbal Medications/ Supplements and Herbal Teas

**Do not use** any herbal products or teas, because there may be an interaction between your transplant medications and these products, which may be harmful to yourself and your new heart.



## Medications, continued

### Pregnancy and transplant medications

Most medications used after transplant can pose a risk to an unborn baby as it develops in the mother's womb. Some of the medications can even affect the fertility of a male transplant patient. Always check with your transplant physician before planning a pregnancy and contact them immediately if you think you are pregnant.

### Medication Dos and Don'ts

1. **Always continue to take your medications as directed; never stop or start a medication or change your dose without approval from the transplant team.**
2. **If a doctor other than your transplant physician prescribes a medication for you, check with your transplant team before taking that medication.**
3. **Keep a list of your medications handy, the directions and the times you take them and bring the list with you to each appointment. Be sure to update the list anytime a change is made.**
4. **If you miss a dose, do not simply double the next dose, contact the transplant team for instructions. Remember, it is best to stay on schedule with all your medications.**
5. **Store all medications away from extreme temperatures, direct light and moisture. Make sure that they are always kept away from children and pets. Do not store your medications in the bathroom.**
6. **Keep your medications in your carry-on bag when you travel, and always keep an updated medication list with phone numbers of your transplant coordinator and pharmacy with you.**
7. **Contact your transplant team if you are feeling too ill to take your medications because of nausea, vomiting or diarrhea. Do not take an extra dose without contacting the transplant team for instructions.**
8. **Make sure you do not run out of your medications. It may be important to contact your pharmacy ahead of the time for refills, in case they need to order the medication. Always try to use the same pharmacy for all your medications so they can check for drug interactions.**
9. **Call the transplant team if you have any side effects or if you are ever uncertain about a medication or its dose.**
10. **Do not take any over-the-counter medications or herbal supplements without the approval of the transplant team. Some of these products interact with your transplant medications or cause side effects, which may be harmful to yourself and your new heart.**

## Other Routine Medications