

This patient education information sheet contains answers to the following questions:

- What happens during the recovery period after liver transplantation in the intensive care unit and nursing unit in the hospital?
- How can individuals donate their organs?
- Is receiving a liver donated by a living relative an option in transplantation?
- Do individuals who have received a transplanted liver have to take medicines to treat or prevent rejection for the rest of their lives?
- How frequent is the medical follow-up of a patient after liver transplantation?
- Are patients who have received a transplanted liver more susceptible to other infections?
- Can individuals have physical activity after receiving a new liver? Sexual activity?
- Can a patient's original liver disease that caused the need for transplantation reoccur in the new, transplanted liver?
- From the description, patients with successful liver transplants seem very healthy. How long can this good health last?
- Where do the livers that are donated for liver transplantation surgery come from?
- Do the patient who is donating the liver known as the donor, and the patient who will receive the liver known as the recipient have to be matched by tissue type, sex, age, etc.?
- What happens if two suitable recipients exist to receive a liver that has been donated?
- How is the decision made to transplant a patient's liver?
- What are the major risks in liver transplantation?
- What are the overall chances of surviving a liver transplant?
- How long does it take to recover from liver transplantation?
- If a patient's transplanted liver fails to function or is rejected, what can be done?
- What side effects do patients who have had liver transplantation commonly experience from the medicines they take to treat or prevent rejection?
- Which diseases are treated by liver transplantation?
- What is the connection between alcohol-related liver disease and liver transplantation?
- Is liver transplantation a common treatment for cancer of the liver?
- Are treatments other than liver transplantation used for liver diseases?
- Is liver transplantation a treatment of last resort, when everything else has failed?

What happens during the recovery period after liver transplantation in the intensive care unit and nursing unit in the hospital?

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Initially when the patient is in the intensive care unit, we closely monitor the patient's bodily functions, including the liver function, very carefully. Once the patient has been transferred to the floor nursing unit, we decrease the frequency of blood testing, allowing eating, and initiate physical therapy and activity to help regain muscle strength. Some of the medicines to prevent rejection are initially given intravenously or by vein, but others are given by mouth immediately and eventually all medications are given by mouth. During the first six weeks after liver transplantation, we will request that the patient have frequent blood tests and other exams to monitor liver function and detect any evidence of rejection or infection in the new liver.

How can individuals donate their organs?

If you wish to be an organ donor, carry an organ donor card and place an organ donor sticker on your medical identification card. It is important to discuss organ donation with family members since they will have to give consent for the donation. For further information on this, contact the [United Network for Organ Sharing](#), also called (UNOS), at 1-888-894-6361, or locally in our region you can contact the [California Transplant Donor Network](#) at 1-800-553-6667.

Is receiving a liver donated by a living relative an option in transplantation?

Yes. To explore this option, review California Pacific Medical Center's special information on living-related liver transplantation and discuss this issue with your surgeon and your hepatologist. Our center does not perform this type of surgery, and we often refer to regional centers if this appears to be a good idea.

Do individuals who have received a transplanted liver have to take medicines to treat or prevent rejection for the rest of their lives?

Yes, in general that is true, although every patient who has been involved with liver transplantation has often heard of that special case of someone who was able to stop the medication. Importantly, almost all patients who have to take these medicines long term can also undergo dose reduction as the body adjusts to the transplanted liver and the amount of medicine needed to control or prevent rejection is reduced.

How frequent is the medical follow-up of a patient after liver transplantation?

Routine follow-up after the few months from the time of liver transplantation consists of monthly blood tests and office appointments. These tests include a check of blood pressure and a local exam by your local physicians to allow us to look for and prevent complications of liver transplantation. We ask the patients to return to CPMC (California Pacific Medical Center) once or twice a year at our local medical center where the transplant was performed.

Are patients who have received a transplanted liver more susceptible to other infections?

Individuals who have received a liver transplant need to avoid exposure to infections as their immune system is suppressed. Also, they need to report illnesses to their doctor immediately, especially fevers, and take over-the-counter medications or prescription medications only under their doctor's direct supervision. It may be their local doctor or their doctor at CPMC (California Pacific Medical Center).

Can individuals have physical activity after receiving a new liver? Sexual activity?

We encourage you to get out of bed as soon as you can after your transplant and move and walk around your room in the first few days. Most patients can return to a normal or near-normal existence and participate in fairly vigorous physical exercise six to 12 months after successful liver transplant. Often we let patients drive as little as 2 to 3 months after liver transplantation. As with other physical activities, sexual activity may be resumed when desired.

Can a patient's original liver disease that caused the need for transplantation reoccur in the new, transplanted liver?

If a patient's liver disease was caused by autoimmune hepatitis, hepatitis B or C viruses, then recurrence is possible. Hepatitis B right now only reoccurs in 5% or less of patients since we have mastered controlling this disease with an immune globulin medicine and an oral medication. Hepatitis C occurs in almost all patients and is progressive in maybe a quarter to half of patients in the first 5 to 10 years. For other types of liver disease, recurrence is less likely, but is still a possibility unless it was a genetic disease that was cured by the liver transplantation.

From the description, patients with successful liver transplants seem very healthy. How long can this good health last?

The newness of liver transplantation makes this question difficult to answer. There is every indication that those who are well one year after a liver transplant have an excellent chance at long term survival. Heart disease and cancer are the most common diseases that can result in death after transplant besides recurrent disease. Patients should not smoke or drink alcohol after liver transplantation.

Where do the livers that are donated for liver transplantation surgery come from?

Livers are donated, with the consent of the next of kin, from individuals who have had brain death. Brain death is usually the result of a head injury or a brain hemorrhage. When such a donor is identified, a network of skilled professionals connected by computers contact the transplant centers and makes arrangements to retrieve whatever organs may be donated. Frequently, this involves a team of skilled professionals from transplant centers flying to the donor hospital to remove the organs and return with them for the transplant operation.

Do the patient who is donating the liver known as the donor, and the patient who will receive the liver known as the recipient have to be matched by tissue type, sex, age, etc.?

No. At this time for liver transplantation, the only requirements are that the donor and recipient need to be approximately the same size and have compatible blood types. No other matching is necessary such as gender or age.

What happens if two suitable recipients exist to receive a liver that has been donated?

This is unusual in practice. But, the decision would be made to transplant the patient who is more ill or with more urgent need using the MELD score. MELD stands for Model for End Stage Liver Disease and is a scoring system using renal function, Bilirubin and a coagulation test, called the INR, to determine how ill someone is and their chance of living or dying while awaiting a liver transplant or in general with liver failure.

How is the decision made to transplant a patient's liver?

The decision to transplant a patient's liver is made in consultation with all individuals involved in the patient's care, including the patient, referring physician, and the patient's family. The patient and family's input is vital in this decision-making process; they must clearly understand the risks involved in proceeding to transplantation and the post transplant care. In general, this means that a person has a poor chance of living in the next 1-2 years from their underlying liver disease.

What are the major risks in liver transplantation?

Before liver transplantation, risks to the patient are mainly those who develop acute liver failure and its complications of bleeding, coma, kidney failure or progressive complications of chronic liver failure that might render the patient an unacceptable risk for surgery. This can also include intestinal bleeding, severe abdominal fluid accumulation, confusion as well as coma and severe infections.

With surgery, the risks are those that are common to all forms of major surgery, or involve technical difficulties in removing the diseased liver, involve implanting the donor liver, and/or involve consequences of being without liver function briefly. Immediately after the operation, risks include bleeding, poor function of the grafted liver, bile leaks, and infections. We monitor the patient carefully for several weeks after surgery for signs that the patient is rejecting the new liver as well. Rejection long-term becomes less and less common.

What are the overall chances of surviving a liver transplant?

The answer to this question depends on many factors. But overall, 87% to 95% of adult patients at CPMC (California Pacific Medical Center) live for the first year.

How long does it take to recover from liver transplantation?

Recovery after liver transplantation depends in part on how ill the patient was prior to surgery. Most patients need to count on spending a few days in the hospital in the intensive care unit and another few days on the ward; about a minimum of 6 days in the hospital is our estimate. The range of days spent in the hospitalization is from five days to maybe even six weeks.

If a patient's transplanted liver fails to function or is rejected, what can be done?

There are varying degrees of failure of the liver; even with imperfect function, patients can remain quite well. Occasionally, when circumstances and time permit, a patient's transplanted liver that is failing can be replaced by a second or even a third transplant. With new advances in medicine, you may want to discuss with your doctor the possibility of a new liver support device that can postpone the need for transplantation or possibly improve the likelihood of a successful transplant. These devices are still in research but are often discussed with patients when they are admitted to the hospital.

What side effects do patients who have had liver transplantation commonly experience from the medicines they take to treat or prevent rejection?

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All the medications used for rejection or to prevent rejection increase a patient's susceptibility to infections and possibly, even though this is more remote, the development of tumors. Various medicines are used, and each has its own set of effects and side effects. Cortisone-like drugs, like prednisone, produce some fluid retention and puffiness of the face, and they carry a risk of worsening or bringing out diabetes and osteoporosis. Osteoporosis, as you know, is a loss of mineral from the bone.

Prograf[®], also called tacrolimus (Prograf), and cyclosporine (many brand and generic names including Gengraf[®]) produce some tendency of high blood pressure as well as diabetes. Cyclosporine can cause growth of body hair as well as periodontal disease or dental disease in your mouth. The dose of cyclosporine must be very carefully regulated as that of the Prograf. Kidney damage can occur from cyclosporine or Prograf, but this can usually be avoided by monitoring the medications levels in the patient's blood. Prograf and CellCept[®] are the most commonly used medications at California Pacific Medical Center and CellCept can cause ulcers of the stomach and potentially, although this is remote, CMV infections. This is a special type of virus that occurs in patients who are immunosuppressed. Rapamune[®] or rapamycin can also have a number of problems and is rarely used.

Which diseases are treated by liver transplantation?

A large number of diseases are capable of decreasing or interfering with the liver's function that's sufficient to threaten the life of the patient, like yourself. Most of these diseases are potentially treatable with liver transplantation. In adults, cirrhosis – which is a heavy accumulation of scar tissue due to the death of liver cells because of chronic viral hepatitis such as hepatitis C – is the most common disease for which liver transplantation is performed. In children, the disease most often treated by liver transplantation is biliary atresia, which is a failure of bile ducts to develop normally and drain bile from the liver.

What is the connection between alcohol-related liver disease and liver transplantation?

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Most people who develop cirrhosis of the liver due to excessive alcohol use do not need a liver transplant; they just need to stop drinking. Abstinence from alcohol and treatment of complications of alcohol induced cirrhosis usually allow them to live for a long period of time without a liver transplant, potentially forever. For patients with advanced liver disease, where prolonged abstinence and medical treatment fail to restore health and liver disease is progressive, we discuss liver transplantation. All patients in this setting must be alcohol free for at least 6 months before they can be listed for a liver transplant as well as attend Alcoholics Anonymous and have random alcohol and tox screens.

Is liver transplantation a common treatment for cancer of the liver?

Most cancers of the liver begin somewhere else in the body and spread to the liver. The most common example is colon cancer, but of course there are a number of other cancers that can also be metastatic to the liver. Typically these are not curable with a liver transplant, and thus, these patients are not transplant candidates. Liver tumors that start in the liver, such as hepatocellular carcinoma, that have not spread to other organs can be cured by transplantation. However, if the liver cancer has spread outside the liver, the patient is not a candidate for liver transplantation. Patients with a single tumor that is less than 5 cm in size or have no more than three tumors all less than 3 cm in size can be cured with liver transplantation and have excellent long term survival.

Are treatments other than liver transplantation used for liver diseases?

There are a number of effective medications that exist to treat a variety of liver diseases, while for other liver diseases medical treatment of complications is really all we can do especially in patients with true end-stage liver disease. Treatment of complications may be all that is required if the liver is not failing and liver transplantation may not be required in many cases. Otherwise, medical treatment delays, but does not eliminate, the patient's need for a liver transplantation.

Is liver transplantation a treatment of last resort, when everything else has failed?

Well, yes and no. Medical treatment is likely to allow a patient's prolonged survival with good quality of life, then transplantation would be reserved for the future. However, ideally we like to undertake liver transplant surgery before the patient's disease is at the terminal stage when he or she is too ill to withstand major surgery and will not survive until a suitable donor liver is available.

Reviewed By: Todd Frederick, M.D.

Produced by the Center for Patient and Community Education in association with the staff and physicians at California Pacific Medical Center. Last updated: 6/11

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Funded by: A generous donation from the Mr. and Mrs. Arthur A. Ciocca Foundation.

Note: This information is not meant to replace any information or personal medical advice which you get directly from your doctor(s). If you have any questions about this information, such as the risks or benefits of the treatment listed, please ask your doctor(s).