



## Understanding Graft-Versus-Host Disease **GvHD**

### WHAT YOU NEED TO KNOW

You or your loved one is considering a stem cell transplant with stem cells from a donor (known as an allogeneic stem cell transplant). Graft-versus-host disease (GvHD) is a potential complication of this type of stem cell transplant. What is GvHD and how might it affect you?

This fact sheet will help you:

- Learn about allogeneic stem cell transplants and GvHD
- Find out how doctors prevent and reduce the severity of GvHD
- Understand the difference between acute GVHD and chronic GvHD (known as cGvHD)
- Recognize the symptoms of GvHD



## What is an allogeneic stem cell transplant?

An allogeneic stem cell transplant uses stem cells from another source outside the recipient – either the stem cells of a healthy person, related or unrelated, or stem cells donated from umbilical cord blood. An allogeneic stem cell transplant is an effective treatment for many blood cancers and can provide a long-term cure.

## What is graft-versus-host disease?

GvHD is a serious health complication that can result from an allogeneic stem cell transplant. It can happen when donor cells (graft) mistakenly attack the transplant recipient's (host) tissue and cells.

### About T-cells and GvHD

- Stem cells contain T-cells, a type of white blood cell that fights infection
- Donor T-cells attack the cancer and can help prevent cancer from returning (relapsing)
- Donor T-cells might also attack healthy tissues and organs
- GvHD can be mild, moderate, or severe in how it affects your body and health

## Preventing and reducing GvHD

Moderate and severe GvHD can decrease a person's chances of survival. Once GvHD develops, it can be difficult to treat. Doctors use various methods before and after a stem cell transplant to prevent GvHD and reduce how severe it may get. Some methods involve genetic testing to assess the degree of compatibility between the donor stem cells and the recipient.

### Method of preventing or reducing GVHD

#### Description

#### HLA typing and matching

GvHD can develop when the donor and recipient have different tissue types. Human leukocyte antigen (HLA) typing is a genetic test that determines how closely a person's tissue type matches yours.

HLA matching is based on HLA markers (biological molecules). The more markers two people share, the less likely their immune systems will attack one another. For most people, possible matches include:

- **Siblings:** Often ideal stem cell donors, as they have a 25% chance of sharing some HLA markers
- **Registered donors:** From a volunteer stem cell donor registry in Canada or another country with an internationally open registry
- **Cord blood donors:** Stem cells are collected from a healthy newborn's umbilical cord and stored in a public bank

#### Immunosuppressive drugs (medication)

You receive immunosuppressive drugs before and after your stem cell transplant. This medication lowers the function of the donor's T-cells.

#### Donor cell manipulations before or after transplant

Stem cells from the donor can be manipulated before or after they are transplanted to prevent or reduce GvHD.

Before a transplant, certain donor cells can be removed (depleted) so they do not affect you.

After a transplant, donor cells can be manipulated by taking medications such as infusing antibodies (ATG, abatacept and alemtuzumab) and cyclophosphamide.



## Types of GvHD

There are two main types of GVHD: acute and chronic.

### Acute GvHD

Acute GvHD usually develops within 100 days after the stem cell transplant and is often intense. Acute GvHD can involve a single organ or multiple organs. It is a leading cause of medical problems and potential death after an allogeneic stem cell transplant, affecting 30% to 50% of people who receive this type of transplant.

#### Risk factors

Certain factors can increase the risk of getting acute GvHD, including:

- A mismatch between the donor's tissue type and the recipient's tissue type
- A mismatch between the donor's age and the recipient's age
- A donor giving stem cells to a recipient of the opposite sex
- The intensity and duration of chemotherapy and radiation before the transplant
- Having had donor lymphocyte infusion, a procedure done after the transplant

#### Symptoms

Although acute GvHD can affect any part of the body, the most common areas are the skin, gastrointestinal (GI) tract (stomach, intestines, and colon), and the liver. You may experience these symptoms:

- **Skin**
  - Often starts as a faint rash that can spread to the entire body
  - A mild rash may look like a sunburn, but a severe rash can include blisters and peeling skin
- **GI tract**
  - Diarrhea, stomach pain, bleeding, and/or nausea with vomiting
- **Liver**
  - Often shows up as jaundice (skin or eyes look yellowish)
  - Can result in bleeding and confusion, or extra fluid in the abdomen



## Chronic GvHD

Chronic GvHD (cGvHD) usually happens more than 80 days after a stem cell transplant. cGvHD means the condition is ongoing and gets worse over a long time. It is a leading cause of medical problems and potential death after a donor stem cell transplant, affecting 30% to 70% of transplant recipients. Chronic GvHD may last for years or the rest of your life.

### Risk factors

Certain factors can increase the risk of getting chronic GvHD:

- A mismatch between the donor's tissue type and yours
- A mismatch between the donor's age and the recipient's age
- Source of the stem cell:
  - Higher risk if it is from peripheral blood rather than bone marrow
  - Lowest risk if it is from umbilical cord blood
- Having previously had acute GvHD

### Symptoms

Symptoms of cGvHD can be mild or life-threatening, affecting a single organ or area of your body, or be widespread and affect multiple organs. Chronic GvHD most commonly affects the skin, mouth, eyes, liver, genitals, GI tract, lungs, and joints. You may experience:

- Dry, painful, and itchy eyes
  - Difficulty tolerating bright lights, blurred vision, and blindness (only in severe cases)
- Dry mouth and difficulty eating
  - Painful ulcers in your throat, gum disease, tooth decay, and sensitivity to hot, cold, spicy, and acidic foods and carbonated drinks
- Skin rash
  - Dry, itchy, and/or tight skin, with a change in colour
- Sensitivity to changes in temperature
  - Feeling the cold or the heat more than usual
- Changes to hair and nails
  - Hard, brittle nails
  - Loss of hair on your body and scalp, and/or premature grey hair
- Loss of appetite and unexplained weight loss
  - Nausea, vomiting, diarrhea, stomach pain
- Shortness of breath, difficulty breathing, wheezing, and persistent cough
- Liver changes
  - Abdominal swelling, jaundice (yellowish colouring of the skin or eyes)
- Muscle and joint weakness, including cramping and stiffness
  - Restricted joint movements
- Physical changes to genitals
  - Women: Vaginal dryness, ulcerations, scarring, difficult or painful intercourse
  - Men: Narrowing of the urethra, itching, or scarring of the penis and scrotum

### Treatment for GvHD

Learn how GvHD is treated in the [Treating Graft-versus-Host Disease fact sheet](#).

Contact your doctor right away if any of these symptoms appear. Early detection and treatment may help limit the severity of symptoms.



Living with GvHD can be overwhelming. Seek medical help if you are feeling “down” or “blue” or do not want to do anything – and your mood does not improve over time. These could be signs of depression, an illness that should be treated even when you are undergoing treatment for GvHD. Treatment for depression has important benefits for people living with cancer.

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