PROCEDURE

Lung transplant

A lung transplant is surgery that replaces one or both failing lungs with donor lungs.

PURPOSE
Replace failing lungs and improve breathing and survival

PROCEDURE TYPE
Therapeutic; surgical replacement of one or both lungs

WHERE IT IS DONE
Operating theatre in a specialist transplant hospital

ANAESTHESIA
General

HOW LONG IT TAKES
About 4 to 12 hours, based on transplant type

PREPARATION
Fasting and medicine changes directed by the transplant centre

RECOVERY
Weeks to months; no driving until transplant team clearance

MAIN RISKS
Rejection, infection, bleeding, and early graft dysfunction

RESULTS
Lung function assessed immediately and during the following days

Overview

A lung transplant is major surgery in which one or both diseased lungs are replaced with lungs from a deceased donor. In uncommon situations, part of a lung may come from a living donor. Some people need a combined heart and lung transplant.

Before surgery, a transplant centre carries out a detailed assessment. If transplantation is suitable, you may join a waiting list until compatible donor lungs become available. Matching considers factors such as blood group, body size, medical urgency, waiting time, and donor-organ suitability.

A transplant cannot cure the underlying condition throughout the body. However, it may improve breathing, physical ability, quality of life, and survival. You will need lifelong medicines and specialist follow-up afterward.

Why the procedure is performed

Lung transplantation may be considered when severe lung disease continues to progress despite the best available treatment and is expected to limit life.

Conditions that may lead to transplantation include:

The aim and likely benefit are different for each person. Your transplant team will discuss whether transplantation offers a meaningful advantage over continued treatment.

- Pulmonary fibrosis, which causes lung scarring
- Chronic obstructive pulmonary disease, including emphysema
- Cystic fibrosis and other forms of bronchiectasis
- Pulmonary hypertension, meaning high pressure in the lung arteries
- Certain severe lung conditions present from birth

Who should and should not have it

You may be assessed if you have advanced, irreversible lung disease, other treatments are no longer enough, and you are likely to withstand surgery and rehabilitation.

Assessment usually examines your heart, kidneys, liver, nutrition, mobility, infection risk, cancer history, emotional health, support network, and ability to follow a complex treatment plan.

Transplantation may be avoided or delayed if there is:

Some of these barriers can improve with treatment, rehabilitation, practical support, or time. Age alone is not the only deciding factor, but age and overall health affect risk. Each transplant centre applies its own selection criteria.

- An active serious infection
- Active cancer or a cancer with an unacceptable risk of returning
- Severe irreversible disease in another major organ, unless combined transplantation is possible
- Active smoking, vaping, or harmful substance use
- Severe frailty or another condition making recovery unlikely
- Difficulty taking medicines safely or attending follow-up that cannot be resolved

- Weight or nutrition concerns that make surgery substantially less safe

How to prepare

Your treating facility's own instructions take priority over general information. Because donor lungs may become available without much warning, keep the transplant centre informed about infections, hospital admissions, medication changes, and travel plans.

When called to the hospital, you will usually be told to stop eating and drinking. Do not stop blood thinners like warfarin or apixaban , diabetes medicines, or other prescribed treatments unless the transplant team tells you to do so.

At the hospital, tests may include blood tests, a chest X-ray, an electrocardiogram to check heart rhythm, and infection screening. The donor lungs are examined before surgery. Occasionally, surgery is cancelled if they are not safe or suitable for transplantation.

What happens during the procedure

You receive a general anaesthetic, so you are unconscious and do not feel the operation. A breathing tube and ventilator support your breathing.

The surgeon reaches your lungs through an incision in the chest. The location and size of the incision depend on whether one or both lungs are being replaced.

The diseased lung is removed. The donor lung is joined to your main airway, pulmonary artery, and pulmonary veins. These blood vessels carry blood between the heart and lungs. A heart-lung bypass machine or extracorporeal membrane oxygenation, known as ECMO, may temporarily support your circulation and oxygen levels.

Chest drains are inserted to remove air and fluid. You are then transferred to intensive care.

Recovery and what to expect afterward

Pain and soreness around the chest incision are expected. Your team will provide pain relief and ask about your comfort. Good pain control helps you cough, breathe deeply, and move safely.

At first, nutrition may be given through a tube or vein. Once it is safe to swallow, you can usually begin drinking and eating. Food-safety precautions are important because anti-rejection medicines reduce your immune defences.

You will start breathing exercises and physiotherapy early. Activity progresses from sitting and standing to walking and structured rehabilitation. Full recovery commonly takes several months.

Do not drive until the transplant team confirms that your incision, strength, movement, and medicines allow you to control a vehicle safely. Strong pain medicines may also make driving unsafe.

Returning to work depends on your recovery, the type of work, and infection exposure. Some people return after several months, while physically demanding or high-exposure work may require longer or permanent changes.

Risks and possible complications

Lung transplantation carries significant risks during surgery and throughout life. Important complications include:

Your team balances anti-rejection treatment against the risk of infection and other side effects.

- Bleeding, blood clots, abnormal heart rhythms, or problems from anaesthesia
- Primary graft dysfunction, in which the new lung works poorly soon after surgery
- Rejection, when the immune system attacks the donor lung
- Bacterial, viral, or fungal infection
- Narrowing or poor healing where the donor airway was joined
- Kidney damage, diabetes, high blood pressure, or other medicine effects
- Chronic lung allograft dysfunction, a long-term loss of transplanted-lung function
- Increased risk of some cancers because of immune-suppressing medicines

Results and follow up

The team begins assessing the donor lung as soon as blood flow and ventilation are established. In intensive care, oxygen levels, chest imaging, blood tests, and breathing measurements show how the lung is working.

You will need lifelong medicines that suppress your immune system. Take them exactly as prescribed. Missing doses can increase the risk of rejection.

Follow-up is especially frequent during the first months and continues for life. It may include blood tests, chest imaging, lung-function tests, and bronchoscopy. During bronchoscopy, a thin camera is passed into the airways; small tissue samples may be taken to look for rejection or infection.

Rejection does not always cause symptoms, which is why routine appointments and home breathing measurements matter.

Alternatives

The realistic alternatives depend on your lung condition and treatment goals.

Continued medical treatment may include inhaled medicines, antifibrotic medicines, oxygen, non-invasive breathing support, pulmonary rehabilitation, and treatment of infections. These options avoid transplant surgery but cannot replace permanently damaged lungs.

For selected people with severe emphysema, lung-volume-reduction surgery or valves placed through a bronchoscope may improve breathing. They are less extensive than transplantation but only suit particular patterns of lung damage.

Supportive and palliative care can ease breathlessness, anxiety, pain, and fatigue at any stage. Choosing not to have a transplant avoids major surgery, lifelong anti-rejection treatment, and transplant complications, but the underlying lung disease may continue to progress.

When to call your healthcare team

Contact your transplant team urgently on the same day if you develop a fever at the threshold they gave you, worsening breathlessness, a new cough, reduced home lung-function readings, wound redness or drainage, or vomiting that prevents you from keeping medicines down. Also call promptly if you miss an anti-rejection dose or cannot obtain your medicines.

Call emergency services for severe trouble breathing, blue or grey lips, fainting, sudden severe chest pain, confusion, or symptoms that appear immediately life-threatening.

Questions about mild medicine effects, activity progression, paperwork, or routine test results can usually wait for normal clinic hours unless your transplant team has told you otherwise.

Common questions

Will I be asleep?

Yes. Lung transplantation is performed under general anaesthesia. You will remain unconscious during the operation and initially have a breathing tube afterward.

Can I drive home?

No. You will remain in hospital after surgery and cannot drive when discharged. Arrange transport and wait for specific clearance before driving again.

How painful is it?

Chest soreness can be considerable at first, but pain medicine is provided. Pain usually improves as the incision heals. Tell the team if pain prevents deep breathing, coughing, sleeping, or walking.

When will I know whether it worked?

The team assesses lung function immediately, but the early result becomes clearer over the following days. Long-term success is monitored through clinic visits, breathing tests, imaging, and sometimes bronchoscopy.

How long will I stay in hospital?

Hospital recovery usually lasts days to weeks. It may be longer if you need extended breathing support, treatment for infection or rejection, or additional rehabilitation.

Will I need medicines forever?

Yes. Lifelong immune-suppressing medicines help prevent rejection. Other medicines may be used to prevent infection and manage treatment side effects.

Sources

- International Society for Heart and Lung Transplantation. Consensus document for the selection of lung transplant candidates: An update from the ISHLT . Journal of Heart and Lung Transplantation. 2021;40(11):1349-1379.
- National Heart, Lung, and Blood Institute. Lung Transplantation .
- NHS. Lung transplant .
- NHS Blood and Transplant. Lung transplantation: Information for patients .
- Organ Procurement and Transplantation Network. Lung transplant: Information for patients .