A BRIEF SUMMARY
What You Should Know About Liver Transplant
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For detailed information, please refer to the Liver Transplant Program Education Guide at UofMHealth.org/conditions-treatments/transplant/liver-transplant-patient-care-guide or talk with your transplant coordinator.

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.
Your Liver Transplant Team

Transplant Coordinator

The professional responsible for managing your case to ensure each detail required for clearance to transplant has been reviewed and approved. Transplant coordinators are the primary communication link between you and your doctors before transplantation.

Hepatologist

A doctor who is an expert in liver disease. Your hepatologist is responsible for determining your medical need for a transplant, managing your medical needs before transplant and managing your medical care following transplant.

Pre-Transplant Nurse

A registered nurse (RN) who specializes in liver disease and more specifically in patients preparing for transplantation. An RN helps the team in the evaluation, education and pre-transplant care of the patient. An RN maintains patient medical information, monitors labs and medications, and works closely with the transplant doctors on patient care issues.

Transplant Surgeon

A doctor who performs the liver transplant surgery. Your surgeon is responsible for evaluating your medical condition in preparation for transplant surgery, discussing the transplant with you, performing the surgery, and providing post-operative care for a defined period following surgery. Since the surgeons on the transplant team have a rotating schedule, the surgeon who performs your surgery may not be the same surgeon you see during the inpatient stay or at clinic visits.

Post-Transplant Nurse

A registered nurse (RN) who specializes in liver disease and more specifically in patients after transplantation. An RN assists the team in providing post-transplant care to the patient. The RN maintains medical information, monitors labs and medications, and works closely with the transplant doctors on patient care issues. Patients may have different transplant nurses during the different phases of post-transplant care.
Transplant Advanced Practice Provider

Advanced practice providers include physician assistants (PA) and nurse practitioners (NP), licensed practitioners, who work closely with the hepatologists and transplant surgeons to provide medical care to patients before and after transplant. They may be involved in the initial diagnosis of your liver disease, the transplant evaluation, the management of active medical problems and/or medication adjustments.

Transplant Social Worker

A professional who helps patients and their families understand and cope with a variety of problems (such as emotional, family, financial, job/work) associated with liver disease and the transplant process. Social workers provide ongoing education and support throughout the transplant process and beyond.

Financial Coordinator

Financial coordinators work with patients and their families to help them understand the various financial aspects of transplantation. They work with your insurance carrier to verify coverage, help in obtaining prior authorization for transplant services, and work with patients with limited insurance coverage to explore other funding opportunities.

Clinical Research

The Clinical Research Team manages the clinical research studies designed to improve the understanding of transplantation and enhance the outcomes for all patients. Research staff responsibilities include identifying eligible patients, informing patients about research options, enrolling patients in research studies, collecting research data and coordinating research care. The research team works closely with the clinical team to provide patients access to cutting-edge therapies before they are available everywhere.

Transplant Pharmacist

A pharmacist who has knowledge, training and experience in transplant medications is available to work with you, your family and the rest of the transplant team with regard to managing your transplant medications during your entire transplant journey.

Registered Dietitian

A dietitian will work with you to determine your current nutritional status and then will provide education regarding nutritional needs, restrictions and supplements that may be necessary to keep you as healthy as possible, before and after the transplant.
**Transplant Unit Staff Nurse**

Unit staff nurses work closely with the patient during the transplant inpatient stay. They are responsible for providing patient care, education, and training on tests, medications and follow-up care. Since unit nurses work as a team on a rotating schedule, you may have several nurses during your inpatient stay.

**Primary Care Physician (PCP) or Family Physician**

A Primary Care Physician is a title used by insurance companies to identify the doctor who is responsible for providing you general medical care and to authorize patient referrals for specialty care. If you do not have a managed care insurance policy, the term “family physician” would be more appropriate.

**Liver Transplants at University of Michigan Hospital**

The University of Michigan is a national leader in liver transplantation, as well as the surgical and medical management of patients with liver disease. Since 1985, our physicians and staff have provided care to more than 2,500 adult and pediatric liver transplant recipients. At Michigan Medicine (MM), state-of-the-art equipment and facilities ensure patients the highest quality care. Electronic records are continually updated, meaning patient records are available to caregivers 24 hours a day, seven days a week. This system also allows for the tracking of all outside lab work and diagnostic studies for each patient. [MyUofMHealth.org](http://www.MyUofMHealth.org) allows patients to review test results, request prescriptions, request clinic visits and send non-urgent messages to their health team.

**The Initial Pre-Transplant Evaluation Appointment**

A liver evaluation appointment is a series of visits with several doctors and other members of the transplant team, generally all occurring on the same day.

During the initial evaluation appointment, you will see the medical liver specialist or hepatologist first. If your medical condition indicates a liver transplant would be appropriate, you will meet with several other members of the transplant team. Team members you are likely to see on evaluation day, include a transplant coordinator, social worker, transplant nurse, transplant surgeon, financial coordinator and dietitian.
Transplant Evaluation Testing

The testing required to assess whether you are an appropriate candidate for liver transplant is quite extensive. Many of the initial tests are ordered on evaluation day, but are often scheduled on other dates.

Testing is important to the transplant committee as it provides information regarding your medical status that is used to help determine your eligibility. Testing also helps assess whether you have other medical issues which would impact the outcome of transplantation, such as significant heart disease, lung disease, kidney disease or liver cancer which may be too advanced for transplant.

You will be given written orders for the tests you need. Tests done at MM do not require written orders; they are entered electronically. You also will receive instructions for completing the testing through your doctor and/or dentist. As testing is completed, the results need to be faxed to the transplant coordinator at the fax number below. Occasionally, transplant physicians will require some testing be performed at MM. You will be advised when that is required.

Other testing may be ordered by the transplant team if there are abnormalities in your initial testing or if the team needs further information to determine whether you are an appropriate liver transplant candidate. These tests can include pulmonary function tests, additional blood work, CT Scan/MRI, heart catheterization, etc. If any of these tests are recommended, you will be given the information regarding the test before the appointment is made.

Reports from tests done outside MM should be mailed or faxed to:

Transplant Center, Liver Program
Michigan Medicine
300 North Ingalls St., Room 5D17
Ann Arbor, MI 48109-5415
(800) 333-9013
(734) 998-2384 Fax

No patient will be put on the transplantation list until all tests are completed and the results confirm that liver transplant is appropriate. Therefore, please make sure all tests are completed and results are sent to the transplant office as soon as possible.
The Liver Transplant Evaluation Committee

Patient cases are discussed at the weekly Liver Transplant Evaluation Meeting. Medical, personal and family histories, insurance and support systems are reviewed. All of the committee members review each patient’s case and test results to determine whether there are any issues which need to be further addressed before the patient can be placed on the liver transplant list.

There are three potential decisions that may be made regarding a patient by the Liver Transplant Evaluation Committee:

• The patient meets the criteria and is approved to be listed.
• The patient does not meet the criteria and cannot be listed.
• More information or testing is needed to make the determination and the decision is deferred until the information can be obtained.

If it is determined that you are an appropriate candidate for placement on the transplant list, you have completed all of the required tests and have received authorization from your insurance company, you are then listed for liver transplant. After the transplant evaluation meeting, you and your referring doctors would receive a letter about the Transplant Committee’s decision.

Patient and Family Education Class

The Liver Transplant Patient Education class is designed to provide you and your caregivers with an explanation of the entire liver transplant experience. All liver transplant patients are required to attend with their intended caregivers before being listed for a transplant. At times, the class may be offered virtually such as during the COVID pandemic. When that is the case, copies of the slide presentations are sent to families prior to the class.

Listing

Getting Listed

All patient cases are presented at the Liver Transplant Evaluation Meeting, at which time their medical condition and social history are discussed. Committee members review each case to determine whether there are issues which need to be addressed further before you can be placed on the wait list for a liver. To be listed:

• You must attend the Patient Education Class (virtual or live)
• The Transplant Evaluation Committee has determined you are an appropriate candidate
• You have completed all the requested testing
• Your insurance company has authorized you to have the transplant at the University of Michigan.
Communication
It is important to communicate with our transplant team after being listed. This includes updating any changes with your health as well as financial or insurance changes.

On Hold
Patients who are listed for transplant can be given a status of “on hold” which makes the patient inactive on the list. The patient is still listed for transplant however will not receive organ offers while “on hold”. There are several reasons to be placed “on hold” such as changes in your medical condition, financial changes, social issues or your medical condition has improved.

Off the List
Patients may be removed from the transplant waiting list for several reasons:
• Complications
• Non-adherence to substance abuse policy
• Non-adherence to medications regimens, clinic appointments and lab tests
• Liver disease improves

Substance Abuse Policy
All patients are required to abstain from the use of alcohol, tobacco, marijuana and illegal drugs, and will be required to sign our policy form confirming their commitment to this policy. (See Substance Abuse Policy on page 29.)

Where and Who to Call – Before Transplant
Problems may occur while waiting for a liver transplant. It is extremely important the patient remain in contact with the liver transplant team. Please contact us at (800) 333-9013.

Getting a Liver
The MELD system was created to allocate livers to all patients listed in a consistent manner that provides livers to those patients who are at the greatest risk of dying before transplant. The system is complex. There are many factors in determining to whom an organ will be offered. Patients are encouraged not to focus too much attention on their MELD score.
When the Call Comes

The call advising of an available liver can come at any time. The first notification comes to the transplant coordinator, who works in collaboration with the surgeon.

Time Considerations

• Coordination of organ retrieval
• Organ preservation time
• Coordination of recipient operation
• Adequate travel time for patient to drive safely

When you get to Michigan Medicine for Transplant

Follow instructions given to you by the transplant coordinator you speak with on the phone.

Living Liver Donation

Living donation provides an opportunity for a recipient to receive a portion of a liver from a live person.

What are the Advantages of Living Donation Over Non-living Donation?

Living donor liver transplants have many advantages. The primary advantage of living donation is that the transplant can be done earlier, before the recipient becomes too sick. The healthier a person is before surgery, the better the outcome. Recipients of living donor transplants have excellent long-term outcomes after transplant. Living donor transplant can also allow families to schedule and prepare for the surgery and recovery afterwards.

What are the Qualifications to be a Living Donor?

A person must be physically fit, in good general health, and free from diabetes, cancer, and heart disease to be a living donor. People considered for living liver donation at the University of Michigan must be between the ages of 21 and 55. The living donor must first undergo a blood test to determine blood type compatibility with the recipient. If compatible, the donor undergoes a medical history review and a complete physical and psychosocial examination. The decision to become a living donor is a voluntary one, and the donor may change his or her mind at any time during the process. The donor’s decision and reasons are kept confidential.
What are the Costs Related to Living Donation?

Medical costs associated with evaluating a living donor are covered by Michigan Medicine. The donor will not have any costs associated with the evaluation, surgical procedure, follow-up or any related complications. Living donors may be eligible for financial assistance through the National Living Donor Assistance Program. This is a federally funded program that provides funding to cover travel, lodging, and meal costs associated with the donor evaluation, surgery, and follow-up appointments.

Will Living Donors Be Entitled to Disability Pay?

If a living donor’s job provides disability insurance coverage, he/she will most likely be entitled to disability pay. Living donors should check with their employer.

Will Donating a Liver Prevent You from Becoming Pregnant or Fathering a Child?

No. Living donation does not have any impact on fertility.

Should Living Donors Stop Smoking Before Surgery?

People must stop smoking to be a donor, even if they are light smokers. Smokers have an increased risk of complications with any surgery.

Should Living Donors Stop Drinking Alcohol?

To be a liver donor, a person must stop drinking all alcohol before the surgery. If a donor has a history of heavy alcohol use, it is very important to tell the doctors. Donors should not return to drinking alcohol until six months after surgery.

Should Living Donors Stop Taking My Medication(s) Before the Evaluation or the Surgery?

Do not stop any prescription medication unless advised to do so by a doctor. Be sure to tell the transplant doctor and team about all prescription and over-the-counter medications currently taken.

Will Living Donors Need Someone to Accompany Them During Their Donor Evaluation?

Yes, a care partner is required for the donor evaluation appointments. The care partner is the person donors choose to support them through the process of living liver donation. This person will also be responsible for helping to care for the donor after surgery.
How Long Will It Take for a Living Donor to Recover?

A donor is typically hospitalized for five to seven days after the surgery. The recovery time varies from four to 12 weeks depending on the type of work and activity of the donor.

Living Liver Donor Eligibility

- Age 21-55
- No major medical problems
- No significant mental illness or substance abuse
- Anatomic considerations of donor and recipient
- BMI<35 – Donors who are interested in structured weight loss program to facilitate donation may be offered consultation with a registered dietitian

Living Donor Contact Information

Potential living donors can contact the University of Michigan Transplant Center at (800) 333-9013 or TXP-Donors@med.umich.edu to speak with a living donor coordinator or go online to submit contact information at UofMHealth.org/transplant.

Living Liver Donor Facts

Compatibility

All living liver donors must have a compatible blood type with the intended recipient.

Resources for Living Liver Donation

- Youtube.com/watch?v=itIBtkQACiI – YouTube video: Living Donation in Liver Transplantation by Dr. Benjamin Samstein (8 minutes, 14 seconds)
- UofMHealth.org/conditions-treatments/transplant/liver-transplant – University of Michigan Transplant Center website
- WeAreTransplant.com – We are Transplant
- ustransplant.org – Supporting the transplant community
- unos.org – United Network for Organ Sharing (UNOS)
**Steps to Living Liver Donation**

- Contact the Living Donor Office at (800) 333-9013 or TXP-DONORS@med.umich.edu to complete initial intake and determine eligibility.
- Review any records if requested to determine if donor is eligible to proceed with evaluation.
- Obtain verification of blood type and Liver Function Blood Test.
- Complete a Formal Evaluation. This may consist of a few different appointments that will be at Michigan Medicine.
- Complete Cancer Screening according to the American Cancer Society Guidelines. This is considered general health maintenance and should be covered by the donor’s insurance.

**Financial Perspective**

Expenses related to living donation evaluation process for Living Donors are covered by the Transplant Center. However, we are unable to reimburse donors for lost wages, traveling or lodging costs. The National Living Donor Assistance Program is a Federal program that may be able to provide assistance with costs associated with Living Donation. Please visit LivingDonorAssistance.org/documents/NLDAC_Program_Brochure.pdf for more information.

**Post-Donation and Recovery**

Donors are generally discharged from the hospital within three to six days after surgery. Expected recovery varies, however average recovery time is about six weeks. About 50 percent of donors return to work at four weeks after donation, 75 percent of donors return to work at eight weeks after donation and nearly 100 percent of donors return to work by 12 weeks after donation. This does depend on the type of employment and lifestyle the donor is returning to as well as individual recovery process. A two-week post-operative appointment will be scheduled at Michigan Medicine to determine expected clearance to return to daily activities.

**Financial Information**

In addition to a medical check-up while you wait for transplant, it is important to check-in with your financial coordinator. Your coordinator is determined by the first letter of your last name.

- A-J  Anne Rieder  (734) 647-0953  amrieder@med.umich.edu
- K-Z  Frankie Mautone  (734) 232-9984  fmhall@med.umich.edu

Telling new information to the registration staff is not enough. It is possible for information to be updated in the main system before our transplant system. Follow up with a call to your coordinator to be certain that we have your most current insurance on file.
When should I call my financial coordinator?

- If you have new health coverage of your own or through a spouse/parent. You want to make sure your new health plan participates with our transplant center.
- If your current employer coverage changed to COBRA.
- If you lose your health or prescription coverage.

When insurance changes, new authorization may be needed for your pending transplant. If that is not done before transplant, you are at risk of not having coverage when you need it the most.

Sometimes there are contract or network issues that come up when insurance changes. These changes may affect your ability to remain with our transplant center.

What Should I Do During Open Enrollment or if My Insurance Changes?

Each year employer groups, Medicare, and Medicaid offer people a chance to change their insurance coverage. Michigan Medicine participates with most health plans but not all. A change in coverage may affect your ability to stay with our transplant center.

Call your financial coordinator before you make a change to be sure the plan you choose will work with Michigan Medicine. Also call your coordinator after any changes occur; new transplant authorization may be needed.

Whenever possible, avoid Medicare advantage plans or Medicare HMOs. Monthly premiums for the advantage plans may appear to be less expensive for separate Part B, supplement, and drug plans, but the cost to you for deductibles, copays, or networking issues end up costing you much more.

What if I don’t have enough coverage or am worried about the future?

Even with ideal medical and prescription coverage at the time of transplant, there is no guarantee that it will always be available. There may be additional expenses after transplant such as frequent travel to and from the transplant center, additional prescription copays, and possible hotel expenses.

If you have any concern about how to manage current or future medical/prescription costs, we recommend fundraising.

- HelpHopeLive (800) 642-8399 HelpHopeLive.org
- National Foundation for Transplants (800) 489-3863 Transplants.org
- Children’s Organ Transplant Association (800) 366-2682 Cota.org
Each of these organizations work exclusively with people who need transplants and are familiar with the challenges you face and goals you may want to set. All money raised is held by them and protected from being considered a taxable income or asset. This is important to anyone receiving assistance through Medicaid or other low-income programs.

**Medicaid**

Michigan Medicaid may be an option for you if you meet certain income requirements. For further information and an online application, please visit MIBridges.michigan.gov/access/accessController?id=0.7691187720935347.

**MSupport**

MSupport is a program offered by Michigan Medicine for those who meet income requirements. This is a short-term plan that can help cover medical expenses at The University of Michigan. This can help some people while they look for new coverage. This alone will NOT cover transplant. It can assist with Medicaid spenddowns or high out-of-pocket costs.

Visit Med.Umich.edu/pdf/finance/MSupport_Application.pdf for more information or to print the application. You may also contact MSupport directly at (855) 853-5380.

**Patient Financial Counselors**

If you are interested in individual and family plans available for purchase through The Market Place, you can get more information from our Patient Financial Counselors at (877) 326-9155 or by visiting UofMHealth.org/patient-visitor-guide/newoptions.

**Extra Help (Medicare Rx Drug Cost)**

If you have Medicare, you may qualify for something called “Extra Help”. This is a low income subsidy that helps patients with Medicare Part D out-of-pocket cost and premiums. Please visit https://secure.ssa.gov/i1020/start for an application, or call (800) 772-1213.

**What Do I Need to Remember?**

Medical coverage and your ability to handle the expense is vital to the success of your transplant. Changes happen and we need to know about them.

To ensure the success of your pending transplant, start with frequent communications with your financial coordinator. They may not be able to resolve all issues but being aware of them is key to finding a solution.
Nutrition Goals Before Transplant

General Nutrition

It is important to stay as healthy as possible before transplant. Symptoms of your liver disease may make it difficult to consume enough nutrients and change your body’s normal way of using nutrients. Here are some healthy lifestyle tips:

- Liver disease often increases calorie and protein needs. Aim to eat at least three meals and two snacks per day or four to six smaller meals if feeling full quickly after eating.
- Try to follow the MyPlate guide, as shown, for every meal.
- Follow a Mediterranean-style diet: lean proteins, low-fat dairy, whole grains, fruits, vegetables, and healthy fats.
- Include a protein source with every meal and snack as well as a bedtime snack containing protein.
- High calorie foods such as olive oil, butter, whole fat dairy, avocados, and nuts can help reach calorie needs as well as nutritional supplements.
- Avoid foods that may cause foodborne illness such as unpasteurized or undercooked foods.
- Prevent vitamin and mineral deficiencies. It may be recommended to take a multi-vitamin.
- Stay as active as possible by including exercise into your day.

Weight Loss

Obesity may be a contraindication for liver transplant. If you have been instructed to lose weight, the following are recommended for you:

- Follow the MyPlate guide for every meal as mentioned above.
- Follow a Mediterranean-style diet.
- Use a smaller plate at meals to help with portion control. Limit unnecessary snacking.
- Limit added sugar in the diet such as pop, juice, and sweets.
- Include physical activity.
**Fluid Retention**

Sodium in the diet encourages the body to retain water. This is known as ascites or edema. The fluid may gather in the feet, legs, abdomen or other body tissues. A low-sodium diet can lower fluid buildup and help you feel better. Here are some tips and facts:

- Almost all foods naturally contain some sodium. The amount found in unsalted food is adequate to meet your body’s needs.
- Limit sodium to no more than 2,000mg (2 grams) per day.
- One teaspoon of salt contains 2,300mg of sodium.
- Read nutrition facts labels on all foods and drinks to look for sodium content. It will be labeled in milligrams (mg).
- Avoid any form of added salt.
- Avoid salt substitutes such as No-Salt and Nu-Salt. These still contain sodium and are very high in potassium which can affect your diuretics.
- Limit eating out as much as possible.
- Hidden sodium sources may be softened water, bottled water and some medications (such as antacids, laxatives and antibiotics).

**Nutrition Goals After Transplant**

**General Nutrition**

After surgery, your body will need enough calories and protein to help with healing. Some patients eat well soon after surgery while others take some time. Here are some tips to ensure proper nutrition as you advance to a regular diet:

- Eat regularly throughout the day. Either three meals and two snacks, or four-six smaller meals, whichever your body can handle. Avoid skipping meals.
- Include a protein source at each meal and snack.
- Include high calorie foods or nutritional supplements if your appetite is poor and you need to increase calories.
- Once you have fully healed from surgery, follow healthy eating and exercise habits to maintain a healthful weight. A Mediterranean-style diet is recommended.
- If you are struggling with fluid accumulation, continue a low-sodium diet of 2,000mg per day.
Liver transplant patients should have their cholesterol/lipid checked yearly as they are more likely to develop high cholesterol levels. Patients are encouraged to keep their cholesterol and lipids under control by:

- Controlling weight with healthy eating and exercise.
- Use of cholesterol and lipid medications as prescribed by your doctor.
- Smoking cessation.

**Hyperglycemia**

Steroids may elevate blood sugar and can lead to steroid-induced diabetes. Whether your blood sugar is elevated for this reason or you previously had diabetes, here are some tips:

- Carbohydrates are found in grains, starches, fruit, starchy vegetables, beans, dairy and sweets.
- Limit high-carbohydrate foods. They are an important source of nutrition, but eating too many at once can cause high blood sugars.
- Consume well-balanced meals that include a protein, starch, and fruit or vegetable.
- Try to eat the same amount of carbohydrates at each meal.
- Avoid skipping meals.
- Don’t drink your carbohydrates. Sugary beverages can increase your blood sugar without providing much nourishment. Limit any sweetened beverage to no more than 4 oz per day.

**Nutrient Imbalances**

Some post-transplant medications may cause mineral imbalances specifically in potassium, magnesium, phosphorus, and calcium. Potassium can often be elevated while magnesium and phosphorus are depleted. Long-term use of steroids can lead to bone loss. Be sure to limit or include foods containing these nutrients as needed.

**Food Safety**

It will be very important to follow good food safety practices to prevent food borne illness. Post-transplant patients are at risk for this type of illness due to taking immunosuppressant medications. Your risk is highest one to six months after transplantation. The following is recommended:

- Avoid cross contamination. Keep raw and ready-to-eat foods separate.
- Frequently wash your hands and counter space.
- Be sure food is being stored at safe temperatures. The refrigerator should be kept at 40°F or below, and the freezer at 0°F or below.
• Avoid using food past expiration dates.
• Avoid purchasing dented or bulging cans, or jars that are cracked or have unsealed lids.
• Check eggs – open carton and do not buy if any are broken or cracked.
• Avoid unpasteurized foods and sprouts.
• Do not eat any raw or undercooked meats, poultry, seafood or eggs.
• Avoid salad bars and buffets.
• Wash fruits and vegetables.
• Well water should be tested periodically for contamination.
• Use refrigerated leftovers within two days.
• Meat, poultry and seafood need to stay cold while they thaw. Thaw them:
  - In the refrigerator – one to two days before you will cook.
  - In the microwave – use the defrost setting, then cook right away.
• Cook food until proper internal temperature is reached.

**Drug-Nutrient Interactions**

The following should be avoided due to interference with certain post-transplant medications:
• Grapefruit
• Papaya
• Pomegranate
• Pomelo
• Starfruit
• Seville oranges
• St. John’s Wort
• Astragalus
• Evening Primrose Oil
• Echinacea
• Ginseng
• Garlic in supplement form. Raw garlic for cooking is OK.
• Green tea extract

Please let the transplant team know of any supplements you are taking.
While following a diet specific for liver disease, keep in mind any other diet restrictions you may have as advised by your doctor or dietitian. The transplant dietitian can help create a diet plan specific to your needs after transplant. Do not hesitate to contact the transplant dietitian with any questions at (734) 936-8273.

After My Liver Transplant

Contact Information

If you have questions after discharge, please call our clinic during business hours Monday thru Friday 8:00 a.m. to 4:30 p.m. at (800) 333-9013. After business hours, holidays and weekends, please call the hospital operator at (734) 936-4000 and ask for the liver transplant on-call physician. For non-urgent needs we strongly urge you to use the patient portal for contact with your transplant team. In some cases, you may get a quicker response.

Social Support Plan

Friends and family need to be ready to provide support during your transplant recovery. Their hands-on help and emotional support is very important. Your caregivers will support you during your recovery by learning your new medications along with you, helping at home after discharge and driving you to clinic visits and the lab when you cannot drive. Social work is available to help you and your caregivers as you adjust to lifestyle changes as a new transplant patient.

Medication Schedule

Transplant patients start taking many new medicines after surgery. You will learn about your medicines and begin taking them in the hospital according to a personalized schedule. It is very important to never stop taking your transplant medicines. Skipping or decreasing doses of any medicine may cause harm to your new liver. If you have problems paying or getting your medicines, please call the Transplant Center at (800) 333-9013 so we can help you. Plan ahead so you always have your transplant medicines when you need to take them.

What Medication Will I be Taking?

There are three classes of medicine that you will be taking:

• **Anti-rejection** – Also called immunosuppressive, these weaken your own immune system without eliminating it. Immediately after transplant, you will start taking a combination of anti-rejection medicines. Tacrolimus, mycophenolate and prednisone are most commonly used. Each medicine works differently in the body to prevent rejection of the liver.
• **Anti-infective** – Usually only taken for the first one to six months after transplant because you will be at high risk for infection due to having a decreased immune system. Since you take anti-rejection medicines that lower the resistance to fight infections, some medicines are given to help prevent infections.

• **General Maintenance Medicine** – You may need to continue some medicines to treat your other medical conditions that are not related to liver failure. You may need to start new medicines to treat the side effects of the anti-rejection medicines. Some examples are diabetes, high blood pressure, and chronic kidney disease.

The success of your liver transplant depends on you taking the correct dose of the anti-rejection medicines as prescribed. You and your caregiver will be expected to pass a quiz on the medicines before being released from the hospital. For your prescriptions, remember to call your transplant nurse two weeks before they run out to get a refill.

**Transplant Specialty Pharmacy**

Michigan Medicine has a Transplant Specialty Pharmacy whose only focus is to serve transplant patients, ensuring they have ongoing and timely access to their medications. The specialty pharmacy offers financial counseling and support services to help transplant patients navigate the difficulties with insurance coverage. It allows patients to obtain answers to questions regarding their medication regimen and medication side effects. The Transplant Pharmacy has the ability to mail prescriptions to patients in the state of Michigan. For questions about the pharmacy, call (866) 946-7695.

Note:

• You must contact the transplant team before you take any over-the-counter medicine and prescription not ordered by the transplant center.

• Pregnancy after transplant is considered high risk. It increases the risk of rejection to your transplanted organ and also causes complications with the pregnancy. You should discuss any planning of pregnancy with your transplant hepatologist.

**Laboratory Blood Draws**

An essential part of your transplant will be close monitoring of your transplanted liver for life. The best way to tell if your liver transplant is working well is by blood work. The results will tell your provider if further interventions are necessary such as more or less medications. You can have labs drawn close to your home with the results faxed to the transplant center.
**Clinic Visits**

Clinic visits are another way to monitor how well you are doing after a liver transplant. Visits are frequent immediately following transplant, but become less frequent as you recover. A clinic visit could lead to readmission based on your symptoms.

**Medical Procedures**

Medical procedures will be performed on an as-needed basis. Generally, they are most frequent following the transplant surgery or during a rejection episode. The procedure ordered is based on the problem that needs intervention. They could include, but not limited to, ultrasound, magnetic resonance imaging (MRI), computed tomography (CT) and liver biopsy.

**Reconnection to Local Gastroenterologist/Primary Care Physician**

We require all patients have a primary care physician appointment three months after transplant. The primary care provider will help your transplant doctors manage your general medical needs such as vaccines, mammograms, high blood pressure and diabetes. Maintaining contact with your local gastroenterologist will help you obtain routine health screenings, such as a colonoscopy when recommended. Most gastroenterologists and primary care physicians are not comfortable with transplant medications and possible complications. Therefore, you will most likely be a patient at Michigan Medicine Transplant for life to help manage your care in coordination with your local providers.

**Life After Transplant**

Without complications most patients are able to go back to work anywhere from six weeks to six months after transplant. Remember you had a liver transplant to improve your quality of life. It is our expectation that you return to work.

**Lifetime Commitment**

A successful liver transplant is a group effort between the patient, family and transplant team that requires a commitment to last a lifetime.
Who Do I Contact if I Have Questions?

If you have any questions at any point during the liver transplant process, please contact your transplant coordinator or the Transplant Call Center at (800) 333-9013.

Want to Learn More or Share Resources With Your Family and Friends?

This education booklet can be found on the University of Michigan Transplant Center website at UofMHealth.org/conditions-treatments/transplant/liver-transplant-patient-care-guide. A more detailed education book can be found at that link as well.

For general information about the University of Michigan Transplant Center, please visit UofMHealth.org/transplant.

Michigan Medicine Patient Portal

What is MyUofMHealth.org?

MyUofMHealth.org offers patients personalized and secure online access to portions of their medical records. It enables you to securely use the internet to help manage and receive information about your health. With MyUofMHealth.org, you can use the internet to:

- Request medical appointments.
- View your health summary from the MyUofMHealth.org electronic health record.
- View test results.
- Request prescription renewals.
- Access trusted health information resources.
- Communicate electronically and securely with your medical care team.

How Do I Sign Up?

Patients who wish to participate will be issued a MyUofMHealth.org activation code. There are two ways to get an activation code. Patients can get an activation code after their clinic visit or they can request an activation code by completing the online request form located on the MyUofMHealth.org website. This code will enable you to login and create your own username and password.
Who Do I Contact if I Have Further Questions?

You may e-mail HIM-PatientPortal@med.umich.edu, or you can call the Health Information Management Department at (734) 615-0872, Monday-Friday, 8 a.m.-5 p.m.

The University of Michigan Transplant Center is pleased to offer two types of visits: Clinic (in-person) and virtual (over video). Both options are available with most providers at the Transplant Center for many pre- and post-transplant appointments. If you are interested in a virtual visit, you must have access to the Michigan Medicine patient portal. Michigan Medicine currently cannot offer virtual visits for patients outside of Michigan. For more information, or to schedule any type of visit, please contact the Transplant Center at (800) 333-9013.

The Transplant Center has an education app available for download on Apple and Android devices. For details on the app, please visit UofMHealth.org/conditions-treatments/transplant/transplant-education-apps.

Parking and Getting to Appointments

Our patients and visitors may park in the convenient patient and visitor parking structure (P2 and P3) attached to the Taubman Center outpatient building and University Hospital. Handicapped parking spaces are clearly marked and available on each level of the structure near the patient elevators. The parking structure is staffed 24 hours a day, seven days a week. Multiple-day parking passes are available for family members staying for an extended period of time. Patients can validate their parking ticket in any outpatient clinic or at the nurses station of any inpatient unit to qualify for a reduced daily parking fee of $3.00 (if parked for more than eight hours.) Parking for less than eight hours costs $3.00 and does not require validation.

Parking information can be found online at UofMHealth.org/parking.

Patients and primary caregivers whose income falls below federal poverty guidelines may qualify for a reduced parking fee. This program is administered by the Guest Assistance Program (University Hospital, Room 2B203, telephone: [734] 764-6893 or [800] 888-9825).

Reception and information centers are located at all entrances to the hospitals and outpatient clinic areas. When you arrive, customer service personnel at these stations will gladly show you how to get to your doctor’s office or appointment location. In addition, help telephones are located throughout the hospital. If you or your family members require special assistance, wheelchairs, child strollers, stretchers, escorts, or valet parking are available at the main entrance and drop off areas at University Hospital, the Rogel Cancer Center, Frankel Cardiovascular Center, and C.S. Mott Children’s Hospital and Von Voigtlander Women’s Hospital.

For more information, please call Michigan Medicine at (734) 936-4000.
Michigan Medicine Patient and Visitor Accommodations Program

Patients and family members are encouraged to contact the Patient and Visitor Accommodations Program for help in finding and making reservations. Many hotels give a better rate when reservations are made through this program. For assistance with reservations please call (800) 544-8684 toll free, or (734) 936-0135.

There are multiple lodging options available for family members while you are in the hospital or staying in the area.

- Med Inn is within the University Hospital complex. Rooms are reserved for patients and family members of ICU patients. There are limited rooms available due to high demand. The cost is $80 for one bed, $85 for two beds or $99 for a suite.

- Local hotels sometimes offer discounts for family members of patients. The cost of local hotels range from $50 to $110 per night.

- Transplant House may be an ideal option if the family plans to stay in the area. Transplant House is a community living arrangement where the family has their own bedroom and they share the common areas of the home, such as the living room, dining room, kitchen and bathrooms. Advantages of Transplant House can be the relaxed home-like atmosphere and the opportunity to meet other families in similar circumstances. The cost is approximately $25 per night for two people sharing one bedroom. Transplant House is located about six blocks from the hospital and has bus shuttle availability each day from the North Ingalls building at the corner of North Ingalls and Catherine streets. Arrangements for a stay at the Transplant House must be made through your social worker.

More details on available accommodations can be found at Med.UMich.edu/hotels/profiles.

Transplant-related Websites

- University of Michigan Transplant Center
  UofMHealth.org/transplant
  The official website of the University of Michigan Transplant Center geared to provide patients with information regarding the Transplant Center and the transplant process for all solid organ programs.

- Scientific Registry of Transplant Recipients (SRTR)
  srtr.org
  The Scientific Registry of Transplant Recipients (SRTR) provides ongoing research to evaluate information and tracks all transplant patients from the time of transplant through discharge, then annually, until graft failure or death.
• **United Network for Organ Sharing**
  unos.org
  United Network for Organ Sharing is a non-profit, scientific, and educational organization that administers the Organ Procurement and Transplantation Network (OPTN), collects and maintains its data, and serves the transplant community.

• **Gift of Life Michigan (GOLM)**
  GiftOfLifeMichigan.org
  Gift of Life Michigan (GOLM) is the only non-profit full-service organ and tissue recovery agency in Michigan since 1971. As an organization, Gift of Life Michigan acts as an intermediary between the donor hospital and the recipient transplant center providing all the services necessary for organ, tissue and eye donation.

• **Transplant Living**
  TransplantLiving.org
  Transplant Living is a website supported by the United Network for Organ Sharing and is promoted as your prescription for transplant information.

• **Organ Procurement and Transplantation Network (OPTN)**
  optn.Transplant.hrsa.gov
  The Organ Procurement and Transplantation Network (OPTN) is a unique public-private partnership that is committed to improving the effectiveness of the nation’s organ procurement, donation and transplantation system.

• **Extra Help for Medicare**
  socialsecurity.gov/extrahelp
  A low-income subsidy set up through the federal government to help with Part D premiums and copays.
MLabs offers adult and pediatric blood drawing services through Michigan Medicine. No appointment is necessary for routine services except for the Howell Health Center location; please call ahead to schedule glucose tolerance testing. Hours are subject to change without notice. Please do not contact the specimen collection facility or blood drawing station for test result information.

Questions? 800.862.7284 or mlabs.umich.edu
MLABS BLOOD DRAWING LOCATIONS

BRIGHTON HEALTH CENTER
8001 Challis Road
P: 810.494.2649
F: 810.494.2645
Mon - Th 7am - 7pm
Fri 7am - 5pm
Sat 8am - Noon

BRIGHTON CENTER FOR SPECIALTY CARE
7500 Challis Road
P: 810.263.4087
F: 810.263.4090
Mon - Fri 7am - 6pm
Sat 7am - 4pm

CHELSEA HEALTH CENTER
14700 E. Old U.S. 12
P: 734.475.4483
F: 734.433.4246
Mon - Fri 8am - 4pm
Sat 8am - Noon

CHLSEA HEALTH CENTER
14700 E. Old U.S. 12
P: 734.475.4483
F: 734.433.4246
Mon - Fri 8am - 4pm
Sat 8am - Noon

DEXTER HEALTH CENTER
7300 Dexter-Ann Arbor Rd
P: 734.426.1724
F: 734.426.2707
Mon - Fri 8am - 3:30pm

SALINE HEALTH CENTER
700 Woodland Dr E
P: 734.295.0022
F: 734.429.1156
Mon-Fri 8am - 3:30pm

HOWELL HEALTH CENTER
3399 E Grand River Ave
P: 517.338.2058
F: 517.540.0203
Mon - Fri 8am - 3:30pm
BY APPOINTMENT ONLY

YPSILANTI HEALTH CENTER
200 Arnet St
(entry drive off Davis St)
P: 734.544.3277
F: 734.544.3272
Mon - Fri 8am - 5pm

LIVONIA HEALTH CENTER
20321 Farmington Rd
P: 248-473-4350
F: 248-888-1390
Mon-Fri 8am - 3:30pm

NORTHVILLE HEALTH CENTER
39901 Traditions Dr
(at 7 Mile & Haggerty)
P: 248-305-4640
F: 248-305-4642
Mon - Th 7am - 6:30pm
Fri 7am - 5pm
Sat 8am - Noon

CANTON HEALTH CENTER
1051 North Canton Center Rd
P: 734.844.5280
F: 734.844.5288
Mon - Th 7am - 7:30pm
Fri 7am - 5pm
Sat 8am - Noon

BY APPOINTMENT ONLY

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Michigan Transplant Center Policy #321

Tobacco Cessation Policy

I. POLICY STATEMENT

The University of Michigan Adult Liver Transplant Program requires tobacco use cessation of all patients listed for liver transplantation.

II. PURPOSE

The purpose of this policy is to describe our requirement for tobacco use cessation, to describe resources available to support tobacco cessation among candidates for liver transplantation, and to provide guidelines for enforcement of the policy and the response to noncompliance with the tobacco cessation policy.

In addition, the policy document provides justification for the policy from the best available medical evidence about tobacco use among transplant patients.

III. DEFINITIONS

Tobacco use: Active use of any amount or frequency of any tobacco product (including inhaled and smokeless products)

Cotinine: Metabolite of nicotine that may be measured in the serum or urine and used to confirm exposure to tobacco products. Subjects who are using tobacco or a high dose nicotine patch will have detectable cotinine in the urine and serum.

Anabasine: Tobacco products contain two alkaloids, nornicotine and anabasine. The presence of anabasine in the urine at > 10 ng/ml indicates active tobacco use and is used to confirm active tobacco product use (Anabasine positive) versus high dose nicotine patch (Anabasine negative). This test is a send out to Mayo labs.

IV. STANDARDS

A. Tobacco Cessation Education

1. All patients evaluated for liver transplantation at the University of Michigan will be informed of the program requirement that all individuals listed for liver transplantation within our program must not engage in the use of any tobacco product (inhaled or smokeless) prior to or after liver transplantation.

2. Active use of any tobacco product of any amount or frequency is considered a relative contraindication to active listing for liver transplantation. However, in cases where patients are urgently evaluated for liver transplantation (fulminant hepatic failure or acute decompensation of chronic liver disease) and have not had time to demonstrate compliance with tobacco use cessation, the treating physicians may proceed with evaluation and listing as clinically indicated. Tobacco cessation education and enforcement in these unique cases will be deferred to the post-transplant period.

3. Patients using tobacco products at the time of evaluation for liver transplantation will be referred to the University of Michigan MHealthy Tobacco Consultation Service (phone 734-998-6222, fax 734-998-2191, email quitsmoking@med.umich.edu, http://hr.umich.edu/mhealthy/programs/tobacco/consultation/) or their local smoking cessation program.

4. Tobacco product users with psychiatric co-morbidity/ substance abuse or those who have failed prior cessation efforts should be considered for treatment through the UMHS Adult Addiction Treatment Services at East Ann Arbor. Referrals can be made by calling intake coordinator Karen at 2-0465 or via MiChart referral.

B. Tobacco Cessation Enforcement

1. All patients with a history of tobacco use are expected to report to the transplant center (via their pre-transplant nurse or liver transplant coordinator) when they have quit tobacco use.

2. Tobacco use cessation will be confirmed by measurement of a serum cotinine level on a case-by-case basis. A negative cotinine test may be required for placement on the waiting list, and testing will be performed if there is any suspicion of continued use.

3. Documentation of a positive serum cotinine test is consistent with either tobacco or nicotine use. A urine anabasine level can be obtained to confirm active tobacco use. Subjects with a positive serum or urine cotinine level requires two consecutive negative tests over a minimum of 2 weeks or longer to be considered for active listing for liver transplantation. The serum cotinine test can be done at any laboratory while the urine anabasine test is a send out to MAYO labs from UMHS.
4. Evidence of relapsed tobacco use – documented by patient or family admission, and confirmed by serum cotinine test – will potentially prevent listing of a candidate in the evaluation process, and is grounds for placing a listed patient in inactive status, until tobacco use cessation is documented with at least one negative serum cotinine test.

V. EXHIBIT

A. General population

In the general population, smoking is a well-recognized risk factor for heart disease, stroke, peripheral vascular disease, kidney disease, peptic ulcer disease, lung disease, and cancer. Smoking increases the risk of all-cause mortality and contributes to approximately 5 million premature deaths per year. In 2000, smoking accounted for 4.83 million deaths worldwide. Based on prevalence of 30%, the World Health Organization has estimated that smoking will kill 8 million people a year by 2030.

B. Liver transplant recipients

1. Mortality and Morbidity

Among liver transplant recipients, smoking is associated with an increased overall mortality, cardiovascular-related mortality, and sepsis-related mortality in a retrospective study of 136 patients from Scotland. Self-reported smokers had a similar 1-year survival to patients who denied smoking, but those who reported smoking had a higher mean length of hospital stay and significantly higher hospital charges. Smokers were also found to have a higher incidence of ascites and encephalopathy at referral to the transplantation program. There was, however, no elevation in Model for End-Stage Liver Disease score or Child-Turcotte-Pugh score.

2. Biliary Complications

Data from our institution showed that active smokers had a 92% higher rate of biliary complication rates compared with lifetime nonsmokers (HR, 1.92; 95% CI, 1.07–3.43). Smoking clearly portends a significant risk of biliary complications following liver transplantation (LT).

3. Vascular Complications

Smoking is associated with a higher risk for developing vascular complications, especially arterial complications after liver transplantation. In patients with a history of cigarette smoking, incidence of vascular complications was higher than in those without history of cigarette smoking (17.8% v 8%, P=0.02). Having quit cigarette smoking 2 years before liver transplantation reduced the incidence of vascular complications by 58.6% (24.4% v 11.8%, P=0.04). The incidence of arterial complications was also higher in patients with a history of cigarette smoking compared with those without such history (13.5% v 4.8%, P=0.015). Cigarette smoking cessation for 2 years also reduced the risk of arterial complications by 77.6% (21.8% v 5.9%, P=0.005). However, the incidence of venous complications was not associated with cigarette smoking. Furthermore, there was no significant association between development of vascular complications and all other characteristics studied.

4. Post-transplant malignancy

At 10 years, the cumulative rate of malignancies was 12.7% in active smokers compared with 2.1% in nonsmokers (P=0.019). Tobacco use is also associated with a higher incidence of posttransplantation de novo noncutaneous neoplasms as well as solid organ (10.5% at 10 years) and hematologic malignancy (3.2% at 10 years), especially in those transplanted for primary sclerosing cholangitis and alcoholic liver disease.

C. Conclusion

Smoking has a negative impact upon health regardless of transplant status. Smoking status should be clearly defined when evaluating transplant candidacy and in counseling patients with cirrhosis. Efforts should be made to counsel all liver transplant recipients against smoking. Tobacco cessation aids, support and counseling should be provided to active smokers so that they can successfully quit smoking and stay free of nicotinic products prior to liver transplantation. This measure may decrease morbidity, length of hospitalization stay and vascular and biliary complications as well as improve overall post-transplant survival.

VI. REFERENCES


Michigan Transplant Center Policy #232
Policy on Substance Use and Liver Transplantation

The University of Michigan Liver Transplant Program requires that all liver transplant candidates agree to abstain completely from tobacco, electronic cigarettes, alcohol, marijuana (including “medical” marijuana), and any illicit substances. Illicit substances include cocaine, heroin, hallucinogens, and controlled substances not prescribed by a physician or that are being used for non-medical purposes. Any use of any of these substances in any form is NOT ALLOWED under this policy. The information regarding a patient’s previous and current tobacco, drug, and alcohol use provided during the evaluation for a liver transplant at the University of Michigan must be correct. If in the future the Transplant Team finds that a patient has not been completely truthful, that patient may be removed from the transplant list.

Patients currently using tobacco products at the time of their transplant evaluation must discontinue use in order to be placed on the waiting list for transplant. We will assist you in identifying resources to help you discontinue use if necessary and the Transplant Team must be made aware of any nicotine-replacement therapy (patches, gum, lozenges) being used. If there is concern about ongoing tobacco use, urine testing for tobacco products will be performed. A positive test or refusal to have the test performed may prevent you from being placed on the transplant waiting list.

In addition, if in the future any patient, either waiting for a liver transplant on the University of Michigan list or currently being evaluated as a potential recipient of a liver transplant, is found to have consumed alcohol, marijuana, or used an illicit drug, that patient will be removed from the transplant list. A positive test for alcohol, marijuana, or illicit substances in the blood or urine of a patient is considered to be absolute evidence that the patient has violated this substance use policy. Patients must therefore be certain they do not ingest any alcohol of any kind, including cough medicines, over the counter medications, or “alcohol free” beers that contain small amounts of alcohol. A conviction for driving while intoxicated or impaired will similarly be considered to be a violation of this policy.

When requested, patients accepted for liver transplantation must agree to undergo random urine or blood screens for alcohol, marijuana, and illegal substances. Refusal to undergo such a test in the timeframe requested will be treated the same as a positive test and the patient will be removed from the transplant list.

I have read the above policy, questions about the policy have been answered to my satisfaction, and I understand the meaning of the policy. I agree to follow it. I have received a copy of this policy.

Patient signature ____________________________________________ Date __________________

Witness ______________________________________________________ Date __________________

I have explained the above policy to ________________________________________________ and answered any questions they or their family have asked.

Social Worker signature ____________________________________________ Date __________________