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Preface

Congratulations on receiving your liver transplant at UCLA Medical Center. You may now look forward to regaining your health and returning to a productive life. To ensure your success in caring for your new liver, it is very important that you read and understand the information presented in this booklet prior to your discharge from the hospital. Your in-house liver transplant coordinator or outpatient case manager will conduct at least one teaching session with you before you are discharged to review the information in this manual and to assist you in fully comprehending it. It is required that at least one family member or significant other be present for the teaching session. You are encouraged to write down any questions that arise pertaining to the material before you meet with your coordinator or case manager. You will not be discharged from the hospital until you and at least one family member or significant other have read this booklet and have participated in the teaching session. Success after your liver transplant is dependent on your understanding and compliance with regard to the topics in this booklet, and on good communication with your coordinator and case manager.
**HOW TO CONTACT YOUR TRANSPLANT CENTER AFTER DISCHARGE**

Upon discharge from UCLA Medical Center, you will be assigned to an outpatient case manager who will follow your progress and will see you at your clinic visits. It is your outpatient case manager, not your in-house coordinator, who will be your link to UCLA and your contact person for any problems or questions you may have after you leave the hospital. Please refer to the telephone list to determine who your outpatient case manager will be, based on the first letter of your last name.

During business hours (8 a.m. to 5 p.m.), you will call your outpatient case manager at the phone number listed on your phone list for all non-urgent concerns. Your call will be returned within 24 hours. If you have an urgent problem or emergency that requires immediate attention during business hours, you must contact your outpatient case manager by calling the UCLA page operator at *(310) 825-6301*, and asking for your outpatient case manager to be paged. If your page is not returned within 15 minutes, you must call the page operator again and repeat the page. **DO NOT PAGE YOUR CASE MANAGER FOR NON-URGENT OR NON-EMERGENCY SITUATIONS.**

During non-business hours (nights, weekends, and holidays), there is always a liver transplant coordinator on call for emergencies and urgent problems. The coordinator can be reached by calling the UCLA page operator and asking the operator to page the liver transplant coordinator on call. Your page will usually be answered within 15 minutes. If it is not, you should call back the page operator and repeat the page. **YOU SHOULD NOT PAGE A COORDINATOR FOR NON URGENT ISSUES** such as medication refills, making, changing, or canceling a clinic appointment, or finding out about laboratory test results. These questions should be dealt with during business hours by calling (not paging) your outpatient case manager.

If you are hospitalized at a facility, you or your family member should notify your case manager (or the on-call coordinator during non-business hours) immediately so that we can guide your medical management and involve the transplant team in your care.
POSSIBLE COMPLICATIONS

Complications are most common the first year post transplant, and most patients are hospitalized for a complication at least once during their first post-operative year. Rejection and infection are the two most common complications you may encounter after your liver transplant. Your ability to recognize the signs and symptoms of rejection and infection and to promptly alert your case manager or the on call coordinator should these symptoms arise will increase your chance for a successful outcome. With early recognition and treatment, most episodes of rejection and infection resolve during a brief hospital stay.

1. Rejection

Your body's immune system is designed to destroy foreign cells such as bacteria and viruses, which could be harmful to you. Unfortunately, your immune system cannot distinguish between a foreign bacteria cell and the foreign cells that make up your liver. Rejection occurs when your immune system is triggered to attack and destroy cells within your "foreign" liver. As the liver cells die, they release proteins called enzymes into the bloodstream. We can measure the levels of these enzymes when we analyze your blood. If your liver enzyme levels are high, it alerts us that you may be experiencing rejection.

Approximately 50% of liver transplant recipients experience at least one episode of rejection. Even though you are taking medications to prevent rejection, your immune system can still attack your new liver. If you do not take your medication properly, you have a higher chance of experiencing rejection. Over time, your liver becomes less "foreign" to your immune system, but you can still experience rejection many years after transplantation.

If discovered early, rejection rarely leads to retransplantation and can usually be successfully reversed by adjusting your immunosuppressants or by treating you with more powerful immunosuppressants during a five to seven day hospital stay. Rejection can be asymptomatic (without signs or symptoms), which is why regular blood draws to measure your liver enzymes are extremely important.
Common signs of rejection include:
  ** fever of 100.5 degrees Fahrenheit or higher  
  ** fatigue  
  ** swelling or soreness over the right side of your abdomen, where your liver is located.  
  ** jaundice (yellow skin)  
  ** dark urine (color of tea or coca-cola)  
  ** pale or clay-colored stool

You must immediately notify your case manager or the on-call coordinator if any of these signs are observed. You may be scheduled for blood tests and a liver biopsy after notifying us of your symptoms.

2. Infection

Infections are usually caused by tiny microorganisms called bacteria, fungi, viruses and protozoa. Because you are immunosuppressed, you have an increased risk of acquiring infections from these organisms. Some of the infections you might get are called opportunistic infections and are caused by organisms that lived comfortably in your body and did not produce illness before your transplant. CMV and pneumocystis carinii are two opportunistic organisms that cause infections in transplant recipients. You are taking prophylaxis (medications preventing infection) to reduce your risk for opportunistic infection.

You can help to prevent infection by avoiding close contact with people having a cold or the flu, washing your hands before touching your face, and treating all minor cuts and abrasions with antibiotic ointment. Other tips in preventing infection are outlined in the "Lifestyle and Activity" section of this booklet.

Any signs or symptoms of infection should be immediately reported to your case manager or the on call coordinator so that prompt work up and treatment can be initiated. You are required to check your temperature once a day for the first month after discharge and whenever you don’t feel well. The following list presents common signs and symptoms of infection:

  ** fatigue  
  ** fever of 100.5 degrees Fahrenheit or higher  
  ** redness, swelling and/or cloudy or foul smelling discharge from any wound Incision, and or drain site
** persistent cough with or without difficulty breathing
** rash or lesions on your skin, in your mouth, or on your genital area
** burning or frequency of urination
** diarrhea, **five or more liquid stools**, persisting over 24 hours without improvement
** vaginal or penile discharge

Your temperature should be monitored daily for one month following your liver transplant. You should monitor your temperature every morning or when you are not feeling well.
If you have a fever, do not mask it by taking Tylenol or other pain medications containing Tylenol. You should immediately notify your case manager or the on call coordinator for any fever of 100.5 degrees Fahrenheit or higher.
MEDICATIONS

1. Immunosuppressants

For the rest of your life, you may take one to three immunosuppressants to prevent rejection of your liver. Without these medications you will reject your liver and could lose it due to chronic rejection. Immunosuppressants weaken your immune system by interfering with the function of your white blood cells. They prevent your white blood cells from attacking and destroying your liver. This results in an increased risk for infection, because your white blood cells will not be as likely to attack bacteria, viruses or fungi within your body. The most common immunosuppressants you may encounter are described below. Various combinations of these drugs are effective in preventing (or reversing) rejection. Your transplant physicians will decide which regimen is best for you.

a. Prograf (Tacrolimus, FK-506)

Prograf comes in 5 mg (pink), 1 mg (white) and 0.5mg (yellow) capsules. It is taken twice a day, 12 hours apart, usually at 8 a.m. and 8 p.m. It is 100 to 400 times stronger than Cyclosporine A and is therefore given in much smaller doses. It is never given concurrently with Cyclosporine A due to the increased risk of kidney damage when both drugs are taken together.

The following list describes possible side effects you may experience while taking Prograf.

**Effects on Nervous System**
- **Tremors**
- **Headaches**
- **Seizures**
- **Numbness, tingling and/or pain in extremities** (arms, legs, hands, feet)
- **Numbness around mouth**
- **Change in taste of food**
- **Confusion**
- **Drowsiness**
- **Difficulty speaking**

**Effects on Stomach and Intestines**
- **Diarrhea**
- **Nausea**
- **Decreased appetite**

**Effects on Kidneys**
- **Increased potassium in bloodstream**
  Because Kidneys do not filter out enough potassium, this can lead to an irregular heartbeat
- **High blood pressure**
- **Fluid retention**
- **Increased magnesium loss via urine**
Other Side Effects (Prograf continued)

** Hot flashes  
** Itching  
** Hair loss  
** Increased risk of infection  
** High blood sugar (about 20% of patients who take Prograf develop high blood sugar, and half of those patients will require insulin injections to control their blood sugar levels). If you are already diabetic, you may require more insulin while taking Prograf. If you are not diabetic, but have other blood relatives who are, you may develop diabetes (high blood sugar) while taking Prograf.

b. Cyclosporine (Sandimmune/Neoral/Sandimmune Microemulsion)

Cyclosporine A and the latest form, Neoral are similar medications. The difference between them has to do with how they are absorbed from your intestines into your bloodstream. Cyclosporine A requires bile for absorption. Neoral does not require bile for absorption and is never given intravenously.

Both Cyclosporine A and Neoral come in 100mg and 25 mg capsules. They should be taken twice a day, 12 hours apart, usually at 8 a.m. and 8 p.m. If you take Cyclosporine A or Neoral, you will not receive Prograf due to the risk of kidney damage when both drugs are taken together.

Patients who take Cyclosporine A or Neoral may experience the following side effects:

Nervous System (same effects as Prograf)

Effects on Kidneys (same effects as Prograf)

Other Side Effects

** Enlargement or overgrowth of gums  
** Increased hair growth (often on face, arms, and legs)  
** Elevated blood sugar (not as common as with Prograf)  
** Increased risk of infection  
** Elevated cholesterol levels  
** Hot flashes  
** Sweating  
** Oily skin  

** Muscle and joint pain  
** Diarrhea  
** Runny nose
c. Prednisone

Prednisone is a steroid that reduces inflammation in your tissue and your new liver. All liver transplant patients take Prednisone with their other medications to prevent liver rejection. Prednisone causes breakdown of muscle, bone, and tissue (unlike the steroids that athletes sometimes take to build muscle) therefore, it is carefully monitored. Upon discharge from the hospital, most patients take four 5mg tablets (20 mg total) every morning. Over the next three to four months, your dose will be reduced by 2.5 mg every two to four weeks, as long as your liver is functioning well, until you take only 2.5 mg to 5 mg per day. Some patients who have experienced no rejection during the first year after transplantation are actually able to discontinue their Prednisone under the supervision of their transplant physicians. Never discontinue any medication without consulting your transplant physicians.

Prednisone can cause insomnia and should be taken in the morning to prevent you from having difficulty sleeping at night. It should also be taken with food in your stomach to prevent stomach irritation and ulcers. Side effects improve or disappear as the dose of Prednisone is reduced. The following list describes possible side effects you may experience while taking Prednisone:

Side-Effects
** insomnia
** mood swings (irritability, emotionality)
** slow wound healing
** weak muscles/muscle loss
** weak bone/bone loss (osteoporosis)
** facial puffiness
** fluid and salt retention (bloating, swollen ankles)
** increased appetite/weight gain
** Blurry vision/cataracts (usually occur after long-term Prednisone use)
** Easy bruising/thin skin
** High blood pressure (due to sodium and fluid retention)
** High blood sugar (diabetes)
** Acne
** Ulcers in stomach/stomach irritation
** Increased risk of infection
d. **Cell-Cept (Mycophenolate Mofetil) or Myfortic (Mycophenolate Mofetil EC)**

Patients are usually given Cell-Cept if they have had or are presently experiencing rejection that has not responded to other antirejection medications, or if they are experiencing intolerable side effects, such as renal insufficiency or neurological side effects from Prograf, Cyclosporine A or Neoral. Taking Cell-Cept allows us to decrease your dose of these other immunosuppressants while continuing to effectively prevent liver rejection. You will never take Cell-Cept and Imuran at the same time because they are very similar and can cause your white blood cell count to drop too low, increasing your risk for infection. If you experience severe diarrhea or nausea and vomiting, you may be changed to “Myfortic” (**Mycophenolate Mofetil EC**). The following list shows side effects, which may be caused by Cell-Cept:

**Side Effects**
- **Nausea**
- **Diarrhea**
- **Poor appetite**
- **Increased risk for certain cancers affecting the lymph nodes and blood cells**

**Increased risk for infection**
**Low white blood cell count**

**e. Sirolimus (Rapamune)**

Patients may be given Sirolimus if they are not able to tolerate Prograf, Cyclosporin A, or Neoral or it may be given in conjunction with Prograf, Cyclosporin A or Neoral at lower doses. Sirolimus comes in 1mg capsules or 1mg/cc elixir (liquid) and is only given once a day. The following list shows side effects you may experience with Sirolimus.

**Side Effects**
- **High blood pressure**
- **Rash**
- **Acne**
- **Anemia**
- **Joint pain**
- **Diarrhea**
- **Slow wound healing**
- **Increased cholesterol and triglyceride level**
- **Low potassium in bloodstream**
- **Low platelet level**
f. General Rules About Taking Your Immunosuppressants (Anti rejection Medications)

1. Absorption

Immunosuppressants are absorbed within your intestines. Any situation that impairs the absorption of your immunosuppressants, such as persistent vomiting or diarrhea, increases your risk for liver rejection. Grapefruit juice should be avoided for two hours before and after taking Prograf.

If you vomit the contents of your stomach within one hour of taking your immunosuppressant medications, you must repeat the doses and take them again. If you vomit more than one hour after taking your medications, they have most likely been absorbed and do not need to be repeated. If you continue to vomit and are unable to hold down your medications, you must page your case manager or the on-call coordinator and notify him/her immediately.

In addition, if you experience diarrhea (four to five watery bowel movements in a 24-hour period), you must immediately notify (page) your case manager or the on-call coordinator. Diarrhea can be a side effect of some of your medications or could indicate that you have an intestinal infection that should be treated.

2. Blood Levels

Whenever you come to the lab or clinic to have blood tests performed, you must wait until after the blood is drawn to take your Prograf, Cyclosporine A, Neoral or Sirolimus. We measure the trough levels (valley level or lowest level in a 12-hour period) of these medications in your bloodstream. If you take these medications prior to the blood draw, your trough level will not be accurate. The amount of Prograf, Cyclosporine A, Neoral, or Sirolimus you take may change from week to week, and the dose that we prescribe for you is determined by how high or low your trough level is. Therefore, it is crucial that you wait until after the blood draw to take these medications. Always bring your Prograf, Cyclosporine A or Neoral, or Sirolimus with you to the lab/clinic so you can take your dose after your blood is drawn.

If you accidentally take your Prograf, Cyclosporine A or Neoral, or Sirolimus before your blood is drawn, do not proceed with the blood draw. You must reschedule your blood draw for the next day.
3. Missed Doses

Missing even one dose of your immunosuppressants can trigger a rejection episode. Therefore, if you miss a dose of any of your immunosuppressants, you must notify your outpatient case manager (or the on-call coordinator). Your case manager or coordinator may request that you have blood drawn to check the level of Prograf, Cyclosporine A or Neoral, or Sirolimus in your bloodstream and to ensure that your liver is working well. You should NEVER double up on any of your immunosuppressants to attempt to make up for missed doses. Doubling up on doses can result in the occurrence of potentially life-threatening side effects.

4. Late Doses

If you take your Prograf, Cyclosporine A or Neoral late, you should always leave at least eight hours between your current dose and your next dose to minimize severe side-effects. For example, if you normally take Prograf at 8 a.m. and 8 p.m., but today you forgot to take your morning dose until 1 p.m., you should wait until at least 9 p.m. to take the second dose of the day. Ideally, these medications should be taken 12 hours apart to maintain steady levels in your blood stream.

2. Drugs That Prevent Infection

Most patients carry the highest risk for infection during the first year following liver transplantation because they are receiving higher doses of the immunosuppressant medications during that time. Therefore, you will take several medications during your first post-transplant year to prevent or prophylax against various types of infections.

   a. Antivirals

For 100 days following your liver transplant, you will be given one of the following antiviral medications:

**Acyclovir (Zovirax)**, 800 mg four times daily, taken by mouth
**Ganciclovir (DHPG), intravenous**, dose based on your weight, once a day Monday through Friday.
**Ganciclovir (DHPG)**, 1000mg three times daily, taken by mouth
**Valganciclovir (Valcyte)**, 900mg taken by mouth once daily

These drugs prevent infections resulting from CMV (cytomegalovirus), a virus that most of us are exposed to by the time we are adults and that does not cause disease in people who are not immunosuppressed. These medications also prevent infections from the viruses that cause fever blisters, cold sores, chicken pox and shingles. Side effects include low white blood cell count, low platelet count and anemia.
b. Antifungals

Patients who are very sick before their liver transplant are more susceptible to serious fungal infections. These patients will receive a medication called **Fluconazole (Diflucan)** for 42 days following transplant to prevent fungal infections. The usual dose is 400mg once a day. **Therefore, when the Fluconazole is discontinued, a Prograf level should be obtained within a week.**

Patients who were less ill before their liver transplant will receive a medication called Nystatin for 42 days following their transplant to prevent fungal infections. The usual dose is 500,000 units or 1 teaspoon, four times daily given after meals and at bedtime. **Do not eat or drink anything for 30 minutes after taking Nystatin.** Side effects of Nystatin include nausea and vomiting.

Fungal infections are often evident as a skin rash, vaginal discharge, white plaque on the tongue, inside the cheeks, or back of the throat, or a thickening and discoloration of the nails. Serious fungal infections that cause pneumonia or infection in the blood or brain usually do not occur after you are well enough to go home from the hospital. If you have lived in the Southwestern United States and have tested positive for exposure to the fungal organism called coccidioides or "cocci", which is found in dirt and dust, you may be required to take Fluconazole for several years or for life. The coccidioides microbe is the cause of "Valley Fever".

c. Preventing Pneumocystis Pneumonia

You are taking an antibiotic called **Bactrim DS** (double strength) for one year following your liver transplant, and for at least six months after any rejection episode for which you are treated with increased immunosuppression. Bactrim DS prevents a pneumonia caused by a protozoan called **Pneumocystis carinii**. This organism normally does not cause infection in people who are not immunosuppressed. One tablet is taken every day. Side effects include low white blood cell and platelet counts, anemia, rash, nausea, and sensitivity to sunlight. Bactrim DS should be taken with a large glass of water and with food to prevent nausea and to aid in absorption.

If you are allergic to Bactrim DS, you will receive an alternate medication to prevent Pneumocystis pneumonia. **Pentamidine, Dapsone, or Atovaquone** may be substituted to prevent this infection.
3. Medications to prevent Ulcers and Stomach Irritation

Because you take Prednisone to prevent rejection, you are at risk for developing stomach ulcers or stomach irritation (gastritis). You will therefore receive one or more of the following medications to protect your stomach from the effects of prednisone: Pepcid (Famotidine), Zantac (Ranitidine), Prilosec (Omeprazole), Prevacid (Lansoprazole), or Protonix (Pantoprazole). When you are on very low doses of Prednisone, your transplant physician may discontinue the anti-ulcer medications.

4. Supplements

Please note that supplements are generally not covered by insurance, therefore, you will need to purchase any supplements from a grocery, vitamin or drug store.

   a. Magnesium

You will be given magnesium supplements for several months or longer after your transplant to replace the magnesium lost in you urine as a result of taking Prograf or Neoral. If your magnesium level falls too low, you are at increased risk for experiencing seizures or worsening nervous system side-effects like tremors and headaches. You are also encouraged to eat foods high in magnesium, such as green leafy vegetables and legumes (lentils, peas). The magnesium supplements you may receive include Magnesium Protein Complex, 133 mg tablets, or Magnesium Oxide, 250 or 400 mg tablets. The usual dose is three tablets three times a day with meals. Although the milligram amount is different, the amount of actual magnesium in a 133 mg Magnesium Protein Complex tablet and a 250 mg Magnesium Oxide tablet is about the same. High doses of magnesium may cause diarrhea, in which case reducing your magnesium dose may be appropriate after discussion with your case manager.

   b. Fish Oil (Omega-3-Fatty Acids)

You may be asked to take Fish Oil to improve blood flow to your kidneys if you are experiencing decreased kidney function secondary to your immunosuppressant medications. Fish oil may also cause loose stools. Fish Oil comes in 1000mg capsules, and patients generally take one or two capsules three times a day with each meal.
c. Multi-Vitamins

Multi-Vitamins are safe to take with the understanding that they are not substitutes for good nutrition through a well balanced diet. We recommend that you don’t take more than 100% of the RDA. We also do not want any added iron. If you are told that your potassium level is too high, you will need to find a multi-vitamin that is low in potassium.

d. Iron Supplements

Your doctors may want you on an iron supplement due to anemia. Anemia is common for the first one to two months after liver transplantation because it takes time for your body to replenish the blood cells you may have lost during the surgery itself. Poor kidney function and some of your medications can also contribute to anemia. Vitamin C may be prescribed with your iron supplement to improve absorption of the iron. Folate may also be added for anemia. Iron supplements can cause constipation and dark stools, as well as nausea and upset stomach. Do not start on iron supplements before checking with your Outpatient Case Manager.

e. Calcium Supplements

Calcium supplements such as TUMS may be prescribed for patients at high risk for osteoporosis, such as women who are no longer menstruating (post-menopausal) or patients who already have documented osteoporosis. Didronel or Fosamax, Vitamin D and sodium fluoride may also be given with the calcium to help strengthen bones.

5. Pain Medications

You will be given 30 pain pills (usually Vicodin, Tylenol with Codeine, or Wygesic) upon discharge from the hospital to reduce pain caused by the transplant surgery itself (incisional and muscle pain). You will not be given refills by any member of the transplant team for this pain medication when you have used it up, unless you are continuing to experience considerable discomfort for which there is a justifiable cause that has been identified upon examination by one of the transplant physicians. Your surgical pain should be markedly improved within four to six weeks after your transplant and by then should be controlled with plain Tylenol. If it is not, you should contact your outpatient case manager so that the cause of your ongoing pain can be understood and treated appropriately.

You must not take aspirin or nonsteroidal anti-inflammatory drugs (NSAID) at any time post transplant, unless specifically ordered by your transplant physician, due to the risk of kidney damage. Common NSAIDS to avoid are Motrin, Ibuprofen, Advil, Aleve, and Naprosyn.
6. Over The Counter Medications (Non Prescription)

The following over the counter medications are safe to take, but any symptoms for which you are taking the medication which persist over 24 hours should be brought to the attention of your outpatient case manager.

** Tylenol (for headache or pain, NOT FOR FEVER until a coordinator or case manager is notified). Take only regular strength Tylenol 325mg (1tablet), never extra-strength.

** Chlortrimeton (for colds, decongestion) ** Dimetapp (for colds, decongestion)
** Mylanta (antacid) ** Benadryl (for insomnia or itching),
** TUMS (antacid) 25mg to 50mg (1-2 tablets
** Colace/Docusate (for constipation) ** Robitussin (for coughs)
** Metamucil or Benefiber(for constipation)

Take Mylanta and Metamucil 2 hours before or 2 hours after your prescribed medications to avoid poor absorption of your immunosuppressants.

Again, aspirin and nonsteroidal anti-inflammatory drugs should be avoided. Any cold medications or decongestants containing pseudoephedrine should be avoided unless you have been given permission to take them by your case manager. Decongestants can cause or worsen high blood pressure.
Hepatitis B and C

If you received your liver transplant for viral hepatitis, you may be asked to take one or more antiviral medications which help to prevent the hepatitis viruses from reinfecting your new liver. Removing your native, diseased liver does not cure your hepatitis. The hepatitis viruses may live in your bloodstream, lymph nodes, spleen and other organs besides the liver. The immunosuppressants that you now take may prevent your immune system from fighting off the hepatitis viruses and may even stimulate the viruses to reproduce and reinfect your new liver.

If you have hepatitis B, you will be given 1 or 2 drugs orally to prevent recurrence of hepatitis B, Lamivudine (Epivir), Hepsera (Adefovir), Entecavir (Baraclude), Tenofovir (Vired) along with Hepatitis B Immune Globulin injections. Lamivudine (Epivir) slows down the reproduction of the hepatitis B virus. In some cases, the hepatitis B virus can be a resistant type, therefore, Epivir may be substituted with Hepsera (Adefovir) or Entecavir (Baraclude) or Tenofovir (Vired). Any of these oral anti-viral medications may cause your white blood cell count to decrease.

In addition to your oral therapy you will also receive Hepatitis B Immune Globulin (HBIG) which supplies you with antibodies against the hepatitis B virus. HBIG is given monthly (or more frequently) either by intramuscular injection or intravenously during your clinic appointment. You will be premedicated with Tylenol and Benadryl before intravenous HBIG administration. Studies have shown that recurrence of Hepatitis B, for patients treated with HBIG and oral antiviral therapy, has been minimal. It is possible that you will receive HBIG and oral antiviral therapy for the rest of your life.

If you have hepatitis C, you can expect it to reoccur at some point in your new liver. However, in most cases, hepatitis C re-infection has only mild effects on the liver and causes minimal liver damage. Most patients with re-infection feel and look well, and their only evidence of re-infection may be slightly abnormal lab tests. It may take many years for the hepatitis C virus to create enough liver damage for you to experience symptoms of liver dysfunction.

Unlike the treatment for hepatitis B after liver transplantation, there is no standard treatment for hepatitis C. However, studies have shown good response and lower hepatitis C virus level (HCV RNA) in the blood when treated with either one or a combination of two drugs: Peg Interferon-alfa and Ribavirin. Peg Interferon-alfa is an antiviral drug that stimulates your immune cells to fight the hepatitis C virus. Ribavirin is an antinflammatory drug that prevents inflammation of your liver cells. Peg Interferon-alfa is given by subcutaneous injection once or three times a week depending on its formulation. Ribavirin is dispensed in 200mg tablets and prescribed as 2,3,4, or 6 tablets a day.
We will monitor your blood markers for hepatitis B and/or hepatitis C after you are discharged home to determine how active your hepatitis virus is. If you have hepatitis B, your family members should be tested for it and if found to be negative for infections and without adequate antibody levels, should receive the hepatitis B vaccine. Safe sex (proper use of condoms or abstinence) should be practiced until the vaccine has taken effect, since hepatitis B is often transmitted sexually. The Center for Disease Control does not believe that sexual contact is a major route of transmission for hepatitis C. However, since hepatitis C is transmitted through blood, we recommend for family members not to use the same scissors, razors, and toothbrushes as the patient, and to practice safe sex using a condom.
8. Medication for High Potassium

The potassium in your bloodstream may rise too high. This is a side-effect of Neoral and Prograf that is related to their effects on your kidneys. High potassium levels can affect the way your heart beats and can cause arrhythmias (irregular heart beat). You may be placed on a medication called Florinef to lower your potassium. The side-effects of Florinef include sodium (salt) retention, fluid retention, and high blood pressure. You should review your potassium-rich food list so that you can adjust your diet so that it includes few high potassium foods if your potassium level rises too high.

9. Medication Lists/Pharmacies

You may be on additional medication unique to your medical condition in addition to or in place of the medications reviewed above. All of your medications will be included on a medication list that you are given when you are discharged from the hospital. **You must carry the list with you at all times and bring it with you to each clinic visit and each readmission to the hospital. You are expected to update it as changes are made in your medication regimen.** Failure to keep your list up to date can result in dangerous medication errors.

There are several transplant specialty pharmacies that have large supplies of the immunosuppressants and other medications that you are taking. These pharmacies can mail your medications to your home each month. Your in house coordinator will assist you in setting up your pharmacy needs before you are discharged. You will usually receive a 30 day supply of all of your medication from UCLA on the day you leave the hospital. HMO patients only receive a 5 day supply and must go the their HMO pharmacy to purchase the remainder of their supply.

**YOU are responsible for ensuring that you do not run out of medication. You should always reorder your medications when you have only two weeks supply left, and you should keep a two week supply on hand at all times in case of emergencies.**

10. Studies/Research

As A University based hospital, UCLA participates in many research studies related to current treatments and therapies in the transplant field. You may be asked to participate in a study that may benefit you as well as others.
Clinic Visits

All patients will complete a comprehensive teaching session prior. The in house coordinator will review your medications and discharge plans with you and answer any remaining questions you may have. The inhouse coordinator will also arrange for a home health nurse and a physical therapist to see if you if it is indicated. If you and your care giver have completed all classes and reviewed all medications during the week with your in house coordinator, it is possible to be discharged on a weekend.

For the first four weeks after discharge, you are required to visit the clinic once a week, on a Thursday. Your in house coordinator will make your first appointment, but you are responsible for making your future appointments at the front desk of the clinic as you check out. The clinic is located on Westwood Boulevard, Suite 214 of the 200 UCLA Medical Plaza Building. The phone number to call when making, changing or canceling an appointment is (310) 794-7788.

The lab is located on the first floor of the 200 Medical Plaza Building, next to the pharmacy. Remember to always bring your Prograf, Cyclosporine/Neoral or Sirolimus and your updated medication list with you to clinic. If you are diabetic, bring your blood sugar log book with you. You will report to the lab at 7 a.m. to have your blood drawn, and then you will proceed to take your Prograf Cyclosporine/Neoral or Sirolimus. You may eat a light breakfast and take all of your other medication before you blood is drawn. Most of your lab results should be available by the time you are seen by your physician in the clinic.

After your blood draw, you will proceed to your appointment, which is located in Pfleger Liver Institute, Suite 214 in the 200 Medical Plaza Building. Please check in at the front desk of the clinic. Patients are seen by an outpatient case manager and a surgeon on a first come, first serve basis. Patients are called into rooms beginning at 8:00 a.m. until 11:00 a.m. You will not be seen if you arrive later than 11:00 a.m.

For the first four weekly visits on Thursdays, a transplant surgeon will examine you. After the first four visits, you will be followed by your hepatologist (liver specialist) as well as your outpatient case manager. At that time, you will come to clinic every two weeks on either Tuesdays or Wednesdays depending on which hepatologist you see. This will continue for at least two more visits. If you are doing well at that point, we will schedule
your clinic visits monthly or every two months alternating with your primary medical doctor. It is imperative that you continue to restore your relationship with your primary M.D. after your transplant, because he or she will eventually resume responsibility for you health care needs unrelated to your liver transplant. **Always consult your outpatient case manager before taking any medication prescribed by your primary M.D.,** as some medications can have harmful interactions with your immunosuppressants. You should especially avoid erythromycin and aminoglycoside antibiotics, as they can cause kidney damage. Aldactone should be avoided as it can cause the potassium level in your blood to rise too high. This can result in irregular heart rhythms.

Your outpatient case manager will contact you by Friday afternoon of the week of your clinic visit to notify you of any additional medication changes or the need for additional follow up for blood tests. **If you have not received a phone call by Friday afternoon, it is your responsibility to call your outpatient case manager on the following business day to discuss your lab results and confirm any changes in your medication.**

If you live too far away to drive to clinic every week, or have come here from another state to have your liver transplant, **you must stay in the local area (near UCLA) for the first two to four weeks after you are discharged.** Your inpatient coordinator will help you make arrangements to stay at the Tiverton House or in local hotels near UCLA, and many insurance companies will cover at least part of the cost. Your outpatient case manager will let you know when it is safe for you to return home. If you have come here from another country for your liver transplant, we recommend that you remain in Southern California until two weeks after your T-tube is removed (about five months after your liver transplant).

At some point after your liver transplant, you may need to have blood drawn at a non-UCLA laboratory or doctor's office. Standing lab orders must be given to the non-UCLA lab or doctor's office. These orders are honored for one year before they require renewal by your outpatient case manager. If your lab or primary M.D. has standing lab orders, you may go there at any time and request to have your labs drawn. **After your lab draw, you must notify your outpatient case manager of the date, the name, and the location of the lab so that he or she can follow up on the results.** If you have not received a call regarding your lab results within one week after your blood draw, please contact your outpatient case manager. You may be asked to contact your lab and ask them to fax your lab results to UCLA. The fax number is **(310) 825-8272**, and the results should be faxed to the attention of your outpatient case manager. It is your responsibility to ensure that UCLA receives lab results from your outside lab or doctor's office.
ACTIVITY AND LIFESTYLE

1. Exercise

Activity restrictions are created to protect your abdomen and prevent interruption of wound and muscle healing. You should not participate in any activities that will result in abdominal trauma or abdominal strain for at least four-six months after your last abdominal surgery. These activities include heavy lifting (objects weighing over 15 pounds), sit-ups, and pushing heavy items. Participation in such activities may result in the opening up of your surgical wounds and in the formation of hernias which may require additional surgical repair. Driving and sexual intercourse may be resumed four to six weeks after your transplant if you are feeling well. We encourage you to walk as much as possible. Using a treadmill or stationary bicycle is also permitted, as is walking up and down stairs.

2. T-tube/Hickman Catheter

If you have a T-tube you should not engage in any activities that allow it to be submerged in water, such as taking a bath, sitting in a jacuzzi, or swimming. Submerging your T-tube in water could cause infection at the entry site, where the tube enters your skin. You may shower while your T-tube is in place. Your T-tube should be cleansed daily with three alcohol and three betadine swabs, and a clean gauze dressing should be placed over it. This dressing change is best done after you have showered. Notify your outpatient case manager or the on call coordinator if bile or cloudy drainage emerges from around the entry site. The purpose of your T-tube is to support your common bile duct where it is sewn to your liver donor's common bile duct as this connection heals. Your T-tube will be removed approximately five months after your liver transplant. You will be readmitted to the hospital for about two to four days for the T-tube removal procedure.

You may be discharged home with your Hickman catheter (chest I.V.) left in place if you require intravenous antiviral therapy. It will normally remain in place for 100 days after your transplant. You may not submerge it in water or allow it to get wet. A nurse will come to your home to teach you how to care for your catheter and clean the entry site.
3. **Staples**

Your staples will remain in place for approximately three weeks after your last surgery. They may be removed at one of your clinic visits. You may shower with the staples in place, as they do not rust. Steristrips (like thin bandaids) will be placed over your incision when the staples are removed. The steristrips will fall off on their own.

4. **Gardening/Plants**

Wear gardening gloves and socks and shoes when working in your yard, if you will have contact with dirt or soil. This will protect you from infections caused by organisms that live in the soil. You may have indoor plants, but again, wear gloves when touching the dirt in which they are planted. If you have fresh cut flowers in your house, they should be discarded at the first sign of wilting, and someone else should change the water each day. The flower water may contain bacteria and fungi that you could inhale, which might increase your risk for infection.

5. **Drinking Water**

You may drink tap water if it has been treated at a water purification plant and has been appropriately chlorinated. You should not drink stagnant well water that has not been treated. You may drink bottled water or use a filter as well.

6. **Smoking and Alcohol Ingestion**

Smoking is strongly discouraged following liver transplantation because it destroys the lining of the airways leading to and within your lungs, including little hair like structures called cilia. The cilia remove potentially harmful organisms and particles from your airways before they settle in your lungs. When the cilia are destroyed by smoking, your risk of potentially life threatening lung infections (pneumonias) is increased. Smoking also increases your risk for lung and other cancers, and the nicotine in cigarettes can alter the way your immunosuppressants are metabolized. In addition, smoking reduces your blood's ability to carry oxygen to your liver, which can result in increased liver cell death. Smoking marijuana should be avoided because it may introduce harmful fungi into your lungs, which may produce a deadly fungal pneumonia.

Alcoholic beverages should not be ingested following liver transplantation because alcohol use can make your liver fatty and impair its function. Use of alcohol can cause liver cirrhosis and result in liver failure. If you have Hepatitis C, use of alcohol can speed up the damage the virus can do to the transplanted liver. **If you destroy your transplanted liver by using drugs or alcohol, you will not be eligible to receive another liver transplant.**
7. Pets

Cats and dogs are the most common types of pets. Contact with cats and dogs is safe. However, you should avoid birds and bird droppings, as they harbor organisms that can cause serious infections in immunosuppressed individuals. Exotic animals are not allowed. You will need to check with your coordinator if you have or plan on having any other kind of pet. You should also stay away from cat and dog feces (poop), which also may harbor harmful microorganisms. If you must change or clean a litter box, wear sturdy gloves and a mask, as some of the microorganisms may be airborne. Always wash your hands after touching your pets.

8. Dental Visits

Having regular dental check ups and maintaining good mouth care is very important after liver transplantation, especially because some immunosuppressants can enlarge your gums and increase your risk for gum disease.

When visiting the dentist, you must take antibiotics prior to your appointment and for 24 hours following it. This will protect you from getting endocarditis. Endocarditis is an infection of the heart that can occur when the dentist probes your gums, allowing bacteria within your mouth to enter your bloodstream. The bacteria may travel to your heart and lodge there, causing vegetation which may impair your heart's ability to beat properly and may disrupt blood flow through the heart's chambers. You may call your outpatient case manager one week prior to your dental appointment to obtain a prescription for oral penicillin, amoxacillin or keflex to protect you from endocarditis. Your dentist may also provide you with these antibiotics. They are identical to those recommended by the American Heart Association.

9. Travel

You should wait one year after your liver transplant to travel outside of the United States and Canada. At this time, your immunosuppressant doses will be lower, and your immune system will be stronger. Consequently, your risk for infection abroad will be less. You may receive the recommended travel vaccines except for the yellow fever vaccine, which is made from a live virus that could make you sick.

UCLA has a travel clinic, and you may ask your outpatient case manager about consulting with a travel clinic physician regarding food and water precautions and appropriate vaccines to have before going to a particular country. If you are traveling to a third world country, a good rule of thumb is to drink only bottled water and to avoid eating foods sold on the street or at food stands. Only eat well cooked meat when abroad, and if you are in a third world country, avoid raw fruits and vegetables. They are usually washed in tap water that may be contaminated. Cooked vegetables are generally safe to eat.
10. **Sun Exposure**

Your risk for skin cancer rises after your liver transplant due to immunosuppression. Your immune system is less able to detect and destroy cancer cells now that you have been transplanted and must take immunosuppressants. Therefore, you should always wear sunscreen with a sun protection factor (SPF) of 15 or higher whenever you are outdoors, even on cloudy days. Wear a hat and a long sleeved shirt if you expect to be outdoors for a long period of time.

11. **Pregnancy and Birth Control**

Pregnancy is possible after liver transplantation, but female transplant recipients should wait at least one year after their transplant before conceiving. Close follow up by an obstetrician specializing in high risk pregnancies is required. Men are able to father children after liver transplantation.

Birth control pills must be avoided after transplantation due to the increased risk for blood clots in the artery that carries blood to the liver. Oral contraceptives also may cause bile to clog up within the liver and may contribute to hypertension (high blood pressure). Intrauterine devices (IUDs) are not advised due to the increased risk for infection. Barrier methods such as condoms and diaphragms are a safe and acceptable alternative to birth control pills and IUDs.

12. **Vaccines**

Vaccines are prohibited for the first year post transplant. All vaccines made with weakened live viruses should be avoided forever. These include small pox, yellow fever, measles-mumps-rubella (MMR), and oral polio. People vaccinated against any of these diseases may shed the virus in their body fluids (blood, urine, stool) for up to three months following vaccination. You should therefore avoid contact with body fluids of vaccinated individuals for three months following vaccination. Because you are immunosuppressed, the viruses, although weakened, can cause infection in your body. For the first year post transplant, other vaccines such a flu shots are not recommended because your immune system won't be able to mount an immune response to the vaccine. One year after your transplant, and your anti rejection drug doses are lower, you may receive a flu shot, tetanus vaccine and/or hepatitis A and B vaccines if indicated, as you will then be able to form antibodies.
RESOURCES

1. American Liver Foundation
   www.liverfoundation.org
   1425 Pompton Avenue,
   Cedar Grove, NJ  07009
   (800) 223-0179

2. National Kidney Foundation
   www.kidney.org
   30 East 33rd Street
   New York, NY   10016
   (800)622-9010

3. United Network for Organ Sharing
   www.unos.org
   1100 Boulders Parkway
   Richmond, VA  23225-8770 (888)-TXINFO-1

4. One Legacy Transplant Donor Network
   www.onelegacy.org
   221 South Figueroa Street, Suite 500
   Los Angeles, CA 90012
   (213) 229-5600
   (213) 229-5601 fax

One Legacy is a transplant donor network serving Southern California. Website is an excellent source of information for the post transplant patient, including a section on writing a donor letter.


**DIETARY GUIDELINES**

I. **Short Term Goals**

A high protein diet is recommended for the first six to eight weeks post transplant to help in the healing and recovery process. Good sources of protein include lean meats, fish, poultry, and low fat dairy products.

II. **Long Term Goals**

Achieve and maintain a healthy weight. In other words, try to avoid becoming overweight. Prednisone can continue to stimulate appetite, and if you're not careful, you may slowly gain excessive weight. Excess weight can contribute to high blood pressure, high cholesterol and high blood sugar. The following tips can help you maintain a normal weight: avoid an abundance of fats, sweets, and second helpings. Include aerobic exercise such as brisk walking in your daily activities.

1. **Food Safety**

Immunosuppressants reduce the body's normal ability to fight infection, including food-borne illnesses, or food Poisoning. The following food handling tips will help lower the risk of food contamination:

Frequent and careful hand washing.

Eggs and some raw meats may contain Salmonella.

Do not eat raw or undercooked meat, fish, poultry and eggs. This includes tasting batter or cookie dough containing raw eggs, Caesar salad dressing, or drinking raw or unpasturized milk or milk products.

Thaw meat in the refrigerator, or use microwave.

Do not thaw meat over the counter.

Wash fresh fruits & vegetables well before eating.

You may scrub with a brush, but do not use regular soap.

Keep food at safe temperatures:

Cook hot foods to at least 165° F

Keep cold foods under 40° F

Foods served in temperatures between 40-165° F should be eaten within 1-2 hrs.

Do not refreeze defrosted foods.

Leftovers should be eaten within 1-2 days.
2. **Salt / Sodium**

Sodium is a mineral occurring naturally in foods. It is also used in cooking and/or the processing food. Our table salt is made from the two minerals, sodium and chloride. Sodium is often responsible for the retention of fluid in our bodies, which can raise blood pressure. Everyone needs some sodium, but most of us get much more than we need. The healthy body can usually handle this excess sodium without causing edema (swelling from fluid retention) and high blood pressure. However, in certain medical conditions of the heart, liver, or kidneys, and with certain medication such as your immunosuppressants, the body cannot excrete the excess sodium. This extra sodium stays in the tissues, causing swelling, high blood pressure, or other problems. To prevent this or reduce the severity of the swelling and/or high blood pressure, you should reduce the sodium in your diet to three to four grams per day, which is called a No Added Salt diet. The following guidelines will help you achieve this:

**Greatly limit the following foods:**

- baking soda
- regular canned broth
- bullion cubes
- monosodium glutamate
- worcestershire sauce
- regular soy sauce
- meat tenderizers
- seafood seasoning
- fish sauce
- shrimp sauce
- barbecue sauce
- sauerkraut
- pickles
- horseradish
- meat sauces
- specialty sauces
- buttermilk
- lemon pepper
- seasoning salts
- garlic salt
- onion salt
- celery salt
- chili sauce
- olives

Use natural herbs, spices and flavoring to enhance the flavor of your food. You may use any salt substitute containing herbs alone, such as tarragon, cumin, basil, oregano, pepper, lemon juice, vinegar, tabasco sauce, vanilla, mint etc. In addition, you may use regular catsup, mayonnaise, and mustard in very small amounts. These products should be used in unsalted form if at all possible, and dry mustard can be substituted for regular mustard.

Avoid processed foods unless they are salt free. In the average American diet, about 80% of one's sodium intake comes from processed foods. Foods that have been precooked, prepared, and packaged in ready to eat form when purchased such as cold cuts, hot dogs, canned soups and vegetables. Regular TV dinners, salted nuts, chips, crackers, etc. are all considered processed foods.
You may use up to 1/4 to 1/2 teaspoon of salt per day in cooking or at the table if you tend to avoid processed foods.

Cured, aged and smoked products all contain high amounts of sodium and should only be used occasionally and only in small amounts.

You should only use cheeses that are low in sodium and fat. The following guidelines should help you in choosing healthier cheeses.

** Low Sodium/Fat: contains less than 150 mg of sodium per ounce and less than 6 grams of fat per ounce (ideally 3 grams of fat). Example: part skim mozzarella, part skim ricotta.

** Medium Sodium/Fat: contains 150-250 mg of sodium and 6 to 8 grams of fat per ounce. Example: whole-milk mozzarella, brie, tilsit, swiss.

** High Sodium/Fat: greater than 250 mg sodium and 8 to 10 grams of fat per ounce. Example: processed american sliced cheese, blue, grated parmesan and roquefort.

Do not use salt substitutes containing potassium chloride. The sodium is taken out of the salt and replaced by potassium. Increasing your potassium intake by using salt substitutes can make your blood potassium level too high, leaking to irregular heart rhythms. Salt substitutes to avoid are:

** Schilling salt substitute
** Adolph's salt substitute
** Morton's salt substitute
** No Salt
** Nu-Salt
** Co-Salt
** Adolph's Seasoned Salt
** Lawry's Seasoned Salt
** other seasoned salts

Read package labels. Avoid foods listing salt as one of the first ingredients. When there is a need to substitute for high sodium foods, you may occasionally use foods with the words "low sodium" of "no added salt" printed on the label. The word "dietetic" may mean something other than "low sodium".

Fast food restaurants should be avoided for the most part, or visited very infrequently due to the high sodium and high fat content of the foods served.
3. Potassium

Potassium (chemical symbol K) is a mineral normally regulated by the kidney, and found in a wide variety of foods. At times you may need to limit food that is high in potassium because you are on one or more potassium sparing medications such as Prograf or Cyclosporine/Neoral. When kidney function is impaired or with use of potassium sparing medications, excess potassium may not be excreted. Even though a certain amount of potassium is needed for normal body functions, too much potassium can cause irregular heart beats, and become life threatening.

Potassium is found in almost all foods, especially in fruits, vegetables, and dried beans. However, certain fruits & vegetables are higher in potassium than others. A food is considered low in potassium if there is less than 150-250 mg potassium per serving. But how much that food contributes to your total daily intake is also important. For example, a dinner entrée containing 300mg potassium is acceptable, where as ½ cup juice containing 300mg potassium is high. Reading labels is also important part of modifying potassium intake. Although, potassium content may not be listed on many labels, potassium or potassium containing ingredients listed in the ingredient section can indicate a high potassium food.

If you have been told by your coordinator or out patient case manager that the level of potassium in your blood has been high, you will need to avoid or limit certain foods.

The following list includes some of the more common foods high in potassium that should be limited or avoided.

**TYPE OF FOOD**

**FRUITS**

Avocados, fresh apricots, bananas, mangos, grapefruits, cantaloupe, honeydew, nectarines, oranges, papaya, persimmons, pomegranate, prunes, raisins, strawberries, watermelon, and all dried fruit. Juice from any of these fruit such as orange juice or prune juice should also be avoided.
VEGETABLES  Artichokes, avocados, dried peas and beans, squash, tomatoes and
tomato paste, potatoes, and all types of vegetable juice.

BEVERAGES  Condensed chocolate milk, instant cocoa mixes, hot chocolate,
Gatorade, caffeinated sodas

OTHERS  Nuts, chocolate, brown sugar, molasses, caramel, cocoa, green tea.
Avoid salt substitute containing potassium

You may substitute your intake by moderate portions of foods low in potassium from the
list below:

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4. **Magnesium**

Like potassium, magnesium is another essential mineral. It plays an important role in muscle contraction and nerve excitability. Your immunosuppressant medication will cause you to lose magnesium in your urine. If the level of magnesium in your blood fall too low, you may experience neurological side effects. Low magnesium levels can cause tremors and may even lead to a seizure.

The intake of foods high in calcium or calcium supplements decrease magnesium absorption. Therefore you need to take calcium supplements and/or dairy products at different intervals than your magnesium supplements. Especially, if you’re having difficulty maintaining a therapeutic magnesium level.

Magnesium is found is a wide variety of foods such as nuts, legumes, whole grain cereal, dark green vegetables, seafood, cocoa, and chocolate. Some of these foods are also rich in potassium. Before trying to increase your dietary magnesium, you will need to check with your out patient case manager.

5. **Calcium**

Long term use of Prednisone can contribute to osteoporosis or thinning of the bones. Therefore, it is important to include foods rich in calcium in your diet. These foods include low fat dairy products, low sodium sardines and salmon, shrimp, spinach, collard greens, kale, dried beans, and peas. Additional calcium supplements, such as TUMS, are usually indicated at doses of 1000-1200 mg per day. Oscal is not recommended because of its lead content. It is especially important to take calcium supplements if you are unable to tolerate milk or dairy products or if you are a woman who has stopped having periods (post menstrual).

6. **Sugar and Snacks High In Sugar**

These may be included in moderation, provided your blood glucose levels are well controlled. Long term use of immunosuppressants tends to interfere with glucose metabolism and insulin production, and may result in the development of high blood sugar (diabetes). To reduce this risk, moderation in intake of sweets and sugary food is recommended. In addition, limiting sweets can help to control your weight. Furthermore, in combination with the initial post transplant high protein diet, reducing sweets and sugar intake has been shown to be helpful in controlling the "moon face" that some people develop when taking Prednisone.
7. **Fluids**

There is no specific long term need for fluid restriction unless you are advised otherwise by a member of the transplant team.

8. **Total Fat and Cholesterol**

These should be consumed in moderation because of the increased risk of developing high blood cholesterol due to the long term use of immunosuppressants. High cholesterol may be controlled by diet, exercise, and if necessary, medication. Limiting total fat intake, in particular, saturated fats largely found in animal products, can help in controlling your cholesterol level. Avoid foods containing fat substitutes such as "Olestra", as it may interfere with the absorption of your immunosuppressants.

9. **Vitamins**

Until you are able to consume adequate amount of grains, fruits, and vegetables, you may take a daily multivitamin and mineral supplement containing about 100% of the USRDA for the most important vitamins and minerals.

10. **Alcoholic Beverages**

Beverages containing alcohol should not be consumed. Use of alcohol can cause your liver to become fatty and may result in abnormal liver function.

11. **Dietary Follow Up**

Any further question or concerns regarding you diet may be addressed to your dietitian, transplant physician, nurse coordinator or outpatient case manager. After you are discharged, your liver transplant dietitian will be available for consults over the phone to address questions and concerns regarding your specific nutritional needs.
GLOSSARY OF TERMS

**Antibodies:** Proteins produced by your white blood cells that recognize and bind to foreign invaders such as bacteria, viruses, fungi, and other harmful cells. Antibodies trigger other white blood cells to destroy these invaders.

**Bacteria:** single celled microorganisms that may cause infection.

**Bile:** brown liquid made in the liver and involved in the digestion of fats within the small intestine.

**Bile Ducts:** small pathways (like tunnels) within the liver that carry bile into a big duct or passageway called the common bile duct. The common bile duct is connected to your small intestine a carries bile, produced in the liver, to your small intestine. There, your bile aids in the digestion of fats.

**Bilirubin:** a brown pigment (like a dye) that makes your bile and your stool (bowel movements) brown. Bilirubin comes from old red blood cells that have died. It is converted in the liver into a form that colors bile and makes stool brown. When the liver doesn't work properly, bilirubin is not converted into this form, so the bile and the stool may be pale. The bilirubin that remains unconverted is reabsorbed into the blood stream and makes the skin and eyes yellow or jaundiced, and the urine dark.

**Cell:** the basic unit making up all living things. Your body and your new liver are made up of millions of individual cells with many different functions.

**Cilia:** small hairs that line your respiratory passageways and help "sweep" out harmful organisms and particles before they reach your lungs.

**CMV:** cytomegalovirus, a normally harmless virus that lives in the environment and enters most of our bodies by the time we become adults. We make antibodies to this virus and are not usually affected by it. However, being immunosuppressed can result in the virus causing infections in the liver (CMV hepatitis) or in other organs of the body. These CMV infections can be prevented or cured by a drug call Ganciclovir.

**Diarrhea:** watery (formless) bowel movements. Soft, formed stool is not considered diarrhea. Diarrhea can indicate infection in your intestines, an allergy or intolerance to something you are eating, or a side effect of some of your medications.
**Enzymes:** proteins made within cells. Liver enzymes are made inside your liver cells and are known as SGOT (AST), SGPT (ALT), alkaline phosphatase, and LDH. They are released into your bloodstream when rejection or hepatitis occurs and are measured by blood tests.

**Fungi:** (singular=fungus) single celled microorganisms somewhat similar to plant cells, but without chlorophyll, the green substance in plants. Fungi can occur as yeasts (oval shaped) or molds (which have branching arms called hyphae) that spread and invade tissue. Serious fungal infections usually occur soon after transplantation if at all, and often affect the sickest, most debilitated patients.

**Immune System:** made up of white blood cells that protect your body from foreign invaders such as bacteria, viruses, and fungi, which all may cause infections. The immune system also attacks "foreign" cells of your transplanted liver, which can result in rejection.

**Immunosuppressant:** a medication that keeps white blood cells from attacking your liver cells and can prevent or reverse rejection. You will take immunosuppressants for the rest of your life to prevent rejection.

**Infection:** invasion of any system of your body by organisms that do not belong there, such as certain bacteria, viruses and fungi. Infection by these organisms may result in activation of your immune system and cause symptoms such as fever and fatigue. Many symptoms of infection are specific to the area of your body that is affected.

**Jaundice:** yellow color of the skin (and eyes), which occurs when the liver is unable to change bilirubin into the form that can be excreted in the bile and stool. This bilirubin is reabsorbed by the bloodstream and carried to small blood vessels under the skin where yellow coloring and itching occur.

**Liver Function Tests:** bilirubin, SGOT, SGPT, alkaline phosphatase, and LDH. These blood tests measure proteins or enzymes that, when elevated, can indicate that rejection, infection, or obstruction (blockage) of the bile ducts may be occurring.

**Opportunistic Infections:** infections caused by organisms that normally live within our bodies and do not cause disease or sickness in non-immunosuppressed, healthy people. Persons who take anti rejection medications have weakened immune system and may become ill from such organisms. These organisms include CMV (cytomegalovirus) and Pneumocystis carinii.

**Platelets:** blood cells that help your blood to clot and prevent you from bleeding.
**Pneumocystis carinii**: a protozoan (similar to a bacteria) found in the environment that may live in our lungs without usually causing illness. However, individuals who take immunosuppressants can develop pneumonia from this organism.

**Pneumonia**: infection within the lungs.

**Prophylaxis**: a medication or treatment given to prevent a disease or infection before it has occurred.

**Protozoa**: the simplest single celled organism in the animal kingdom. Pneumocystis carinii, the organism that can cause pneumonia in transplant recipients, is a protozoan.

**Rejection**: describes the process of your white blood cells attacking "foreign" cells of your transplanted liver and destroying them. When the liver cells are destroyed, enzymes (proteins) from within the cells enter your bloodstream. They can be measured by blood test. High enzyme levels in the blood may indicate rejection.

**Virus**: the smallest known microorganism (smaller than a single cell). Viruses need to invade your cells in order to multiply. They cannot reproduce without help from your