

Release date April 1, 1999
Revised March 19, 2003
Revised December, 2006

Authors

Shreeram Aradhye	Michael Ishitani
Daniel Brennan	Bertam Kasiske
Carl Cardella	Jerry McCauley
M. Francesca Egidi	Craig Shadur
Simin Goral	Stephen Tomlanovich
R. Michael Hofmann	Carlos Zayas

Medicines for Keeping Your New Kidney Healthy



**American Society of Transplantation
15000 Commerce Parkway, Suite C
Mount Laurel, NJ 08054**

**Phone: 856-439-9986 • Fax: 856-439-9982 • E-mail: ast@ahint.com
www.a-s-t.org**

The information presented and opinions expressed herein are those of the authors and do not necessarily represent the views of the Society.

Medicines for Keeping Your New Kidney Healthy

Please note: The information in this brochure is for the treatment of adults. There is a difference in protocols and treatments for children. Please talk to your child's doctor about transplant medicines for children.

Some Facts about Transplant Medicines

Fact #1: You must take your transplant medicine or you will lose your kidney.

Fact #2: These medicines are very strong. They have side effects. You may need to take other medicines to help with the problems caused by the transplant medicines.

Your doctors will work very hard to keep you and your new kidney healthy. They will check your blood. They may change your medicines. They may need to add one medicine or take one away, but they will always try to keep everything in balance. So you need to stay in touch with your doctors. Talk with them. Ask questions. They need you to work with them as they try to balance your medicines.

You will take 3 different kinds of medicines:

1. Transplant medicine to keep your body from fighting your new kidney
2. Medicine that protects you from infection
3. Medicine to control the side effects of the transplant medicines

1. Transplant medicine

Transplant medicines are drugs that stop your immune system from attacking your new kidney. They are called immunosuppressants (im-u-no-su-pres-ants) or anti-rejection drugs.

Your body's defense system — called the immune system — fights things like bacteria, viruses, and pollen. Your immune system thinks these things are foreign invaders. It thinks your new kidney is also a foreign invader. It attacks your new cells because they are not your body's own cells. We call this rejection. It is the most serious problem you can have after a transplant.

Transplant medicines work better when you take several at the same time.

2. Medicines for infections

Your body can easily get infections after your transplant. This is because the transplant medicines (anti-rejection drugs) you will take suppress your immune system so it does not reject your new organ. Your immune system will not be able to fight infections as it usually does. That is why your doctor will give you medicine that helps your immune system fight infections.

3. Medicines for side effects

The medicines you will take have side effects. Your doctor can give you other medicines to deal with the side effects. For example, if your stomach bothers you, you can take medicine for that. Or, if the transplant medicine makes your blood pressure go up, you can take blood pressure medicine.

Take Your Medicines Correctly

It is important that you take all your transplant medicines the right way. The transplant team will tell you how you need to take them. Be sure you understand what they tell you. This is not always easy because you will take many of different medicines, and it is easy to get confused.

There are two things you can do to be sure you are taking your medicines correctly.

1. Bring all your medicines with you to your doctor visits.
2. Show your doctors how and when you take your medicines. If necessary, they can tell you if you need to make any changes.

Note: You are an important part of the transplant team. The doctors and nurses cannot do this without you. Be sure to tell them everything about your medicines so they can understand what you are doing and what you are not doing.

Here are some important things to do when taking transplant medicines:

1. Never stop taking your medicine without calling your doctor first.
2. Tell your doctor or nurse if you think you are having side effects from a medicine.
3. Always have enough medicine on hand. Get your prescriptions filled before you run out. You must have the right amount of medicine every day.
4. If you cannot pay for your medicine, tell your doctors right away. Transplant medicines cost a lot of money. Most health plans will cover the costs of medicine for a while. Also talk to the social worker at the transplant center. They can help too.



And, be sure to call your transplant team if:

- o You miss a dose of medicine
- o Another doctor gives you a new medicine
- o You want to take any over-the-counter medicine

The Medicines

This is a list of some medicines you might take and what they are used for:

GENERIC NAME	BRAND NAME	USE
Acyclovir	Zovirax®	Infection
Azathioprine	Imuran®	Transplant medicine
Spironolactone	Aldactone®	Diuretic or "water pill"
Bumetanide	Bumex®	Diuretic or "water pill"
Cimetidine	Tagamet®	Ulcer medicine
Clotrimazole	Mycelex®	Infection
Cyclosporine (cyclo)	Sandimmune®, Neoral®, Gengraf®	Transplant medicines
Esomeprazole	Nexium®	Ulcer medicine
Famotidine	Pepcid®	Ulcer medicine
Fluconazole	Diflucan®	Infection
Furosemide	Lasix®	Diuretic or "water pill"
Ketoconazole	Nizoral®	Infection
Ganciclovir	Cytovene®	Infection
Itraconazole	Sporanox®	Infection
Lansoprazole	Prevacid®	Ulcer medicine

The Medicines (CONT'D)

GENERIC NAME	BRAND NAME	USE
Methylprednisolone	Medrol®, Solu-Medrol®	Transplant medicine
Metolazone	Zaroxolyn®	Diuretic or "water pill"
Mycophenolate mofetil	CellCept®, "MMF", Myfortic®	Transplant Medicines
Nizatidine	Axid®	Ulcer medicine
Nystatin	Mycostatin®	Infection
Omeprazole	Prilosec®	Ulcer medicine
Prednisolone	Pediapred®, Prelone®	Transplant medicines
Prednisone	Deltasone®	Transplant medicine
Ranitidine	Zantac®	Ulcer medicine
Sirolimus, rapamycin	Rapamune®	Transplant medicine
Sucralfate	Carafate®	Ulcer medicine
Tacrolimus	Prograf®, FK506	Transplant medicine
Trimethoprim-sulfamethoxazole	Bactrim®, Cotrim®, Septra®	Infection
Valganciclovir	Valcyte®	Infection
Voriconazole	Vfend®	Infection

Side effects

You will need to take transplant medicines for as long as you have the kidney transplant. If you stop taking these medicines, you could lose your transplant. These medicines are strong, and each one has some side effects. Side effects are different for each person.

Your doctors will try to give you medicine that has the fewest side effects. The biggest problem with any of these medicines is that they make it hard for your body to fight off infections. They also make you more likely to get some types of cancer, mainly cancer of the lymph glands and skin cancers.

Your doctors will try very hard to make sure you get enough transplant medicine, but not so much that it makes your immune system unable to fight infections.

Anti-rejection medicines

Steroids

There are many different types of steroids. They are not the kind some athletes use. Here are the names of some steroids used by transplant patients.

Prednisone Methylprednisolone Prednisolone Deltasone®
Medrol® Pediapred® Prelone® Solu-Medrol®

Anti-rejection medicines (CONT'D)

How do steroids work?

Steroids help your body to not reject your new organ. They can also affect your blood sugar, blood pressure, and mood.

How do I take steroids?

During and right after your transplant operation

Doctors will give you high doses of steroids by mouth or through your vein (IV). If your body tries to reject the organ, you may be given a large dose through an IV for 3 to 5 days. After these large doses, you may keep taking larger doses, but this would be only after treatment for rejection. After that, you will start to take smaller doses.

When you are back home, you might take steroids once a day, twice a day, or once every other day. Some people are able to stop taking steroids. Never stop taking steroids before talking to your doctor.

What are the side effects of steroids?

Steroids can have many side effects. There are more side effects if you have to take a high dose for a long time, but your doctor can help you with the side effect.

Changes in the way you look

- Your face might get more round. You may get more fat deposits around your waist and the back of your neck.
- Some people get stretch marks; others get bruises.
- Teenagers and young adults often get acne on the face, back, and chest.
- You might become very sensitive to the sun.
- These changes do not last. They will begin to go away when your steroid dose becomes smaller.

Stomach problems

- Steroids can cause mild heartburn and ulcers.
- Take your steroid medicine with food. This will lessen the side effects. Your transplant team can also give you other medicine for your stomach.

Fluid retention and high blood pressure

- Steroids can cause your body to retain salt and water. This can raise your blood pressure. You may need to take high blood pressure medicine.
- Do not eat salty foods. This can help keep your blood pressure down.

Hunger and weight gain

- Steroids can make you feel hungry. Try to eat low-fat foods and limit the amount of sweets you eat. Ask the dietitian on your transplant team to help you with an eating plan.

High blood sugar levels

- Your blood sugar may go up if you are on a high dose of steroids. You may need to take drugs to lower your blood sugar. Some people may need insulin shots. If you have taken insulin before, or have a family history of diabetes, you will probably need to take insulin.

Problems with bones and muscles

- Steroids can cause your muscles to get weak, especially the muscles in your thighs and shoulders.
- Some people get muscle cramps and pains in their joints, mostly in their hips and knees. These problems should go away when your steroid dose becomes smaller.

Anti-rejection medicines (CONT'D)

- Steroids can take calcium out of your bones, which can lead to weak bones (osteoporosis). Sometimes these drugs can damage hip or knee bones, and surgery may be needed. You can prevent this by taking calcium, vitamin D, and other supplements. Talk to your doctor about how to prevent bone loss.

Changes in behavior

- Steroids can cause mood changes. You may have trouble sleeping or have nightmares. You might feel depressed. Steroids can make you feel nervous or hyperactive, especially in children. This mainly happens with high doses. It should go away when the dose is lower. There are many medicines that can relieve these symptoms, so be sure to tell your doctor if you are having any of these side effects.

Eye problems

- Some people get eye diseases like cataracts or glaucoma. Regular eye exams are an important part of your treatment. Talk to your doctor about eye checkups.

Azathioprine (Imuran®)

Azathioprine and Imuran® are the same medicine. Imuran® is the brand name for azathioprine (ay-za-THYE-oh-preen).

How does azathioprine work?

Azathioprine is used to help keep your body from rejecting your new kidney. It cuts down on the number of white blood cells that your body uses to fight diseases.

How do I take it?

Azathioprine is a pill you can take by mouth once a day at any time. If your blood count goes too low, your doctor may change the amount you are taking.

- Never take azathioprine when you are taking medicine for gout, such as allopurinol or Zyloprim®.
- Never take azathioprine when you are taking the transplant medicine mycophenolate mofetil (CellCept®) or mycophenolic acid (Myfortic®).

What are the side effects?

For most people, there are few side effects from taking azathioprine.

Infections

- You might get an infection because your white blood cell count is low. If your white blood cell count goes too low (less than 4000), your dose may be changed.
- It can also cause a drop in the number of platelets in your blood. You need platelets to help clot your blood.
- The number of red cells in your blood may also fall. This could cause anemia.

Stomach problems

- Some people have nausea and vomiting.
- On occasion, this medicine can cause liver damage, but this is rare. You will have liver tests to check for this side effect.

Other side effects that are rare

- Fever, rash, thinning hair, loss of appetite, diarrhea, joint or muscle pain, or pancreas problems.

Anti-rejection medicines (CONT'D)

Note: Some types of skin cancer are more common in transplant patients. This happens mostly to people with fair skin who live in sunny climates. Azathioprine does not cause skin cancer. But if you develop a skin cancer, your doctor may lower your dose of azathioprine.

Cyclosporine

Neoral®, Sandimmune®, and SangCya® are brand names for cyclosporine (SYE-kloe-spor-een). Cyclosporine is sometimes called “cyclo” for short.

These medicines are all the same, but they are made in different capsules. Do not switch back and forth between them. Take only the one your transplant doctor gives you.

How does cyclosporine work?

Cyclosporine can help keep your body from rejecting your new kidney. It weakens your body's white blood cells, so they cannot damage the new kidney too much.

How do I take it?

In the hospital, you will get cyclosporine in a vein (IV) or by mouth. When you go home, you will take it by mouth as a liquid or capsule. When you take cyclosporine as a liquid, you must mix it in a glass container and use a metal spoon.

Cyclosporine capsules come in two strengths: 25 mg and 100 mg. You will take this drug one, two, or three times a day. It depends on how quickly your body uses the drug and what you are eating when you take it. (Children often need to take the drug three times a day.)

Take your medicine the following way. This is very important!

- Take cyclosporine at the same time each day. You must take it with the same kind of food every time. So, if you take it in the morning when you eat a bowl of cereal, then you should take it every morning with a bowl of cereal. Do not change how you take it from day to day.

How should I store cyclosporine?

Each capsule comes in a foil package. Leave each capsule in this package until you are ready to take it. Once you open the foil package, you have to take the capsule within 7 days.

You may notice a slight odor when you open the foil package. This is normal and does not mean the capsule has gone bad.

Capsules are good for 3 years if you keep each one in its foil package and store them in a cool place. Always make sure you have enough of this medicine on hand so you never run out.

Note: You will have blood tests to check the amount of cyclosporine in your blood. Your doctor needs to make sure the amount of this drug in your blood is not too high or too low. When you go for a blood test, do not take your cyclosporine before the test. Wait until after your blood has been taken.

Anti-rejection medicines (CONT'D)

What are the side effects?

Decrease in kidney function

- Cyclosporine may slow down your kidney function. Your doctor may need to lower your dose of cyclosporine. Do not lower the dose yourself. Talk to your doctor first.

High blood pressure

- This drug can make your body retain salt and water. It may also cause your blood vessels to narrow. These things can cause high blood pressure, even though your kidney is working well. You might need to take high blood pressure medicines.

Changes in your body

- You might grow more hair on your face, arms, and legs. Talk to your doctor if you have any questions about this.

Swollen and bleeding gums

- You will have to take good care of your mouth and teeth. Brush and floss your teeth at least two times a day. See a dentist at least once a year.

Shaking and headaches

- You might get headaches. Your hands might shake, and your hands and feet might tingle. These are signs that the cyclosporine levels in your blood are high. These side effects can go away, but tell your doctor if you have them.

High blood potassium levels

- Cyclosporine will make the potassium level in your blood go up. You may need to take medicine to bring your potassium levels down. You may also have to stay away from food that has a lot of potassium. Talk to your doctor and a dietitian if this is a problem.

Sirolimus and Rapamycin

Sirolimus (sir-OH-li-mus) and rapamycin are the same medicine. Rapamune® is the brand name.

How does sirolimus work?

Sirolimus helps keep your body from rejecting your new kidney. It weakens the white blood cells that could attack and damage your kidney.

How do I take sirolimus?

Sirolimus should be taken once a day in the morning. If you also take cyclosporine or tacrolimus in the morning, you need to wait 4 hours before you take sirolimus. It must be taken at the same time each day and with the same kind of food. This is very important!

How should I store sirolimus?

Sirolimus tablets should be stored at room temperature (68 to 77° F) in a cabinet or some place that is dark. The pills should be kept in a container that will not let light in.

Always keep enough sirolimus on hand. Never run out.

Anti-rejection medicines (CONT'D)

What are the side effects?

Low blood cell counts

- Your white blood cell count can go down. You can get an infection. It can also cause a drop in the number of platelets in your blood. You need platelets to help clot your blood. The number of red blood cells can also drop. This could cause anemia.

High lipid counts

- Lipids are cholesterol and triglycerides. They can go up. This can lead to hardening of the arteries. You may need to take another medicine to lower your lipid levels.

Mouth ulcers

- You may get sores in your mouth. Rinsing your mouth with Listerine 2 times a day can help.

Skin rash or acne

- You may get a rash or acne on your face or body.

Stomach problems

- You may have diarrhea.

Low blood potassium levels

- Sirolimus can make the potassium level in your blood go down. You may need to take medicine that will bring your potassium level back up. You may also have to eat foods high in potassium. Talk to a dietician if this is a problem.

Note: If you are planning to get pregnant, please talk to your transplant doctor first. Your doctor may take you off sirolimus before you try to get pregnant, or stop it while you are pregnant.

Tacrolimus

Prograf® and FK506 are two brand names for tacrolimus (ta-KRO-li-mus).

How does tacrolimus work?

Tacrolimus can help keep your body from rejecting your new kidney. Tacrolimus makes your body's white blood cells weaker so they cannot damage your new organ.

Tacrolimus works the same way as another medicine called cyclosporine. Many of their side effects are the same.

How do I take tacrolimus?

Most people take tacrolimus two times a day, either before or after they eat. You must take it at the same time each day, at the same time before or after you eat.

This drug and your food work together. So if you take your pill 1 hour before you eat, then you must always take it 1 hour before you eat. If you take it 1 hour after you eat, then you must always take it 1 hour after you eat. The idea is to decide when you will eat and when you will take your tacrolimus, then stick to that. Once you start to take tacrolimus, take it the same way every day.

Make sure you always have enough tacrolimus on hand. Never let your supply run out.

Anti-rejection medicines (CONT'D)

Do not take tacrolimus and cyclosporine at the same time.

Note: You will need to have blood tests to check the level of tacrolimus in your blood. Your doctor needs to make sure the level is not too high or too low. Do not take your tacrolimus on the morning of your blood test. Wait until after your blood has been taken.

What are the side effects?

Decrease in kidney function

- Tacrolimus may slow down your kidney function. To help with this, your doctor may change the amount of tacrolimus you take.

Tremors and shakiness

- You could feel shaky and have tremors. This could be a sign of high tacrolimus in your blood. These side effects might go away, but tell your doctor anyway.

Other side effects

- You might get headaches. You might have problems with your blood pressure, stomach, or liver. Or you may have high blood sugar or high potassium in your blood. You may need to take other medicine for these side effects.
- Tacrolimus does not cause extra hair growth on your face, arms, or legs. Nor does it cause problems with your gums. But tacrolimus causes more tremors, headaches, and even seizures than cyclosporine. Blood sugar problems due to diabetes are more common with tacrolimus than cyclosporine.
- Tacrolimus can cause hair loss.

Mycophenolate mofetil

CellCept® and “MMF” are brand names for mycophenolate mofetil. Myfortic® is the same medicine, but the pills are coated to make the medicine easier on your stomach.

How does mycophenolate mofetil work?

Mycophenolate mofetil can help keep your body from rejecting your transplant. Mycophenolate (mye-koe-FEN-oh-late) keeps down the number of white blood cells that your body makes. These white cells are the cells that could attack your new kidney. It is almost always used along with cyclosporine or tacrolimus and prednisone.

How do I take mycophenolate mofetil?

You will take this drug twice a day by mouth. It comes in a capsule or a tablet. Cellcept® comes in two strengths: 250 mg capsules and 500 mg tablets. Myfortic® comes in 180 mg and 360mg tablets.

Do not take antacids at the same time you take mycophenolate.

Do not take azathioprine (Imuran®) and mycophenolate mofetil at the same time.

If you are planning to get pregnant, talk to your transplant doctor. You will need to stop taking mycophenolate mofetil while pregnant, but first talk to your doctor before you stop taking this medicine or any other medicines.

Anti-rejection medicines (CONT'D)

What are the side effects?

Stomach problems

- This medicine can give you diarrhea, nausea, vomiting, or heartburn. These are very common side effects. You might also get an ulcer, but this is rare. These side effects can get better if you can take a lower dose, but do not lower your dose without talking to your doctor.

Very low number of white blood cells

- If you do not have enough white blood cells, you can get a serious infection. To help prevent this, your doctor may lower your dose of mycophenolate mofetil for a while.

Medicines for infections

Trimethoprim-sulfamethoxazole

Bactrim®, Cotrim®, and Septra® are brand names for trimethoprim-sulfamethoxazole (trye-METH-oh-prim) (sul-fa-meth-ox-a-zole). They are all the same medicine. They are antibiotics that are a type of sulfa drug.

How does trimethoprim-sulfamethoxazole work?

This medicine is used to prevent infections in the lungs and urine.

How do I take trimethoprim-sulfamethoxazole?

It comes in a pill, liquid, or IV (intravenous) form. The pills come in two strengths: single-strength (SS) tablets and double-strength (DS) tablets.

This medicine has sulfa in it. If you have an allergy to sulfa, tell your doctors. They will give you a different medicine. Do not take this medicine if you are pregnant.

What are the side effects?

Most people do not have side effects from this drug, but it is possible you may have the following:

- Nausea, vomiting, diarrhea, or stomach cramps
- Skin rash
- Low numbers of white blood cells and other blood changes
- Your skin may become sensitive to sunlight. Use sunscreen when you are outdoors, and take your medicine with a glass of water.
- High blood potassium levels. You may need to avoid foods high in potassium. Ask your dietitian for help with what foods to eat. You can also go to www.kidney.org for a list of foods.

Acyclovir

Zovirax® is the brand name for acyclovir (acy-clo-vir).

Medicines for infections (CONT'D)

How does acyclovir work?

Acyclovir fights viral infections. You will probably take acyclovir for the first few months after your transplant. It helps prevent certain kinds of viral infections such as herpes, chicken pox, shingles, and cold sores.

How do I take acyclovir?

It comes as a pill, liquid, or is given intravenously (IV). It comes in several strengths.

It is very important that you stay away from people who have any type of viral infection, such as the flu, chicken pox, herpes, or cold sores. Be sure to tell your doctor if you have been around anyone with chicken pox.

What are the side effects?

This drug has few side effects, but you may feel tired, get headaches, or feel nausea.

Ganciclovir

Cytovene® is the brand name for ganciclovir (gan-ci-clo-vir).

How does ganciclovir work?

Ganciclovir fights viral infections like cytomegalovirus, herpes, chicken pox, shingles, and cold sores.

How do I take ganciclovir?

It comes in a pill, liquid, or IV form.

What are the side effects?

You will not have many side effects from this medicine, but you may have some nausea, vomiting, or diarrhea. Ganciclovir can also be hard on the liver, so you may need to have liver tests. It can lower the number of white blood cells and platelet counts too, so your doctor may need to lower your dose for this reason.

Valganciclovir

Valcyte® is the brand name for valganciclovir (val-gan-SYE-kloh-veer).

How does valganciclovir work?

This medicine fights viral infections like cytomegalovirus, herpes, chicken pox, shingles, and cold sores. It works the same way as ganciclovir, but only comes in a pill. It is easier to absorb than ganciclovir.

How do I take valganciclovir?

It is usually given as a pill.

What are the side effects?

Valganciclovir can lower your white blood cell and platelet counts. You may also have diarrhea, nausea, vomiting, headache, fever, and trouble sleeping.

Medicines for infections (CONT'D)

Nystatin and Clotrimazole

Mycostatin® is the brand name for nystatin. Mycelex® is brand name for clotrimazole.

How do nystatin and clotrimazole work?

Nystatin (nye-STA-tin) and clotrimazole (kloe-TRIM-a-zole) are used to treat yeast infections in your mouth. This yeast infection is called thrush. Thrush looks like a white coating all over your tongue.

How do I take nystatin and clotrimazole?

When you take nystatin, you swish and hold the medicine in your mouth for 5 minutes, then swallow it. You should not eat or drink anything for 30 minutes after doing this.

Clotrimazole comes as a lozenge. When you take clotrimazole you suck on the lozenge until it dissolves. Both nystatin and clotrimazole are used four times a day.

What are the side effects?

You will not have many side effects from these medicines, but you may have some nausea, vomiting, diarrhea, or stomach cramps.

Fluconazole, Ketoconazole, Itraconazole, and Voriconazole

Diflucan® is the brand name for fluconazole.

Nizoral® is the brand name for ketoconazole.

Sporanox® is the brand name for itraconazole.

Vfend® is the brand name for voriconazole.

How do these medicines work?

These are powerful anti-fungal medicines that are given to fight major infections.

What are the side effects?

You will not have many side effects from this medicine, but it can cause nausea, vomiting, diarrhea, or stomach cramps.

Medicines that help with side effects

Medicine for Ulcers

Carafate®
Prilosec®

Pepcid®
Prevacid®

Tagamet®
Axid®

Zantac®
Nexium®

How do these medicines work?

Because some transplant medicines are hard on your stomach, you may need to take medicine to prevent stomach ulcers. The medicines listed above, as well as the generic brands, are the ulcer medicines used by most people.

How do I take these medicines?

Follow the directions on the label, and ask your doctor if you have any questions.

Medicines that help with side effects (CONT'D)

Note: If you are taking CellCept®, you should not take Carafate® because it prevents CellCept® from working. Your doctor should give you a different medicine in that case. If your doctor tells you to take an antacid or Carafate, take it 1 hour before or 2 hours after you take Cellcept or Myfortic.

What are the side effects?

Most people have very few side effects from these medicines.

Diuretics (Water Pills)

Lasix® Bumex®
Zaroxolyn® Demedex®

Lasix® (furosemide) is the diuretic most often used by people.

How do diuretics work?

Diuretics are called water pills because they help the kidneys make more urine. Transplant patients often need to take diuretics. These medicines help reduce swelling, blood pressure, and high blood potassium levels. It is important to know that spironolactone (aldactone) causes high potassium levels in the blood.

How do I take diuretics?

Follow the directions on the label, and ask your doctor if you have any questions.

When you take water pills, it is important to watch your weight and blood pressure. It is important that your body does not lose too much water. Do not change how much diuretic you take without first talking to your doctor. Diuretics can lower or raise your potassium level and cause heart problems.

What are the side effects?

When you first start taking diuretics, you will probably notice that you are passing more urine than before. If you feel dizzy when you stand up, get up more slowly.

Vitamins and Minerals

How do vitamins and minerals work?

Most people get all the vitamins they need from the food they eat. But when you have a transplant, it puts stress on your body. Your doctor may tell you to take more vitamins or minerals, like calcium.

How do I take vitamins and minerals?

Follow directions on the label, and ask your doctor if you have any questions.

There is no need for you to take other kinds of vitamins, but if you want to take them, tell your transplant team. Some herbal medicines may cause a reaction when taken with your transplant drugs. Do not take herbal medicines unless you ask your doctor first.

What are the side effects?

Side effects from vitamins and minerals are rare, if you take the right dose. However, some herbal medicines cannot be taken with anti-rejection drugs, so talk to your doctor before you take any herbal medicines.

Medicines that help with side effects (CONT'D)

Blood Pressure Medicines

How do blood pressure medicines work?

Some people get high blood pressure for the first time after their organ transplant. This is because some transplant medicines cause your blood pressure to rise. This can happen even if your new kidney is working well. If you were taking blood pressure medicine before your transplant, you may need to keep taking it.

How do I take blood pressure medicines?

Follow the directions on the label, and ask your doctor if you have any questions.

Note: There are many kinds of blood pressure medicines. Two of them may have side effects that make your kidneys not work as well. These medicines are

- o angiotensin converting enzyme (ACE) inhibitors and
- o angiotensin receptor blockers (ARBs).

Your doctor will tell you if you need to take a different kind of blood pressure medicine to prevent this problem.

What are the side effects?

The side effects you get from blood pressure medicine depend on which medicine you take.

Some common side effects of blood pressure medicine are:

- Getting dizzy when you stand up
- Being tired
- Change in your heart beat
- Swelling in your feet or hands
- Problems having sex

Combining medicines: What you need to know

Transplant medicine is very strong, and it does not always mix well with other medicines. Below is some information you need to know about mixing medicines.

A very important point to remember: When your doctors put you on a new medicine, remind them you are taking transplant medicine.

Drugs that can raise the cyclosporine level in your blood

If you are taking cyclosporine (brand names are Sandimmune®, Neoral®, SangCya®, or Gengraf®), the following drugs can raise the levels of cyclosporine in your blood:

Infection drugs

Erythromycin and similar drugs like clarithromycin (Biaxin®)

Antifungal medications like:

- Ketoconazole (Nizoral®)
- Itraconazole (Sporanox®)
- Fluconazole (Diflucan®)
- Voriconazole (Vfend®)

Combining medicines: What you need to know (CONT'D)

Blood pressure medicines

- Verapamil (Calan®, Isoptin®)
- Diltiazem (Cardizem®)
- Nicardipine (Cardene®)

Other medicines

- Ethisterone derivative (danazol) used for gynecologic conditions
- Amiodarone (Cordarone®) used for heart rhythm problems

Drugs that can lower the cyclosporine level in your blood

A low cyclosporine level may lead to rejection, and damage your new kidney.

Medicines for seizures

- Phenytoin (Dilantin®)
- Phenobarbital (Luminal™)
- Carbamazepine (Tegretol®)

Infection drugs

- Rifampin (Rifadin®)
- Isoniazid (Calpas-INH™)

Taking cyclosporine with the drugs below can be dangerous for you

Infection drugs

- Gentamicin (Garamycin®)
- Tobramycin (Nebcin®)
- Trimethoprim-sulfamethoxazole
- Amphotericin B (Fungizone®)

Do not take these pain medicines (some are over-the-counter)

- Ibuprofen (Motrin®, Advil®, Nuprin®)
- Indomethacin (Indocin®)
- Naproxen (Naprosyn®, Aleve®)
- Piroxicam (Feldene®)
- Phenylbutazone (Butazone™)
- Ketorolac (Toradol®)
- Ketoprofen (Orudis®)

Tacrolimus

If you are taking tacrolimus (brand names Prograf® and FK506), look at the drug interactions listed above for cyclosporine. Tacrolimus and cyclosporine have almost the same problems when they are mixed with other medications.

Combining medicines: What you need to know (CONT'D)

Azathioprine

Do not take gout medicine called allopurinol or Zyloprim® when you are taking azathioprine or its brand name Imuran®. It can cause very serious problems with your blood and bone marrow.

Do not take azathioprine with the transplant medicine called mycophenolate mofetil.

Mycophenolate Mofetil

Do not take mycophenolate mofetil (brand names CellCept®, MMF, RS) with azathioprine (Imuran®), which are both transplant medicines.

Antacids and Carafate® can cause you to not absorb CellCept® as well as you should. For this reason, take antacids and Carafate® 1 hour before, or 2 hours after, you have taken CellCept®.

Sirolimus (rapamycin)

It is important to remember that sirolimus (Rapamune®) taken with cyclosporine or tacrolimus can be toxic to your kidney. Your doctor will need to adjust the levels of both medicines.

Some drugs may interfere with how sirolimus works.

- Ketoconazole (Nizoral®) can raise the level of sirolimus in your body.
- Drugs like rifampin (Rifadin®) can lower the level of sirolimus in your body.
- Other drugs may cause transplant rejection or other serious side effects if taken with sirolimus.

Tell your doctor or pharmacist about any medicine or over-the-counter drugs you are taking. They need to know this to avoid any problems with how your medicines work together.

Researching new medicines

Doctors are studying new medicines all the time. Some of these drugs may help keep your new kidney healthy. Other new medicines could have fewer side effects or cause fewer infections.

Tell your doctor if you would like to be part of a clinical trial. All these new medicines must be tested before they can be given to people who need transplants. These tests are called clinical trials or studies.

Your doctor will see if there is a clinical trial that can be helpful to you. Your transplant team will discuss with you the pros and cons of taking part in a clinical trial. They will explain, in detail, all the facts about the clinical trial so that you will be able to make what we call an informed decision.

You do not have to join a clinical trial. It is your right to join or not join. Your choice will not change the quality of care you will receive after the transplant.