

## About the Khoo Teck Puat – National University Children's Medical Institute (KTP-NUCMI)

The KTP-NUCMI is the paediatric arm of the National University Hospital and comprises the Departments of Paediatrics, Paediatric Surgery and Neonatology. We provide comprehensive and specialised medical and surgical services for newborns, children and adolescents, and are the only public hospital in Singapore that offers paediatric kidney and liver transplant programmes. Through a generous gift from the Estate of Khoo Teck Puat, we have set up an integrated outpatient facility with medical, diagnostic and rehabilitation services.

For more information about us, visit [www.nuh.com.sg/nuhkids](http://www.nuh.com.sg/nuhkids).

### Contact Us

#### 24-hour Children's Emergency

Location: NUH Main Building, Zone F, Level 1

General Enquiry: +65 6772 2555

#### KTP-NUCMI

Location: NUH Main Building, Zone E, Level 2

(Accessible via Kent Ridge Wing, Zone C, Level 2, Lift Lobby C)

Operating Hours: 8.30am – 5.30pm (Mon to Fri), 8.30am – 12.30pm (Sat)

General Enquiry: +65 6772 5736

Appointment Line: +65 6772 2002

Fax: +65 6776 2102

Email: [ktpnucmi\\_appt@nuhs.edu.sg](mailto:ktpnucmi_appt@nuhs.edu.sg)

#### 9a Viva-University Children's Cancer Centre

Location: NUH Medical Centre, Zone B, Level 9

Operating Hours: 8.30am – 5.30pm (Mon to Fri)

Appointment Line: +65 6772 5030

Fax: +65 6872 4314

Email: [cbccappt@nuhs.edu.sg](mailto:cbccappt@nuhs.edu.sg)

#### NUH Children's Urgent Care Clinic @ Bukit Panjang

Location: Junction 10, 1 Woodlands Road, #01-22, Singapore 677899

Operating Hours: 9am – 11pm daily (including public holidays)

General Enquiry: +65 6219 1538

Email: [childrenucc@nuhs.edu.sg](mailto:childrenucc@nuhs.edu.sg)

Website: [www.nuh.com.sg/ucc](http://www.nuh.com.sg/ucc)

#### NUH Child Development Unit @ JMC

Location: Jurong Medical Centre, 60 Jurong West Central 3, Level 2, Singapore 648346

Operating Hours: 8.30am – 5.30pm (Mon to Fri)

Appointment Line: +65 6665 2530/2531

Fax: +65 6665 0158

Email: [cdu@nuhs.edu.sg](mailto:cdu@nuhs.edu.sg)

Website: [www.nuh.com.sg/cdu](http://www.nuh.com.sg/cdu)

#### NUH Child Development Unit @ Keat Hong

Location: Keat Hong Community Club, 2 Choa Chu Kang Loop, #03-01, Singapore 689687

Operating Hours: 8.30am – 5.30pm (Mon to Fri)

Appointment Line: +65 6769 4537/4637

Fax: +65 6665 0158

Email: [cdu@nuhs.edu.sg](mailto:cdu@nuhs.edu.sg)

Website: [www.nuh.com.sg/cdu](http://www.nuh.com.sg/cdu)

#### National University Hospital

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Tel: +65 6779 5555

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Website: [www.nuh.com.sg](http://www.nuh.com.sg)



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Information is correct at the time of printing (Sep 2021) and subject to revision without prior notice.

# About Renal Transplant Medications



## This booklet contains the following information about transplant medications:

- Name and purpose of the medications
- When and how to take them
- How to track the changes to the medications and doses
- Side effects of the medications
- Other important details and advice

The list of commonly prescribed post-transplant drugs in this booklet is not exhaustive. You may also be asked to start on other medications.

## How are the medications prescribed to me?

To achieve a more effective treatment with fewer side effects, we use a combination of three anti-rejection medications, also known as the triple therapy. It consists of one medication chosen from each of the three groups in the table below. This combination of medications is chosen for its function and allows you to take smaller, individual doses to achieve less overall side effects.

Group 1	Group 2	Group 3
Tacrolimus (PROGRAF®) or Cyclosporin (Neoral®)	Mycophenolate mofetil (CellCept®) or Mycophenolate sodium (Myfortic®)	Prednisolone

## Manage your medications

### • Be responsible

- You have a part to play in knowing your medications, the dosage and what they are for. Check with your transplant doctor if you are unsure why the medications are prescribed to you.



- Book a follow-up appointment with your transplant doctor if you are running out of medications. We recommend having at least a week's supply of medications at home at all times.



- Never skip a dose or change your medications unless specifically instructed by your transplant doctor.



- Always keep the medications with you.



### • Seek advice (Paediatric Renal Transplant Hotline: 9721 4710 or 6772 2405)

- Should you forget to take your medications or if you happen to vomit a dose, contact the transplant team for advice on what to do. Do not double your next dose intake.



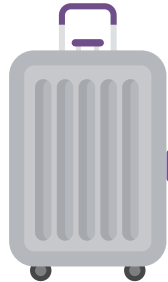
- Do not start on any new prescription or over-the-counter medication without first discussing with your transplant doctor.



- Many herbal medications, vitamins or supplements are said to improve your health by 'boosting' your immune system. These, however, may affect how your body absorbs or processes the immunosuppressants you are taking. Never consume any herbal medications, vitamins or supplements without first discussing with your transplant doctor.



- **Things to note when travelling**



Plan ahead and pack extra medications in case your trip lasts longer than originally planned. Many of your medications are available for collection at the pharmacies in NUH.

If you are travelling by plane, keep your medications in both the hand luggage and check-in luggage, in case either is misplaced or stolen.



It may be helpful to request for a letter from your transplant doctor that outlines your current medications in the event that you are queried by the immigration officer.



Remember to hydrate well and have fun!

- **Tip!**

Use a pill box to organise your medications.



**Do not make changes to your medications without consulting your transplant team.**

## Tacrolimus

**This is an immunosuppressive medication. It must be taken every day, unless advised otherwise by your transplant doctor.**

**Brand names: PROGRAF®, ADVAGRAF®**

Tacrolimus prevents kidney rejection. It comes in 2 different capsule forms and different doses. **Do take note that PROGRAF® and ADVAGRAF® are not the same drugs and cannot be taken interchangeably.**



PROGRAF® 1mg



PROGRAF® 0.5mg



ADVAGRAF® 1mg



ADVAGRAF® 0.5mg

### When do I take tacrolimus?

ADVAGRAF® is taken once daily.

PROGRAF® is taken twice a day. You should take your morning and evening dose about 12 hours apart every day. This ensures that you have the right amount of tacrolimus in your body to protect your new kidney from rejection.

### How do I know that the tacrolimus dose is enough to prevent my new kidney from rejection?

There is a minimum level of tacrolimus in the blood which prevents your immune system from rejecting the transplant. Tacrolimus levels are measured in the blood to allow us to give you the correct dose of the drug.

Your blood should be drawn about 12 hours after your last dose of PROGRAF® (or 24 hours after your last dose of ADVAGRAF®). Do ensure that your blood test is done before you take your morning dose of tacrolimus. Please inform us if the interval is less than 11 hours (or 23 hours) between your last dose of medication and blood testing, e.g. if tacrolimus is to be taken at 9am, please make sure the blood is drawn between 8.30am and 9am. Do not forget to take the medication after your blood test.

**Taking the right amount of tacrolimus is crucial as too much of it may damage your new kidney and too little may cause a rejection.**

### How do I take tacrolimus?

Swallow the capsule whole. **Do not cut, crush or chew it. Do not take tacrolimus with grapefruit, pomegranate, pomelo or their juices as doing so may affect the level of tacrolimus in your blood.** You may take tacrolimus with or without food, as long as you do it the same way every time, e.g. if you choose to take tacrolimus with food, you should always take it with food.

Missed or late doses can affect your kidney even if you do not feel different. It is important to call the Paediatric Renal Transplant Hotline (9721 4710 or 6772 2405) for advice if you missed a dose or took too many doses at one time.

### What are the side effects of taking tacrolimus?

You may experience the following symptoms after taking tacrolimus:

- Headache
- Hand tremor
- Hair loss
- High blood sugar
- Numbness or tingling at the fingers and toes
- Possible upsetting of the digestive system
- High blood pressure
- Sleep pattern disturbance
- High cholesterol
- Increased risk of infection
- Increased risk of skin cancer
  - Taking immunosuppressive medication on a long term basis will increase the risk of skin cancer. Minimise sun exposure on your skin. Apply sun block with SPF 50 on your face and areas of your body that are exposed.

### Taking tacrolimus with other medication

Before you take any of the following medications with tacrolimus, please inform your transplant team via the Paediatric Renal Transplant Hotline (9721 4710 or 6772 2405).

Please check the generic name of your medicine if you are not familiar with the brand name. For example, ibuprofen is sold under more than 50 different brand names.

#### Antibiotics

Macrolides: Erythromycin, Clarithromycin (Klacid®), Spiramycin, Metronidazole (Flagyl®) Sulphonamides, Azithromycin (Zithromax®), Ciprofloxacin (Ciprobay®), Cotrimoxazole (Bactrim®) Vancomycin, Imipenem

#### Anti-tuberculosis

Isoniazid, Rifampicin (Rifampin®)

#### Antifungal

Ketoconazole Amphotericin B, Fluconazole, Itraconazole

#### Antiemetic (Anti-vomiting)

Metoclopramide (Maxolon®), Cisapride (Prepulsid®)

#### Anti-ulcer (Gastric medication)

Cimetidine (Tagamet®), Aluminium hydroxide

#### Anticonvulsant (Fit medication)

Phenobarbitone Carbamazepine, Phenytoin (Dilantin®)

#### Lipid-lowering agents

Simvastatin (Zocor®), Lovastatin, Atorvastatin (Lipitor®)

#### Non-steroid anti-inflammatory drugs (NSAIDs)

Aspirin (Cardipirin®, Disprin®), Ibuprofen (Proris®), Ketoprofen (Oruvail®), Celecoxib (Celebrex®), Etoricoxib (Arcoxia®), Mefenamic acid (Ponstan®), Diclofenac (Voltaren®), Ketorolac (Toradol®), Indomethacin (Indocid®), Piroxicam (Feldene®)

## Mycophenolate

**This is an immunosuppressive medication. It must be taken every day, unless advised otherwise by your transplant doctor.**

**Brand names: CellCept®, Myfortic®**

Mycophenolate (MMF) prevents kidney rejection. It comes in two different forms and doses. **Do take note that CellCept® and Myfortic® are not the same drugs and cannot be taken interchangeably.**



CellCept® 500mg



CellCept® 250mg



Myfortic® 360mg



Myfortic® 180mg

### How and when do I take MMF?

MMF is taken twice a day.

We suggest that you take MMF with food as it may cause stomach irritation when taken on an empty stomach. You should take MMF the same way every time, e.g. if you choose to take MMF with food, you should always take it with food.

Missed or late doses can affect your kidney even if you do not feel different. It is important to call the Paediatric Renal Transplant Hotline (9721 4710 or 6772 2405) for advice if you missed a dose or took too many doses at one time.

### What are the side effects of taking MMF?

- Headache
- Hand tremor
- Hair loss
- High blood sugar
- Numbness or tingling at the fingers and toes
- High blood pressure
- Sleep pattern disturbance
- High cholesterol
- Increased risk of infection
- Nausea or vomiting\*
- Diarrhoea or constipation\*

- Drop in the number of white blood cells (which fight infections)\*\*
  - Blood tests are done every month to check for this, especially in the first year of transplant. You will be advised if this happens. It is important to see a doctor if you have a fever, as you may need antibiotics to help fight the infection when your white blood cells are low in number.
- Possible birth defects
  - Please inform your doctor if you intend to get pregnant. Do not take this medication while pregnant.
- Increased risk of skin cancer
  - Taking immunosuppressive medication on a long term basis will increase the risk of skin cancer. Minimise sun exposure on your skin. Apply sun block with SPF 50 on your face and areas of your body that are exposed.

## Prednisolone

**This is an immunosuppressive medication. It must be taken every day, unless advised otherwise by your transplant doctor.**

Prednisolone helps to prevent and treat rejection of the transplanted kidney. It is similar to cortisone which is one of the natural steroids produced by the body. The tablets come in two different doses, 1mg and 5mg.



Prednisolone 5mg



Prednisolone 1mg

### How and when do I take prednisolone?

Prednisolone is taken once a day in the morning. It is best to take prednisolone with food. Do not stop the intake of prednisolone abruptly. It has to be a gradual cessation of intake.

\* These side effects are commonly seen.

\*\* This effect is less common but important to note.

### What are the side effects of taking prednisolone?

- Increased risk of infection, weight gain and appetite
- Muscle weakness
- High cholesterol, blood pressure and blood glucose level
- Acne, oily skin, mood swings, anxiety, bone loss
- Cataracts and glaucoma
- Stomach ulcer
- Changes in moods; you may feel very low, or energetic, or angry and irritable
- Increased risk of skin cancer
  - Taking immunosuppressive medication on a long term basis will increase the risk of skin cancer. Minimise sun exposure on your skin. Apply sun block with SPF 50 on your face and areas of your body that are exposed.

The side effects of prednisolone is worse with higher doses. The dose will be tapered over the first few months after transplant to minimise the side effects.

## Sulfamethoxazole-Trimethoprin



**Brand names:** Bactrim®

Sulfamethoxazole-Trimethoprin prevents bacterial infections, especially lung infections.

### When do I take sulfamethoxazole-trimethoprin?

It is taken once a day on alternate days.

### What are the side effects of taking sulfamethoxazole-trimethoprin?

- Loss of appetite, nausea, vomiting
- Painful or swollen tongue
- Dizziness
- Tiredness
- Sleep problems
- Bruising or bleeding, pale appearance (anaemia), jaundice\*\*

## Nystatin



**Brand names:** Mycostatin®

Nystatin is an antifungal medicine. It prevents fungal infections like thrush in your mouth and the back of your throat. It comes in the form of a yellow liquid.

\* These side effects are commonly seen.

\*\* This effect is less common but important to note.

### How do I take Nystatin?

It is taken by gargling in the mouth before swallowing. Do not consume food for 20 minutes after.

## Valganciclovir



**Brand names:** Valcyte®

It prevents you from getting viral infections from Cytomegalovirus (CMV) after a kidney transplant. It is also used to treat CMV infections.

### When do I take valganciclovir?

As valganciclovir is removed from the body by the kidneys, the dose will depend on your kidney function after the transplant. Dose timings can range from twice daily to twice a week.

### How do I take valganciclovir?

It is best to swallow this medication whole. The transplant team or pharmacist will advise you on how to handle the medication if you need to cut the tablet.

### What are the side effects of taking valganciclovir?

- Abdominal pain\*
- Diarrhoea\*
- Nausea and vomiting\*
- Pale appearance, easy bruising or easy bleeding
- Drop in the number of white blood cells (which fight infections)\*\*
  - Blood tests are done every month to check for this, especially in the first year of transplant. You will be advised if this happens. It is important to see a doctor if you have a fever, as you may need antibiotics to help fight the infection when your white blood cells are low in number.
- Possible birth defects
  - Please inform your doctor if you intend to get pregnant. **Do not** take this medication while pregnant.
- Numbness, tingling, pain or weakness of the hands and feet
- Difficulty sleeping

Inform the transplant team immediately if you notice any strange bruising, bleeding or blood in your stools as valganciclovir may cause gastrointestinal bleeding.

The information provided in this publication is meant purely for educational purposes and may not be used as a substitute for medical diagnosis or treatment. You should seek the advice of your doctor or a qualified healthcare provider before starting any treatment or if you have any questions related to your health, physical fitness or medical condition.