

DISCHARGE ADVICE FOR PATIENTS AFTER A LIVER TRANSPLANT

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Please note that the liver transplant coordinator on-call number is also meant for attending to emergency liver transplant operation.

For all non-emergency matters, kindly contact us only during working hours Monday – Friday, 0800hr to 1730hr

Going home

Everyone looks forward to going home and the recovery process for each individual is different. We hope this information guide will help you to gain the confidence and better understanding of the post-transplant care that you need to return to everyday life safely. Prior to your discharge, you will be meeting different healthcare professionals such as pharmacist, specialist nurse, dietician and liver transplant coordinator, ensuring that you and your family are aware of the key information that you should know once you are discharged from hospital.

Follow-up Clinic

The purpose of regular follow-up is to review your progression through physical examination and investigations such as blood tests. During your clinic visit, doctors will be checking for signs of rejection and any change in your medical condition from the last review. They will also be monitoring the level of your immunosuppressants through blood test. Frequent clinic appointments and blood tests are necessary at the initial part of your post-transplant journey. The interval between appointments would gradually be lengthened once you are deemed clinically stable.

Exercise

Your wound would take 6-8 weeks to heal while your muscles and nerves would take a longer time to get back to normal. During this time, you should avoid strenuous physical activities to avoid injury. You may want to consider gentle exercise to regain your strength and muscle tone (e.g. walking). In the long term, a liver transplant will not prevent you from participating in any physical activity or sport that you enjoy.

Alcohol

It is important to avoid alcohol after your transplant as alcohol can cause liver disease. If alcohol has been the cause of your liver disease, lifelong abstinence is necessary to safeguard your future health.

Sex

There is no medical reason that you cannot resume sexuality activity once you feel well enough. However, you may find that it takes some time for your sex drive to return and this is normal. While practising safe sex is important for everyone, it is especially important for transplant patients because of the reduced immune system.

Contraception/Pregnancy

Female patients of child-bearing age must use appropriate birth control methods as pregnancy should be avoided for at least a year after the liver transplant. Please consult your transplant team if you have any queries.

Driving

You may start to drive about six weeks after your discharge from hospital unless you are still experiencing discomfort caused by the safety belt.

Returning to work

You are likely to remain off work for at least three months after your transplant but this would depend on your recovery and the nature of your occupation.

Travel

There is no reason to stop you from travelling as long as you feel well enough, however, but you should discuss your travel plans with the Transplant Physician for advice on health risks, vaccinations and medication etc.

General Health Screening

Prevention is better than cure. It is essential to follow advice on cancer screening for example skin protection, cervical screening, breast or testicular self-examination.

Who do you contact if you have questions?

Should you have any questions or concerns about any aspects of liver transplantation that you wish to discuss with a member of the transplant team, please contact your Transplant Coordinator who will assist you.

Clinic Follow-up

You will have to attend follow-up clinics for the rest of your life but interval of clinic visits will be longer as you get better.

Why do I have to attend clinic?

The purpose of attending clinic is to monitor the function of your new liver and detect any problems as soon as possible. Clinic visits are also an opportunity for you to ask any questions that you or your family may have.

What happens in the clinic?

The Liver Transplant Team will:

- discuss your current health
- check your weight and blood pressure
- examine your wound
- do a physical examination
- take blood tests to check your liver function, kidney function and blood count
- take a blood test to check your blood Tacrolimus / Cyclosporine level
- check for any signs of side effects from your medication
- check for any signs of rejection or infection

Always omit your morning dose of tacrolimus/cyclosporine before coming to clinic. Bring the medication along with you and take it after the blood test.

Re-admission to the Transplant Ward

If you are unwell, we may have to re-admit you to the ward directly from clinic for further investigations and treatment.

If your blood results are abnormal, we may contact you if there are changes to your medication or if you need to be admitted to the hospital for further investigation or treatment.

How often will I attend clinic?

The following table is a guide but your follow-up visits will depend on your rate of recovery.

Discharge to 6 weeks	1 - 2 weekly	Transplant Clinic	Thursday- am
6 weeks - 3 months	2 weekly	Transplant Clinic	Thursday- am
3 months - 6 months	4 - 6 weekly	Transplant Clinic	Thursday- am
6 months - 1 year	every 2 months	Transplant Clinic	Thursday- am
After 1 year	3- 6 monthly	Transplant Clinic	Thursday- am

Prevention and Screening

- Skin Protection
- Screening Programs
- Osteoporosis
- Alcohol abstinence
- Stop Smoking

Your immunosuppressant medicines reduce your body's ability to detect and destroy abnormal cells that may increase your risk of developing certain types of cancer. It is important to follow general health advice that may help prevent a developing cancer or ensure the early detection of malignant changes.

Skin protection

Exposure to the sun can damage your skin and increase your risk of developing skin cancer. Because of your anti-rejection medication your body is less able to protect itself against the damaging effects of the sun on your skin. You **MUST** take sensible precautions against excessive exposure to the sun and avoid sunburn:

- Wear long-sleeved shirts and a wide-brimmed hat
- Avoid sitting out in the sun between 11am and 3pm
- Sit in the shade when possible
- Always use a sunscreen with a sun protection factor (SPF) of 15 or more - whether out in the sun at home or abroad
- Check with the transplant physician if you notice any new or changing moles or unusual spots on your skin.

Screening programme for cervical, breast and testicular cancer

The detection and treatment of cervical abnormalities through screening programmes can prevent cervical cancer developing. All women aged between 20 and 64 years should have a cervical smear test every year.

All female patients must attend the O&G clinic for annual check-up, including a mammogram and cervical PAP smear. Your Liver Transplant Coordinator can arrange this for you. Breast cancer is rare in young women but becomes increasingly common from the age of 35 onwards. You should learn to be 'breast aware' from around your mid 20's onwards. You should know what your breasts are normally like by regular self-examination which involves checking the appearance of the breasts, feeling for any lumps or thickening, noticing any changes in the shape of the nipple or discharge from the nipple. If you notice any change, please inform your physician without delay. Women aged 50 - 64 are encouraged to attend the breast screening programme and we would strongly recommend that you do this.

Testicular cancer is quite rare and the cause is unknown but it can be treated if detected early. All men from puberty onwards should do a regular simple check of their testicles. This will help you to know what is normal for you and make it easier for you to detect any changes such as swelling, a hard lump developing or pain around the testicles.

Osteoporosis

Osteoporosis is the gradual thinning and weakening of the bones that increases with age. Osteoporosis can cause pain in the bones, often in the back and increase your risk of bone fractures. It is common in people who have had long-standing liver disease and may become worse temporarily after a transplant because of treatment with steroids (prednisolone). Other risk factors include:

- early menopause or prolonged absence of periods earlier in life
- family history of osteoporosis
- thin body type
- lack of exercise
- smoking
- high alcohol intake
- diabetes

How can I prevent osteoporosis?

Diet and exercise are the main ways of preventing osteoporosis:

Your diet should include plenty of calcium rich foods and vitamin D - the dietician can give you advice on what to eat to increase your calcium intake

Keep active - exercise appears to reduce bone loss and may stimulate new bone growth. Outdoor exercises such as walking and cycling are especially good

In addition you should:

- protect your back by lifting heavy objects correctly and avoiding twisting your body
- stop smoking
- reduce your caffeine intake

If you are at risk of developing osteoporosis or if you have evidence of thinning of the bones, the doctors at the Transplant Centre may refer you for a special scan to measure the density of your bones (a DEXA scan) and recommend medical treatment

Alcohol Abstinence

Because alcohol is processed in the body by the liver, it is recommended to remain abstinent from alcohol after their liver transplant.

Stopping Smoking

Cigarettes are the number one cause of death in Singapore through problems like heart disease and lung cancer. Cigarette smoking after a liver transplant may limit the extent of your recovery and return to fitness. By smoking, you are:

- increasing your risk of chest infection
- increasing your risk of lung cancer
- increasing your risk of high blood pressure
- increasing your risk of having a heart attack or stroke

You are not to resume smoking after the Liver Transplant.

Anti-rejection Medications

- How will my body cope with a new liver?
- What are the possible side effects?
- What other medicines do I have to take?
- Can I take any other medicines?
- What else do I need to know about medicines?

How will my body cope with a new liver?

The immune system is our body's natural defence mechanism. It is programmed to recognise and destroy anything unfamiliar. This includes the cells of a transplanted liver as well as the bacteria and organisms that cause infection.

Following a liver transplant, specific drugs are needed to prevent the immune system from rejecting the new liver. These are called **immunosuppressant** and you will have to take them every day for the rest of your life.

A combination of the following immunosuppressant medications is prescribed:

Tacrolimus (Prograf)

Prednisolone

MMF (Cellcept)

Cyclosporine (Neoral)

Azathioprine (Imuran)

All of these drugs will increase your risk of infection. During the first few months after transplantation the need for immunosuppressant is at its highest. This is the time when you are at most risk from infection. The risk decreases when the doses are reduced after several months but it will always remain sensible to avoid close contact with people with infections e.g. chicken pox, flu. You should also avoid eating any form of raw food (e.g. salads). You will be monitored very closely for signs of infection and treated if necessary.

Regular blood samples will determine the level of these drugs and the daily dose will be changed if required by the Transplant physician. If the levels are too low the risk of rejection is greater and the doses are increased. If the levels are too high you may experience more side effects and the doses are reduced. You must never alter the dose of your immunosuppressant by yourself.

Failure to take these medicines as prescribed can result in rejection of your new liver. What are the possible side effects?

Like most medicines, immunosuppressant has some unwanted side effects. Although a medicine is known to cause certain side effects, it does not necessarily mean that you will experience all or any of them. Other medicines are available to help treat troublesome side effects.

The following side effects may be experienced:

Cyclosporine

High blood pressure
Headaches
Increased /unusual hair growth
Sore or swollen gums
Shaky hands

Tacrolimus

Increased blood sugar/ diabetes
Headaches
Visual problems
Shaky hands
Aching joints

Prednisolone

Mood changes
Increased appetite
Weight gain
Indigestion
Irritation of stomach lining
Fragile skin
Thinning of the bones (osteoporosis)

MMF

diarrhoea
nausea vomiting
headache

Azathioprine

Unusual bleeding or bruising
Hair loss
Nausea and vomiting
Increase risk of skin damage by sun exposure

What other medicines do I have to take?

For the first three to six months after transplantation you need to take the following medicines:

Antibiotics - to reduce the risk of bacterial infection

Antifungal liquid- to reduce the risk of fungal infection in your mouth

Anti-acid agents - to reduce the risk of stomach ulcers and heartburn

Any other medicines that you have to take will be prescribed for you depending on your symptoms.

Can I take any other medicines?

Please discuss your current medication with the pharmacist if you need to buy "over the counter" medicines for minor ailments e.g. paracetamol for a headache.

Your GP may wish to contact your Liver Transplant Coordinator before giving you any new prescription medicines.

If you have any concerns about your medicines do not hesitate to ask a member of the team.

Understanding Rejection and recognizing it

Rejection is your body's way of recognizing your donated liver as foreign and attacks it. If rejection is diagnosed and treated early, it can usually be reversed. Rejection can happen any time. You may be feeling perfectly fine while having rejection. It can be acute (sudden onset) or chronic (persisting for a long time). Having rejection does not always equate to losing your new liver, but that does not mean that you can ignore it.

To aid early detection of rejection:

- Have your lab tests done as recommended by the transplant team.
- Take your medications on time as prescribed.
- Keep a lookout and report signs of rejection immediately.

Signs of liver rejection

- Abnormal results for liver function tests
 - total bilirubin, ALT, AST, GGT
- Fatigue
- Fever
- Abdominal pain or tenderness
- Dark coloured urine
- Light coloured stool
- Yellow eyes
- Yellow skin
- Ascites (fluid in the abdomen)
- Itching

Elevated laboratory results can indicate a possible rejection. Often, a liver biopsy is required to confirm the rejection. Other factors such as infection may also result in elevated liver enzymes. For this reason, treatment of rejection should only be managed by your transplant physician.

Infection

Your immunosuppressant medications, which are necessary to prevent rejection of your transplanted liver, will reduce your immunity. If you have any signs or symptoms of infection listed below, you should seek medical attention immediately and inform the transplant coordinator.

Signs and symptoms of infection

- Blisters
- Blood in the urine
- Burning sensation when urinating
- Chills
- Clammy skin
- Confusion
- Cough
- Decreased appetite
- Diarrhoea
- Difficulty swallowing
- Ear ache
- Fatigue
- Fever
- High white blood cell count
- Joint pain
- Lethargy
- Pus-like drainage
- Rash
- Shortness of breath
- Skin redness
- Sore throat
- Sputum production
- Swollen glands
- Vaginal discharge
- Vomiting
- Weight loss
- White plaque in mouth
- Any symptom you are unsure of

Preventing Infection

Although immunosuppressant medications reduces your ability to fight infections, this does not mean that you should avoid going out. By making some changes to your lifestyle, you can significantly reduce your risks!

Some actions you can take to decrease your risk of infection include:

- Maintain your general health with proper nutrition, rest, exercise and stress management.
- Avoid people with infections, especially those with active infections such as chicken pox, mumps, measles, hand, foot and mouth disease, tuberculosis, colds or flu.

- Take your medication as prescribed to prevent infection.
- Take the recommended antibiotics before and after dental works or other invasive procedures.
- Avoid composts piles, construction sites, decaying fruits and vegetables.
- Wear shoes when walking outside to prevent exposing cuts on feet to micro-organisms in soil.
- Do not receive live vaccinations. Avoid anyone who has received an oral polio vaccine for 8 weeks. You may call your transplant coordinators to check if the vaccine is safe.
- Get tetanus shots as needed (animal bites, dirty cuts).
- Do not share razors, toothbrushes or eating and kitchen utensils.
- Practice safe sex.

Nutrition is a very important part of your recovery after your transplant.

Eating a well-balanced diet after transplant will help with the healing of your surgical wounds. Usually, you will not need to follow the same dietary restrictions that were necessary before your transplant. In some cases, however, the side effects of your medications may cause other temporary restrictions to be necessary.

For example, certain medications e.g. steroids and tacrolimus, can cause your blood sugar to rise. This can be identified by regular blood tests at the transplant clinic and controlled by dietary intervention. Our dietician will advise you on an appropriate dietary regimen when needed.

As your immune system will be suppressed, you will be at risk of infections which includes food-borne illnesses. Your dietician will provide you information concerning food safety at home, so that you can protect yourself from unnecessary infections.

Food such as grapefruits, pomelos and pomegranates should be avoided as they will interact with your immunosuppressant. In general, you should continue to eat healthily and introduce appropriate exercises in your lifestyle.