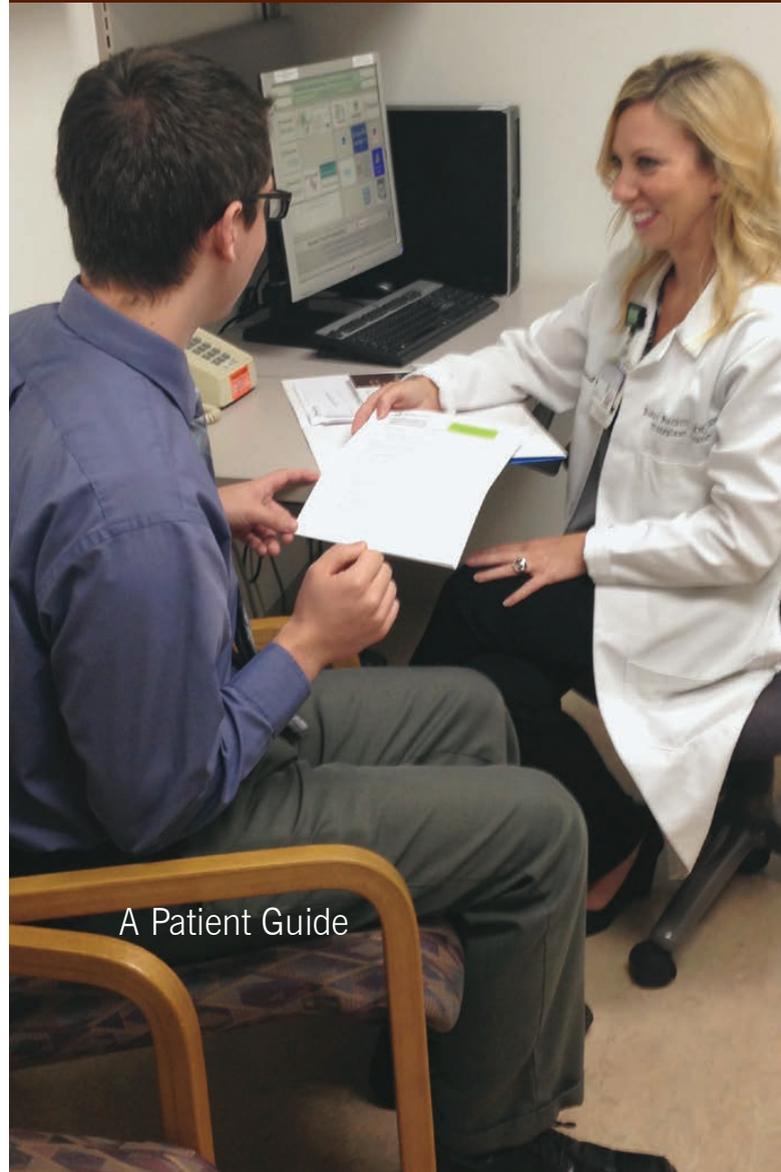


# What You Need to Know About Adult Living Donor Liver Transplantation



A Patient Guide



Every life deserves world class care.

9500 Euclid Ave., Cleveland, OH 44195

Cleveland Clinic is a nonprofit multispecialty academic medical center integrating clinical and hospital care with research and education for better patient care. More than 3,000 staff physicians and researchers in 120 medical specialties provide services through 27 patient-centered institutes. Cleveland Clinic's health system comprises a main campus, eight community hospitals and more than 75 outpatient locations, with 16 family health centers in northern Ohio, and medical facilities in Florida, Nevada, Toronto and Abu Dhabi. Cleveland Clinic is consistently ranked among the top four hospitals in America (*U.S. News & World Report*).  
[clevelandclinic.org](http://clevelandclinic.org)

©2014 The Cleveland Clinic Foundation



## CLEVELAND CLINIC TRANSPLANT CENTER

9500 Euclid Ave. / A100  
Cleveland, OH 44195

### CONTACT US

You can reach Cleveland Clinic's Transplant Center by calling **216.444.8770** or **800.223.2273, ext. 58473**.

To reach the Department Coordinator for the Liver Transplant Program, call **800.223.2273, ext. 48770**, or **216.444.8770**.

Visit us online at [clevelandclinic.org/transplant](http://clevelandclinic.org/transplant)

## Table of Contents

- 5** About Cleveland Clinic and the Cleveland Clinic Transplant Center
- 7** Why living donor liver transplantation is done
- 7** What living donor liver transplantation is
- 8** Overview of the procedure
- 9** Advantages of the procedure
- 9** Potential complications of living donation
- 13** Candidates for living donor liver transplantation
- 13** The evaluation process
- 17** Frequently asked questions
- 17** Evaluation visits
- 19** Pre-surgery
- 21** Surgery
- 23** Post-surgery
- 25** Recovering from surgery
- 27** Life after the donation
- 31** Procedure for evaluation as a potential living donor
- 32** Resources on the Web

# About Cleveland Clinic and Cleveland Clinic's Transplant Center

## CLEVELAND CLINIC

Cleveland Clinic is a nonprofit, integrated healthcare delivery system with local, national and international reach. At Cleveland Clinic, more than 3,000 physicians and researchers represent 120 medical specialties and subspecialties – along with pediatrics at Cleveland Clinic Children's – are present in one facility, making multidisciplinary consultation, diagnosis and treatment readily available.

Cleveland Clinic has been consistently ranked among the nation's top hospitals in the "Best Hospitals" report compiled annually by *U.S. News & World Report*.

## CLEVELAND CLINIC'S TRANSPLANT CENTER

Since 1963, when Cleveland Clinic performed the first kidney transplant in Ohio and became a recognized pioneer in the field of transplantation, we have been committed to expanding the staff, resources and technical support necessary to stay in the forefront of transplant technology. Cleveland Clinic offers one of the most comprehensive transplant programs in the world for organ, blood and marrow, and tissue Transplants. To provide the highest quality care for patients facing transplantation and their families, we use a surgical-medical team approach. All Cleveland Clinic staff transplant physicians are board-certified in a related medical specialty, and all transplant surgeons are board-certified in a related surgical specialty or have the international equivalent of board certification.

Cleveland Clinic is accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and meets the United Network for Organ Sharing (UNOS) standards as a center for heart, heart/lung, kidney, kidney/pancreas, liver, lung, and pancreas transplants.

Cleveland Clinic is a Medicare-approved center for heart, heart/lung, kidney, kidney/pancreas, liver, lung, intestine, face and pancreas transplantation.

## THE LIVER TRANSPLANT PROGRAM

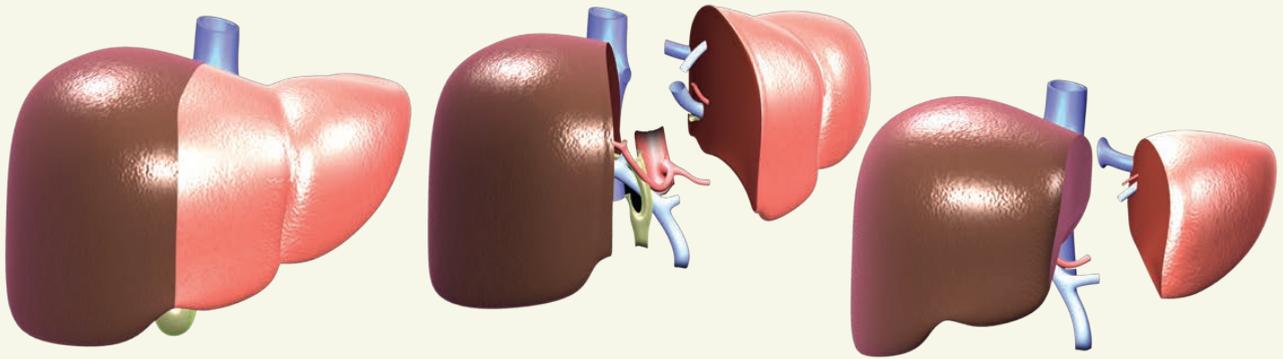
Cleveland Clinic performed its first adult liver transplant on November 8, 1984. The first liver transplant on a child was performed on August 26, 1986. Since then, our program has grown steadily – 1,963 liver transplants performed through the end of 2013.

Cleveland Clinic's liver transplant program is an important part of a broad medical and surgical strategy to manage all patients with liver disease with the therapy best suited to that patient. Experts in all areas of liver disease take part in the evaluation, management, treatment and follow-up of these patients.

Cleveland Clinic's liver transplant program is a member of the Ohio Solid Organ Transplant Consortium (OSOTC) and UNOS, meeting all their requirements for liver transplantation. Our program is approved by Medicare for liver transplant and also has OPTN/UNOS full approval for live liver donation.

## THE LIVING LIVER DONOR ADVOCATE TEAM

The Living Liver Donor Advocate Team consists of specialists from hepatology, nursing, ethics, psychology, surgery, social work and a living donor advocate, who focus on protecting the safety and welfare of potential living organ donors. These living-donor advocates function separately from the organ-recipient group; they are independent, unbiased transplant professionals working on behalf of the donor.



## Why is living donor liver transplantation done?

Typically, organs for transplantation are obtained from deceased (dead) donors, after their families give permission. But there are not enough deceased donor organs available for everyone who needs a transplant and, as a result, the number of patients on the transplant waiting list continues to grow. Because of this organ shortage, patients waiting for a liver may die while on the waiting list, or become too sick to undergo a transplant. But if a patient can receive a piece of a liver from a relative or friend, he or she need not wait for a deceased donor organ. Thus, living donor liver transplantation can be an important option for many patients.

## What is living donor liver transplantation?

In living donor liver transplantation, a piece of liver is removed by surgery from a living person (the donor) and placed, or transplanted, into a recipient (the patient who needs the new organ) immediately after the recipient's diseased liver has been entirely removed.

Living donor liver transplantation is possible because the liver – unlike any other organ in the body – has the ability to regenerate (regrow). Regeneration of the liver happens

over a very short period – possibly days to weeks, and certainly within six to eight weeks. So when surgeons remove a piece of the donor's liver, the part that remains in the donor, as well as the part that is transplanted into the recipient, grows back to the original size of the liver.

More than two decades ago, surgeons around the world began to perform these procedures using adult donors for children who needed transplants. In addition, surgeons gained experience in splitting a single deceased donor liver into two pieces, for transplantation into two recipients. Cleveland Clinic surgeons have been leading the way in these surgical advances. They also have pioneered the use of living donor transplants in adult recipients, safely removing the larger right lobe of the donor's liver.

## How is the procedure done?

The liver is divided into a right lobe and a left lobe. The right lobe makes up about 60 to 70 percent of the liver, and the left lobe the remaining 30 to 40 percent. This division between the lobes allows surgeons to divide the liver into two distinct parts, which can work independently of each other. In a typical living donor liver transplantation, about 30 to 70 percent of the donor's liver is removed. During the surgery, the donor's gallbladder is also removed. When the recipient is a small child, a piece of the donor's left lobe, called the left lateral segment, may be used.

## *What are the procedure's advantages?*

Just like everyone else who needs a liver transplant, potential recipients of a living donor transplant must be on the UNOS waiting list. One advantage of a living donor transplant is that you can get a transplant on a specified date without having to wait an unpredictable length of time. Patients who are on the waiting list may get much sicker during this time, so they may be weaker going into surgery. Patients may get worse to the point that they are not eligible for a transplant. Some patients die before an organ becomes available.

In addition, when patients get sicker and weaker on the waiting list, they are more likely to have complications during the early period after the transplant. They also have a higher risk of not doing well after the transplant. If there were enough deceased donor organs available, we probably would not need to consider living donor liver transplant; however, there are other benefits to this procedure. For instance, the quality of the liver may be better, as living donors are healthy adults who have undergone a thorough medical evaluation over several days or weeks. Also, because the operations on the donor and recipient take place at the same time, the preservation time (when the liver is without blood) is short – minutes, not hours.

## Are there potential complications to living donation?

As with any surgery in which general anesthesia is used, there are possible complications with living liver donation surgery caused by the anesthesia itself, including heart problems, stroke and blood clots in the legs or lungs. Other risks to the donor include bleeding or bile leaks after surgery – if this happens, you might need a blood transfusion and/or another operation.

There also is a risk that the remaining section of your liver will fail and that you will need an urgent liver transplant yourself. There is even a risk that you might die. (The risk of death after donation is between one to five in 1,000 transplants, and mostly depends on how much of your liver was removed.) While these complications are very rare, the risks do exist and we will discuss them with you in more detail during the evaluation.

The most common complications of this surgery are small bile leaks from the remaining part of your liver, minor wound infections and gastrointestinal upsets (such as constipation, indigestion and occasional nausea or diarrhea). These usually go away after a couple of weeks.

Other complications of living liver donation surgery include the following:

- After opening the donor's abdomen, the surgeon may decide that it is too risky to continue with the surgery. This is known as an "interrupted donor procedure." This does not happen often, but when it does, it may be caused by one of the following situations:
  1. An unexpected finding that could cause too much risk to the donor.
  2. The recipient may become unable to receive a transplant, and so the donor surgery may be stopped. This can happen at any point during the surgery

and may occur after the donor's bile duct has been divided, or even after the graft has been removed ("orphan graft"). We will tell you before the operation that, in the event of graft removal ("orphan graft"), the graft could be offered to another recipient, if you agree to do so.

3. If the donor's bile duct has been divided during the surgery, he or she may need to have surgery to rebuild it.

- Hernia, wound infection, scars, blood clots, pneumonia, nerve injury, pain, fatigue and other complications that might happen during any surgery
- Transient liver dysfunction with recovery (the liver may not work properly for a while after the surgery). This will depend on the how much of the liver was removed for donation. Symptoms may include ascites, bruising and fatigue.
- Acute liver failure, with a need for a new liver transplant
- Risk of red cell transfusions or other blood products
- Abdominal or bowel symptoms such as bloating, nausea, gastric stasis and development of bowel obstruction
- Medical conditions such as obesity and high blood pressure may cause medical problems for a potential donor

Potential donors should know about the possibility of other medical complications, including long-term complications, which may occur. Potential donors must also be informed that they will need yearly follow up with their primary care physicians, for health maintenance and risk reduction, for the rest of their lives.

Donors should also know that laboratory tests that they will have to have after their donation may have abnormal or false positive results. This, in turn, may mean additional tests that have some risks, as well. These potential risks must be balanced against benefits of follow-up testing.

## POTENTIAL PSYCHOSOCIAL RISKS

- Problems with body image
- Difficulty adjusting after surgery
- Possibility that the recipient will reject the transplant and need another one
- Possibility that the transplant recipient's disease will return
- Possibility that the transplant recipient will die
- Potential impact of donation on donor's lifestyle
- Post-surgery depression and anxiety (including but not limited to symptoms of post-traumatic stress disorder, anxiety related to dependence on others and feeling of guilt)
- Feeling of emotional distress or grief if the transplant recipient's disease returns, or if recipient dies

## POTENTIAL FINANCIAL RISKS

- Personal expenses of travel, housing and lost wages might not be reimbursed; however, the potential donor should be informed that resources may be available to cover some donation-related costs.
- Child care costs
- Possible loss of employment
- Potential impact on the ability to obtain future employment
- Potential problems obtaining or affording health insurance, disability and life insurance
- Health problems of living donors after donation may not be covered by the recipient's insurance
- Need for life-long primary care follow-up at donor's expense

## *Who is a candidate for living donor liver transplantation?*

Generally, candidates for a living donor should be between 18 and 55 years old. In cases where the recipient is a small child and only the left lateral segment is needed, we may consider donors up to age 60. You must not be pregnant. You should not be overweight, although if you are, you may still be considered a potential donor if you can lose weight. You should not have any major medical or psychiatric problems, including drug or alcohol dependence. You also must be able to understand the risks of this surgery and be able to follow our instructions for short- and long-term follow-up medical care.

You do not need to be a blood relative of the recipient to be a donor. Spouses, friends and even total strangers have donated parts of their livers. In studies, there does not appear to be a lower risk of rejection if the donor is a blood relative. The relationship between donor and recipient also does not appear to affect how much immunosuppressive medication the recipient will need. You would probably need to be identical twins for the relationship between the donor and recipient to make a difference.

## How does the evaluation process work?

The decision to become a living donor begins with an evaluation to make sure that your liver is normal and large enough, and that you do not have any medical or psychiatric disorders that would make this procedure more risky or difficult for you. We also want to make sure you do not have any medical conditions that could be passed on to the recipient. Finally, we want to make sure that you are becoming a donor voluntarily, and that no one is pressuring you to do this.

It is best that our team, as opposed to your own doctor, performs all tests and examinations. For insurance and billing reasons, it also is easier if the evaluation is done at Cleveland Clinic.

Before we can begin to evaluate you as a potential donor, you need to know your blood type. This is a simple test that your doctor can do, or you can go to any blood donation center and they will check it for free. You must be either the same blood type as your recipient, or blood type "O." If your recipient is blood type AB, you can be a donor whatever your blood type is. Your Rh factor – positive (+) or negative (-) – does not affect whether you can donate. Once you know your blood type and know that it matches with your recipient, you are ready to begin the evaluation process.

### STEP ONE

Once you know your blood type, call our transplant office at 216.445.8473 and tell the receptionist that you wish to discuss living donor transplantation. You will be put in touch with a member of the living donor transplant team. We will collect demographic information (your age, personal and family history, etc.) over the phone, and you will have a chance to ask questions. You will be contacted by a transplant nurse coordinator who will take

your full medical history and discuss the living donor liver transplant process. Your case will be reviewed by a liver surgeon. If the surgeon feels that you meet the criteria to be considered as a living donor, you will then be contacted to schedule your evaluation.

## STEP TWO

Once you are considered to be a potential donor in step one, we will schedule the second step of the evaluation. During your evaluation, you will have a noninvasive study of your abdomen to measure the size of your liver and to look at the liver's blood supply. This study is called a spiral CT scan. The CT scan will give us a very detailed picture of your liver. You will meet with a social worker, a hepatologist (a doctor who specializes in liver disease), a psychiatrist, ethicist, living donor advocate, transplant coordinator and one of our transplant surgeons. During your evaluation, the physician will review your full medical history and do a physical exam. The medical doctor and the surgeon will then discuss living donor liver transplantation with you, including the potential risks, and the statistics on the procedure at our hospital, elsewhere in the United States and around the world.

There are risks associated with the evaluation process including the following:

- Allergic reactions to contrast  
Discovery of reportable infections  
Discovery of serious medical conditions
- Discovery of adverse genetic findings unknown to the donor
- Discovery of certain abnormalities that will require more testing at the donor's expense or create the need for unexpected decisions on the part of the transplant team



## STEP THREE

During this part of the evaluation, you will have testing on your heart, and you will see an anesthesiologist. You will have another imaging test of your liver, called an MRCP. Other tests or consultations also may be necessary, depending on your situation. You may need a liver biopsy, in which a small piece of your liver is removed and studied. This would be scheduled on a different day.

- There may be times when steps 1 to 3 are combined. This can be discussed with your coordinator during step 1.

## THE DECISION

Once you have completed all the necessary tests, the transplant team will meet to review the test results and your recipient's medical condition. The team includes physicians, surgeons, nurse coordinators, a psychiatrist, an ethicist, social workers and any specialists who took part in your evaluation. The decision is not made by one person; the team decides. In our decision-making, we put the well-being of the donor ahead of anything else. The donor's safety is our top priority.



Your transplant coordinator will keep you updated on your eligibility to be an organ donor. You may need additional medical tests other than those described, which would delay your clearance for surgery. It is extremely important that you allow yourself as much time as necessary to digest the information you have been given. The decision to donate a piece of your liver is not one you should make lightly. You should consider it very carefully and discuss it with your family. It is important to remember that at any time before surgery, you have the right to change your mind about being an organ donor. If you do change your mind, the reason for the decision will remain confidential between you and your donor team.

## Frequently asked questions

### EVALUATION VISITS

#### **Q. Will my recipient be removed from the regular transplant waiting list if I am evaluated?**

A. While a potential donor is being evaluated, no changes are made to the recipient's place on the waiting list. If a deceased donor becomes available for your recipient, your evaluation will be cancelled.

#### **Q. Will my evaluation be covered by medical insurance?**

A. You should not have any expenses for the evaluation, surgery, hospitalization or postoperative care. Your evaluation will be sent directly to your recipient's insurance carrier. Different insurance carriers handle the donor's evaluation in different ways. Most will approve a living donor evaluation once the recipient has been accepted as a candidate for liver transplantation.

There may be some expenses that are not covered, such as travel, housing, child care and loss of wages. Also, you may have higher life insurance premiums as a result of being a donor. The recipient's insurance will only cover costs after the surgery for a limited period of time. Late or lengthy complications might be the responsibility of the donor. All potential donors must have their own healthcare coverage.

#### **Q. Do I need to fast before my appointments?**

A. You are advised not to eat four hours before your CT scan and MRCP. You have to start fasting 12 hours before your first blood work.

#### **Q. Should my family come with me to appointments?**

A. It is important to have your support system come with you to at least some of the appointments, so they can take part in the process and understand what is involved before you decide to proceed. All these appointments

offer the opportunity for you and your support system to ask questions and learn more about the procedure, so you can make an informed decision. Your support system must take part in the evaluation process or attend the final appointments before the scheduled surgery.

**Q. Should the cause of the recipient's disease affect my decision to donate?**

A. You are volunteering, with extraordinary generosity, to donate part of your liver in an attempt to save another person's life. Before you make this gift, it is important that you understand the chances that your sacrifice will actually save your recipient's life. Some diseases (such as hepatitis C and liver cancer) can return after transplant. In some situations, we may discuss the recipient's medical condition with you, what we can expect from transplant, and what other complications, if any, may be connected with the recipient's disease. (Consent from the recipient will be obtained before any discussion.) We expect that you will understand and respect that these discussions are confidential, and that you will respect the recipient's privacy.

**Q. What are the possible complications of the donor's operations?**

A. As with any surgery in which general anesthesia is used, there are possible complications caused by the anesthesia itself, including heart complications, stroke and blood clots in the legs or lungs. Other risks include bleeding or bile leaks after surgery that might require blood transfusion and/or another operation. There also is a risk that the remaining portion of your liver will fail and that you will need an urgent liver transplant yourself. There is even a risk that you might die. While these complications are very rare, the risks do exist and we will discuss them with you in more detail during the evaluation.

The most common complications of this surgery are small bile leaks from the remaining part of your liver, minor wound infections and gastrointestinal upsets (such

as constipation, indigestion and occasional nausea or diarrhea). These usually go away after a couple of weeks. However, some of these complications may require invasive (surgical or radiological) interventions.

**Q. If I am cleared to be a donor, who decides when to do the transplant?**

A. This decision is made jointly by the transplant team, by you and by the recipient. The transplant team, especially the physicians caring for your recipient, will determine as accurately as possible the best time to do the transplant, based on the recipient's medical condition. Once we know this, we will ask you what suits you best, within our limits. There may be specific weekdays when we can do living donor liver transplants. We need two operating rooms and two teams of surgeons, nurses and anesthesiologists, so the procedure takes a lot of organization.

**Q. Will my recipient need more testing?**

A. The recipient will need to be re-evaluated by the surgeon and will go through a more in-depth examination of blood vessels with venography (a special X-ray).

**PRE-SURGERY**

**Q. Should I not drink alcohol?**

A. If you are going to be a liver donor, you will have to stop drinking alcohol. If you currently drink alcohol, it is very important that you tell our physicians. Alcohol use may not prevent you from being a donor, but you may need to undergo a liver biopsy to be sure your liver has not been damaged. You can start drinking a limited amount of alcohol six months after the operation.

**Q. What if I am a smoker?**

A. The Living Donor Advocacy Team wants to minimize the risk to you from the liver donation operation. Many experts, including our anesthesiologists, believe that smokers have

a higher risk of complications after surgery. Therefore, we very much urge you to stop smoking for at least one to two months before the operation. Those who smoke within six months of the donor evaluation will undergo lung function studies.

**Q. Should I stop taking my medication before the evaluation or the surgery?**

A. You should not stop any prescription medication unless your doctor tells you to do so. You should avoid aspirin or non-steroidal medications (such as Advil® or Motrin®) for seven days before a liver biopsy or surgery. These medications affect the ability of the blood to clot and put you at higher risk of bleeding complications. Instead, you may take Tylenol® if needed. Women who take birth control pills or pills for hormone replacement therapy will be advised to stop taking them one month before the surgery. Birth control pills can be taken again two months after surgery because of the increased risk of blood clots during recovery from surgery.

**Q. How long will I be off work?**

A. Because people recover differently, with different degrees of fatigue and pain, you may need as long as eight to 12 weeks. We prefer that you be in a position – both financially and from a job security perspective – to be able to take 12 weeks, if you need that much time.

**Q. Will I be entitled to disability pay?**

A. If your job provides disability coverage, then you will most likely be covered. It is best to discuss this with your benefits department before you decide to proceed.

**Q. Once the transplant is scheduled, will it definitely happen?**

A. Unfortunately, very little is written in stone when it comes to liver transplants. A number of things could happen that could change our plans, up until the time of surgery. Your recipient's condition might weaken to the

point where he or she is too sick for a transplant. Or the recipient might develop an infection or some other condition that would need to be treated before the transplant could be done. Rarely, we may need to postpone the transplant on very short notice (sometimes hours before) if we have a number of deceased donor transplants that same day. (Because organs must be used within a short time, a deceased donor transplant would take priority over a living donor transplant.) Also, if your recipient has liver cancer, we will do an “exploratory laparotomy” on the morning of the transplant before we begin the donor's surgery. Your recipient would be brought to the operating room first and we would begin the operation by examining his or her abdomen for any signs that the cancer has spread. If the cancer has spread, we would not perform the transplant. Finally, there is always a chance a deceased donor organ transplant might become available for your recipient.

**SURGERY**

**Q. Do I need to do any special preparation before surgery?**

A. The medical evaluation we perform on potential living donors is extremely thorough. You will come in the week before the surgery for a final review with surgeons, social workers and anesthesia. Lab studies will also be repeated. You will have the opportunity to ask any remaining questions.

**Q. Are there any special diet or medication restrictions before surgery?**

A. Yes, you will be on a clear liquid diet the day before surgery. If you regularly take any medications, we will instruct you about these when you come in for the final appointment before surgery. You should not drink alcohol once you begin the evaluation process. Remember, if you are taking oral contraceptive pills or hormone replacement therapy, you must stop taking them one month before the surgery. Do not take any aspirin, Advil®, or Motrin®

(nonsteroidal) medication within seven days of your surgery.

**Q. Will I be admitted the night before surgery?**

A. Yes. You and your recipient will be admitted to the hospital the afternoon or evening before surgery. You will be given a bowel prep after you are admitted to your room.

**Q. What should I bring with me to the hospital?**

A. .... Bring only necessary belongings, and no valuables. Leave all jewelry at home or give it to your family for safekeeping. You may want to bring a basic toiletry bag and ask your family to hold it for you.

**Q. Will I need a blood transfusion during my surgery?**

A. A blood transfusion during this surgery is unusual, although it may be necessary. As a precaution, we will use a “cell saver;” if you do need a transfusion, we can then use your blood. This will minimize the need to use donated blood from someone else.

**Q. How big is the incision?**

A. The incision is large and looks like a backward “L.”

**Q. Will I have a scar after the incision heals?**

A. In most cases, the incision heals quickly, leaving a scar that fades over time, but will always be visible. If a wound infection develops, you may be left with a wider scar that will be more noticeable. Occasionally, people develop what is called “granulation tissue.” This is overgrowing or over-healing of the skin, and it results in a raised scar. This can be corrected by plastic surgery if it bothers you, but your recipient’s insurance would probably not cover cosmetic surgery.



**POST-SURGERY**

**Q. How long will I be in the hospital?**

A. The average hospital stay for donors is five to seven days. The hospital stay may be longer if you have complications.

**Q. Will I be in the same room as my recipient after the surgery?**

A. No. The recipient goes to the Intensive Care Unit for one to two days before being transferred to the transplant floor.

**Q. Will I be in the Intensive Care Unit after my surgery?**

A. After your surgery, you will be taken to the surgical intensive care unit (SICU) for close observation by the nursing and medical staff. You will remain in the SICU overnight, until you have completely awakened from the anesthesia. Once we see that everything is stable and that you do not have any bleeding or other complications, you will be transferred to a regular nursing floor.

**Q. How soon will I be able to eat and drink after my surgery?**

A. As soon as your intestines start to work again after the surgery, you will be able to begin drinking and eating. We will know it is safe for you to begin taking sips of water when you are passing gas. If you do not have nausea or vomiting with the sips of water, you will be able to move on to clear fluids, a soft diet and then a regular diet within the next two days. Very occasionally, some individuals do not return to normal eating habits this quickly. The less pain medication used, the faster the bowel returns to normal and the diet starts again.

**Q. Will I have any tubes or drains in me after the surgery?**

A. You will have one or two intravenous lines in you during and after the surgery so we can give you fluids to keep you hydrated and to give you medicines. One of these lines may be used to give you your pain medications after the surgery. You also will have a catheter (drainage tube) in your bladder so we can check on how your kidneys are working during and after the surgery. Having the catheter in your bladder also means that you will not need to get up to go to the bathroom immediately after your surgery. A nasogastric (NG) tube will be placed during surgery and will remain until bowel function returns. You also may have one or two small drainage tubes in your belly to drain any blood or bile that might ooze after the surgery. Most of these tubes and intravenous lines will be removed within two to three days.

**Q. Will I get an injection of pain medication after the surgery?**

A. We use several different methods to give pain medication. You may be given intravenous (IV) pain medication or you may have what is called PCA (Patient-Controlled Analgesia). With PCA, you will have an intravenous line attached to a pump that is controlled by a computer. You press a button whenever you need pain medication, and the medicine is immediately sent into

your vein. It is important to realize that you cannot “over-dose” with this system, as a computer controls the amount of medicine you can give yourself. Once you are eating normally, we will switch you to a pill for pain medication.

## RECOVERY FROM SURGERY

**Q. Will I need to come back to the hospital for check-ups?**

A. This procedure is major surgery, and we need to keep track of you very closely at first to make sure everything is OK. You must come back 10 days after your surgery for a check-up and to have your staples or stitches removed. You will need another check-up 6 weeks after your surgery, another check-up at three months and a final check-up about 12 months after your surgery. At that time, you will have a CT scan to check your liver size, some basic blood tests and a physical exam. You may need other appointments as well, depending on how you are feeling. You should have an annual physical exam with your primary care physician after being a living liver donor. We will also ask you to have lab work done 24 months after surgery, but we will not need to see you as long as you continue to feel well.

**Q. Must I remain close to the hospital after my surgery?**

A. You do need to remain close to Cleveland Clinic for at least two to three weeks after your surgery. You also need to be able to return here to Cleveland Clinic if you have any problems during your recovery. If you are from out of town or out of state, your social worker will help you find a place to stay. It is important that you have a relative or friend stay with you, especially right after you leave the hospital.

**Q. Will I need a nurse to take care of me when I leave the hospital?**

A. Although this is a very big operation and you will be very tired and weak, you probably will not need any professional nursing care at home. You will need a friend

or family member to do your food shopping, perhaps cook your meals for you and just generally be available should you run into any problems. It also is nice to have some company when you first come home from the hospital. You should have someone available to take you to and from the hospital for your check-up.

**Q. Will I need to take any medications after I donate part of my liver?**

A. You may get prescriptions for pain medications after your surgery. Other medications may be needed, depending on complications.

**Q. Will I have much pain after surgery?**

A. Unfortunately, you will have a lot of pain after this surgery. We will give you pain medication, but you still will be very uncomfortable for at least the first week or so. You will have less pain as each day goes by, but most donors tell us that they have varying degrees of discomfort for two to four weeks after the surgery. Most pain medication is broken down (metabolized) by the liver. Because you have a much smaller amount of liver volume right after your surgery, we will watch you very carefully to make sure we are not giving you too much medication, which could cause serious side effects. Most pain medication makes you sleepy and can affect your breathing and bowel function. We will try to get the right balance of pain medication to make you comfortable but not sleepy, so that you can do your deep breathing exercises, coughing and walking. The anesthesiologist will discuss this with you the morning of the surgery. Before you leave the hospital, you may get a prescription for pain medication to take at home.

**Q. When can I begin to exercise?**

A. As soon as you wake up from anesthesia, you will begin “exercising.” You will need to take deep breaths and cough to make sure you are getting air into all the cells of your lungs. This will help prevent pneumonia. You also will begin to exercise the muscles of your legs by flexing

and relaxing them on a regular basis. You will be helped out of bed within 24 to 48 hours of your surgery and will begin walking. We cannot stress enough how important walking is to your recovery. Each day, you should be pushing yourself a little bit more. By walking as soon after your surgery as possible, you will help to prevent such problems as blood clots, pneumonia and muscle wasting. You are encouraged to continue a program of daily walking when you go home. You will be advised to avoid running or abdominal exercises for three to six months after surgery.

**LIFE AFTER THE DONATION**

**Q. Will I have a normal life after surgery?**

A. We expect that you will return to a totally normal life within three months after your surgery, as long as you do not have any complications. We do not expect you to have any long-term complications but all complications are not known.

**Q. How long before my liver grows back to normal size?**

A. The liver begins to regenerate (grow back) almost immediately. Probably, most of the regeneration occurs in the first two weeks after surgery. By three months, your liver most likely is back to normal or near normal size.

**Q. When can I engage in sexual intercourse?**

A. You probably will want to refrain from sexual intercourse for a couple of weeks, until you have less discomfort and are feeling stronger. This decision will be based, for the most part, on how you are feeling.

**Q. If I want to start a family, how long should I wait after surgery to get pregnant?**

A. There is no definite answer on this, but we recommend that you do not become pregnant for at least six months after surgery.

**Q. When can I restart my birth control pills or replacement therapy?**

A. We advise you to wait at least two months after surgery.

**Q. When will I be able to drive after my surgery?**

A. We advise you not to drive for at least the first two to three weeks after surgery. You must be physically and mentally strong, with normal reflexes, and not having any abdominal pain or discomfort before you decide to drive. You also must not be taking any narcotic medication such as Percocet® or Tylenol® with codeine, as these can affect your mental alertness.

**Q. When can I lift weights, jog, swim, etc.?**

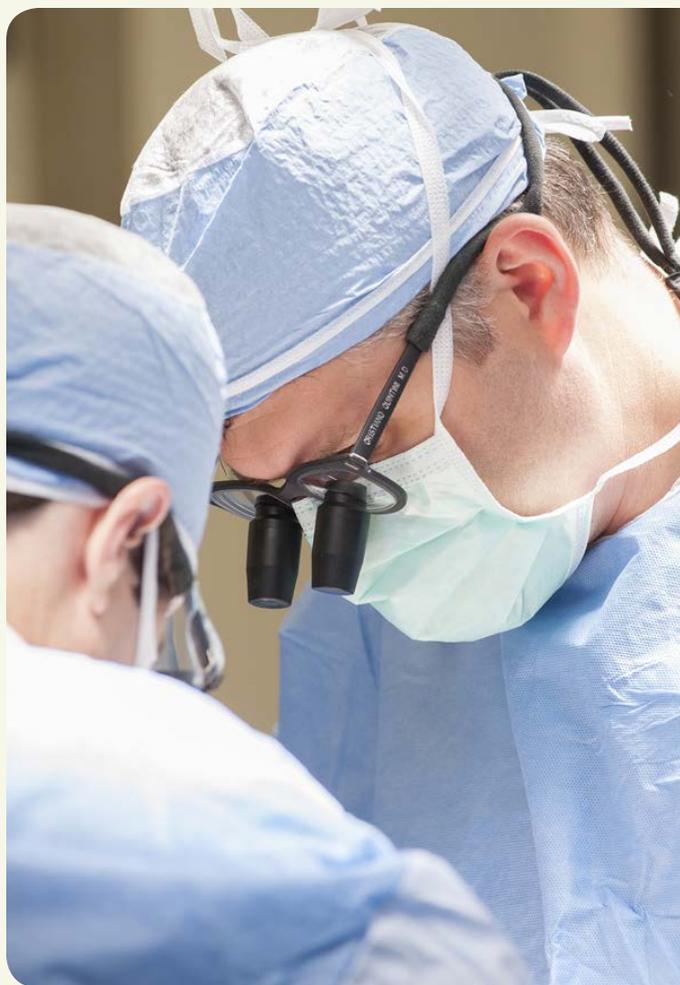
A. You will need to avoid any heavy lifting for the first four weeks, until your abdomen has had time to heal. You should not lift any weights greater than 10 pounds. After six to eight weeks, if you are feeling well and are not having any complications, you may begin to return to some normal activities, such as low-impact aerobics. Begin slowly and build up gradually. Be cautious with abdominal exercises.

**Q. When can I go on vacation or fly?**

A. You should not plan any vacations or trips outside the United States for at least eight to 12 weeks after your surgery. If you wish to return to your home in the United States, you may be able to do so two to four weeks after the surgery, depending on how you feel and how you are recovering. Remember, if we have any concerns about any possible complications, we will want you to return to Cleveland Clinic for evaluation and treatment. You should be able to take trips or vacations after eight to 12 weeks.

**Q. Would I be able to donate part of my liver again in the future to someone else?**

A. No. Once you donate a portion of your liver, you cannot do so again in the future.



## *Procedure for Evaluation as a Potential Living Donor*

- Your recipient must be on the liver transplant waiting list.
- All potential donors should confirm their blood type.
- All potential donors should read a copy of our educational material on living donor transplantation.
- All potential donors should contact the Living Donor Liver Transplant Coordinator (216.445.8473) and complete a brief health questionnaire.
- If several donors are available, the team will choose the best candidate for evaluation. Only one donor will be evaluated at a time.
- The potential donor will be contacted and appointments will be scheduled.
- After you complete your evaluation, we will make a decision on your candidacy as a living donor. At this time, we may decide that additional tests or a liver biopsy are necessary.
- Once you have been cleared as a donor, we will discuss the timing of the transplant with you and the recipient. In most cases, it may take several weeks to complete the process and be scheduled for surgery.

### RESOURCES ON THE WEB

Cleveland Clinic Transplant Program  
[www.clevelandclinic.org/transplant](http://www.clevelandclinic.org/transplant)

American Liver Foundation  
[www.liverfoundation.org](http://www.liverfoundation.org)

United Network for Organ Sharing (UNOS)  
[www.unos.org](http://www.unos.org)