

The
TRANSPLANT
Patient's Guide



to Understanding
CMV



Introduction

Once you've received your new organ, staying healthy is a top priority.

Your health—as well as the health of your new organ—may be threatened by a virus. One virus, called **cytomegalovirus** (or **CMV**), might infect you. When this happens, you can get **CMV disease**.

This brochure explains **CMV** in more detail, including:

- What it is
- What it does
- How people get it
- How to limit your risk

If you are already infected with **CMV**, this brochure also offers advice for managing the effects of **CMV**.

Transplantation is a new beginning.

The more you know today about helping to prevent **CMV** and care for your transplant, the more likely you will be to keep your organ healthy into the future.

Read through this brochure to learn about **CMV** and how to help defend yourself. For information about other areas of transplant care, please visit the websites listed on the inside back cover of this brochure.

Words in **bold type** are explained in greater detail in the glossary at the end of this brochure.

your
health



What Is CMV?

CMV is a virus (a type of germ). It is related to the herpes virus and the virus that causes chickenpox.

When a person has CMV in his or her body, that person is said to have “CMV infection.” Sometimes, this infection turns into a more serious condition called “CMV disease.” These 2 different CMV stages are explained in more detail below.

CMV Infection

CMV infection is fairly common—most adults are infected with CMV.

However, in most people, CMV is not active. It is **dormant**, or asleep. This is due to the body’s natural defense system against infection and disease—the **immune system**.

This ability to keep CMV dormant is why most infected people never feel sick. It is also why most cases of CMV infection do not develop into CMV disease.

CMV Disease

Sometimes, CMV infection turns into CMV disease.

When CMV disease occurs in a person with a healthy immune system (not a transplant patient), the symptoms are fairly mild. Flu-like symptoms, such as fever, chills, weakness, and body aches, may occur.

However, transplant patients may not have a healthy immune system. This is because certain medicines may limit the immune system’s ability to fight infection. In transplant patients, CMV disease can be much more serious. CMV disease in transplant patients can cause other diseases, such as:

- **Colitis**, a bowel infection
- **Hepatitis**, an infection that can damage the liver
- **Pancreatitis**, an inflammation (swelling) of the pancreas
- **Pneumonia**, an infection of one or both lungs

In addition, CMV disease may increase the risk for **organ rejection**.

your
guide

What Causes CMV Infection?

How Is CMV Usually Spread?

CMV lives in saliva, tears, urine, blood, semen, and breast milk.

People may get CMV after coming into close contact (either sexual or nonsexual) with an infected person.

Most infected adults and children with CMV have no symptoms and do not require medical treatment. Although CMV is not easily spread, the virus can

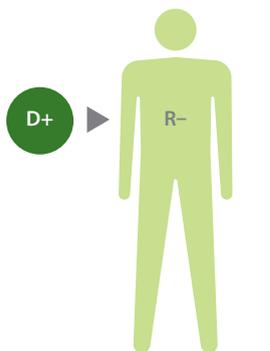
be spread between members of a household, and between children in day care.

CMV is most often spread when individuals accidentally touch infected body fluids, and then touch their own mouth, eyes, or nose.

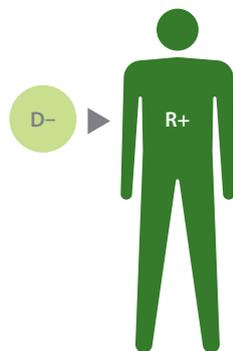
Although getting CMV through casual contact is unlikely, it's a good idea to take steps to help prevent the spread of germs (see pages 10-11 for more information).

How Is CMV Spread to Transplant Patients?

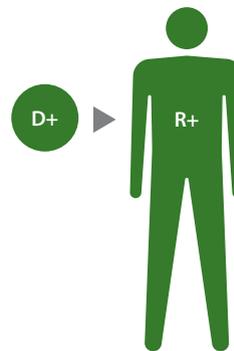
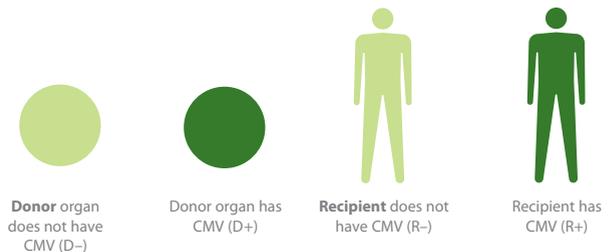
There are 4 main ways that transplant patients become infected with CMV.



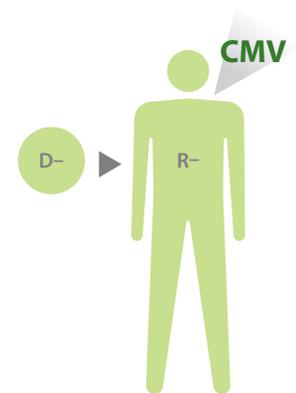
1. From donor organ
Recipient is not CMV infected (R-), but donor organ is (D+).



2. From weakened immune system
Dormant CMV infection in recipient (R+) becomes CMV disease because of a weakened immune system, even though donor organ is not infected (D-).



3. From donor organ with a different type of CMV
Recipient is already infected with dormant CMV (R+) but becomes ill because donor organ is infected with a different type (strain) of CMV (D+).



4. From close contact with an infected person
Neither the donor nor the recipient is infected (D-/R-), but the recipient is later exposed to CMV.



CMV and Transplant Patients

Overall, the likelihood of CMV infection turning into CMV disease is higher in transplant patients. This is because the immune system is weakened and, therefore, unable to keep the virus dormant.

To understand why, it helps to know a little bit about the immune system.

Your Immune System

Every day, you are exposed to thousands of germs, including bacteria and viruses. Some of the germs manage to get inside your body.

Germs that get inside your body can cause infection and make you sick. Your immune system is constantly scanning your body for these intruders, so it can destroy them.

Most of the immune system's work is carried out by **white blood cells (WBCs)**. In this role, WBCs have 2 jobs:

- Find germs
- Destroy germs

Of the millions of tiny particles that pass through your body, WBCs can tell which were actually created by your body. These substances are considered okay, and the WBCs leave them alone.

Anything not created by your body is considered foreign.

When a WBC detects something foreign, that does not belong in your body, it sends a signal to other WBCs. Together, these cells attack and destroy the foreign substance.

This process of finding and destroying foreign substances (including germs) is how your body fights infection and disease.

Suppressing Your Immune System

Unfortunately, WBCs treat your new organ (since it did not originally belong to your body) just as they would any other foreign substance—they try to destroy it. This is called organ rejection.

To help prevent rejection, your doctor will give you **immunosuppressants**. These medicines hold back, or suppress, your immune system to help keep it from attacking the new organ.

Suppressing the immune system weakens it. This means that germs, such as CMV, are less likely to be destroyed and more likely to cause infection.

In addition, a weakened immune system cannot fight infection as well as a healthy immune system. If you had a dormant CMV infection, suppressing your immune system makes it more likely that the infection will come back, and possibly become CMV disease.



Can CMV Be Prevented?

All donors and recipients are screened for CMV. While it is not possible for all transplanted organs to be CMV-free, your doctor can develop the best plan to help prevent infection and possible disease.

Basic Precautions

Even if you and your donor are CMV-free, you can use simple precautions to help limit your exposure to CMV. For example, be sure to wash your hands with soap and water for 15-20 seconds after:

- Changing diapers
- Contact with saliva, tears, or any other body fluids
- Contact with a child who attends day care
- Feeding a young child
 - Do not share drinks, food, forks, or spoons
- Wiping a child's nose or drool

Thoroughly clean toys, countertops, and any surfaces that may come into contact with body fluids.

Another good practice for reducing your risk of CMV exposure is to limit contact with people who are sick, particularly anyone with flu-like symptoms.

Medical Precautions

CMV disease is more likely to develop within the first 6 months after transplant surgery.

If you are at risk for developing CMV disease, your doctor may decide to prescribe anti-CMV medicine in addition to your other medicines after your transplant to help prevent the virus so that you do not get sick.

take
action

What Can I Do to Help?

Now that your doctor and transplant team have decided on a CMV-prevention plan for you, it's time to take an active role in returning to and maintaining good health. In addition to the Basic Precautions, some important ways that you can help in your CMV treatment include:

- **Take your medicines on time.** Set up your doses to coincide with daily activities (lunch, bedtime) and use a digital watch or timer to help you stay on schedule
- **Finish all medicines.** Stopping your medicine before it's used up could put you at risk for infection and may make the medicine less effective the next time
- **Call the pharmacy for refills early,** so you do not miss a dose
- **Stick to your schedule** of follow-up doctor visits
- **Go for all of your blood work** and other lab tests
- **Contact your doctor immediately if you experience possible signs of CMV disease, such as fever, nausea, vomiting, or joint pain**
- **Call your healthcare provider with any questions**

Transplantation Is a New Start



For many people, transplantation opens a new door to a healthier future. After your surgery, your new organ will hopefully help your body function better and make you feel better than you did before the surgery.

Help protect this new start by taking an active role in your care. Follow the instructions of your transplant team carefully and completely. Your transplant team is your best resource for information and advice about your transplant.

Learn as much as you can about maintaining good health after your transplant. Some helpful website links are listed on the inside back cover of this brochure.

CMV disease remains a common problem—talk to your doctor about a plan that is right for you. By becoming familiar with CMV disease and other risks to your new organ, you are taking an active role in helping to make your transplant a success.

a new start

Glossary

Colitis (ko-LIE-tis): An inflammation of the colon, part of the large intestine.

Cytomegalovirus (CMV) (sigh-toe-MEG-a-low-vie-rus): The most common viral infection affecting transplant recipients. Infection may lead to CMV disease.

Donor: Someone from whom an organ or tissue is taken and used for transplantation into someone else's body.

Dormant (DOR-ment): Causing no trouble or symptoms; sleeping or inactive.

Hepatitis (hep-a-TIE-tis): Severe inflammation of the liver that can result in liver failure.

Immune (im-YOON) system: The body's natural defense system against infection and disease.

Immunosuppressants (im-YOU-no-su-PRESS-ants): Medications that reduce or suppress the ability of the immune system to respond to foreign substances. Immunosuppressants are used to help prevent rejection of a transplanted organ.

Organ rejection: When the recipient's immune system attacks a transplanted organ.

Pancreatitis (pan-kree-a-TIE-tis): Inflammation of the pancreas.

Pneumonia (noo-MOAN-ya): Infection of the lungs.

Recipient: The person receiving a transplanted organ.

White blood cells (WBCs): Cells in the blood that help fight infection and disease.

Additional Information About Transplantation

Below is a listing of highly regarded websites where you can obtain helpful information about transplantation.

Genentech is neither affiliated with nor endorses the following organizations. The information provided by Genentech or these organizations is meant for informational purposes only and is not meant to replace your healthcare provider's medical advice.

- Transplant LivingSM, sponsored by the United Network for Organ Sharing—
www.transplantliving.org or 1-888-894-6361
- transAction Council, sponsored by the National Kidney Foundation—
www.kidney.org/transplantation/transAction/index.cfm or 1-800-622-9010



Genentech

A Member of the Roche Group



© 2011 Genentech USA, Inc.
All rights reserved. Printed in USA
VAL0000567201