CONDITION

GVHD

GVHD is an immune reaction in which donated cells attack tissues after a stem cell transplant

WHAT IT IS
Donor immune cells attacking the transplant recipient's tissues

BODY SYSTEM
Skin, digestive system, liver, lungs, eyes, and mouth

MAIN SYMPTOMS
Rash, diarrhoea, jaundice, dry eyes or mouth

WHAT CAUSES IT
Immune reaction after receiving donor cells

HOW IT IS DIAGNOSED
Clinical assessment, organ tests, and sometimes biopsy

MAIN TREATMENT
Immune-suppressing medicines and organ-specific supportive care

CAN IT BE CURED?
Sometimes - it may resolve as immunity stabilises

IS IT AN EMERGENCY?
Sometimes - severe diarrhoea, breathing trouble, or rapidly spreading rash

LONG-TERM OUTLOOK
Many improve, but chronic organ damage can persist

Overview

GVHD stands for graft-versus-host disease. It can happen after an allogeneic stem cell transplant , meaning the stem cells came from another person.

The donated stem cells form a new immune system. Sometimes, donor immune cells recognise your tissues as foreign and attack them. The skin, digestive system, liver, eyes, mouth, lungs, joints, and genital area can be affected.

GVHD is usually described as acute or chronic . These names refer mainly to the pattern of symptoms, not simply to when they begin. Acute GVHD often causes a rash, digestive symptoms, or liver inflammation. Chronic GVHD can cause longer-lasting inflammation and scarring in one or several organs. Some people have features of both.

GVHD can be mild and limited to one area. It can also become severe. Early recognition matters because treatment may limit tissue damage and help protect organ function.

A controlled donor immune response can also attack remaining cancer cells. This is called the graft-versus-tumour or graft-versus-leukaemia effect . Transplant teams therefore try to control harmful GVHD without completely removing the useful effects of the new immune system.

Symptoms

Symptoms differ according to which organs are affected. They may appear during the first weeks after transplant, but GVHD can also begin months or occasionally years later.

Acute GVHD commonly affects the skin, digestive system, and liver:

Liver GVHD may cause no noticeable symptoms at first. It is often found through routine blood tests.

Chronic GVHD can affect more areas of the body. Possible symptoms include dry, gritty, painful, or light-sensitive eyes. Your mouth may feel dry or sore, and spicy or acidic foods may hurt. Mouth ulcers, white patches, or changes in taste can occur.

Skin may become itchy, discoloured, thick, tight, or less flexible. Inflammation and scarring around joints can make movement difficult. Hair thinning and brittle or ridged nails are also possible.

Lung involvement can cause a dry cough, wheezing, shortness of breath, or reduced exercise tolerance. One important lung complication is bronchiolitis obliterans syndrome , in which inflammation and scarring narrow the small airways.

Some people develop painful intercourse, vaginal dryness or narrowing, or irritation and tightening around the penis. GVHD may also affect muscles, the tissue around muscles, or the food pipe, making movement or swallowing harder.

Many of these symptoms can also come from infection, medicine side effects, or other transplant complications. New symptoms need assessment rather than self-diagnosis.

- A new red or darker rash, often starting on the palms, soles, face, ears, or upper body
- Itching, skin tenderness, blistering, or peeling
- Persistent nausea, vomiting, poor appetite, or stomach pain
- Frequent or watery diarrhoea, sometimes with blood
- Yellow skin or eyes, dark urine, or abnormal liver blood tests

Causes and risk factors

GVHD is caused by immune cells from a donor reacting against the recipient's tissues. It is not contagious and cannot spread between people.

Before transplantation, donor and recipient cells are compared using markers called human leukocyte antigens , or HLA. A close match lowers the chance of GVHD but does not remove it. GVHD can happen even when a sibling or unrelated donor is fully matched.

The likelihood and severity can be influenced by several factors, including:

These factors help a transplant team plan care, but they cannot predict exactly who will develop GVHD.

A separate condition called transfusion-associated GVHD can very rarely follow a blood transfusion when donor immune cells survive and attack the recipient. It is different from the more common form seen after stem cell transplantation.

- How closely the donor and recipient are HLA matched
- The type and source of donated stem cells
- Differences in age, sex, or immune history between donor and recipient
- The medicines and transplant methods used to prevent GVHD
- Previous acute GVHD, which can increase the chance of chronic GVHD

Diagnosis

There is no single test that confirms every form of GVHD. Diagnosis begins with your symptoms, physical examination, transplant history, and the pattern of organs affected.

Blood tests can check liver function, blood cell counts, inflammation, kidney function, and possible infection. Stool tests may be used when diarrhoea is present. Eye examinations, breathing tests, scans, or liver imaging may be needed depending on the symptoms.

A biopsy may help confirm the diagnosis. During a biopsy, a small tissue sample is removed and examined under a microscope. Samples may come from skin, the digestive tract, liver, mouth, or another affected area. A biopsy is not always necessary when the clinical pattern is clear.

Doctors also check for conditions that can look like GVHD. These include viral or bacterial infections, reactions to medicines, effects of chemotherapy or radiotherapy, and recurrence of the condition treated by the transplant.

Chronic GVHD is assessed by the organs involved and how much each one is affected. Regular

measurements-such as lung function, joint movement, weight, and eye or mouth symptoms-help show whether it is improving, stable, or progressing.

Treatment and management

Treatment aims to reduce the donor immune attack while preserving organ function and controlling infection risk. The approach is based on whether GVHD is acute or chronic, which organs are involved, and how severe it is.

Mild disease limited to one area may be treated locally. Examples include steroid creams for skin, medicated mouth rinses, eye drops, or treatments applied to the genital area.

More extensive GVHD usually requires medicines that suppress or change immune activity. Corticosteroids like prednisone or hydrocortisone are commonly used for significant acute or chronic GVHD. Other immune-targeting medicines may be added if steroids do not control the condition, cause difficult side effects, or cannot be reduced safely.

Some people receive extracorporeal photopheresis . Blood is passed through a machine that separates certain white blood cells, treats them with a light-activated medicine, and returns the blood to the body. This can help alter the immune response without being surgery.

Supportive care is an important part of treatment. It may include:

Treatment often continues for months and sometimes longer. Immune-suppressing medicines usually need to be reduced slowly. Do not stop or change transplant medicines without instructions from your transplant team, even when symptoms improve.

- Fluids and nutrition support for digestive GVHD
- Treatment for pain, itching, dry eyes, or dry mouth
- Physiotherapy and stretching for tight skin or reduced joint movement
- Dental, eye, lung, liver, or gynaecological care
- Monitoring and prevention of infections while immunity is suppressed

Complications

GVHD and its treatment can both cause complications.

Ongoing inflammation can lead to scarring and permanent changes in affected organs. Tight skin may restrict movement. Mouth disease can contribute to tooth decay, weight loss, or difficulty eating. Lung GVHD may reduce breathing capacity. Severe digestive GVHD can

cause dehydration, bleeding, or poor absorption of nutrients.

Immune-suppressing treatment increases vulnerability to bacterial, viral, and fungal infections. It can also contribute to bone thinning, muscle weakness, high blood sugar, cataracts, or changes in blood pressure, depending on the medicines used.

Chronic inflammation and reduced immune surveillance may increase the long-term risk of some cancers, particularly cancers of the skin and mouth. This is one reason long-term skin, mouth, dental, and transplant follow-up remains important.

Emotional effects also matter. Uncertainty, fatigue, changes in appearance, sexual symptoms, and a long treatment course can affect mood, relationships, work, and independence. Psychological support and rehabilitation can be part of GVHD care.

Prevention

GVHD cannot always be prevented. It may occur despite careful donor matching and preventive treatment.

Before transplant, the team selects the most suitable available donor and plans measures based on the type of transplant. Preventive immune-suppressing medicines are usually given around and after the procedure. Some transplant methods also remove or alter certain donor immune cells.

Taking medicines exactly as directed and attending scheduled monitoring can help detect GVHD early. Report new rashes, diarrhoea, jaundice, breathing changes, or persistent eye and mouth symptoms promptly rather than waiting for the next routine visit.

Protecting skin from strong sunlight may reduce irritation and skin flare-ups. Infection precautions, vaccination plans, and decisions about irradiated blood products should follow the instructions provided by your transplant service.

Living with it and what to expect

Acute GVHD may settle with treatment, but some cases are difficult to control. It may resolve without becoming chronic. Chronic GVHD can begin after acute GVHD, follow a symptom-free period, or appear without recognised acute disease.

Chronic GVHD often changes slowly over months or years. Symptoms may improve, remain stable, or flare when immune-suppressing treatment is reduced. Some people eventually stop treatment after their immune system becomes more tolerant. Others need long-term

treatment or continue to have organ damage after inflammation has settled.

Follow-up commonly includes blood tests, medicine reviews, skin and mouth checks, and monitoring of weight and nutrition. Lung function testing can identify breathing changes before they become obvious. Eye, dental, bone, sexual health, and rehabilitation assessments may also be appropriate.

Day-to-day life depends on the organs affected and the intensity of treatment. Many people return to work, education, exercise, and family activities, sometimes with adjustments for fatigue, infection risk, appointments, or reduced mobility. Gentle activity and prescribed stretching can help maintain strength and movement, but activity may need to be adapted during flares.

Keeping a record of symptoms can help you notice changes. Useful details include stool frequency, rash spread, temperature, breathing ability, food intake, weight, eye discomfort, and joint movement.

When to get medical help

Contact your transplant team promptly about any new symptom that could represent GVHD or infection. Early assessment is especially important for a new rash, ongoing vomiting or diarrhoea, yellow skin or eyes, worsening mouth pain, painful eyes, or a new cough.

Seek same-day medical advice for:

Call emergency services for severe trouble breathing, fainting, confusion, uncontrolled bleeding, signs of severe dehydration, or a rapidly worsening reaction affecting the skin or several organs.

Stable symptoms, medicine side effects, rehabilitation needs, and routine monitoring can usually be discussed at planned follow-up. Do not wait for a routine appointment if symptoms are new or getting worse.

- Rapidly spreading rash, blistering, or skin peeling
- Frequent watery diarrhoea, blood in stool, or inability to keep fluids down
- New jaundice or very dark urine
- Fever at or above the threshold given by your transplant team
- New shortness of breath, wheezing, or a clear fall in exercise tolerance
- Severe eye pain, light sensitivity, or a sudden vision change

Common questions

Is GVHD a form of transplant rejection?

No. Rejection means the recipient's immune system attacks the donated cells or organ. In GVHD, immune cells from the donor attack the recipient's tissues.

Can GVHD go away completely?

It can. Acute GVHD may resolve after treatment, and some people with chronic GVHD eventually become well enough to stop immune-suppressing medicines. Others have repeated flares or lasting organ changes.

Can I get GVHD years after my transplant?

Yes, although it is less common. Chronic GVHD can begin or return long after transplantation, particularly while immune-suppressing medicines are being reduced. New symptoms still need assessment because infection and other conditions can look similar.

Does having GVHD mean the transplant is working?

Not by itself. A donor immune response can help attack remaining cancer cells, but GVHD is a harmful complication and is not required for a transplant to succeed.

Is GVHD contagious?

No. GVHD is an internal immune reaction involving donor cells. You cannot pass it to family members or other people.

Why do I still need check-ups when I feel well?

Some effects, especially liver or lung changes, may begin before clear symptoms appear. Monitoring can also detect medicine side effects, infection, nutritional problems, and late complications.

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