

Medicines after your Renal Transplant

Information for patients



After your transplant, medicines will play an essential role in keeping your new kidney working properly and maintaining your general good health. You will have to take some medicines for the rest of your life. Other medicines will be necessary only for a short time after the operation.

From time to time, the dose of a medicine may change, or you may be switched from one medicine to another. Learning to manage your medicines may take some effort, but the entire transplant team is here to help you. Your family and friends can also be of great help. Never change doses or stop taking any prescribed medicines unless advised to do so by the transplant team. If in doubt, ask.

You will be given a Medicines Record Card with details of what you are taking and when you should take it when you are discharged after your transplant.

Never share your medicines with anyone else, no matter how similar they are.

Will I continue to take the medicines I was taking before my transplant?

Some of the medicines you were taking for your kidney problems before your transplant will normally stop afterwards, e.g. phosphate binders, renal vitamin supplements and epoetins (Aranesp). The list of medicines that have stopped will be shown on your discharge document.

What type of medicines will I take after my renal transplant?

After your transplant you will take a number of different medicines for different reasons. You will be started on several different types at first but the number usually reduces over the first few months. Each of the different types of medicines will be discussed over the next few pages.

Anti-rejection medicines / Immunosuppressants

Your body's normal response to anything that it sees as a foreign object is to attack it. This helps us stay healthy and fight infection. After a transplant, your new kidney will be seen by your body as foreign and your immune system will automatically try to attack it. This is called rejection.

To prevent this from happening you will need to take anti-rejection medicines (also called immunosuppressants) for the rest of the life of your transplanted kidney. Without these it is very likely that your body will reject the kidney.

Immunosuppressants reduce your immune system, so they reduce your body's ability to fight infection. You should try to avoid being in contact with people with coughs and colds and other types of infection.

Taking immunosuppressants increases your chance of developing certain types of cancer, including skin cancer. Most skin cancers can be treated successfully if they are caught at an early stage. Please see your discharge information for advice on sun protection.

Intravenous Immunosuppression

In the operating theatre you will be given a combination of intravenous immunosuppressants. These help prevent rejection in the early days after surgery. In Leeds, most patients will receive one dose of methylprednisolone and either one dose of alemtuzumab or two doses of basiliximab.

Oral Immunosuppression

Anti-rejection medicines taken by mouth will form the mainstay of your long-term treatment to prevent rejection.

This group includes the following medicines:

- **Tacrolimus** (Adoport®/Dailiport®).
- **Mycophenolate** (Cellcept®/Ceptava®)
- **Prednisolone**

There are several other types of immunosuppression. If you are started on any medicines not discussed in this booklet then one of the transplant team will discuss them with you.

The common types of immunosuppressants that we use in Leeds will be discussed in turn. You should read the patient information leaflets enclosed in the packets of medicines for further information or ask to speak to a member of the transplant team.

Tacrolimus

You will usually be started on tacrolimus post-transplant. Tacrolimus works by blocking the production of cells that attack the new kidney and cause rejection.

There are different brands of tacrolimus and it is very important that you remain on the same brand that your hospital specialist starts you on. You must not switch between different brands unless your hospital specialist tells you to do so.

Initially after transplant you will be started on the brand Adoport®, a preparation designed to be taken twice a day, twelve hours apart.

The dose will be altered according to how much of the drug is in your blood, this is checked by a blood test just before you take your dose on clinic days.

On clinic days, do not take your **tacrolimus** before you come to clinic. Bring your capsules with you to hospital and take them after you have had your blood tests.

Always be aware what dose you need to take. If your blood tests show that you need to have your dose changed (up or down), you will be contacted by telephone.

All types of tacrolimus preparation come in capsule form and are available as different strengths. You can make your dose up with any combination of these.

Immediate release tacrolimus (Adoport®) comes in 0.5mg, 1mg, 2mg and 5mg.

Prolonged release tacrolimus (Dailiport®) comes in 0.5mg, 1mg, 2mg, 3mg and 5mg.

Side-effects

Tacrolimus has several side-effects but not everyone will experience them. Some of the side-effects disappear as the dose of tacrolimus is reduced over time. Listed below are the most common side-effects.

- Tremor (shaking) of the hands
- Headache
- Vivid dreams
- Upset stomach
- Hair loss on head
- Numb, hot or tingly hands, feet or mouth
- Diabetes
- High blood pressure
- Altered kidney function - we will be constantly monitoring this when you visit us in transplant clinic

You may notice some of these side-effects yourself. Tell the transplant team if you do as there is often a solution. Your blood pressure, blood sugars and kidney function will be checked in outpatient clinic so changes can be made if needed.

Taking other medicines with tacrolimus

Some medicines can increase or decrease your tacrolimus level in the blood. This may either increase your chance of side-effects or rejection. Always check with your transplant team if you are prescribed or you buy any new medicines over the counter, including herbal medicines.

There are various medicines that you should NOT take whilst on tacrolimus, some examples include;

- Some antibiotics called erythromycin and clarithromycin
- Non-steroidal anti-inflammatory drugs such as ibuprofen or diclofenac (these can affect your kidneys).
- Some antifungals
- St. Johns Wort

You should avoid eating grapefruit or drinking grapefruit juice whilst you are taking tacrolimus because it contains a chemical that affects the level of tacrolimus in your blood. Other citrus fruits are safe to eat or drink.

What to do if you forget to take a dose of Adoport

A missed dose of Adoport should be taken at least six hours before the next dose is due. If there is less than six hours before your next dose then do not take that missed dose and carry on with the next dose at the normal time. Never take a double dose to make up for missed doses.

Mycophenolate

Another type of immunosuppressant you may take after a renal transplant is mycophenolate. It acts to reduce the number of white cells in the blood which play an important role in rejection.

General Information

There are two different preparations of mycophenolate, one is called mycophenolate mofetil and the other is mycophenolate sodium, which is enteric coated. This means that it has a special coating which can help prevent a stomach upset. It is important you know which type you are on.

Apart from this, mycophenolate does not need to be prescribed as a specific brand, unlike tacrolimus.

Initially after transplant you will be started on mycophenolate mofetil.

- Mycophenolate mofetil is available as 250mg capsules, 500mg tablets and a liquid, which contains 1 gram in 5mL.
- Mycophenolate mofetil should be taken twice a day, every morning and evening, 12 hours apart. Swallow the tablets/capsules whole (without chewing) with a glass of water. Sometimes mycophenolate doses are changed to three times a day to help with side effects.
- Mycophenolate sodium (Myfortic®/Ceptava®) is available as a 180mg tablet and a 360mg tablet.

Side-effects

The most common side-effects are:

- Stomach upset (diarrhoea and vomiting) Taking the medicine with or just after food can help.
- Reduced white cell count (increasing risk of infection).
- Unexplained bruising.

It is important to inform your transplant team if you develop signs of infection whilst taking mycophenolate.

Taking other medicines with mycophenolate

Some other medicines can reduce the amount of mycophenolate that is absorbed into the body. We recommend not taking iron supplements or antacids containing magnesium or calcium (e.g. Maalox®) within two hours of taking mycophenolate.

Always check with the transplant team that any new medicine is safe for you to take.

What to do if you forget to take a dose of mycophenolate

A missed dose of mycophenolate should be taken at least six hours before the next dose is due. If there is less than six hours before your next dose then do not take that missed dose and carry on with the next dose at the normal time. Never take a double dose to make up for missed doses.

What to do if you are considering having a baby

The use of mycophenolate is not recommended in pregnancy.

- If you are female it is recommended to use two different forms of effective contraception whilst taking mycophenolate and for six weeks after stopping treatment.
- For male patients (including those who have had a vasectomy) the use of one form of contraception by either yourself or your partner, during treatment and for at least 90 days after stopping treatment is recommended.

If you do want to try for a baby please involve your transplant team and all options for medicines can be explored prior to conception.

Prednisolone

Prednisolone is an immunosuppressant and also a steroid. It is a corticosteroid produced normally by your body which is not the same as an anabolic steroid misused by some body builders.

General Information

Prednisolone may be started in some patients after a renal transplant. It is gradually reduced over a period of weeks. After taking prednisolone for more than a few weeks, your body will reduce the amount of natural steroid it produces

and so it is important that you reduce the dose as instructed and do not stop it suddenly.

You will be given a blue steroid card to carry around with you at all times. If you are having any surgical procedures, including dental treatment, inform your doctor or dentist beforehand.

Prednisolone should be taken once a day in the morning. Taking them with food may reduce the chance of indigestion.

Side-effects of prednisolone

Prednisolone has a number of possible side effects. Most of the side-effects happen slowly over a period of time. The transplant team will reduce your dose to the smallest amount to prevent rejection.

- Stomach upset and indigestion (take with/after food to reduce this)
- Night disturbances
- Swollen ankles
- Weight gain due to increased appetite
- Rounded face
- Diabetes (increased sugar in blood)
- Thinning of bones (osteoporosis). You are likely to be started on calcium and vitamin D tablets to reduce this effect, if you are not already taking them.

You may notice some of these side-effects yourself. Tell the transplant team if you do as there is often a solution.

What to do if you forget to take a dose of Prednisolone

If you forget to take your prednisolone but remember before

6pm, take it and then take your next dose at the normal time the following morning. If you remember after 6pm, do not take your missed dose and take your normal dose in the morning. The later in the day you take your dose the more chance you will experience night time side-effects such as trouble getting to sleep.

Anti-infective Medicines

All anti-rejection medicines act on the body's immune system. They reduce your body's ability to either detect foreign substances or fight off attacks. This is good for preventing rejection of your new kidney, but it also means you cannot easily fight off infections caused by viruses, bacteria or fungi. All transplant patients have a higher risk of infection compared to people not taking immunosuppression medicines.

This is especially true during the first months following the transplant, when doses or amounts of anti-rejection medicines are at their highest. Infection can be just as life threatening as rejection and should be taken very seriously.

Antibacterial medicines

To prevent bacterial infections, particularly lung and urinary tract infections, most patients will take an antibiotic called co-trimoxazole which contains two medicines called trimethoprim and sulfamethoxazole. It is taken by mouth in the evening. If you are allergic to either of these medicines you must make the transplant team aware and an alternative can be prescribed. You will be made aware in clinic when you can stop this medicine, it is usually taken for six months. After you have your ureteric stent removed (at around six weeks

after transplant) you can change the time of day that you take co-trimoxazole, if you prefer.

Some patients may be given antibiotics to prevent TB (tuberculosis). If the transplant team decides you need to take medicines for this you will be started on isoniazid 300mg once a day. The duration of this will be for six months after your transplant.

One of the side-effects of isoniazid is pins and needles in your fingers and toes. To help with this you will also be given a medicine called pyridoxine 10mg once a day. This will continue whilst you are taking isoniazid.

Anti-viral medicines

The most common cause of viral infection in transplant patients are CMV (which stands for cytomegalovirus) and herpes. Herpes simplex viruses can cause cold sores and genital sores (although it is usually not transmitted sexually). Herpes zoster infection can cause chickenpox and shingles. If you think you have a cold sore or have been exposed to chickenpox/shingles you should see your GP as you may need stronger medication than you can buy in your local pharmacy.

If you are particularly at risk of developing cytomegalovirus (CMV) infection after your transplant you will be started on valganciclovir. You will be told how long you need to take this for. The dose of valganciclovir may change depending on transplant kidney function so always make sure you are aware after clinic what dose you should have.

Antifungal Medicines

Fungi are the third source of infection. The most common fungal infection in renal transplant patients is Candida

albicans. To cover against this you will be given fluconazole once a day for seven days after transplant. Most patients will receive the majority of this as an inpatient but may have to take the remainder of the course when they get home.

Other Medicines

A lot of the other medicines we start after your transplant are usually to help with the side-effects of the immunosuppression medicines. Some of these will be taken long term, others will be stopped relatively soon after transplant.

Medicines to protect your stomach

Some of the medicines prescribed after transplant can cause irritation to your stomach and digestive system. If you are already taking a medicine for stomach acid this will be continued after your transplant. If you are not, then we will start either lansoprazole or omeprazole, a medicine which reduces the amount of acid produced in the stomach.

You may also use ant-acid preparations that you can buy from your pharmacy (Gaviscon[®], Rennie Duo[®], Maalox[®] and Tums[®]) but be aware that some of these can reduce the absorption of your anti-rejection medicines. We advise that you don't take these at the same time as your immunosuppression medicines. If you wish to discuss this further then please speak to your transplant team.

Painkillers

For the first few days after your renal transplant you will have strong pain killers into your vein (Patient Controlled Analgesia or PCAS). After this time you will be given your pain medicines orally in the form of paracetamol and codeine.

You can take two paracetamol tablets every four to six hours up to a maximum of eight tablets in 24 hours and codeine 30mg tablets at a dosage of one or two tablets every four to six hours up to a maximum of eight tablets in 24 hours. When going home you can reduce the doses of the pain killers when you are ready. Please ask the transplant team for advice if you weigh less than 50Kg, as the doses of these medicines may need to be reduced

Anti-constipation medicines

Constipation may be a short-term problem, or it can continue for some time following a transplant. Medicines will be prescribed after your surgery to prevent this becoming an issue. Most patients will receive senna tablets to stimulate the bowel and lactulose to soften the stools. If you feel you no longer require these speak to either the nurse on the ward or in clinic and they can be reviewed. If you were taking different laxatives prior to transplant these will be reviewed. Please discuss with your transplant team if you have any concerns.

Blood sugar medicines

Some patients may have high blood sugar levels after their transplant and may be caused by some of the medicines you are taking. This could potentially develop into diabetes which may require medication to control your blood sugar. If you are started on medication initially, it does not necessarily mean that you will need them for the rest of your life.

Medicines to protect your heart and circulation

An increase in blood pressure (hypertension) or blood cholesterol (hypercholesterolaemia) can be caused by some of the anti-rejection medicines. Both of these factors can

increase your risk of heart disease, stroke or damage to your transplanted kidney if left untreated for a long period of time. Your blood pressure will be checked at each clinic visit and your cholesterol levels will be monitored regularly.

Side-effects

All medicines have some side-effects. The patient information leaflet that is supplied with your medicines will list the known side-effects. The new drugs prescribed after transplant each have their own set of side-effects, some are quite minor and others can be more serious.

If you are concerned about a possible side-effect or symptom talk to the transplant team. In most cases, something can be done to reduce or treat the problem.

Never assume a symptom is “just another side-effect”. It could be a sign of illness, infection or even rejection. Make sure that you mention it to one of the team, but never stop taking your medicines before discussing it first.

It is important to keep the following facts in mind:

- There may be alternative medicines available. It may be possible to find a medicine that works for you with fewer side-effects.
- Some side-effects are related to the amount or dose of a medicine that is taken. With some medicines, for example tacrolimus, the dose is usually higher in the first three months after the transplant and is then reduced. As the dose is reduced, some side-side effects may become less troublesome or even disappear.
- Some side-effects become less troublesome over time, even if the dose isn't reduced, as the body adapts to the medicine.

- Not everyone experiences all of the side-effects.
- There may be other ways to reduce side-effects. For example, acne can develop with some anti-rejection medicines but responds well to creams and certain antibiotics.

Supply of medicines after your transplant

You will receive a supply of your new immunosuppression medicines from your transplant centre for the first three months when you are discharged from hospital.

For the first three months after your transplant, you will get prescriptions in clinic for your immunosuppression medicines which you should take to the outpatient pharmacy within the hospital. When you attend each outpatient appointment, check what supplies you have at home and alert the transplant team if you are getting low. Do not wait until you've run out or are on your last tablet before speaking to the team or ordering. Try to keep at least two weeks supply of all your medicines at all times. If you are not sure, bring your medicines with you to clinic and one of the team will go through them with you.

After the first three months, the renal transplant pharmacy team will take over the supply of your immunosuppression medicines and they will be delivered to your home by our homecare company. A member of the team will contact you to discuss this nearer the time.

When you receive your medicines, check them carefully. Look at each label and make sure it is what you were expecting. If there is anything that appears different than usual, speak to a member of the transplant team.

As with any medicine, you will need to pay a prescription charge per item unless you qualify for an exemption. If not, it may save you money to buy a pre-payment certificate. These can be purchased for 3 or 12 months. Ask at your local community pharmacy or the hospital outpatient pharmacy for an application form. Alternatively, information and prices for these can be found at www.gov.uk/get-a-ppc or by calling **0300 330 1341**.

Can I use alternative medicines after a renal transplant?

Alternative medicines are 'natural' medicines and are often marked as 'safe'. There are different types of alternative medicines e.g. herbal medicines, aromatherapy and homeopathy.

Alternative medicines do not go through the same testing as conventional medicines therefore little is known about some of them.

Some herbal medicines have been found to cause problems when taken, and can even interact with your immunosuppression medicines. For this reason if you are considering starting to take any alternative/herbal medicine please discuss it with one of the transplant team.

You must not take Kava Kava, St. Johns Wort or Echinacea.

Travel tips after your transplant

Now that you have had a new transplant, getting back to a 'normal' and healthy lifestyle is the next step. You may need to seek medical permission before travelling abroad. Please feel free to discuss it with the team.

Advice around your medicines when travelling:

1. Always split your medicines between your hand luggage and suitcase. This way, if one goes missing you will have a backup supply.
2. Make sure you take more medicines than you will need for the time that you are away. If for any reason you get delayed the last thing you want to worry about is finding a supply of medicines.
3. If you are travelling to a country in a different time zone, speak with one of the transplant team about how to adjust your medicines schedule. Generally, you should stick to local timings when taking your medicines.
4. Please request a travel letter at least two weeks in advance of your planned travel which should be kept in your hand luggage with your medicines. You can request this at your clinic visit or by contacting one of the post-transplant nurses. This should include a full list of the medicines you are taking. Please make sure this list is accurate when you receive it.
5. Make sure you have thought about which vaccines may be needed before you book your holiday. Not all vaccines are suitable once you have had a transplant. See the vaccines section below for information on this.

Is it safe to have vaccinations after a renal transplant?

If you need a vaccination after your kidney transplant it is important to check if it is safe for you to have, as transplant patients are not able to have all vaccines.

There are two main types of vaccinations:

- Live
- Inactivated or 'dead'

Live vaccines have the live bugs in the vaccine. While on immunosuppressants, your body's immune system will not respond as well and you may get the infection from the vaccine. It is important that you do not have any live vaccinations after your transplant.

If you need to receive any vaccinations check they are not live:

- Live vaccines: **not safe to have after a transplant**
- Inactivated vaccines: **safe to have from six months after a transplant**

All immunosuppressed patients are advised to have an annual influenza vaccination and pneumococcal vaccine every five years. It is usually advised that vaccines are not given in the first six months after transplant, but if you are invited for a vaccine before this six month period, please ask the transplant team for advice.

If you are going on holiday abroad and need advice about vaccinations or malaria tablets, please discuss with your GP or pharmacist and refer to the 'Permitted Vaccines' chart on the back page. Some anti-malarial treatment can affect the levels of immunosuppression in your blood so please discuss this with your transplant team if necessary.

Vaccines Chart

Permitted Vaccines	Vaccines not to be given
Diphtheria	Polio (oral)
Tetanus	Smallpox (vaccinia)
Tick Borne Encephalitis	Tuberculosis (BCG)
Hepatitis B	Typhoid (Oral-Ty21a)
Hepatitis A	Yellow Fever
Influenza	Measles, mumps, rubella (MMR)
Pneumococcal	Varicella (chickenpox)
Inactivated (injected) Polio (Salk)	Nasal influenza vaccine (Fluenz Tetra)
Haemophilus Influenza B	Rotavirus
Typhoid	Live shingles vaccine (Zostavax)
Pertussis	
Meningococcal	
Cholera (oral-combined with recombinant B sub unit)	
Japanese encephalitis	
COVID-19 (Oxford/Astra Zeneca, Pfizer/BioNTech and Moderna)	
Inactivated shingles vaccine (Shingrix)	

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