PROCEDURE

Pancreas transplant

A pancreas transplant replaces insulin production using a healthy donor pancreas.

PURPOSE
Restore insulin production and improve blood glucose control

PROCEDURE TYPE
Therapeutic surgical transplant

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General

HOW LONG IT TAKES
About 4 to 6 hours

PREPARATION
Transplant assessment, medication review, and fasting when called

RECOVERY
Hospital about two weeks; no driving until cleared

MAIN RISKS
Rejection, blood clots, infection, and bleeding

RESULTS
Pancreas function monitored immediately and throughout recovery

Overview

A pancreas transplant is an operation that places a healthy donor pancreas into your body. The new pancreas can make insulin, the hormone that controls blood glucose. Most donated pancreases come from people who have died and agreed to organ donation.

Your own pancreas is usually left in place because it still helps with digestion. The donor pancreas is placed in the lower abdomen and connected to nearby blood vessels and the small intestine.

A pancreas transplant may be performed by itself, at the same time as a kidney transplant, or after a previous kidney transplant. A combined pancreas-kidney transplant is often considered when diabetes and severe kidney disease occur together.

This is major surgery, not a routine treatment for diabetes. You must take medicines that

suppress your immune system for as long as the transplanted organ works. These medicines reduce rejection but increase other health risks.

Why the procedure is performed

The main goal is to restore the body's insulin production. A successful transplant may allow you to stop insulin injections and can reduce episodes of dangerously low or high blood glucose. These benefits are not guaranteed, and some people need insulin again later.

Pancreas transplantation may be considered when diabetes is causing serious problems despite specialist care. Reasons include:

The potential benefit must be greater than the risks of surgery and lifelong immune-suppressing treatment. Improving glucose control alone may not justify those risks when diabetes can be managed safely with insulin and glucose-monitoring technology.

- Severe, repeated low blood glucose that is difficult to detect or prevent
- Wide glucose swings that remain difficult to manage
- Diabetes-related kidney failure
- A previous kidney transplant with ongoing severe diabetes-related problems

Who should and should not have it

Most recipients have type 1 diabetes because their pancreas produces little or no insulin. Some people with insulin-treated type 2 diabetes may be considered if specialist testing suggests that a transplant could work well for them.

You will have a detailed transplant assessment. This commonly reviews your heart, lungs, kidneys, blood vessels, infections, cancer screening, mental health, support network, and ability to follow a complex medicine schedule.

A transplant may be avoided or delayed if you have:

Some concerns can be treated or reassessed. Each transplant centre uses a multidisciplinary team to decide whether transplantation is suitable and when it can be done.

- An active infection
- Active cancer or a recently treated cancer with a high risk of returning
- Severe heart, lung, or blood-vessel disease that makes surgery unsafe

- Ongoing alcohol or drug use that could affect safety or follow-up
- Difficulty taking medicines reliably or attending frequent appointments
- Another condition likely to outweigh the transplant's expected benefit

How to prepare

Your treating facility's instructions take priority because transplant programmes use different testing and medicine plans.

Before joining the waiting list, you may have blood tests, scans, heart and lung testing, infection screening, and assessment by several members of the transplant team. Blood tests help the team match a donor organ and check for antibodies that could attack it.

Give the team an up-to-date list of all medicines, supplements, and non-prescription products. Do not stop insulin, blood thinners like warfarin or apixaban , or other medicines unless the transplant team tells you exactly when and how to do so.

While waiting, keep the transplant centre informed about infections, hospital admissions, new medicines, travel, or changes in contact details. You may need regular blood samples so the team can maintain current matching information.

When a possible donor pancreas becomes available, the centre will tell you when to stop eating and drinking and when to arrive. A call does not guarantee surgery: final donor testing or an examination at the hospital may show that the organ is not suitable.

What happens during the procedure

You receive general anaesthesia, so you are unconscious and do not feel the operation. The team places monitoring equipment and usually inserts intravenous lines, a urinary catheter, and sometimes a line into a large vein.

The surgeon makes an incision in your abdomen. The donor pancreas, along with a short section of the donor's small intestine called the duodenum, is placed in the lower abdomen.

The surgeon connects the donor blood vessels to blood vessels in your pelvis. The donor duodenum is usually connected to your small intestine so digestive fluid from the transplanted pancreas can drain normally.

If you are also receiving a kidney, the donor kidney is placed in the lower abdomen and connected to blood vessels and the bladder. Your original pancreas and kidneys are usually left in place unless there is a separate reason to remove them.

After the connections are checked, the incision is closed. You are then moved to a recovery area or transplant intensive care unit for close monitoring.

Recovery and what to expect afterward

Pain: Abdominal soreness is expected after surgery. Pain medicine is provided, then reduced as healing progresses. Tell the team if pain suddenly becomes worse or is not controlled.

Eating: You will initially receive fluids through a vein. Drinking and food restart as your bowel begins working. Some people feel sick or have a temporary slowing of the bowel after abdominal surgery.

Activity: Staff will help you sit up and walk early to reduce the risk of blood clots and chest infections. Avoid heavy lifting and strenuous exercise until the transplant team confirms that the incision has healed.

Driving: Do not drive home. You must wait until you can move safely, perform an emergency stop, and are no longer taking medicines that impair alertness. Your transplant team will tell you when driving is appropriate.

Work: Returning to work often takes several weeks or longer. Timing is based on healing, the physical demands of your job, medicine effects, and whether you also received a kidney.

You will begin immune-suppressing medicines immediately. Blood tests and glucose checks are frequent at first. A hospital stay of around one to two weeks is common, but a longer stay may be needed after combined transplantation or complications.

Risks and possible complications

A pancreas transplant has surgical risks and long-term risks from immune suppression. Important complications include:

Long-term immune suppression also increases the risk of certain cancers, particularly skin cancer and lymphoma. Your team will discuss screening, sun protection, and the specific effects of your medicines.

Occasionally, the transplanted pancreas fails and must be removed. Insulin treatment can be restarted if the transplant does not work or later loses function.

- Rejection: Your immune system may attack the donor pancreas, sometimes without clear symptoms

- Blood clots: A clot can block blood flow to the transplant and may cause it to fail
- Infection: Surgery and immune-suppressing medicines make infections more likely
- Bleeding: Bleeding may require transfusion or another operation
- Leakage: Digestive fluid may leak from the intestinal connection
- Pancreatitis: The transplanted pancreas can become inflamed
- Delayed bowel function: The bowel may temporarily stop moving normally
- Medicine effects: These can include kidney injury, high blood pressure, high cholesterol, or increased blood glucose

Results and follow up

The new pancreas may begin producing insulin soon after blood flow is restored. The team checks blood glucose and other blood tests to assess how it is working.

Regular follow-up continues for life. Early visits are frequent and become less frequent when your condition and medicine levels are stable. Testing may include glucose, kidney function, pancreatic enzymes, and levels of immune-suppressing medicines.

Unexpected blood-test changes can be an early sign of rejection or medicine toxicity. A biopsy, which removes a tiny tissue sample, may be needed if rejection is suspected.

Take immune-suppressing medicines exactly as prescribed. Missing doses can allow rejection to develop even when you feel well. Contact the transplant team before starting new prescriptions, supplements, or over-the-counter medicines because interactions are common.

Alternatives

Alternatives are based on whether the main problem is glucose control, kidney failure, or both.

Ask the transplant team to compare likely benefits, waiting time, surgical risk, and long-term medicine burden for your situation.

- Intensive insulin treatment: Multiple daily injections or an insulin pump avoid transplant surgery and immune suppression. They require ongoing glucose management and do not restore natural insulin production.

- Continuous glucose monitoring and automated insulin delivery: These systems can reduce glucose swings and low-glucose episodes. They require equipment, training, and continued insulin use.
- Islet transplantation: Insulin-producing cells are infused into the liver rather than transplanting the whole pancreas. It is less invasive but is available only to selected people, still requires immune suppression, and may not provide lasting freedom from insulin.
- Kidney transplant alone: This treats kidney failure with a smaller operation than a combined transplant, but diabetes and insulin treatment continue.
- Continued medical care without transplantation: This avoids surgical and immune-suppression risks but does not offer the potential glucose-control benefits of a functioning donor pancreas.

When to call your healthcare team

Routine appointments and planned blood tests are essential even when you feel well. Contact the transplant team promptly if test results change or you are unsure about a medicine dose.

Call the transplant team urgently for:

Call emergency services for severe breathing difficulty, chest pain, fainting, uncontrolled bleeding, or sudden severe abdominal pain. Do not drive yourself in an emergency.

- Fever, chills, or feeling suddenly unwell
- Increasing abdominal pain or swelling
- Redness, warmth, fluid, or opening at the incision
- Repeated vomiting or inability to keep medicines down
- Unexpectedly rising blood glucose
- Much less urine, especially after a kidney transplant
- New diarrhea that could affect medicine absorption

Common questions

Will I be asleep?

Yes. A pancreas transplant is performed under general anaesthesia, so you are unconscious throughout the operation.

Can I drive home?

No. You will remain in hospital after surgery and need someone else to take you home. Driving can restart only after the transplant team confirms that it is safe.

How painful is it?

You can expect abdominal pain and soreness, particularly during the first few days. The hospital team provides pain treatment and helps you move safely as you recover.

When will I know if it worked?

The team begins checking function immediately through blood glucose and other blood tests. Longer-term success becomes clearer through repeated testing during recovery.

Will I still need insulin?

A functioning transplant may allow you to stop insulin. Some people need insulin temporarily, and insulin may be needed again if the transplant does not produce enough insulin or later fails.

Will I need anti-rejection medicine forever?

You generally need immune-suppressing medicine for as long as the transplanted pancreas is functioning. Stopping it without transplant-team supervision can lead to rejection.

Sources

- NHS Blood and Transplant. Pancreas transplantation
- Mayo Clinic. Pancreas transplant
- Organ Procurement and Transplantation Network. Pancreas transplantation
- National Institute of Diabetes and Digestive and Kidney Diseases. Pancreatic islet transplantation
- Boggi U, Vistoli F, Andres A, and colleagues. "First World Consensus Conference on Pancreas Transplantation: Part II-Recommendations." American Journal of Transplantation . 2021;21(Supplement 3):17-59.