

## Having a Pancreas After Kidney Transplant (PAK)

This leaflet explains more about having a PAK transplant, including the benefits, risks, alternatives, and what you can expect at the time of the transplant.

### What is a PAK transplant?

A PAK transplant is a treatment for patients with insulin-dependent diabetes that occurs following a kidney transplant (either live donor or deceased donor kidney transplant). A pancreas is removed from a person who has died (the deceased donor) and given to another person (the recipient).

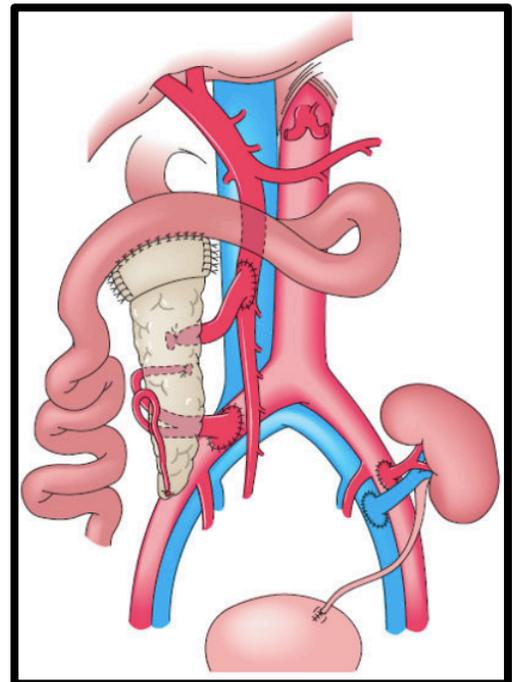
The transplanted pancreas produces the insulin that the recipient needs and it responds to the recipient's own blood sugar levels. The pancreas also produces enzymes (chemicals that break down tissues) that your body doesn't need. The transplanted pancreas is joined to your blood vessels and intestines, and these enzymes flow into your gut.

There are alternative treatments, but a PAK transplant is often the best treatment for insulin dependent diabetic patients following a successful kidney transplant who are fit enough for the operation. PAK transplantation is major surgery and should be considered carefully.

### Why should I have a PAK transplant?

For most patients, having a PAK transplant leads to a better quality of life and a longer life. This is because patients can eat and drink more freely and not have to worry about checking their blood sugars several times a day. Most people say they have more energy and feel more able to cope with everyday activities.

In addition, the pancreas transplant protects the kidney transplant. Patients who receive a PAK transplant have better kidney transplant outcomes. Research has shown that patients that receive a PAK compared to patients that receive a kidney transplant alone have improved kidney survival (~7-8% improvement).



Furthermore, It is very important to understand that patients that receive a PAK live longer than patients receiving a kidney transplant alone. Research has shown that patients that receive a PAK compared to patients that receive a kidney transplant alone have improved survival (~7-9% improvement).

Blood sugar control is usually very good, and the recipient does not need to inject insulin or check their blood sugars regularly. Dangerously low blood sugars do not occur. Complications of diabetes such as eye disease (diabetic retinopathy), gut disease (diabetic gastroparesis), nerve disease (diabetic neuropathy), and heart and blood vessel diseases often stabilize after PAK transplantation. Sometimes these diseases get better.

## **What are the risks?**

As with any medical procedure, there are risks associated with PAK transplantation and it is important to understand these.

We believe it is very important for you to understand the potential risks as well as the potential benefits of having a PAK transplant.

### **Primary non-function and pancreas failure**

Sometimes the transplanted organ never work (primary non-function). This happens in 1 to 3 out of 100 pancreas transplants, and 1 to 2 out of 100 kidney transplants. The failed transplant will then need to be removed by a surgeon.

Sometimes the pancreas may work for a few days or weeks, but then stop working. This may be due to blood clots within the pancreas, or inflammation of the pancreas. Occasionally the pancreas may be working, but might have to be removed due to infection or leakage of enzymes.

Overall, between 5 and 10 out of 100 transplanted pancreases need to be removed within the first year after the transplant.

### **Infection**

After a PAK transplant you may get an infection in the surgical wound, abdomen or urine. These infections can usually be treated with antibiotics, but sometimes another operation or drain placement is needed.

### **Bleeding**

Between 5 and 10 out of 100 PAK patients might need a further operation to address bleeding or evacuate old blood. Bleeding that may require a second operation is more common after a PAK than after your prior kidney transplant.

## **More surgery**

A further operation may be needed for bleeding, infection, or to rule out any problems with the pancreas transplant. 10 out of 100 PAK patients need more surgery after the transplant. 5 to 10 out of 100 patients may develop a hernia in the transplant scar and may need an operation to repair this months or years after your transplant.

## **Rejection**

Sometimes your body may recognize your pancreas (as well as your kidney) as foreign and start to attack it. This process is called rejection. 5 to 10 out of 100 patients who have had a PAK transplant will have an episode of rejection during the first year. Rejection is diagnosed by taking a sample of the pancreas tissue to look at under the microscope (a biopsy). Most episodes of rejection can be treated by increased doses of immunosuppressant medication. Rejection rates after PAK are slightly higher than if you received your pancreas at the same time as your kidney transplant.

## **Risks of immunosuppressant medications**

You will need to continue taking medication to suppress the immune system during the whole time that your transplants last (All transplant patients need to take immunosuppressant medications!). The doses of the immunosuppressive medication may be higher than following your kidney transplant.

As you learned following your kidney transplant, the medication has side effects including an increased risk of infection and, in the longer term, cancer, particularly skin cancer. Other side effects include a higher risk of high blood pressure, and high cholesterol (a fatty substance found in the body that can cause narrowing of the blood vessels). While you are in hospital, the transplant pharmacist will talk to you about these possible side effects and how to monitor and manage them. For example, using high factor sun block cream to reduce the risk of skin cancers. At your transplant follow-up clinics we will check your blood pressure, cholesterol and blood sugar.

## **Other risks**

Rarely, the blood vessels supplying the pancreas become swollen, or may erode into other organs. These problems cause pain, back pain, or bleeding into the intestines. This is extremely rare and happens in less than 1 in 100 patients, and will require major surgery. This can occur in a pancreas transplant that is working well, or even after the pancreas has stopped working or has been surgically removed.

If the transplanted pancreas needs to be removed, your own intestines will need to be repaired at the site where the transplanted pancreas was previously attached.

## **Survival**

The transplanted pancreas, on average, works for 8-10 years after PAK.

Sadly, between four to six out of 100 patients will not survive the first year after PAK transplant surgery. This is due to complications from the surgery, complications from the immunosuppressant medications or other health issues. In comparison, 5 out of 100 patients will not survive the first year after kidney transplant alone.

But, again, PAK patients have better long-term survival than patients who receive a kidney transplant alone.

## **Are there any alternatives?**

Continue with your current diabetic medical management with insulin shots and regular blood sugar checks.

## **What happens during a PAK transplant?**

The operation is carried out under general anesthesia. An incision (cut) is made in the middle of your abdomen (incision extends from below your sternum (breast bone) to above your pubic bone). The artery and vein of the pancreas are sewn into your artery and vein in the right-hand side of your lower abdomen. The intestine that comes attached to the pancreas is sewn into your intestine. The pancreas usually starts producing insulin during the transplant procedure.

The operation usually takes between 3-5 hours. Your own pancreas is left in place.

## **Will I feel any pain?**

You will feel some pain after the operation, but this will be controlled with pain medication. You will control the amount of painkiller you receive by pushing a button on a patient-controlled analgesia (PCA) pump. The transplant team will treat your pain so you are comfortable to get out of bed, sit in a chair and walk on the first day after surgery.

## **What happens after a PAK transplant?**

For the first 24-48 hours after the transplant, you will be cared for in the intensive care unit. You will have a catheter (flexible tube) to drain urine from your bladder, which is usually left in for 1-2 days. You will also have tubes (drains) coming out of your abdomen to evaluate the character of the fluid that may accumulate around your pancreas and kidney, and a tube in your neck to give fluids into your veins. You will also have a tube down your nose into your stomach to remove fluid to allow the new pancreas connection to your intestine to heal safely (usually stays in for 2-3 days). You will be allowed to have ice chips but your bowels need to start working again before your diet is slowly advanced. Patients' bowels are "sleepy" after

any abdominal surgery so it usually takes several days for you to tolerate liquids and food without being nauseated.

You may have an ultrasound scan to check the blood flow to the pancreas. Your blood sugars, urine output, and blood tests will be carefully monitored to check the function of the transplanted pancreas and kidney.

Most people are in hospital for between 5-10 days after the transplant. If you need more surgery, or there is a problem with the transplant, you may need to be in hospital for longer.

## **What do I need to do after I go home?**

Before you go home, the pharmacist will go through all of your medications and tell you what they are for and how to take them. The nurse educator and the transplant team will make sure that you are fully prepared to have a successful transition to home after discharge.

## **How long will my PAK transplant last?**

90 out of 100 pancreas transplants and 95 kidney transplants are still working one year after PAK transplantation. On average, pancreas transplants last for between 10 years. For some patients the transplants last much longer and for others they may only last a short time.

## **Can I have another transplant if it fails?**

Most people can have another pancreas transplant if this happens. The success rate for second transplants is generally as good as for the first. However, you are likely to wait longer. You will also need to go through the same tests again to make sure you are healthy enough to have another transplant.