



Baxter

“YOUR KIDNEYS AREN'T WORKING PROPERLY.”

What does this mean?
How can you stay healthy?

When you're born, everything works perfectly.
Then something goes wrong and you ask:

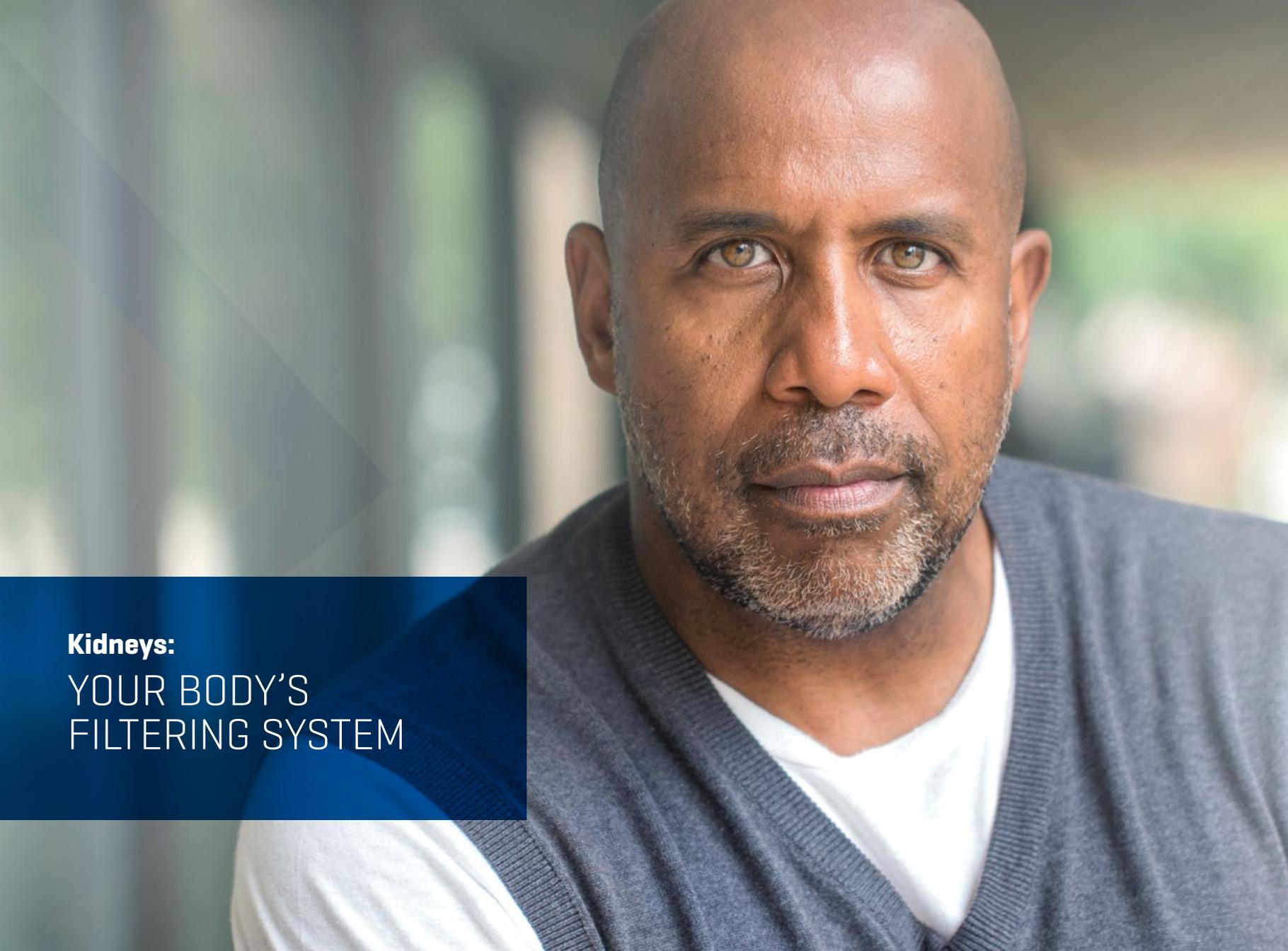
“HOW DO I DEAL WITH THIS?”

“WHAT ROLE DO KIDNEYS PLAY IN MY HEALTH?”

“WHAT ARE MY OPTIONS?”

“WHAT IS BEST FOR ME AND MY LIFESTYLE?”

“WHO CAN I TURN TO?”

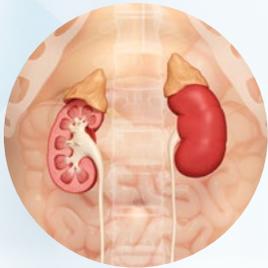


Kidneys:

YOUR BODY'S
FILTERING SYSTEM

NORMAL HEALTHY KIDNEYS PLAY AN IMPORTANT ROLE IN YOUR HEALTH

- > Kidneys **clean your blood** and **remove extra fluid** to form urine.
- > They **keep minerals** (sodium, calcium, potassium, and phosphorus) **in balance**.
- > They help **control blood pressure**.
- > They help **make red blood cells**.
- > They **produce vitamin D** to keep bones healthy.



- > Kidneys are shaped like kidney beans.
- > They're the size of a small fist.
- > They weigh about 1/4 pound or 114 grams.

WHEN YOUR KIDNEYS AREN'T WORKING PROPERLY, YOU MAY BE DEVELOPING KIDNEY FAILURE

When this happens:

- > harmful waste and fluid can build up in your body;
- > your blood pressure may rise; and
- > your body may not be able to make enough red blood cells.



All you need to stay healthy is **one kidney that works at 20%**.

THREE TYPES OF KIDNEY DISEASE: CHRONIC KIDNEY FAILURE, ACUTE KIDNEY DISEASE, END-STAGE RENAL DISEASE

- > **Chronic kidney failure:** A gradual loss of kidney function that results from a long-term disease. It is the most common type of kidney failure. It cannot be reversed, but it can be treated.
- > **Acute kidney failure:** A sudden loss of kidney function resulting from an injury or poison. It can usually be reversed within a few weeks if treated quickly.
- > **End-stage renal disease (ESRD):** A condition where the kidneys do not work, or very little kidney function remains.

CAUSES OF KIDNEY FAILURE: SEVERAL DISEASES OR CONDITIONS MAY BE RESPONSIBLE



Diabetes is the most common cause of kidney failure. High levels of blood sugar (glucose) in people with diabetes can damage the small blood vessels in the **nephrons** and cause the kidneys to fail.

What can you do?

- > Review your blood sugar levels each time you visit your nurse or doctor.
- > Know your numbers: strive for “normal” blood sugar levels.



High blood pressure, or hypertension, can also damage the small blood vessels in your kidneys’ filters, causing them to fail. Uncontrolled high blood pressure can make kidney disease progress even faster.

What can you do?

- > Medication, healthy diet, and exercise can help keep your blood pressure within a healthy range to protect your kidneys.
- > Write down your blood pressure each time you visit your nurse or doctor.

OTHER FACTORS THAT CAN LEAD TO KIDNEY FAILURE:



Lupus (an immune system disease)



Polycystic kidney disease (multiple cysts in the kidneys)



Glomerulonephritis (an inflammation of the kidney’s filtering mechanism)



Injury or trauma from an accident, **and poisons**, such as street drugs or large quantities of certain over-the-counter medicines

KIDNEY DISEASE IS SOMETIMES CALLED A “SILENT” DISEASE

Some people may not feel sick or notice their symptoms until their kidneys no longer remove waste.

As the disease progresses and kidney function slows, most people experience symptoms of **uremia**:

- > Feeling tired and/or weak
- > Swelling of the hands and feet
- > Shortness of breath
- > Appetite loss, a bad taste in the mouth, vomiting, nausea, and weight loss
- > Difficulty sleeping, itching, muscle cramps, and darkening of the skin

Be sure to tell your doctor or nurse if you experience any of these symptoms.

MONITOR YOUR KIDNEY FUNCTION TO REMAIN HEALTHY

Kidney function is what percentage of your kidneys is still working (e.g. 100% = fully functioning). Monitoring how slowly or quickly your kidney disease is progressing is done by keeping a close watch on your **serum creatinine**, a waste product found in your blood that is checked with a simple blood test.

People with kidney failure can develop complications such as anemia and bone disease.

To stay healthy, it is important to:

- > regularly follow up with your healthcare team; and
- > have tests that will help find these problems early so the best therapy can be started.

STAY IN TOUCH WITH YOUR FEELINGS WHEN LEARNING ABOUT YOUR NEW HEALTH PROBLEM

It is common to experience many emotions, especially if you generally feel well and the news of a health issue comes as a surprise.

Feelings can range from shock (perhaps this news is very sudden and unexpected) to sadness, depression, and anger.



It is not uncommon to feel this way. You should speak with your nurse and doctor, who can connect you with other members of the healthcare team. They will also guide you to resources who can help you work through your feelings and help you make decisions that are best for you.

KIDNEY FAILURE IS MANAGEABLE

There are several treatments for kidney disease that can help you live a healthy, active life:

- > Medications and treatment procedures exist that are designed to slow down your kidney disease.
- > **Dialysis**, a procedure that temporarily removes waste and extra fluid from your body, mimics the function of a normal kidney.
- > Eventually, you may require kidney transplantation, a surgical procedure that places a new donor kidney into your body.



Nephrons are tiny filters inside the kidneys that clean the blood. Most kidney diseases affect the nephrons.

Uremia means having urea or waste in the blood.

Dialysis is a process that removes the waste and extra fluid from your blood by filtering them through a membrane/filter, the way healthy kidneys would.



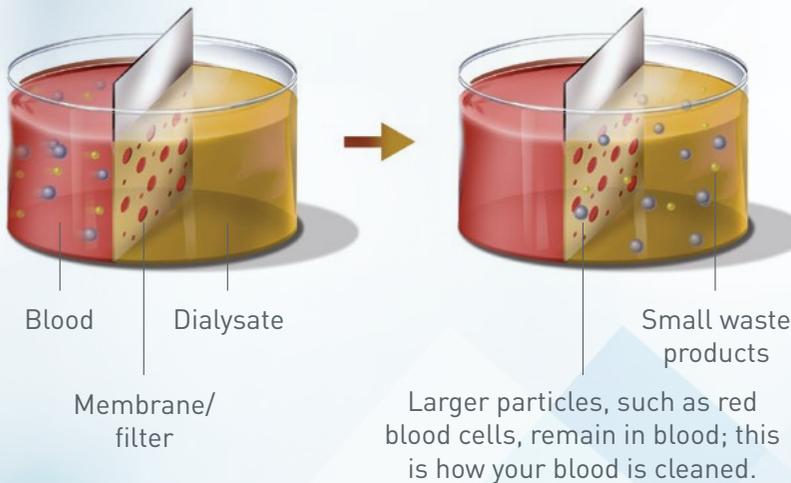
Dialysis for kidney disease:
DOING THE WORK
OF THE KIDNEYS

As your kidneys slow down and stop working normally, you will need to decide on a treatment. While there is no cure for kidney failure, there are treatments that can take over the functions that your kidneys can no longer perform, making you feel better so that you can live a healthy life.

HOW DOES DIALYSIS WORK TO CLEAN MY BLOOD ?

During dialysis, blood is on one side of the membrane/filter, and a special fluid called **dialysate** is on the other.

Small waste products in your blood flow through the membrane/filter and into the dialysate. Larger particles, like red blood cells, remain in your blood. This is how your blood is cleaned.



TWO KINDS OF DIALYSIS: THEY DIFFER IN HOW AND WHERE THEY ARE DONE

- > **Peritoneal dialysis** uses the natural membrane of the body, called the **peritoneum**, as the filter to remove waste and fluid.
- > **Hemodialysis** uses a machine and an external man-made blood filter, called a dialyzer, to remove waste from the body.



The **peritoneum** is a thin layer of tissue that lines your abdomen and covers your abdominal organs.

PERITONEAL DIALYSIS (PD) FILTERS YOUR BLOOD **INSIDE** YOUR BODY.

PD uses the natural membrane of your own peritoneum as the filter.

Two types of PD

Continuous ambulatory peritoneal dialysis (CAPD)

- > Cleans and filters your blood continuously
- > Does not require a machine
- > Requires that you exchange (infuse and drain) fluid four times a day through a permanent catheter inserted in your abdomen

Automated peritoneal dialysis (APD)

- > Uses a machine called a **peritoneal dialysis cycler** to perform the prescribed exchanges to clean/filter your blood each day through a permanent catheter
- > Done at home during the night while you sleep

Your doctor will recommend the dialysis prescription (the number of exchanges and the dialysis solution) that is best for you.



Once you have been fully trained by your dialysis nurse, you will be able to perform PD yourself at home, or even while travelling.

HEMODIALYSIS FILTERS YOUR BLOOD **OUTSIDE** YOUR BODY.

During hemodialysis, your blood is removed from your body and pumped through a manufactured filter called a **dialyzer**.

Hemodialysis

- > Performed during a scheduled time at the hospital in a dialysis clinic
- > Done three times a week. Each treatment session lasts about four hours, depending on the dialysis prescription recommended by the doctor.

A nurse or technician inserts two needles into a special permanent access called a **fistula**, usually located in your arm. The fistula is created surgically. The needles that are inserted into the fistula are connected to tubes that are used to remove your blood. Once the waste in your blood has been removed through the filter, the blood is returned to your body.



With proper training and the help of a partner, hemodialysis can be done at home. It may be done daily or three times a week, depending on the dialysis prescription.

CHOOSING THE TYPE OF DIALYSIS THAT'S RIGHT FOR YOU: MEDICAL OR LIFESTYLE REASONS MAY MAKE ONE TYPE OF DIALYSIS BETTER FOR YOU THAN ANOTHER.



With the help of your nurse, doctor, healthcare team, and family, you can choose the treatment that's best for you and your lifestyle.

Here are some things to consider when making your decision.

TYPE OF DIALYSIS	BENEFITS	POINTS TO CONSIDER
Peritoneal dialysis (PD)	<ul style="list-style-type: none"> > Fits your treatment around your lifestyle > Portable and flexible—easy to take your therapy with you when travelling or going to the cottage > Continuous therapy is gentler and more like your natural kidney function > Fewer visits to the dialysis unit for treatment > No needles > Independence—you mostly perform therapy yourself > Therapy can occur while you sleep 	<ul style="list-style-type: none"> > Exchanges need to be made daily > Need for a permanent access > Some chance of infection > May show a slightly larger waistline (due to carrying fluid) > Storage space required in your home > Some fluid and diet restrictions
In-centre/ hospital hemodialysis (IHD)	<ul style="list-style-type: none"> > Regular contact with other hemodialysis patients and staff > Three treatments/week (four days off) > No need to store equipment/supplies at home > Immediate access to medical help during therapy 	<ul style="list-style-type: none"> > Travel to centre/unit three times a week, on a fixed schedule for an average of four hours per treatment > Need for a permanent access > Insertion of two needles for each treatment > Some fluid and diet restrictions > Possible discomfort, such as headache, nausea, leg cramps, and fatigue
Home hemodialysis (HHD)	<ul style="list-style-type: none"> > Help from family members > More control over when you dialyze > No need to travel to a clinic or hospital for treatment > Works during sleep (for some people) 	<ul style="list-style-type: none"> > Need for permanent access > Some risk of infection > Insertion of two needles for each treatment > Some fluid and diet restrictions > Training may take a minimum of four to six weeks > Storage space required for equipment and supplies

DIALYSIS SIDE EFFECTS: KNOW WHAT THEY ARE AND HOW TO PREVENT THEM

Peritoneal dialysis (PD)

Most people enjoy the flexibility of being on PD, and complications do not occur often with today's new technology. However, one complication of PD is **peritonitis**, an abdominal infection that may occur if procedures and hygiene are not followed carefully.

You can stay healthy while doing PD by doing the following:



Following the **procedures** taught by your nurse



Learning to **recognize** the early **signs of infection**



Getting immediate **antibiotic treatment**

Hemodialysis

Common complications of hemodialysis that can prevent your hemodialysis treatment from working well and that can become serious if not treated quickly include the following:

- > **Infection of your access (fistula) site**
- > Blockage from blood clots
- > Poor blood flow
- > Vascular access problems



Learning to **recognize these complications and getting treatment quickly** will also let you remain healthy while doing hemodialysis at home or in the clinic.

Hemodialysis side effects also include:

- > Muscle cramps
- > Headaches
- > Low blood pressure (which can make you feel dizzy, weak, or nauseated)



These symptoms are related to your body's response to the rapid changes in fluid and electrolyte balance during the treatment. They are manageable, so be sure to report them to your dialysis nurse or technician.

KEEPING YOUR DIABETES AND BLOOD PRESSURE UNDER CONTROL WHEN YOU ARE ON DIALYSIS OR HAVE A TRANSPLANTED KIDNEY

Managing these conditions is critical. Your healthcare team will routinely check your blood glucose levels and your blood pressure during medical visits. Your doctor may change your medications or the dose, depending on how your kidney failure is being treated.

YOU CAN TAKE CONTROL: IT IS UP TO YOU TO REGULARLY MONITOR YOUR BLOOD GLUCOSE LEVELS AND BLOOD PRESSURE

High levels of blood glucose can complicate dialysis and damage the small blood vessels in the kidneys.

If you have diabetes:



take your medications as prescribed;



stick to your recommended diet; and



monitor your blood glucose level regularly.

High blood pressure can also damage the kidneys and disrupt dialysis.

If you have high blood pressure:



take your medications even if you feel fine;



watch what you eat and drink; and



check your blood pressure regularly



You are not alone:

MANAGING YOUR
KIDNEY DISEASE TO
STAY HEALTHY IS A
TEAM EFFORT

UNDERSTAND THE ROLE OF EACH PERSON ON YOUR TEAM

Your healthcare team includes doctors, nurses, dieticians, pharmacists, social workers, and psychologists. Each team member has individual responsibilities, but they all work together to make sure you get the very best care.

Your family and friends also play an important role in helping you and your kidneys stay as healthy as possible.

Never be afraid to take the lead by:

- > asking questions;
- > reporting symptoms;
- > reading on your own; and
- > reaching out to another team member.



Nephrologist: A doctor who specializes in kidney diseases and oversees all the medical care related to your kidneys, including prescribing medications, ordering and evaluating tests, and designing your treatment plan.



Nurse (dialysis nurse): A registered nurse who specializes in kidney care and works with the nephrologist and healthcare team to coordinate your care, perform tests, and provide education to support you in making informed decisions about the treatment plan that is best for you and your family.



Dietician: A renal dietitian is a nutritional expert who can provide diet and nutritional advice to help you live well with kidney disease. Your dietitian may create a meal plan or special diet that will help your kidneys stay healthy longer.



Social worker: A trained counsellor who can provide support and practical advice on living with a chronic illness and adjusting to life with dialysis or a transplantation, a social worker is a resource for information on issues such as finances or transportation.



Pharmacist: A pharmacist works with you and the team of nurses and doctors to provide education about your medications and can answer questions about types of herbal therapies that could be harmful to your kidneys. A pharmacist monitors medication prescriptions for possible drug interactions and provides suggestions to the team about the best types of medications based on your kidney health at a given time.



Conservative care or non-treatment may also be an option as it offers both physical and emotional comfort care.

Please speak to your healthcare team about conservative care, as this pathway may eventually lead to death from kidney disease.

Learn more at www.ckmcare.com.



A kidney transplant:
THE CLOSEST THING
TO YOUR OWN
HEALTHY KIDNEY

A kidney transplant is a major surgical procedure in which a healthy kidney from a human donor is placed inside your lower abdomen.

A healthy donor kidney can come from several sources:

- > A living person, such as a family member, friend, or unrelated individual can be a donor. This option requires procedures and tests to help your doctor determine if you can accept the living donor kidney.
- > A recently deceased person (a cadaver). This option also requires procedures and tests while you are on some form of dialysis as you wait for the transplant procedure.

About 70% of all transplanted kidneys are from cadavers; in Canada, the wait for most individuals can vary due to the limited availability of donors.



Are you a candidate for transplantation?

Not everyone is eligible for a kidney transplant. Your doctor and healthcare team can help determine if transplantation is right for you or if your condition makes this option too risky or too unlikely to succeed.

WHAT TO EXPECT

The operation – During the transplant operation, your arteries and veins are connected to the transplanted kidney. The operation usually takes three to four hours. After surgery, you will need to spend several days in the hospital and several weeks recovering at home.

No more dialysis – Following the operation, the healthy kidney takes over the work that your kidneys can no longer do. Dialysis is no longer necessary.

Living with a new kidney – A successful kidney transplant is probably the closest thing to a cure for kidney failure, as it may allow you to lead a more “normal” life—one with fewer daily disruptions or reminders of your kidney disease.

Avoiding rejection – Patients who have received a transplant need to take immunosuppressive drugs every day to prevent the body from rejecting the transplanted kidney. Rejection occurs because the body naturally tries to get rid of foreign substances or objects—in this case, the new kidney.

Immunosuppressants work by weakening the body’s immune system. They lower your resistance to other illnesses, particularly infections.

Side effects include the following:

- > Weight gain
- > Skin changes
- > Mood swings
- > Upset stomach

Complications of transplantation – Rejection can be a major complication of kidney transplantation. Unfortunately, sometimes even drugs cannot stop the body from rejecting a transplanted kidney. When this happens, you will need to go back on dialysis and possibly wait for another donor kidney.

KIDNEY RESOURCES

There are many online resources available to help you learn about living with kidney disease. Also, sometimes hearing from other patients who are living life to the fullest with kidney disease can be helpful.

Online resources

Kidney Foundation of Canada: www.kidney.ca

Canadian Diabetes Association: www.diabetes.ca

Heart and Stroke Foundation of Canada: www.heartandstroke.ca

AGIR (French kidney patient connection – Québec): www.agir.qc.ca

Conservative Kidney Management: www.ckmcare.com

Ontario Renal Network: www.ontariorenalnetwork.ca

BC Renal Agency: www.bcrenalagency.ca

Manitoba Renal Program: www.kidneyhealth.ca/wp

Nova Scotia Renal Program: www.nshealth.ca/renal-program

Home Dialysis Central: www.homedialysis.org

YOUR FRIENDS AND FAMILY PLAY A KEY ROLE ON YOUR TEAM

Learning more about kidney disease and dialysis can help them better help you. Refer them to kidneydialysis.ca and kidneycampus.ca for more information.

Patient stories

Remember that you are not alone.

Visit www.kidneycampus.ca/patient-stories to hear patients and families tell their stories about living with kidney disease and dialysis.



Thank you to the centres that helped put this material together.

Provided by Baxter Corporation as a service to healthcare professionals and their patients.

Reference: Stein Andy, and Janet Wild. *Kidney failure explained: Everything you always wanted to know about dialysis and kidney transplants but were afraid to ask.* London, England: Class Publishing, 1999.



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