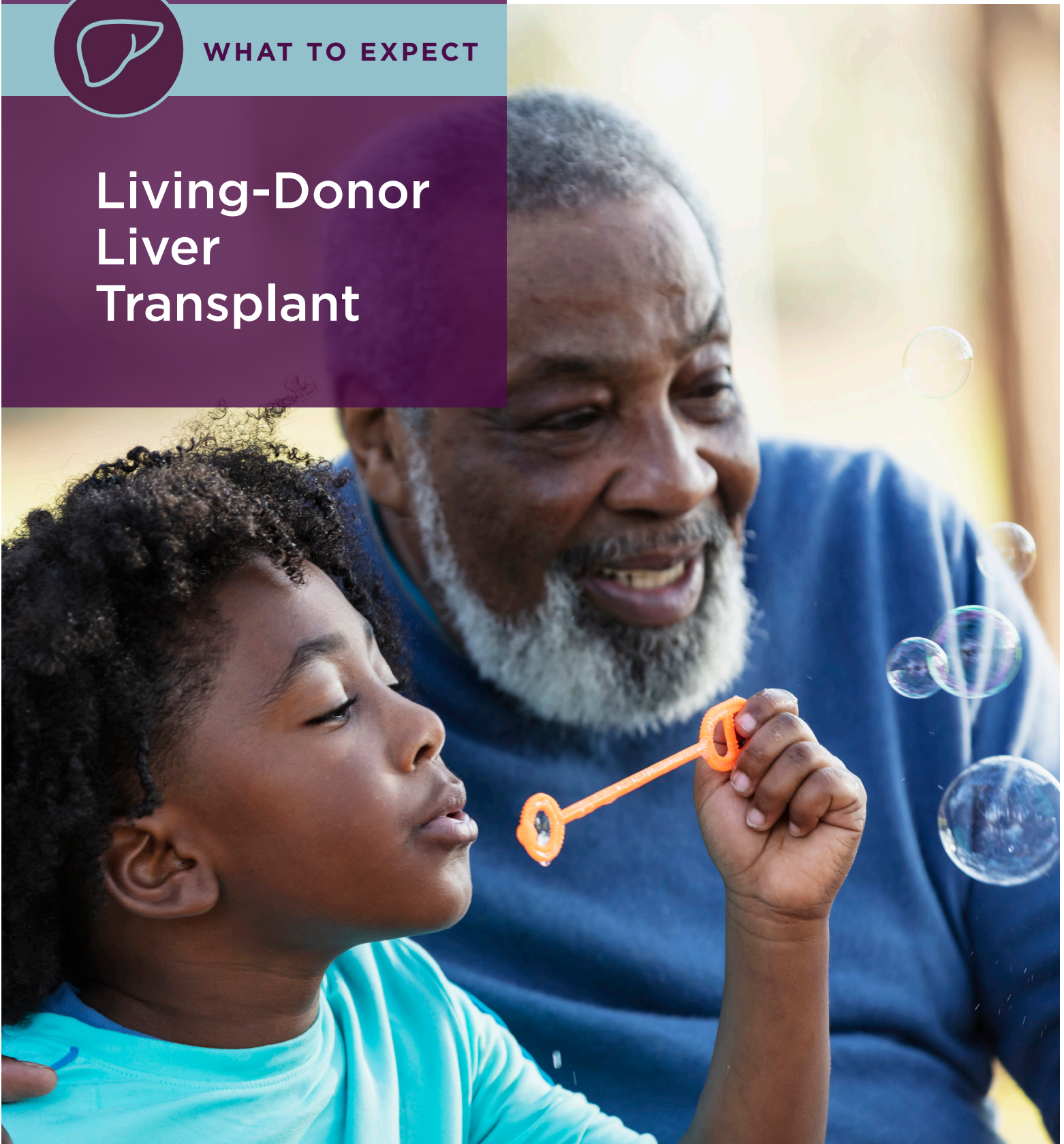




WHAT TO EXPECT

Living-Donor Liver Transplant



Welcome to the Thomas E. Starzl Transplantation Institute

Your UPMC health care team wants to support you throughout the living-donor liver donation and transplant process. We have made this booklet as a useful resource, but you may find that you have questions not answered here. Please do not hesitate to ask us questions at any time during your care.

The Transplant Office is open Monday through Friday from 8:30 a.m. to 5 p.m. Please call if you have any questions or concerns during this time. During after hours and on weekends, there is an answering service available for urgent and emergency calls.

Contact Us: 1-877-640-6746

For urgent and emergency calls after office hours and on weekends: 412-647-5800

Register to be a living-donor at LivingDonorReg.UPMC.com.

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About Living-Donor Liver Transplant

What is living-donor liver transplant?

Living-donor liver transplant is a type of transplant where a part of a healthy liver from a living person (living-donor) is taken out and used to replace the unhealthy liver of another person (recipient). One reason for living-donor transplant is to help overcome the shortage of organs and save more lives.

In most transplants, an organ is taken from a person who has died after their family has given permission or their donor consent card is verified. The organ (called a deceased-donor organ) is then given to a patient on the liver transplant list.

Because of this significant organ shortage, and an increasing number of lives lost due to patients not receiving transplants at the right time, there is a need for ways to expand the donor pool and increase the number of available organs. Living-donor liver transplant has proven to be a safe and effective way to perform a life-saving transplant and decrease the risk of someone dying while on the waiting list.

Previously, living-donor liver transplants were only done for small children, but because so many patients have died waiting for a donor liver, this procedure is now done on adults as well.

What are the benefits of a living-donor liver transplant?

- A life-saving procedure is offered without the risk of dying while being on a waiting list. With a living-donor transplant, the surgery is planned for a time when the person waiting for the liver is in the best state of health. From the day a person is first put on the waiting list for a liver transplant, they may wait 1.5 to 2 years to get a liver from someone who has died. During the wait, their liver disease may progress and their overall health may become worse.

- Often, recipients of living-donor liver transplants have a quicker recovery time and a better result than recipients of deceased-donor liver transplants. A piece of the liver from a living-donor is put into the recipient as soon as it is removed from the donor. This improves the chance that the transplanted liver will work as it should. A liver from a deceased-donor may need to be stored for many hours before it can be transplanted.
- For the donor, there is the additional benefit of knowing that they have contributed to another person's life in a very meaningful way.

Who can be a donor?

- A donor can be a family member, spouse, friend, or even a stranger who is willing to donate to anyone in need (called a non-directed donor). The age range for a living liver donor must be between 18 and 60 years old.
- All potential donors must be in good general health. People interested in becoming donors are carefully evaluated to make sure they can safely donate.
 - > Some livers could be too big, too small, have an unusual shape, or have veins and arteries that would make donation risky, or even impossible.
 - > There are other health conditions that may prevent people from being candidates as well.
 - > Only about 1 in 3 people who are considered for living-donation can actually donate.
- A donor will only be approved to donate if their main reason for donating is to help the recipient. Accepting money or gifts in exchange for donation is illegal.

What does the donor evaluation involve?

The process starts with registration on our website and a phone interview with the living-donor intake coordinator. If you are deemed an appropriate living-donor candidate, a living-donor coordinator will gather information about you and answer any questions you may have.

Basic Health Information - You will give your blood type, height, and weight, along with medical, surgical, and insurance information. The evaluation is then scheduled for you over a 1 to 2 day period.

Blood Work and Testing - You are evaluated before the surgery to help find out if the recipient could benefit from your liver and if you can tolerate the operation and function well after surgery. The evaluation includes blood work and other diagnostic tests and consults with transplant specialists. There will be many chances to ask the living-donor transplant team questions during the evaluation process.

Your Medical History - We will also evaluate your medical and surgical history. Medical problems that would increase the risk during a major surgery to have part of the liver taken out include:

- Certain liver, heart, and lung problems
- Hepatitis (liver disease)
- HIV infection
- Obesity
- Diabetes (high blood sugar)
- A history of cancer
- A history of heavy alcohol use

What are the risks of having living-donor liver surgery?

There are risks in all surgeries, especially those done under general anesthesia. The risk of having some type of complication, either minor or major, from living-donor liver surgery is estimated to be 15 to 30 percent. Most complications are minor and resolve on their own. In some cases, the complications are serious enough to need another surgery or medical procedure. The death rate in the United States for a living-liver donor is about 0.5 percent (less than 1 percent).

Bile Leakage - The most common major liver-related complication is bile leakage. Bile is a fluid made by the liver that helps with digestion. Bile may leak from where the surface of the liver was cut or where the bile duct was cut. The possibility of this happening is about 3 to 5 percent. Most bile leaks resolve without the need for surgery. In rare cases, surgery may be needed to correct the bile leak.

Bleeding - Another possible complication is bleeding. The liver has a very rich blood supply, so there can be some bleeding during the surgery. If there is more bleeding than expected, we may need to give you blood from a blood bank. The chance that you will need a blood transfusion is less than 1 percent.

Other Possible Complications - Other possible complications that may happen after surgery is a hernia (if the muscles do not heal together properly), infection, and blood clots in the legs.

Donor Testing

Blood Work

Blood work will be done to determine whether you have any transmissible diseases or any serious medical conditions that might make the surgery unsafe for you and/or the recipient.

Chest X-ray

This is an x-ray to check the lungs.

CT Scan

A CT scan is a computerized x-ray that shows detailed pictures of the organs in the body to find out the size of the part of the liver that can be donated. It also maps out the blood supply to, and in, the liver.

A donated liver must be the right size and have good blood vessels. Each part of the liver has its own blood supply and bile duct (a tube that carries away bile, which is made in the liver). Since each part of the liver has its own blood supply and bile duct, it is possible to safely remove a part of the liver and successfully place it inside the body of a recipient.

Liver Biopsy

A liver biopsy may be ordered by the transplant team. This involves taking a sample of a tiny part of the liver by passing a needle into the liver with the help of an ultrasound.

The liver tissue is then looked at under a microscope to determine the quality of the liver and to make sure there is no disease.

Test Results

All test results are generally available within a few days of completion. The results are reviewed by the living-donor transplant team once they are available. If any test results are found to be abnormal or would prevent you from donating, the evaluation process stops. A liver biopsy may be done on the last day of testing. Once all tests are completed, it usually takes 1 week to receive and interpret all the results to determine if you are a suitable candidate. In an emergency situation, this can be done more quickly. If you are an acceptable candidate, the surgery date will then be set.

If the liver of someone who has died becomes available during the living-donor evaluation, the transplant team will transplant the liver from the deceased donor.

Visits With Transplant Specialists

Social Worker

This visit consists of an interview with a social worker who will help you to plan for your care after surgery and when you leave the hospital. The plan will include housing arrangements, medicines, transportation to and from appointments after surgery, and support for personal, emotional, and physical needs.

Independent Living-Donor Advocate

You will meet with a member of the transplant team who has been assigned to you as your advocate. They will act only on your behalf. Part of the advocate's job is to make sure that you know the risks of being a living-donor and that you have made your decision entirely on your own without pressure from anyone else.

Behavioral Health Specialist

You may meet with a psychiatric professional to make sure that you are able to deal psychologically with the possible stresses that may result from living donation. They will also assess the main reasons for your decision to donate. All non-directed donors will meet with a psychiatric professional.

Hepatology

A history and physical exam is performed by a transplant hepatologist (liver doctor). The hepatologist will do a careful medical evaluation to make sure that you do not have another medical condition that would increase the risk of surgery and to make sure that your liver function is entirely normal.

Transplant Surgeon

The transplant surgeon performs a history and physical exam to make sure that you have no medical conditions or issues that would make the surgery unsafe. The transplant surgeon will talk in detail about the surgery itself, potential risks and complications, what happens after surgery, and the routine for follow-up visits.

They will also review in detail the written informed consent for the living-donor surgery with you. After you have had time to read and understand the consent form, and all your questions have been answered, you will be asked to sign the form.

Anesthesia

You will meet with a member of the anesthesia team on the day of surgery. They will perform a history and physical exam. They will also discuss with you the type of anesthesia they are going to give you and the potential risks.

Getting Ready for Surgery

If the decision is made to accept you as a donor, a date for the transplant is chosen. The living-donor liver transplant surgery journey will go as follows:

- Both you and the recipient are scheduled for an appointment the week before surgery at the Frank Sarris Outpatient Clinic at the Thomas E. Starzl Transplantation Institute.
- The transplant surgeon will meet with you and the recipient to again review the surgery, get consent forms, and answer any last-minute questions. Instructions will be given about when to stop eating and drinking before surgery.

The Day of Surgery

On the day of surgery, both you and the recipient will go to the Ambulatory Surgery Center located on the 6th floor of UPMC Montefiore.

The Donor:

- Will be admitted directly to the Ambulatory Surgery Center. Because surgery for the donor begins first, you are brought to the holding area of the operating room (OR), located on the 5th floor. You will meet with the anesthesiologist who will place an IV in your arm, and you will then be taken to the OR Suite.

Both the Donor and the Recipient:

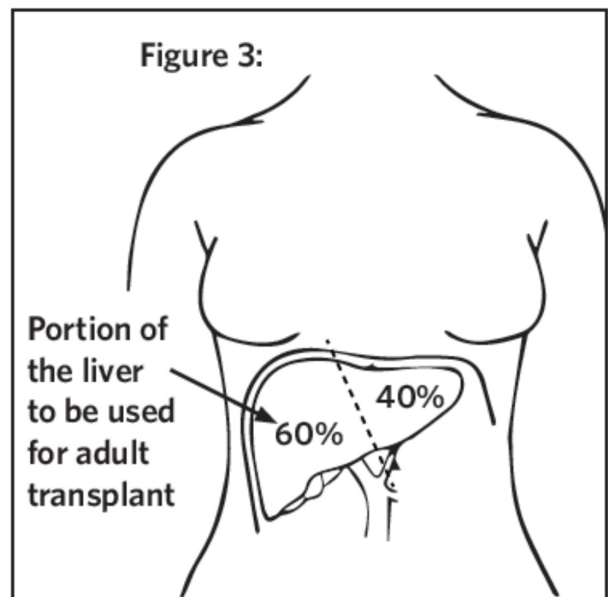
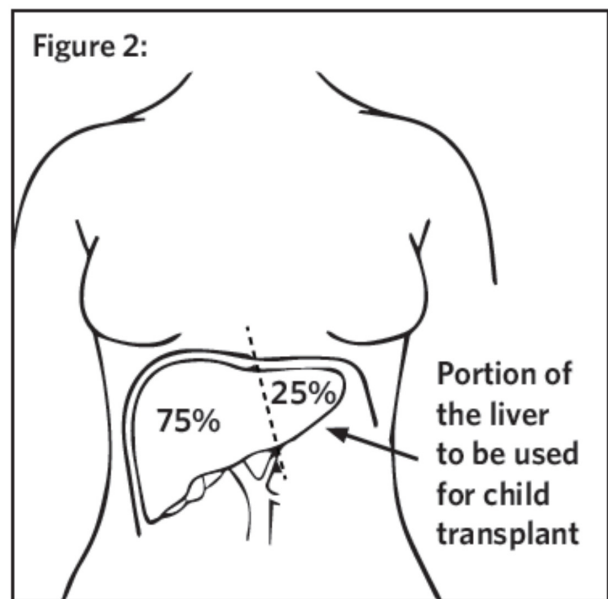
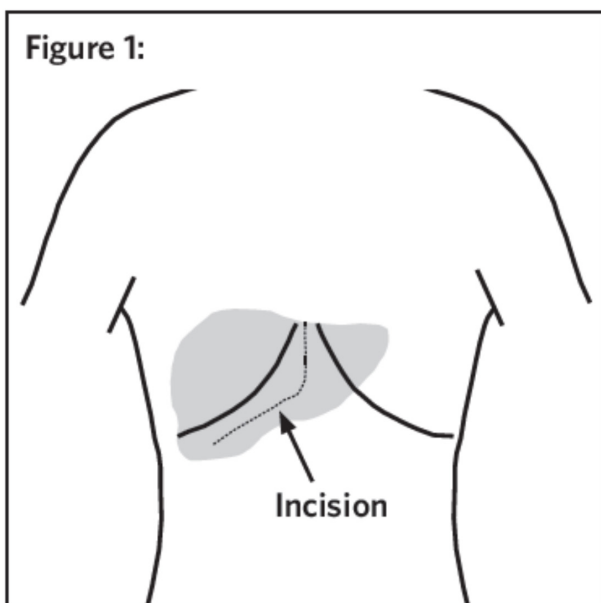
- May wear only a hospital gown to surgery.
- Should remove all dentures, glasses, nail polish, makeup, jewelry, and hairpins. Valuables should be kept with a support person for safekeeping.

During the surgeries, support persons may wait in the Ambulatory Surgery Center Family Waiting Area. The living-donor transplant coordinator will update your support person(s) on the progress of both operations regularly. The transplant surgeon will also visit with your support person(s) after surgery is complete.



Donor Surgery

- Once you are asleep from the anesthesia, a breathing tube will be placed down your throat. The surgical team will enter the OR Suite after you are asleep under anesthesia.
- You will have a partial hepatectomy (surgery to remove a part of the liver). The surgical team will make an incision (cut) across the abdomen (belly) just below the ribs (Figure 1) to safely locate and remove the gallbladder and a part of the liver. It is necessary to remove the gallbladder since it is located under the part of the liver that will be removed. The surgical team will remove about 25 to 65 percent of your liver.
- If the recipient is a child, only a piece of the left part of your liver will be taken out (Figure 2). This piece will be about 1/4 of your total liver on the left side of your body. If the recipient is an adult (Figure 3), a larger piece of the right side of your liver will be taken out (about 1/2 of your liver on the right side of your body).



- A flexible plastic tube, called a catheter, will be placed into your bladder to drain urine. Another tube will be placed in through your nose and throat down to your stomach to drain fluids to prevent you from getting sick and throwing up. The stomach tube (NG tube) will stay in place for 1 to 2 days after surgery until your bowels begin to work again.
- During surgery, a small plastic drain (JP drain) will be placed near the abdomen incision to allow fluids to be drained while you heal after surgery. The drain is usually taken out about 5 days after surgery.
- The surgery usually takes about 6 to 8 hours.

Recipient Surgery

- The recipient will be sent to the holding area of the operating room.
- After your surgery starts, a second team of surgeons will start to operate on the recipient. The evaluation process will not stop when the surgeries begin, but will continue throughout the surgeries.
- If at any point the surgical team believes that you are at risk or that the part of the liver is not right for transplant, the surgery will be stopped. This is very rare.

Your Hospital Stay

You will go to the Recovery Room for about 1 to 2 hours and then, when you are fully awake, you will be transferred to the Transplant Intensive Care Unit (TICU) for about 1 to 2 days.

- You will breathe air through an oxygen mask on your face or through small tubes that run to your nose for the first 24 hours after surgery. It will be very important for you to cough and deep breathe every 1 to 2 hours as instructed by your nurse. This will prevent fluid from building up in your lungs that may cause pneumonia.
- Your mouth and throat may feel dry and sore due to the breathing tube placed during surgery. You may rinse your mouth, but you cannot drink or eat until your bowels are working again and your stomach tube (NG tube) is taken out. If you feel sick to your stomach, please tell the nurse; they can give you medicine to make you feel better.
- You will be asked to sit up in bed and dangle your feet during the first evening after surgery. The next morning, a nurse will help you to walk a short distance. Walking will help your lungs and bowels to work normally again. You may want to ask for pain medicine at least 30 minutes before getting out of bed to walk. You may also have some swelling in your feet and ankles. This usually goes away on its own.

- Your bladder catheter will be taken out 2 to 3 days after surgery. If you cannot urinate within 6 to 8 hours after the catheter is removed, another catheter will be put in to empty your bladder and then will be taken back out. Not all people can urinate the first time the catheter is removed.
- Your stomach tube (NG tube) will usually be removed the day after surgery. The nurse will ask you if you are passing gas. This is an important question and helps your care team to determine when you can start to drink and eat again.
- Because your incision is large and the ribs are pulled back during the surgery to see the liver, you may have pain after surgery. To control your pain, you will have multiple pain medicines that run continuously, as well as additional pain medicines that can be given on an as-needed basis. Once you are able to drink and eat, you may be given pain medicine in pill form.
- When ready, you will be transferred out of the TICU to the Transplant Unit. You will stay in the hospital for about 7 days.
- The nurse will watch and measure the drainage of your JP drain and teach you how to empty and record the amount of drainage. Usually, the JP drain is taken out before you leave the hospital. Rarely, if there is a lot of drainage, the drain may be left in place when you leave the hospital. In that case, the drain would be removed later in the clinic.

How long will it take me to feel better?

Every person recovers at a different rate. Some people bounce back very quickly, while it may take longer for others. For a few weeks after surgery, you may find that you get tired more frequently. Most donors are back to their normal state of health by about 3 months after surgery.

When will my liver return to its normal size?

The part of the liver that is left will grow to fill the space of the part that was taken out. Your liver should return to its normal size in about 2 to 3 months.

Care at Home

Daily Activities

- Most donors are able to shower, dress, and do other simple daily activities when they return home. Responsibility for household duties and childcare should be given to someone else while you are recovering.
- You will need to be on a liquid diet right after surgery and then can advance to a regular diet as tolerated. This will only take a few days. Then you will need to maintain a healthy, balanced diet, avoiding fried foods and foods with a lot of cheese or cream.
- Drink plenty of water to help you heal and to prevent constipation after surgery.
- You can become more active, including sexually active, as you feel able. Female donors are encouraged to wait 1 year after donation to become pregnant.
- For at least 6 weeks after surgery, you must not lift more than 10 pounds. If you lift too much too soon, you could hurt yourself or develop a hernia, which could require more surgery.

Signs of Infection and Incision Care

- Check your incision every day for signs of redness, drainage, swelling, or tenderness. Call your transplant coordinator if you have any of these possible signs of infection.
- Check your temperature every day for a week after returning home. Call your transplant coordinator if your temperature is above 100 F (37.8 C). It may be a sign of infection.
- You should shower every day to keep the incision clean. Do not take a tub bath or swim until approved by your doctor.
- The skin along your incision may feel numb because nerves on your abdomen are cut during surgery. As the nerves grow back, you may feel tiny shooting pains along the incision for about 6 to 12 months. This is normal and will decrease over time. The incision may also feel uneven but will flatten over time.

Returning to Work and Traveling

- Most donors can return to work about 8 weeks after surgery. If your job involves heavy lifting, bending, or stretching, you may return to work in 12 weeks. Your nurse coordinator can help you with forms and releases to work.
- You should be able to drive and fly on an airplane 3 weeks after surgery. You should not drive if you are taking any kind of prescription pain medicine.

Follow-Up Appointments

You will be scheduled for clinic visits after you leave the hospital. You will be seen by a transplant surgeon in the Frank Sarris Outpatient Clinic at the Thomas E. Starzl Transplantation Institute. Please check in at the desk and ask for your transplant coordinator to be paged. You should plan on having a clinic visit during the 1st and 3rd week after surgery, as well as at 3 months, 1 year, and 2 years after donating. Lab testing will be needed at 1 month, 3 months, 6 months, 1 year, and 2 years after surgery. Your coordinator will mail you lab orders for these tests, which can be completed at your local lab.

If I get a bill after surgery, what should I do?

Do not pay any bills related to living-donor evaluation testing or transplant surgery. If you are billed, please send them to:

UPMC Montefiore Hospital

c/o Living Donor Team 7S
3459 Fifth Ave.
Pittsburgh, PA 15213



UPMC Transplant Services

UPMC Montefiore, 7 South

3459 Fifth Ave.
Pittsburgh, PA 15213

1-877-640-6746

[UPMC.com/LivingDonorLiver](https://www.upmc.com/LivingDonorLiver)

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