



When you get a kidney transplant, your body knows that the new kidney is foreign (that is, not originally part of your body). Your body will attack the new kidney and try to damage or destroy it. Immunosuppressant drugs block your body's ability to do this. The goal is to adjust these drugs to prevent rejection and to minimize any side effects of the drugs.

### About Immunosuppressants

Immunosuppressants are drugs or medicines that lower the body's ability to reject a transplanted organ. Another term for these drugs is anti-rejection drugs.

Just skipping a single dose increases the likelihood of your body rejecting your transplanted kidney. If you miss a dose, take it as soon as you remember and call your doctor. If it is time for the next dose, do not take a double dose. The only time you should skip a dose is if your doctor or other health care team member tells you to do so. If you are not sure, call your doctor.

Also, before any clinic visits, you should check with your doctor whether you should delay taking your immunosuppressant medicines until your blood is drawn for lab work.

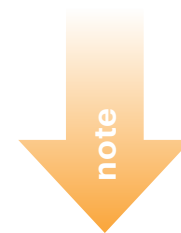
### THERE ARE 2 TYPES OF IMMUNOSUPPRESSANTS:



- 1. Induction drugs:** Powerful antirejection medicine used at the time of transplant
- 2. Maintenance drugs:** Antirejection medications used for the long term.

### MOST MAINTENANCE DRUGS FALL INTO 1 OF 4 CATEGORIES:

- **Calcineurin inhibitors:** tacrolimus and cyclosporine
- **Antiproliferative agents:** mycophenolate mofetil, mycophenolate sodium and azathioprine
- **Mammalian target of rapamycin (mTOR) inhibitor:** sirolimus, everolimus
- **Selective T-cell costimulation blockers:** belatacept
- **Corticosteroids:** prednisone



Common Kidney Transplant Immunosuppressants

| Brand Name                        | Generic Name                | Administration |          | Dosing       |               | Dietary Recommendations                       |
|-----------------------------------|-----------------------------|----------------|----------|--------------|---------------|---|
|                                   |                             | Oral           | Infusion | Once per day | Twice per day |   |
| Envarsus XR (New!)<br>Astagraf XL | Tacrolimus                  | ✓              |          | ✓            |               | Avoid grapefruit juice                        |
| Prograf                           |                             | ✓              |          |              | ✓             |   |
| Sandimmune Neoral                 | Cyclosporine                | ✓              |          |              | ✓             | Avoid grapefruit juice                        |
| Deltasone                         | Prednisone                  | ✓              |          | ✓            |               | Best to take with food to avoid stomach upset |
| Cellcept Myfortic                 | Mycophenolate mofetil (MMF) | ✓              |          | ✓            |               |   |
| Rapamune                          | Sirolimus                   | ✓              |          | ✓            |               | Avoid grapefruit juice                        |
| Zortress                          | Everolimus                  | ✓              |          |              | ✓             | Avoid grapefruit juice                        |
| Nulojix                           | Belatacept                  |                | ✓*       |              |               |   |
| Imuran                            | Azathioprine                | ✓              |          |              |               |   |

Almost everyone who has a transplant must take these immunosuppressants every day as directed. If your new kidney came from an identical twin, however, you may not have to take them.

\*Available as an IV infusion only. Dosing schedule depends on time after transplant but are usually given every four weeks  
Note: Different tacrolimus, cyclosporine, and mycophenolate products are not interchangeable.

There are many other medicines, food, and supplements that can change the levels (up or down) of immunosuppressants in the blood. Some of the common ones are grapefruit juice, St. John's Wort, erythromycin, anti-TB (tuberculosis) medicines, anti-seizure medicines and common blood pressure medicines (cardizem or diltiazem, and verapamil).

### CHANGING IMMUNOSUPPRESSANT MEDICATIONS

After having a kidney transplant, taking immunosuppressant medications become a normal part of your daily routine – and they should be taken as prescribed by your doctor.

At some point, your doctor may recommend changing your medication. These are some of the most common reasons why your doctor may think changing your medications is a good idea:

- **Dosage change:** In the beginning, when the risk of organ rejection is highest, most people need to take several types of immunosuppressants. But over time, your transplant team will likely want to lower your dose because the goal is for you to take enough medication to avoid rejection, but not so much that it causes side effects or other problems.
- **Effectiveness:** Not all immunosuppressants work equally well for everyone. Your gender, past medical history, individual intolerance, and other factors can play a role. Your medication may be changed if your transplant team finds that it isn't working well enough for you.

- **Side effects:** Taking immunosuppressants can cause some side effects, however these side effects are usually manageable. But if side effects happen, changing the dose or type of medications can often lessen them.
- **Health risks:** Some types of immunosuppressants can increase your risk for high blood pressure, diabetes, certain types of cancer, and infections. For most people, the risk is small. Your transplant team may decide to change your medication because of health risks.
- **Financial costs:** Many immunosuppressants are available as generics. This can offer significant cost savings, but there is a downside. A generic may not provide you with the exact same drug effectiveness as the brand name. Talk to your healthcare team if you have questions or concerns about the cost of your medications. You and your healthcare team can decide together whether the generic form of the brand name product offers the same level of immunosuppressant effectiveness.



Remember, your immunosuppressant medications are the lifeline for your new kidney and it is very important to be very consistent taking them all that are prescribed for you. It may be helpful to use pillboxes and set alarms to make sure you take your medications as directed and to help ensure you do not miss any doses.

For more information, contact the National Kidney Foundation

Toll-free help line: **855.NKF.CARES** or email: **nkfcares@kidney.org**



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