

# KIDNEY DONATION EDUCATION MANUAL

An overview of living kidney donation at Toronto General Hospital

Fall 2022 Edition

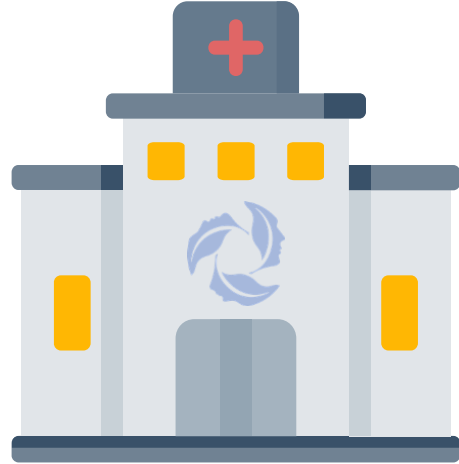
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*The following chapters contain important information related to living kidney donation. We hope that they will serve as a valuable guide. The team in the living kidney donation program are available to help you understand, prepare for, and assist you through the kidney donation process.*

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## Introduction

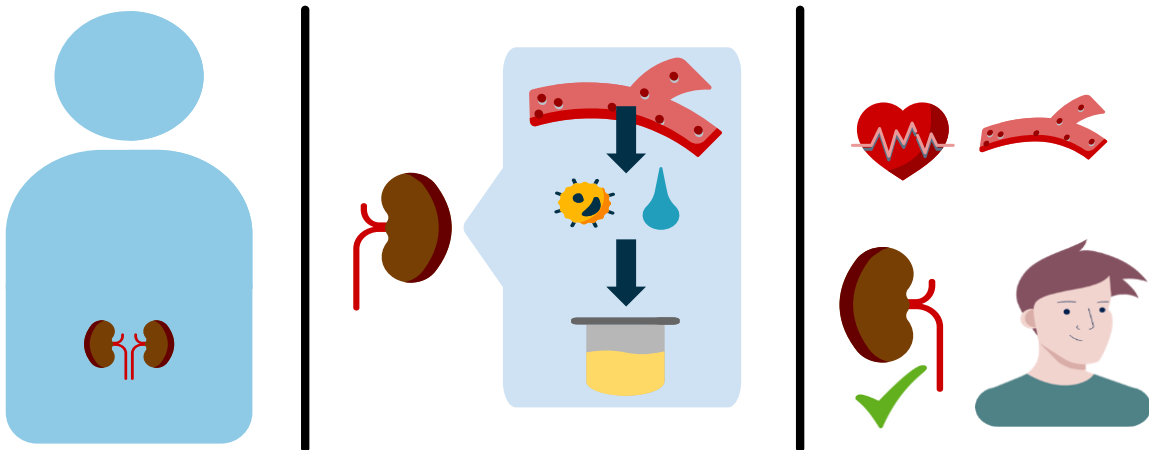
Welcome to the Living Kidney Donation Program at the Toronto General Hospital. The Ajmera Transplant Centre at the University Health Network (UHN) in Toronto is the largest transplant program in Canada. Many types of organs are transplanted at the UHN, including the liver, kidney, pancreas, lung, bowel and heart. The Ajmera Transplant Centre performs approximately 170 kidney transplants every year, of which 70 to 80 are from living kidney donors. Transplantation cannot occur without the generosity of others. Living kidney donors are remarkable individuals who donate a kidney to someone in need.



## Chapter 1: Living Kidney Donation

This chapter will provide a general overview of why someone would need a kidney transplant, and how a living kidney donor can help someone in need.

Most people are born with two kidneys. These organs are located at the back of your body, just above your waist. Your kidneys perform important functions, the main being to remove waste and excess fluid from your body. When blood flows through the kidneys, waste and water are removed and exit your body as urine.

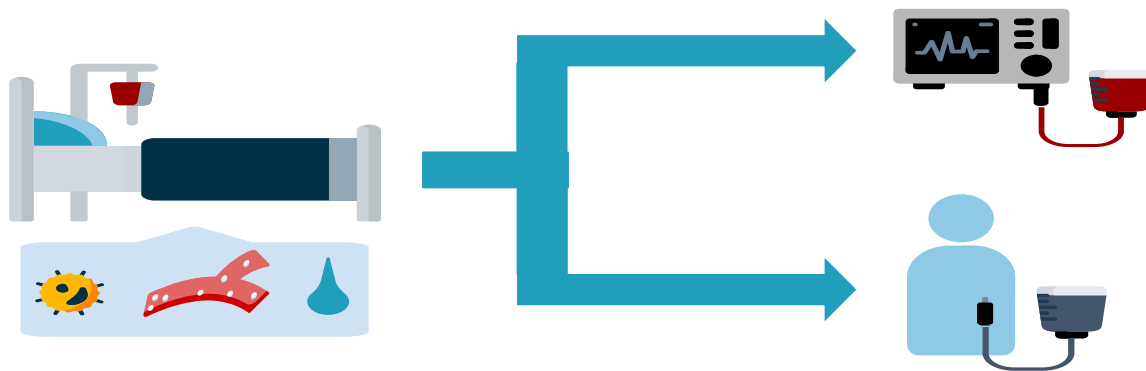


Your kidneys also make hormones which control things like your blood pressure and red blood cell production. Ultimately, your kidneys need to work well to keep your bones, heart, and body working properly.

When a person has kidney failure, their kidneys no longer work well enough to meet their body's needs and they can become very sick. There are two main ways to treat kidney failure: dialysis and transplantation.

Dialysis helps a person with kidney failure by removing waste, salt, and extra water from their body. There are two kinds of dialysis: hemodialysis and peritoneal dialysis.

Hemodialysis involves a machine that removes and cleans blood before returning it to the body. Peritoneal dialysis involves inserting a tube into the abdomen. Fluid drains in and out of the abdomen through this tube to remove excess waste and fluid from the body. For most people with kidney failure, though, a kidney transplant is the best treatment. Most people with kidney failure will live longer and have a better quality of life with a kidney transplant, as compared to dialysis.



A kidney transplant involves a person with kidney failure receiving a new kidney from a donor. The kidney can come from someone who has recently died (a deceased donor) or from someone who is living, known as a living kidney donor. The new kidney will do all the things a normal kidney does, and dialysis will no longer be needed. However, it is important to note that a kidney transplant is not a cure; it is a treatment option for kidney failure. Some people may need another transplant in the future.

A living donor kidney transplant involves a living person donating one of their kidneys to a patient in need. This act is called "Living Kidney Donation" and the living person donating one of their kidneys is referred to as a "Living Donor" or "Living Kidney Donor." The person with kidney failure receiving a kidney is often referred to as a "Transplant Recipient." Living kidney donors may be a relative, for example, a sibling, parent, child, aunt, uncle, or cousin. A living kidney donor can also be a spouse, friend, or co-worker. Additionally, people can donate a kidney to a stranger in need. Living kidney donation is possible and safe because most people are born with two kidneys but can lead normal lives with just one.

Many people with kidney failure who need a kidney transplant go on a waiting list for a deceased donor kidney. However, the wait times can be long and their health may deteriorate on dialysis as they wait to receive a kidney transplant. In Ontario, depending on the blood group of the recipient, the waiting time for a kidney transplant can be between 2 and 10 years. Unfortunately, 2 to 3 out of every 100 people on the waiting list die waiting for a kidney each year.



A kidney transplant from a living donor has many advantages in comparison to a kidney transplant from a deceased donor. First, the waiting time for a kidney transplant is much shorter. This may decrease the time that a person with kidney failure must spend on dialysis, or dialysis can even be avoided all-together.



Second, the transplant date can be planned ahead of time, thereby allowing time for both the living kidney donor and recipient to plan and prepare for surgery.



Third, a kidney from a living kidney donor generally lasts longer than a kidney from a deceased donor and usually works well right after the surgery.

At our institution, the probability that someone will be alive with a kidney that is working is higher with a living donor transplant as compared to a deceased donor transplant. You can see these various probabilities below, at several time points such as 6 months, 1 year, 5 years or 10 years after transplant. As an example, 5 years after transplant, the probability that a transplant recipient will be alive with a kidney that is working is 87% with a kidney from a living donor vs. 80% with a kidney from a deceased donor.

<b>Time After Transplant</b>	<b>Deceased Donor Transplant</b>	<b>Living Donor Transplant</b>
6 months	96%	97%
1 year	94%	96%
5 years	80%	87%
10 years	63%	73%

It is important to remember that although we have very good success rates, sometimes kidney transplants are unsuccessful. If this happens, it can be very disappointing for the donor and the recipient. All members of the donor team are here to support you in the unlikely event that this should happen.

As discussed, there are several reasons why a kidney transplant from a living kidney donor is the best treatment for someone with kidney failure. Living kidney donors also experience many benefits.

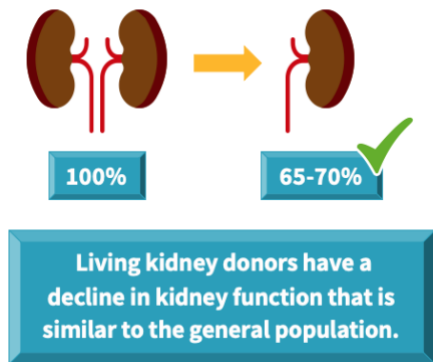
Most living kidney donors feel proud and satisfied with the decision to help a person in need and often feel great joy in seeing the improved health of their transplant recipient. In general, most living kidney donors say that they would make the same choice to donate a kidney again, if they could. Most living kidney donors remain positive about their decision to donate and report excellent health and well-being afterwards.

As a potential living kidney donor, you should know that living kidney donation comes with some risks which your doctor will discuss with you before the surgery. Living kidney donation is a major surgery and even though living kidney donors are generally in good health, there are always certain risks associated with surgery. Rarely, after surgery, living kidney donors may experience the following:

- **Bleeding** during surgery which may require a blood transfusion. This is rare, and less than 1 person out of 500 people will require a blood transfusion.
- Development of a **blood clot** which may cause leg swelling or difficulty breathing. This is also rare, occurring in less than 1% of donors. All living kidney donors are given a small dose of heparin (a blood thinner medication) during their hospital stay to decrease the risk of blood clots.
- An **infection** such as a lung infection, skin infection or bladder infection. Less than 4% of living kidney donors will experience an infection, which is typically treated with antibiotics for approximately 1 week. These are usually given in tablet form by mouth. A single dose of antibiotic is given in the operating room just before surgery to decrease the risk of infections.
- A **temporary collapse of the lung**, which could interfere with breathing. Should this occur, the lung can be re-expanded again. This is rare and less than 1 percent of living kidney donors experience this complication.
- An **allergic reaction** to anaesthesia or a **complication associated with any anaesthesia and major surgery**, such as stroke, heart attack, or death, although this is extremely rare (1 person out of 10,000).

It is important to note that the possibility of developing any of these complications is very small. As you will learn in the following modules, all potential living kidney donors undergo extensive testing and medical evaluation to ensure that it is safe to donate.

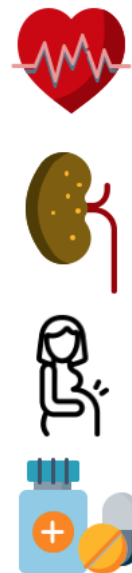
Although people can live the rest of their lives with one kidney, it is important to think about life after donation. Fortunately, research around the world reassures us that living kidney donors can live full and long lives.



Usually, after living kidney donation, kidney function decreases to approximately 65-70% of its original level. This slight decline does not affect how donors feel and does not require any specific changes in diet or physical activity level. We recommend that living kidney donors follow the same diet and exercise recommendations as the general population. Kidney function generally declines over time, and this is a part of aging. Living kidney donors have a decline in kidney function that is similar to the general population.

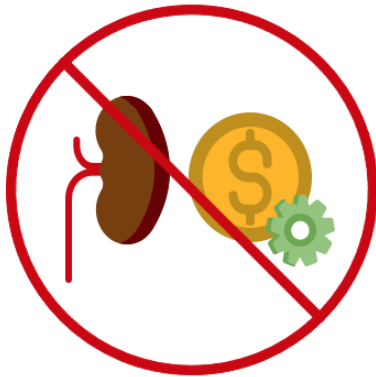
After donation, living kidney donors may experience small increases in blood pressure and may have mild protein loss in the urine. These rarely require treatment.

Over the long-term, living kidney donors have a slight increase in their risk of developing high blood pressure, however, high blood pressure can be successfully treated with lifestyle changes and medication. Living kidney donors have a slight increase in risk of developing kidney failure over the long-term after donation when compared to healthy people who did not donate a kidney, however this risk is very low and less than in the general population. Additionally, living kidney donation does not affect fertility. Living kidney donors are encouraged to discuss their potential future plans for pregnancy with the living kidney donor team. There is a slight increase in the risk of developing high blood pressure and pre-eclampsia during pregnancy in living kidney donors. Your donor nephrologist can discuss these risks in greater detail with you.



After living kidney donation, it is recommended to avoid anti-inflammatory medications such as Advil, Motrin, Aleve, etc., as these types of medications can harm the remaining kidney. Tylenol, when taken as directed, is safe to use after donation. Overall, living kidney donors can return to their normal lives with minimal issues following donation.

Living kidney donors are healthy adults who are not undergoing treatment for an infection or cancer at the time of their application. They also must not have any history of prior heart attack, stroke, diabetes, or a type of skin cancer called melanoma. The living kidney donation team will review the health of each potential donor to determine if they are suitable to be evaluated as a living kidney donor.



In accordance with the Ontario Human Tissue Gift Act, the Toronto General Hospital and the Ajmera Transplant Program do not support payment of any kind for organs for transplantation. It is against the law to buy, sell, or otherwise deal in, directly or indirectly, any tissue for transplant, or any body part or parts of the body for therapeutic purposes, medical education, or scientific research. If at any time you are approached by a person to purchase or sell an organ for transplantation, please notify the patient relations department at the UHN.

## Chapter 2: The Living Kidney Donor Evaluation Process.

This chapter will discuss various aspects of becoming a living kidney donor. The living kidney donation team is a group of highly skilled health professionals who work together to help the potential living kidney donors through the evaluation process and donation.



Before being approved as a living kidney donor, the living kidney donation team will evaluate your physical and mental health. The evaluation process will require several tests, such as blood and urine testing, x-rays, CT scans and consultations with various members of the team.

The members of the Living Kidney Donation Team include:

**Clinical Coordinator:** The clinical coordinator, also called a living donor assessment coordinator, is a Registered Nurse (RN) who guides potential living kidney donors through the evaluation process and provides teaching and support throughout.

**Administrative Assistant:** The administrative assistant schedules your tests and appointments and will assist you with changes or cancellations. They also can provide valuable information about the evaluation process.

**Social Worker:** The social worker meets with all potential living kidney donors. They will discuss your decision donate a kidney, your understanding of living kidney donation and



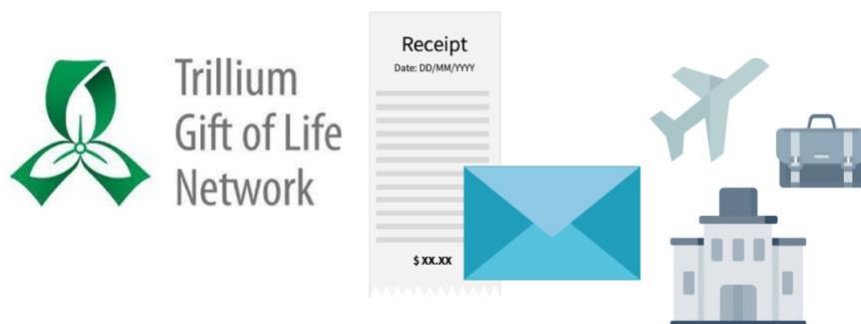
its possible impact on you, your family, and the recipient. They will work with you and your support persons to plan for donation while keeping your unique needs in mind. They will offer supportive counseling for you and your family to talk about the emotions you may have related to living kidney donation. Your social worker will also be able to advise you about employment and financial issues.

The social worker will also discuss the Program for Reimbursing Living Organ Donors (PRELOD), which is operated by the Trillium Gift of Life Network. This program will reimburse living kidney donors for their expenses. For example, with PRELOD, living kidney donors can receive reimbursement for the following items:

- Travel expenses incurred
- Parking/Transit
- Accommodation
- Meals
- Loss of Income Subsidy After Surgery

Of note, claims made for follow-up assessments after surgery are eligible for reimbursement for one year after surgery. Reimbursement for companion expenses (travel, accommodation, meals) is also available during the surgery and recovery period. Only expenses that meet specified eligibility criteria will be considered. PRELOD is a program which aims to reduce the financial burden associated with the living kidney donation process. Expenses such as prescriptions, entertainment, telephone, and expenses incurred by primary caregivers and visitors/family are not reimbursed through PRELOD at this time. You will receive detailed information about PRELOD during your evaluation and contact information for PRELOD will also be provided to you.

## The Program for Reimbursing Living Organ Donors (PRELOD)



**Psychiatrist:** The psychiatrist may see you, depending on your needs, during the evaluation process. These professionals specialize in mental health and will address these issues as they relate to living kidney donation.

**Nurse Practitioner:** The Nurse Practitioner (NP), is a Registered nurse who has met additional education, experience and exam requirements set by the College of Nurses of Ontario. The NP is authorized to diagnose, order and interpret diagnostic tests, and prescribe medication and other treatments. The NP works in collaboration with the donor nephrologist to determine if it is safe for you to donate your kidney. You may meet the NP prior to donation and after donation to evaluate your overall health.

**Nephrologist:** The nephrologist is a medical doctor who specializes in the diagnosis and treatment of kidney disease. The nephrologist will determine if it is safe for you to donate your kidney. The nephrologist will also discuss the short- and long-term risks of living kidney donation with you and may discuss lifestyle changes or treatments which can decrease your risks of these. Three and six months after the surgery, you will meet with the nephrologist again to ensure your remaining kidney is working well.

**Surgeon:** The surgeon may be either a urologist or general surgeon who specializes in living kidney donation and kidney transplantation. They are responsible for performing the kidney donation and transplant surgery. You will be seen by the transplant surgeon once you have been cleared to donate by the nephrologist and your surgery has been scheduled. This appointment usually takes place about one week before your surgery. During this appointment, you and your surgeon will talk about donation surgery as well as the risks of surgery.

**Anesthesiologist:** The anesthesiologist is a doctor who will assess the safety of giving you anesthetic (medication that puts you to sleep) during the donation surgery. The anesthesiologist is also a member of the pain management team. They can help you select which form of pain management will be best for you after your surgery. This appointment also takes place about one week before your surgery once your surgery is scheduled.

Separate teams assess transplant recipients and potential living kidney donors. This is to ensure that there is no conflict of interest involved in your evaluation as a potential living kidney donor.

In order to donate a kidney, you must be assessed to find out if you are suitable to donate. This assessment requires a number of tests including blood and urine samples, X-rays, CT scans and consultations with various members of the living kidney donation team.



The living kidney donation team will also want to ensure that you have thought about all the aspects of donating a kidney and have been given the opportunity to have your questions answered by the most appropriate team member(s). If you, as a potential living kidney donor, are found to have a health problem, you will be directed to either your family

physician for follow up or to a specialist. The living kidney donation team is here to support you and act in your best interest. All health information about you, including your test results, is strictly confidential and will not be discussed with your potential recipient.

It is important to note that there are many possible outcomes of this evaluation process which may occur at any stage of the evaluation. You may be found suitable to proceed with living kidney donation or deemed unsuitable to proceed with living kidney donation at any time.

In the event that you are deemed unsuitable to donate, you will be provided with a detailed explanation. The evaluation process typically takes around 3 months, however, based on your individual circumstances, additional testing may be required which may prolong the evaluation process.

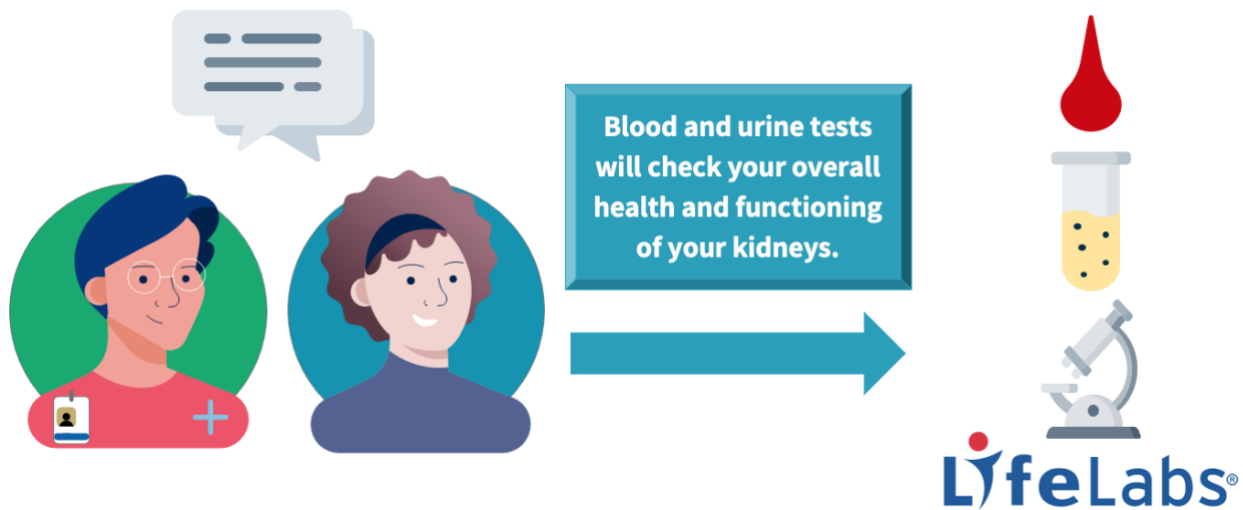


The first step towards becoming a living kidney donor consists of completing a health history questionnaire. This questionnaire is available on our website ([https://www.uhn.ca/Transplant/Living\\_Donor\\_Program/Documents/Living\\_Donor\\_Health\\_History\\_Form.pdf](https://www.uhn.ca/Transplant/Living_Donor_Program/Documents/Living_Donor_Health_History_Form.pdf)) or from a member of the living kidney donation team. This questionnaire includes general information about your past and current health, and why you are pursuing living kidney donation. The living kidney donation team will review your questionnaire carefully to determine if you are suitable to proceed with evaluation. There are certain conditions that may prevent you from donating. For your

safety and that of your intended recipient, it is essential that you complete this form truthfully.

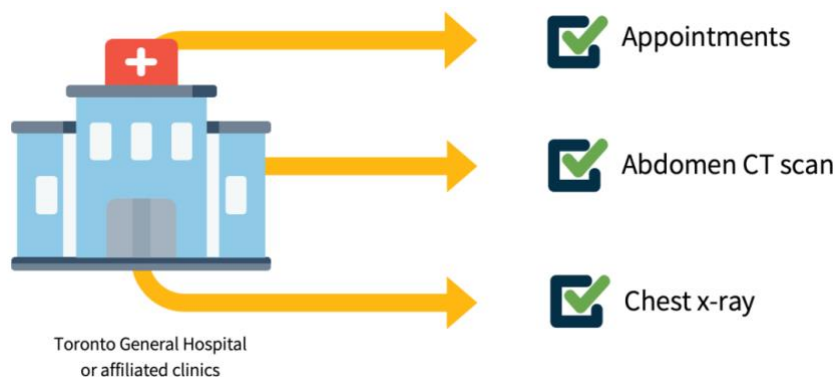
If there are no issues that prevent you from proceeding with evaluation based on your health history questionnaire, you will be informed that you can begin your evaluation. Typically, your evaluation begins only once your intended recipient has been referred to our transplant program.

The living kidney donor evaluation process at Toronto General Hospital is divided into three phases. Phase 1 of testing includes blood and urine tests, as well as an EKG. These tests are important to checking your overall health, and the health and functioning of your kidneys.



These tests will also determine your blood group, in order to determine if your blood group is compatible with your intended recipient. These tests can be completed at your local lab (e.g., LifeLabs) or at Toronto General Hospital based on your preference. The results of your Phase 1 tests will be reviewed and, should you be deemed suitable to proceed with evaluation, you will be asked to complete Phase 2 of the evaluation. Phase 2 of the evaluation process takes place at Toronto General Hospital or affiliated clinics and involves medical imaging and appointments.

During Phase 2, you will be asked to complete an X ray of your chest and a CT scan of your abdomen. These tests look for any internal abnormalities that that may affect your overall health or the health of your kidneys.



You will also meet with a social worker to discuss your decision donate a kidney. A support person can join you for this assessment as long as they are not the recipient. The support person will be asked to leave at a certain point so that the social worker can have private discussions with you.

During the social work appointment, the following may be discussed:

- How you decided to donate a kidney, your understanding of living kidney donation, as well as the possible impacts of donation on you, your family, and the potential recipient.
- How your social worker can work with you and your support persons to plan for the living kidney donation while keeping your unique needs in mind.
- Employment, financial, and practical aspects of living kidney donation.
- How your social worker can provide supportive counseling, if needed, to you and your family, before and after living kidney donation.

Depending on your unique circumstances discussed during your appointment with the social worker, you may also be scheduled to see a psychiatrist as part of the evaluation process.

During Phase 2, you will also meet with the clinical coordinator for an education session. During this education session, your clinical coordinator will discuss all aspects of living kidney donation, from the evaluation process to the donation itself, including preparations for donation and instructions for after the donation surgery. Special circumstances that pertain to you and your intended recipient, such as not being the same blood group for example, will also be discussed during this session. You will also have an opportunity to ask any questions you may have.

Your clinical coordinator will also review what cancer screening tests you will need to complete should you be suitable to donate. All donors over 50 will need to complete colon cancer screening within 2 years prior to donation. Women will require a pap smear completed within 3 years prior to donation and women over 50 will require a mammogram to be completed within 2 years of donation. These requirements are the same as for the general population and should be completed by your family doctor. In addition, some potential donors will be asked to complete a tuberculosis (TB) skin test.

During this phase, you will also complete special testing called human leukocyte antigen (HLA) typing and a crossmatch. This is a different test than the blood group test. This testing will determine the degree of tissue compatibility of your kidney with your intended recipient. If you are incompatible with your intended recipient, there



are still options for you to donate your kidney to help your intended recipient. This is covered in more detail in module 3: The kidney paired donation program.

Finally, as part of Phase 2, potential living kidney donors that are above 50 years of age (for men) and 60 years of age (for women) will also be required to complete a stress test of the heart. Depending on the results of your investigations and your medical history, you may be asked to complete additional tests and/or consultations.

Once the phase 2 testing is complete and acceptable, you will move on to Phase 3 and attend an appointment with a donor nephrologist. The nephrologist will meet with you to review your health history, complete a physical examination, and discuss all of your test results. The nephrologist will determine whether you are suitable to donate or whether additional testing is needed. The purpose of the appointment will be to make sure that it is safe for you to donate a kidney and to ensure that you are aware of the benefits and risks of living kidney donation. Should you be deemed suitable to donate, you will be able to proceed with kidney donation.

If you are compatible with your transplant recipient and your transplant recipient has been cleared to proceed with kidney transplant, your surgery date will be booked. You will be scheduled for a series of pre-operative appointments with the clinical coordinator, the surgeon, and the anesthesiologist, as well as to update certain lab tests. This is discussed in further detail in Module 4: Living kidney donation surgery. If you are incompatible with your transplant recipient, options will be discussed with you such as enrolment in the the kidney paired donation program.

If you miss a required appointment, you will be contacted by the administrative assistant to re-book. Please inform the administrative assistant as soon as possible if you need to reschedule or cancel. If you miss the same test or appointment on more than three occasions without notification, the living kidney donation team will assume that you do not wish to continue with the living kidney donor evaluation. You will be notified of this, and you will be required to contact the living kidney donation team within two weeks. If we do not hear from you, we will stop the evaluation process. The potential recipient will be told that you are not a suitable candidate for living kidney donation at this time.

As a potential living kidney donor, you will be treated by a completely different team of healthcare professionals than your intended recipient. None of your health information will be shared with the recipient. Similarly, the living kidney donation team will be unable to provide you with information regarding the health of your intended recipient. Potential living kidney donors and recipients may share as much or as little information with each other as they wish. As a potential living kidney donor this is up to you based on your personal preferences.

Choosing to donate one of your kidneys is a big decision which must be voluntary. You may also wish to think about how living kidney donation aligns with your beliefs, morals, and values. You should not donate if you do not want to and you should not feel pressured by others to donate. If you decide that donating is not the right choice for you at this time, the living kidney donation team will be available to help you deal with this. It is important that you take time to think about your decision carefully. You may end the donor evaluation process at any time and the specific reason(s) for ending your work up will be kept confidential. The intended recipient will not be told the reason that you do not wish to donate. Rather, they will be informed that you are unsuitable for living kidney donation. You may wish to tell your intended recipient yourself or you may ask your clinical coordinator to assist you.



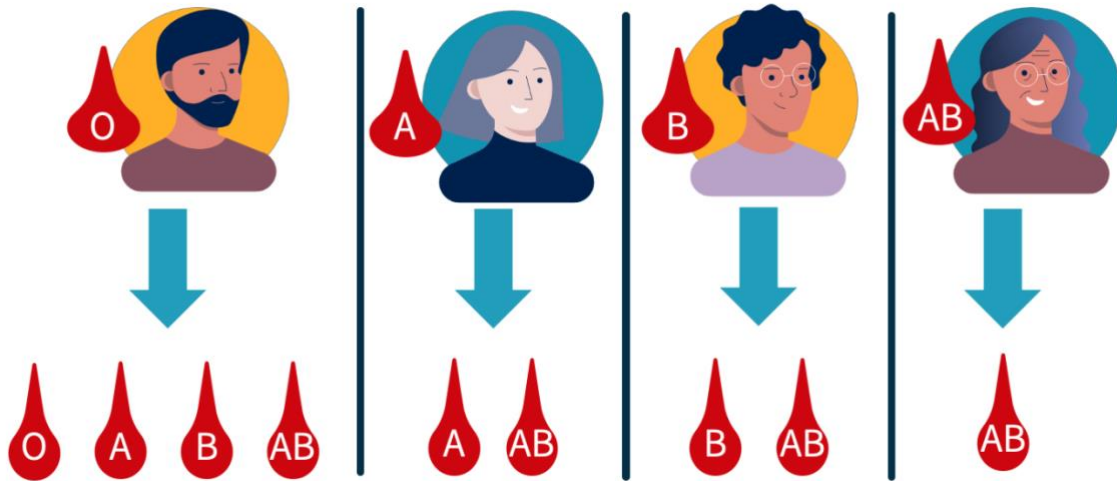
If multiple living kidney donors are interested in donating to the same recipient, the living kidney donation team will review all of the living kidney donor health history questionnaires and determine the most suitable individual to begin the evaluation. Only one potential donor is evaluated at a time for a transplant recipient. The other individuals will then be considered “backup” living kidney donors should the initial living kidney donor be determined medically unsuitable during the evaluation. They may be contacted later if the initial living kidney donor cannot proceed with living kidney donation.

### **Chapter 3: The Kidney Paired Donation Program**

This chapter will provide an overview of blood group and tissue compatibility, and will also explain the Kidney Paired Donation (KPD) Program.

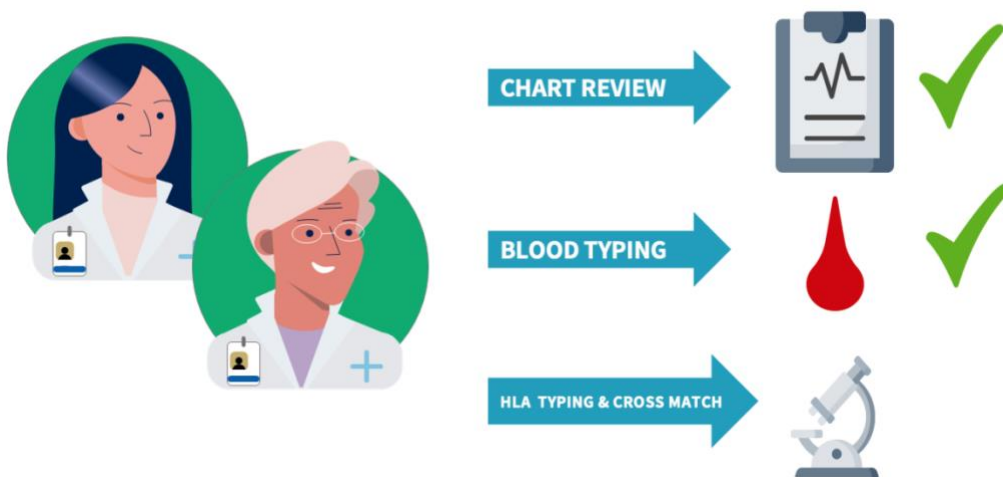
As you’ve just learned, a rigorous evaluation process is conducted to ensure that you are healthy enough to become a living kidney donor. Another important detail that must be considered before someone can donate a kidney is how well the living kidney donor’s blood group matches or is compatible with the recipients’ blood group. This is often referred to as ABO compatibility. This information can be discovered by giving a blood sample. Alternatively, if you have donated blood before, you likely received a card from the Canadian Blood Services which specifically states your blood group.

If your blood group is O, you can donate to a recipient whose Blood Group is O, A, B, or AB. If your blood group is A, you can donate to a recipient whose Blood Group is A or AB. If your blood group is B, you can donate to a recipient whose Blood Group is B or AB. Lastly, if your blood group is AB, you can only donate to a recipient whose Blood Group is AB.



The living kidney donation team will determine if your blood group is compatible with your intended recipient. If you are blood group incompatible, you can still be a living kidney donor. There are other options which will be discussed in the second part of this module.

In order to donate a kidney to your intended recipient, you must not only be blood group compatible, but your kidney tissue must also be compatible with the recipient. This can be determined by conducting a test called Human Leukocyte Antigen typing (also called HLA typing) as well as a cross match test, which is performed during Phase 2 of the evaluation.

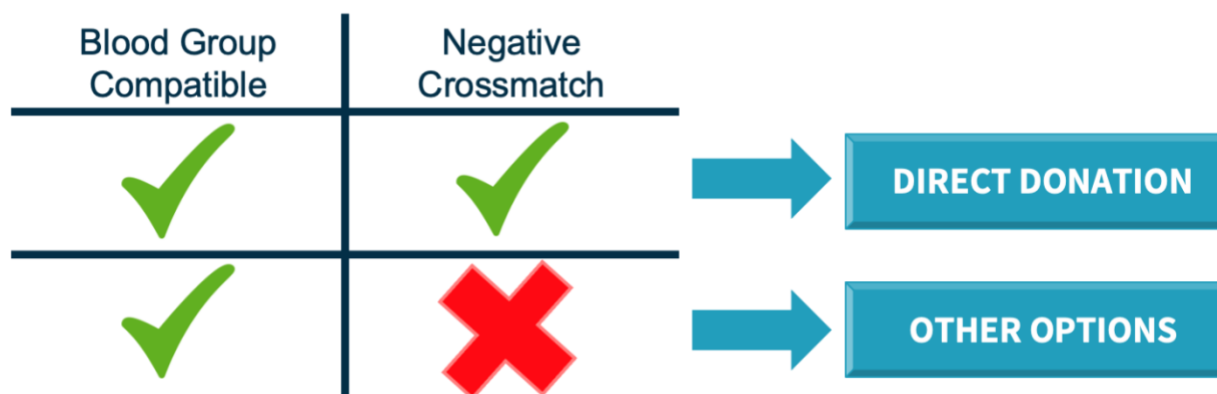




This testing determines if there are antibodies in the blood of your intended recipient against proteins on your kidney, called HLA antigens. When these antibodies are present, they are called donor specific antibodies. If your intended recipient has donor specific antibodies against your kidney, then they may reject that kidney, which can cause the kidney to fail prematurely. When these antibodies are present, this is also known as a positive crossmatch and donation directly to your intended recipient is not possible.

If your intended recipient does not have donor specific antibodies in their blood against your kidney, this is known as a negative crossmatch and donation directly to your intended recipient may be possible.

**To summarize:** If you are blood group compatible and have a negative crossmatch you are considered compatible with your recipient and you can directly donate to them if you are suitable to donate. This is called direct donation. If you are blood group compatible but the crossmatch is positive, there is a higher chance that your recipient's body may reject your donated kidney. You can still be a living kidney donor, although you cannot donate directly to your recipient. Other options are available and will be discussed next.



It is important to note that the HLA typing test may also reveal some information about your biological relationship to the intended recipient; although, it is not being performed to specifically determine this relationship. Therefore, you will not be given information about this aspect of the test result. If you wish to have testing done to determine your biological relationship to your recipient, you will be referred to your family doctor.

The results of the HLA typing and Crossmatch test will be reported on the intended recipient's chart. You will be asked to give written consent for the HLA typing and crossmatch test and for your results to be visible in their chart.

If you are a living kidney donor who is 1) blood group incompatible with your intended recipient or 2) has a positive crossmatch with your intended recipient, you can still be a living kidney donor. There are several options that make a kidney transplant for your recipient possible.



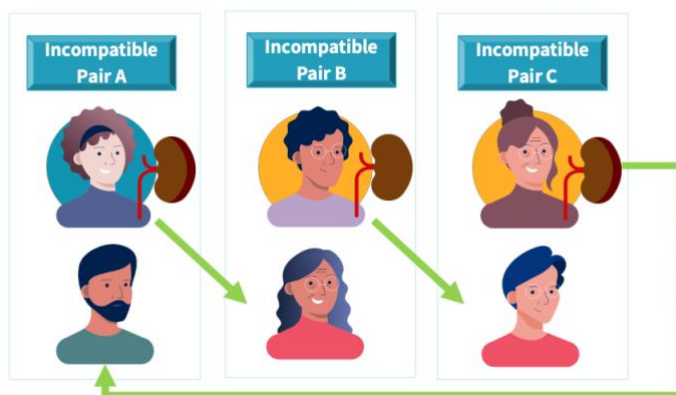
First, you and your recipient can participate in the Kidney Paired Donation program, also known as the KPD program. This is a Canada-wide program run by the Canadian Blood Services in partnership with all living kidney donation and kidney transplant programs in the country. Essentially, the KPD program matches incompatible living

kidney donor and recipient pairs to other incompatible pairs. A living kidney donor of an incompatible pair can donate to another recipient in Canada with whom they are compatible, while their original recipient receives a kidney from a different living kidney donor in the program that is compatible with them.

For example, Donor A wants to donate to Recipient A but they are incompatible. Donor B wants to donate to Recipient B but they are incompatible and Donor C wants to donate to recipient C but they are incompatible. The KPD program will create an exchange where kidney donors will donate to a compatible recipient. Here, donor A will donate to recipient B. Donor B will donate to Recipient C and Donor C will donate to Recipient A.

Source: [Canadian Blood Services](https://www.cbs.ca)

Example of a KPD program exchange



As you can see by this example, this process creates a chain reaction where each living kidney donor is donating a kidney to another recipient who is compatible, while ensuring that their original intended recipient still receives a living donor kidney transplant.

Since the KPD program is a national program, donors and recipients may not always be located in the same city. In most circumstances, if you are evaluated at Toronto General Hospital, you will donate your kidney at Toronto General Hospital and it will be shipped to the recipient who may be located anywhere in the country. Your intended recipient will receive a kidney shipped from elsewhere to Toronto General Hospital in order for their transplant to occur. Kidneys are shipped via ground transport or air.

The recipient surgeries typically do not take place on the same day, but usually within the same week. Since the KPD program requires that multiple programs work together, there may also be limited flexibility in surgery dates. As such, living kidney donors who would like to donate a kidney during specific times, such as over holidays, may not always be accommodated. In rare circumstances, a living kidney donor will be required to travel to another centre to donate. Your clinical coordinator will discuss this with you as required.

It is important to note that you may be required to complete additional testing prior to living kidney donation surgery. Each transplant centre operates slightly differently; therefore, to ensure all protocols are followed, more testing may be required before the living kidney donation surgery can occur, depending on where your kidney is being shipped.

In cases of blood group incompatibility or in cases of a positive crossmatch, the KPD program is the preferred option. However, other options are possible including list exchange and desensitization.

List exchange occurs when a living kidney donor donates a kidney to someone on the waiting list in exchange for their intended recipient receiving higher priority for a kidney on the deceased donor waiting list.

Desensitization is used to allow a living kidney donor to donate directly to their recipient even if incompatibility exists between the donor and recipient. To make this possible, the recipient will require a series of treatments before the transplant to treat their immune system reaction to the living kidney donor tissue. This is not always successful or possible.

List exchange and desensitization are not commonly performed. Your clinical coordinator will provide you with more information about these options if they apply to you and your intended recipient.

## Chapter 4: Kidney Donation Surgery

This chapter covers the surgical procedure, our hospital procedures, and how postoperative pain is controlled.

Once you have been cleared to proceed with kidney donation, the living kidney donation team will work with you to book a surgery date. It is important to know that surgery can only be booked if you are cleared for donation and if your recipient is also cleared to proceed with transplantation. The hospital staff will try and accommodate you and your recipient as much as possible to find a suitable surgery date. Typically, surgery dates are confirmed about one month ahead of time. It is also important to know that health problems in the living kidney donor or recipient may occur prior to surgery. In these cases, extra testing may be needed before surgery or the surgery may be cancelled or postponed.

Approximately one to three weeks before your surgery, you will be required to complete basic blood and urine tests and attend appointments with the surgeon, clinical coordinator, and anesthesiologist. These must all be completed at Toronto General Hospital.

If you live far away from Toronto General Hospital, the Living Kidney Donation team can direct you to local accommodations such as hotels that offer a discounted rate for Toronto General Hospital patients.

In the month before your surgery, it is important to take extra precautions to prevent getting an infection that can affect your health and the health of the recipient.

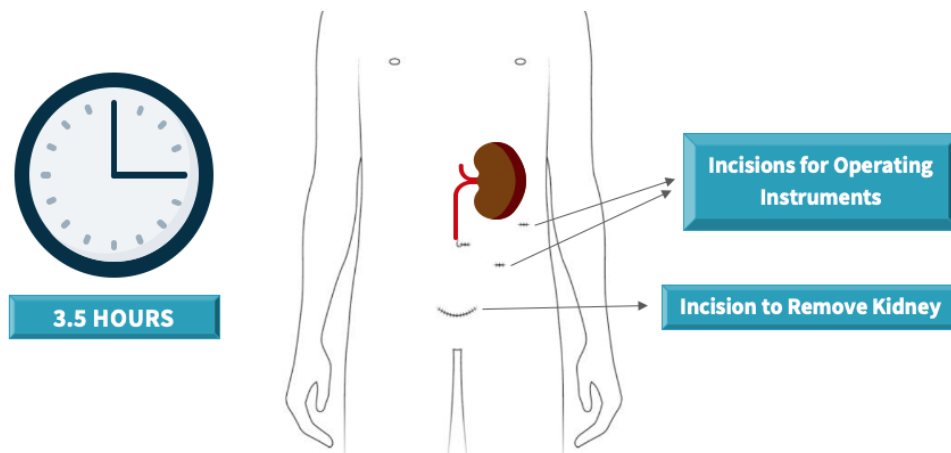
Infections can sometimes be transmitted from the donor to the recipient when a transplant occurs, which is why we recommend extra precautions prior to surgery. These precautions include 1) practicing safe sex, 2) avoiding mosquito and bug bites, 3) avoiding using needles, including those for electrolysis or acupuncture, 4) avoiding getting tattoos or piercings, and 5) avoiding travel outside of North America. In addition, alcohol should be avoided 24 hours prior to surgery.

On the morning of your surgery, you will be admitted to the hospital around 6:00 AM. Following your surgery, you will be in the Post-Anesthesia Care Unit (PACU) or recovery room for about 2 to 4 hours, and then you will be admitted to the 6th, 7th, or 10th floor of the Peter Munk Building for recovery.

Kidney donation surgery, also called "nephrectomy," is performed laparoscopically, which is a minimally invasive procedure where 3 or 4 very small cuts (approximately 0.5

inch) are made in the upper right or upper left part of your stomach to allow insertion of a small camera and surgical instruments. The small camera is used to monitor the procedure. The surgical instruments are used to separate the kidney from your body for it to be removed. Then, an approximately 4-inch incision is made in the lower part of your stomach to remove the kidney out of your body. The incisions are closed using sutures and the skin is closed using small pieces of surgical tape. This surgery takes about 3 and a half hours.

## Laparoscopic nephrectomy

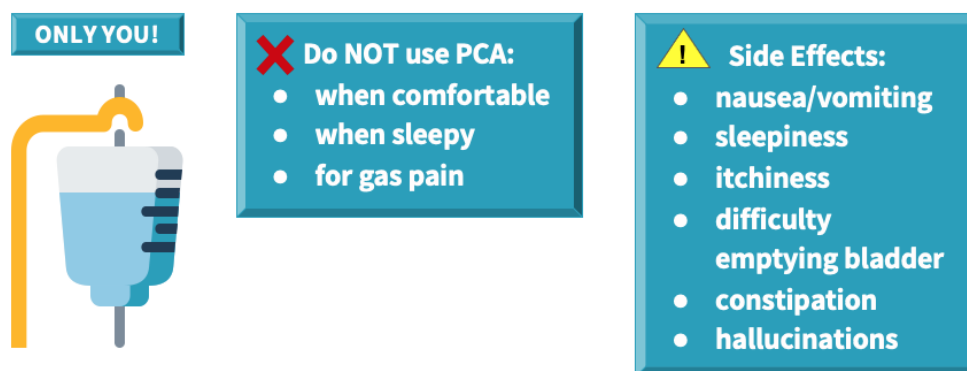


After your surgery, you will stay in the hospital for approximately 3 to 5 days. You will have a urinary catheter, which is a tube that is inserted in your bladder to drain the urine for about 1 to 2 days. Your sutures will dissolve on their own in about 2 weeks.

Right after your surgery, there will be some pain and discomfort around the site of the incision. You will be given medications to lessen the pain. Your pain will be managed by Patient Controlled Analgesia (PCA) and oral pain medication. PCA is started before you go to the Post-Anesthesia Care Unit or recovery room and is stopped when you are ready to take pain medication by mouth. The incision will become less painful over the first couple of weeks, but it will take several weeks for the muscles and nerves to heal completely. Analgesia is medicine for pain. PCA allows you to give yourself pain medicine by pushing a button. You will have an intravenous (IV) catheter in your hand or arm. The PCA pump is connected to your IV. When you push the button, the pump will give you the pain medicine through your IV. The medicine will take 5 to 10 minutes to work. To prevent overdose, the PCA pump has a safety timer called a "lockout." The lockout time is typically 5 to 10 minutes. If you press the button during the lockout time, you will not receive more medication. This is to ensure that a safe amount of pain medication is delivered to you during your recovery.

**There are some important things you should know about PCA:**

1. Visitors and family should not press the PCA button. Only you should push the button.
2. Do not wait until the pain is severe before using your pain medicine. Push the button when you start to feel pain. You can also push the button before you do something that brings on pain such as movement or coughing. Do not use PCA for gas (bowel) pain.
3. Do not use PCA when you are comfortable or sleepy.
4. There are some side effects to PCA. The most common side effects of PCA are nausea or vomiting, sleepiness, itchiness, difficulty emptying your bladder after removal of your catheter, constipation, and hallucinations. You will be monitored for these side effects.



PCA will be stopped when you are able to take pain medicine by mouth. Your surgeon will decide when it is safe to be discharged home to recover. This will depend on your level of pain, your ability to eat and drink, as well as your bowel and bladder function.

When you are ready to be discharged home, you will be given a prescription for pain medication (e.g., Percocet or Tylenol #3) and stool softeners. Narcotics, such as Percocet or Tylenol #3, can make you drowsy and cause constipation. Drinking fluids, eating fruits and vegetables, and using stool softeners can help with regular bowel movements. If you wish, you may take extra strength Tylenol as per package instructions instead of the narcotic pain medication prescribed. Many living donors only require Tylenol at home for pain while they recover.

These are some important points to keep in mind for recovering after surgery:

- Most living kidney donors require 4 to 6 weeks off before getting back to work
- Avoid driving while taking narcotic pain medication. You should also avoid driving if you have pain over your incisions as your range of motion may be

limited. This may affect your ability to properly check your blind spots while driving, and you may have pain while your seat belt is fastened.

- Avoid pregnancy for 6 months after donation. If you plan on becoming pregnant after donation, you should discuss this with the nephrologist prior to donation surgery.
- You should avoid non-steroidal anti-inflammatories such as Advil, Motrin, Ibuprofen, Aleve, or Naproxen after kidney donation, for the rest of your life. Tylenol is safe to use as directed.
- You should not do any heavy lifting (over 10 pounds) or intense physical activity for at least 6 weeks after surgery. Heavy lifting may damage your incision and can affect your healing; this may also cause a hernia at the site of your incision which would require further surgery to treat.
- Walking is the best exercise while you recover from surgery. You should try to walk a bit every day, and to increase the distance and speed you walk each day based on how you feel. In the winter, you can walk in malls to avoid icy surfaces and cold conditions or use a treadmill if you have access to one.
- You may resume sexual activity as soon as you feel ready to do so.

Small Steri-Strips are placed on the incisions to provide some support. There are no sutures or staples to remove. The Steri-Strips will fall off on their own. It is good to have a shower daily and to let the water flow over the incision. Gently dry the incision with a clean towel. Do not soak in the bath or go swimming until the incision is completely healed. Do not use a heating pad over the incision.

## **Chapter 5: Life After Living Kidney Donation**

This chapter covers your follow-up appointments after surgery and things you should consider about your life after living kidney donation.

It is important to attend follow-up appointments with your surgeon and nephrologist to ensure that you are recovering well after your kidney donation surgery.

An appointment with your surgeon will be scheduled one month after your surgery. This appointment is to determine how your incisions are healing and how well you are recovering. An appointment with your nephrologist will be scheduled for 3 and 6 months after surgery. During these visits, your blood pressure will be measured and blood tests will be completed to check your overall recovery and your kidney function.

You will also be asked to complete another 24-hour urine collection for your 6-month visit. These blood and urine tests can be completed at Toronto General Hospital or at your local lab before the appointment, based on your preferences.

After the 6-month visit, your nephrologist will provide you and your family doctor with recommendations for long term follow up. It is generally recommended that all living kidney donors visit their family doctor at least once a year for life. Your family doctor will check your blood pressure and order blood and urine tests every year.

**1 MONTH:**  
Donor Surgeon



**3 & 6 MONTHS:**  
Nephrologist



If you do not currently have a family doctor, please visit [www.ontario.ca/healthcareconnect](http://www.ontario.ca/healthcareconnect) or call +1 (800) 445-1822 to be added to a waitlist.

We recommend that after kidney donation surgery, donors follow health recommendations for the general population. This includes maintaining a healthy weight, exercising regularly, and following a healthy diet as recommended by Canada's food guide. It is strongly recommended that living kidney



donors do not smoke. Similar to the general population, alcohol can be consumed in moderation. It is generally recommended that women consume no more than 10 alcoholic beverages per week and no more than 2 drinks per day. It is generally recommended that men consume no more than 15 alcoholic beverages per week and



no more than 3 drinks per day. You should also follow vaccination recommendations for the general population.

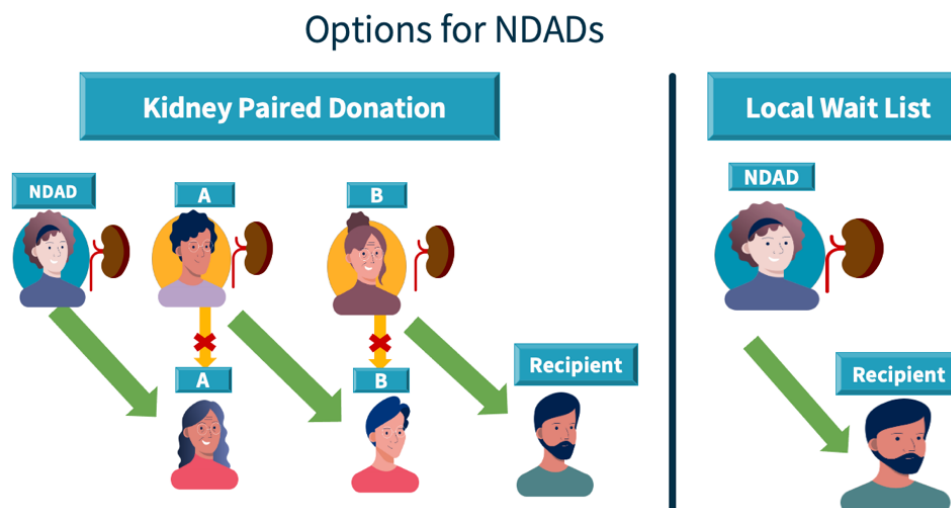
## Chapter 6: Non-Directed Anonymous Donors (NDAD)

This chapter will discuss the different living kidney donation options for anonymous donors.

A non-directed anonymous donor, commonly referred to as an “NDAD,” is an individual who donates a kidney to a recipient that they do not know. All potential living kidney donors must go through the living kidney donor evaluation process. This process applies to non-directed anonymous donors as well. Once a NDAD is cleared to donate, they may choose to donate directly to someone waiting for a kidney on the deceased donor waiting list or they may also choose to donate through the Kidney Paired Donation Program.

As you may recall from Chapter 3, the Kidney Paired Donation (KPD) program is a Canada-wide program run by the Canadian Blood Services in partnership with all living kidney donation and kidney transplant programs in the country. Essentially, the KPD program matches incompatible living kidney donor and recipient pairs to other incompatible pairs. In the KPD program, an NDAD can kickstart a domino chain of transplants.

For example, donor A and recipient A are incompatible and so are donor B and recipient B. An NDAD can donate a kidney for the compatible recipient of pair A. The living kidney donor of pair A will then donate a kidney for the recipient of pair B. This chain ends with donor B donating a kidney to someone on the deceased donor waiting list. Domino chains can be of various lengths. Source: [Canadian Blood Services](#)



NDAD's are a large part of the success of KPD program because they enter the program without adding a specific recipient into the program. Through their donation, NDADs can not only help multiple patients by kickstarting a chain of transplants, but, in addition, a patient on the deceased donor waiting list receives a transplant as a result of their donation.

The options to donate directly to a recipient on the waiting list or through the KPD program are discussed with all NDADs. Just like any other living kidney donor candidate, an NDAD can withdraw from the evaluation process at any time. All health information, including the identity of the NDAD is kept confidential from the recipient at all times, and NDADs and recipients do not meet in person.

### **Conclusion**

Congratulations! You have reached the end of the overview of living kidney donation at Toronto General Hospital. The living kidney donation team is here to support you along each and every step of your living kidney donation journey. For additional information, please contact your clinical coordinator.

### **Acknowledgments**

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