CONDITION

Transplant rejection

Transplant rejection is immune-system damage to a transplanted organ or tissue, which may reduce how well it works.

WHAT IT IS
Immune injury to a transplanted organ or tissue

BODY SYSTEM
The body system containing the transplanted organ

MAIN SYMPTOMS
Fever, graft-area pain, swelling, reduced organ function

WHAT CAUSES IT
Immune recognition of donor tissue

HOW IT IS DIAGNOSED
Organ-function tests, antibody tests, imaging, and often biopsy

MAIN TREATMENT
Adjusted immune-suppressing treatment and organ-specific support

CAN IT BE CURED?
Sometimes - acute rejection can be reversed

IS IT AN EMERGENCY?
Sometimes - sudden organ failure symptoms need emergency care

LONG-TERM OUTLOOK
Many grafts last years; chronic rejection may cause failure

Overview

Transplant rejection happens when your immune system attacks a transplanted organ or tissue. The immune system normally protects you from infections. It can also recognize a transplant as different from your own body and react against it.

A transplanted organ is sometimes called a graft . Rejection does not automatically mean that the graft has failed. Some episodes are found early through routine testing and can be treated successfully.

Doctors usually describe rejection by when and how it develops:

Rejection can involve immune cells, antibodies, or both. The pattern affects which treatment may help.

This article mainly covers solid-organ transplants, such as kidney, liver, heart, lung, pancreas, and intestine transplants. Rejection after corneal, stem-cell, or complex tissue transplantation is assessed and treated differently.

- Hyperacute rejection begins within minutes or hours because antibodies already in the blood attack the graft. Careful testing before transplantation has made this uncommon.
- Acute rejection usually develops over days or weeks, but it can happen months or years later.
- Chronic rejection causes slow, lasting damage over months or years.

Symptoms

Rejection often causes no clear symptoms at first. Routine blood tests, scans, breathing tests, or biopsies may show a problem before you feel unwell.

Possible symptoms depend on which organ was transplanted.

After a kidney transplant, signs may include less urine, swelling, rising blood pressure, pain near the kidney, or sudden weight gain from fluid. Often, the first sign is an increase in creatinine, a blood-test measure used to check kidney function.

After a liver transplant, possible signs include tiredness, fever, pain in the upper abdomen, yellow skin or eyes, dark urine, or pale stools. Liver blood tests may become abnormal before symptoms appear.

After a heart transplant, rejection may cause tiredness, breathlessness, ankle swelling, palpitations, faintness, or reduced ability to exercise.

After a lung transplant, you may notice a new cough, breathlessness, lower oxygen readings, or a drop in home spirometry. Spirometry measures how much air you can breathe out and how quickly.

After a pancreas transplant, rising blood glucose may be an early sign. Intestinal transplant rejection may cause abdominal pain, vomiting, diarrhea, bleeding, or changes in stoma output.

Fever, pain, and reduced organ function can also be caused by infection, medication effects, blocked blood vessels, or other transplant complications. Symptoms alone cannot confirm rejection.

Causes and risk factors

Rejection is caused by an immune response to differences between your cells and the donor's

cells. Proteins called human leukocyte antigens, or HLA , help the immune system tell cells apart.

Anti-rejection medicines, also called immunosuppressants , reduce this response. They cannot remove the risk completely.

Factors linked with a greater chance of rejection include:

Rejection is not always caused by something you did. It can happen even when medicines are taken correctly and follow-up appointments are kept.

- Missing or stopping anti-rejection medicine
- Medicine levels becoming too low
- Poor absorption because of vomiting or diarrhea
- Interactions with another medicine, supplement, or food
- Antibodies from an earlier transplant, pregnancy, or blood transfusion
- Greater immune differences between donor and recipient
- A previous rejection episode

Diagnosis

Your transplant team monitors how well the graft is working. The tests depend on the transplanted organ and how long it has been since surgery.

Blood tests may measure kidney or liver function, blood glucose, blood-cell counts, and the level of certain anti-rejection medicines. Heart or lung monitoring may include scans, heart tests, oxygen measurements, or spirometry.

Blood can also be tested for donor-specific antibodies . These are antibodies directed against features of the donated organ. Finding them may support a diagnosis of antibody-mediated rejection, but the result must be considered with other findings.

A biopsy is often needed to confirm rejection and identify its type. During a biopsy, a small sample of the transplanted organ is removed and examined under a microscope. Depending on the organ, this may be done with a needle, a thin tube passed through a blood vessel, bronchoscopy, or endoscopy.

Imaging helps check for other causes of reduced organ function, such as a blocked blood vessel, narrowed drainage tube, fluid collection, or infection.

Because rejection can be silent, normal symptoms at home do not replace scheduled monitoring.

Treatment and management

Treatment is based on the transplanted organ, the biopsy pattern, the seriousness of the episode, and your current medicines. Mild changes found on testing may be managed differently from rapid organ dysfunction.

The transplant team first checks for other possible causes. They may review medicine levels, recent infections, vomiting or diarrhea, and interactions with new prescriptions or supplements.

Acute rejection caused mainly by immune cells is often treated by increasing immune-suppressing treatment. Corticosteroids like prednisone or hydrocortisone are commonly used. If the rejection is severe or does not respond, other medicines that target immune cells may be considered.

Antibody-mediated rejection requires a different approach. Depending on the organ and situation, treatment may include procedures that remove antibodies from the blood, intravenous immune proteins, or medicines that affect antibody-producing cells. These treatments are not appropriate for every rejection episode.

Chronic rejection is usually harder to reverse because it causes scarring and narrowing of small blood vessels or airways. Management may focus on slowing further injury, adjusting immunosuppression, treating related problems, and preserving organ function.

Supportive treatment may include dialysis for severe kidney dysfunction, oxygen or breathing support for lung problems, or treatment for heart or liver failure. If a graft eventually stops working, another transplant may sometimes be considered.

Do not change, skip, or double an anti-rejection medicine unless your transplant team specifically tells you to. Too little can increase rejection risk, while too much can cause infection, kidney injury, and other harmful effects.

Complications

Rejection can reduce how well a graft works. Severe or repeated episodes may cause permanent scarring and eventual graft failure.

Treatment also has risks because stronger immunosuppression makes it harder to fight infection. Some treatments can affect blood-cell counts, blood pressure, blood glucose, kidneys, bones, or the digestive system.

Other possible complications include:

Rejection-like symptoms may instead be caused by infection. Prompt assessment matters because increasing immunosuppression during an untreated infection could make the infection worse.

- Fluid retention or organ failure symptoms
- Admission to hospital for testing and treatment
- Repeated biopsies or closer monitoring
- A return to dialysis after kidney graft failure
- The need to consider another transplant

Prevention

Transplant rejection cannot always be prevented. The immune differences between you and a donor cannot be removed.

Before transplantation, blood-group testing, HLA testing, and crossmatching help identify dangerous immune reactions. A crossmatch checks whether your blood reacts strongly against cells from the donor.

After transplantation, you can reduce avoidable risks by:

Use reminders or a pill organizer if these have been approved as part of your medication plan. If cost, side effects, travel, work, or memory problems make treatment difficult, tell the transplant service early. Practical support may be available.

- Taking anti-rejection medicines at the scheduled times
- Keeping routine blood-test and transplant-clinic appointments
- Following instructions for home blood pressure, glucose, weight, or breathing checks
- Reporting vomiting or diarrhea that may stop medicines being absorbed
- Checking before starting medicines, vitamins, supplements, or herbal products
- Following your transplant team's infection and vaccination advice

Living with it and what to expect

Many people have years of useful graft function after transplantation. Rejection can still occur at any stage, including after a long period of stable health.

An acute episode does not necessarily mean that the transplant will fail. Organ function may

return fully or partly after treatment. Some people need more frequent blood tests, biopsies, or clinic visits for a time.

Chronic rejection usually develops gradually. You may feel well while tests show slow changes. Treatment may stabilize function, but established scarring is often permanent. The rate of change is different for each person and each type of transplant.

Most transplant recipients continue anti-rejection medicine and monitoring for as long as the graft is functioning. Feeling well does not mean that the immune system has stopped recognizing the graft.

Living with possible rejection can cause anxiety, especially around blood tests or anniversaries of the transplant. Clear instructions about whom to contact, what to monitor, and how quickly to act can make uncertainty easier to manage.

When to get medical help

Contact your transplant team promptly if you develop a new symptom that could reflect rejection, infection, or a medication problem. This includes:

These concerns usually need same-day advice rather than waiting for a routine appointment. Do not wait for several symptoms to appear.

Seek emergency help for severe difficulty breathing, blue or grey lips, crushing or persistent chest pain, fainting, new confusion, heavy bleeding, or sudden severe abdominal pain. Also use emergency services for any rapidly worsening symptom that may represent organ failure.

Keep attending routine follow-up when you feel well. Monitoring is designed to find silent rejection before it causes major symptoms.

- Fever or chills
- New pain or tenderness over the transplant
- Vomiting or diarrhea that prevents you keeping medicines down
- Reduced urine, new swelling, or rapid fluid-related weight gain
- Yellow skin or eyes
- New cough, breathlessness, or lower home lung readings
- Rising blood glucose after a pancreas transplant
- An abnormal home measurement your team told you to report
- A missed anti-rejection dose or uncertainty about how to take it

Common questions

Can you feel transplant rejection happening?

Not always. Many episodes are first detected through blood tests, breathing tests, scans, or scheduled biopsies. When symptoms occur, they often overlap with infection or other transplant complications.

Does rejection mean my transplant has failed?

No. Acute rejection can often be controlled, especially when found early. Some episodes leave little lasting damage, while others cause partial or permanent loss of graft function.

Can rejection happen years after a transplant?

Yes. The risk is often greatest earlier after transplantation, but rejection can happen at any time. Long-term medicine and monitoring remain important even when the graft has been stable.

What should I do if I miss an anti-rejection medicine?

Follow the missed-dose instructions provided by your transplant service or contact the service promptly. Do not automatically double the next dose. The safest response depends on the medicine and how late the dose is.

Is rejection the same as an infection?

No. Rejection is an immune attack on the graft, while infection is caused by organisms such as viruses, bacteria, or fungi. They can cause similar symptoms and may occur together, so testing is important.

Can I stop anti-rejection medicine if I feel well?

Usually not. The medicines help prevent an immune reaction even when you have no symptoms. Stopping suddenly can trigger serious rejection. Any change should be planned with your transplant team.

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