Infection and the Transplant Patient

Why are transplant patients more likely to get infections?

When you have an organ transplant, a new organ is placed in your body to take over the function of your failed organ. As with anything foreign to your body, such as virus or splinter, your immune system will recognize the new organ as being foreign, and try to get rid of it. This is called rejection.

After transplant you take medicines to prevent this rejection process. These medicines weaken your immune system to allow your transplant to be accepted by your body.

As a result of your weakened immune system, you are more at risk to get infections. This includes typical, everyday infections such as colds and flu, and also some unusual infections that are unique to transplant patients. When you get an infection, you will not be able to fight it as well. Some symptoms of infection may be more severe and may not go away as quickly as before. Also, you may need medicine to help you get better.

Your transplant team tries to adjust your medicines so you get enough to prevent rejection, but not weaken the immune system too much.

How can I prevent infections?

It is important to protect yourself from infections. There are ways you can protect yourself.

- Avoid direct contact with people known to be ill.
- Frequent hand washing.
- Avoid raw or undercooked meats.
- Avoid changing cat litter boxes or cleaning birdcages.
- Wear gloves when doing gardening, farm work, or outdoor work.
- Practice good routine dental care.
- Keep up to date on vaccinations.
- Avoid smoking and exposure to second hand smoke.
- Practice safe sex.
- Wear protective clothing and insect repellent when outdoors.
Types of infections

Viral Infections
Many common upper respiratory and gastrointestinal infections are caused by viruses. There is no cure for these common viruses; they simply have to run their course. Try to get plenty of rest and fluids to help your body fight the virus. You should see your local doctor if your symptoms last longer than expected or if you seem to be getting worse instead of better as time goes on.

Respiratory Infection Symptoms
- Fever (oral temperature over 100.5° F)
- Cough
- Yellow or green tinged phlegm
- Sore throat
- Fatigue

Gastrointestinal Infection Symptoms
- Fever (oral temperature over 100.5° F)
- Chills
- Diarrhea
- Nausea
- Vomiting
- Fatigue

As well as common, general viruses, transplant patients need to be aware of other specific viruses that can cause problems.

Cytomegalovirus (CMV)

Cytomegalovirus or CMV is a virus that most people have been exposed to. It lives in the body for years and often goes unnoticed until a person has a suppressed immune system. You will take valganciclovir (Valcyte®) or acyclovir (Zovirax®) for three to six months after transplant to help prevent CMV. These first three months are the time when you are most at risk for CMV, but you can develop CMV at any time.

Symptoms of CMV can include:
- Nausea
- Vomiting
- Diarrhea
- Feeling tired
- Decreased white blood cell count
- Fever (oral temperature over 100.5° F)

There is a blood test for CMV. Your transplant doctor or your coordinator will indicate if this blood test should be done. CMV can be a very serious infection, but there is a medicine to treat it. Tell your coordinator if you are having any of the symptoms listed above.
**Herpes infections**

*Herpes simplex* is a virus most people have been exposed to sometime in their lives. It can remain hidden in our bodies for years and become active at any time. It most commonly causes **cold sores** on the lips and in the mouth. This can be treated with antiviral medicines. Another type of *Herpes simplex* causes genital sores. You may have these viruses with no symptoms. However, because of immunosuppression symptoms may emerge after transplant. They can be controlled with medicines, so please contact your transplant coordinator or local doctor should you develop symptoms.

*Varicella zoster* virus, more commonly known as shingles, is another type of herpes virus. Shingles will appear as a rash or series of small blisters. They may be painful, and they most often form on one side of the chest, back, hip or head. Typically, shingles occurs in older people. Transplant patients may get shingles because of the weakened immune system. While there is no way to prevent shingles, if you do notice a rash anywhere on your body, especially one that is painful, tell your local doctor or transplant coordinator. Early treatment will help shorten the length of the illness and may ease symptoms.

It is important to note that you may not receive the shingles vaccine (Zostavax®) at any time after you receive a transplant. This is a live vaccine and could trigger an outbreak of the virus in your body.

If you have never had *Varicella zoster* or the Chicken Pox, or received the vaccine with proven immunity, you will need to be especially careful with exposure to those who have chicken pox. The virus is highly contagious as early as 5 days before the carrier breaks out in the red, open sores, called vesicles. These fluid-filled sores are also highly contagious, and you should avoid contact with them even if you have had chicken-pox in the past. You may be at-risk to develop the disease if your immunity is low. Contact your transplant coordinator if you have had close contact with someone with whom you think may be contagious.

**Influenza**

Influenza is a viral infection of the nose and throat that is more severe than the common cold. It most often hits suddenly and is caused by germs that are found in the air and on surfaces. Influenza can be mild to severe. It is recommended that you receive an annual flu vaccination to help prevent you from getting influenza. There are many different strains of influenza, so it is possible to get influenza even if you received your flu shot. Symptoms include fever, head and muscle aches, extreme tiredness, and sometimes cold symptoms.

**Epstein - Barr virus (EBV)**

EBV can cause infectious mononucleosis (mono). It can also put you at risk for lymphoma, or a cancer of the lymphatic system. There is a blood test for EBV, and you should tell your transplant coordinator or local doctor if you develop symptoms of EBV. Symptoms include enlarged lymph nodes, a feeling of malaise, sore throat, and fever.
Papillomaviruses
Papillomaviruses are a family of viruses that can cause warts on the hands, fingers, face, and genitals. Decrease your risk for these viruses by limiting close contacts and use safe sex practices.

Hepatitis B
Hepatitis B is a viral infection of the liver that is spread through blood and sexual contact. It can lead to liver failure. Patients should be vaccinated against Hepatitis B before transplant. Hepatitis B can be treated with anti-viral medicines. After transplant, Hepatitis B can re-activate and cause liver damage; so patients with Hepatitis B will need to continue their anti-viral therapy life-long after transplant.

Hepatitis C
Hepatitis C is another viral infection of the liver that can lead to liver damage. It is spread through blood or sexual contact. After transplant, Hepatitis C can re-activate and damage the liver. There are medicines to treat Hepatitis C and prevent liver damage.

West Nile Virus (WNV)
WNV is a virus that can affect the central nervous system. It is most often spread through the bite from an infected mosquito. In patients with weakened immune systems it can be very severe and cause encephalitis, meningitis, and even death. Transplant recipients should wear long-sleeved shirts and pants and use insect repellents to prevent mosquito bites. Contact your transplant team if you develop symptoms, which may include fever, neck stiffness, tremors, muscle weakness, vision loss, confusion, or numbness.

BK virus
BK virus is a virus that may affect patients who have had a kidney transplant. It usually lies dormant in the transplanted kidney, but can become active and cause damage to the new kidney. We monitor for BK virus through blood tests. Typically, you will not have any symptoms.
Bacterial Infections

Bacterial infections can and should be treated with antibiotics. Please contact your transplant coordinator or local doctor as soon as you notice any symptoms of bacterial infection.

**Pneumonia**
Pneumonia is a lung infection that can be caused by bacteria. Symptoms include cough with green, yellow, or brown mucous, fever, chills, shortness of breath, chest pain, and weakness.

One type of bacterial pneumonia you are particularly at risk for after transplant is *Pneumocystis carinii* or PCP. This is an infection in your lungs. At first, after transplant you will take TMP/Sulfa (Bactrim) or Pentamidine to help protect you from this bacterial infection. Symptoms include cough, fever and problems breathing.

**Wound infections**
If you develop an infection in your incision, drain, or catheter site, contact your transplant coordinator right away. After the wound is checked, you may be prescribed antibiotics to treat the infection.

Symptoms include fever, increased pain, redness, pus-like or greenish drainage, foul odor, and swelling around the wound.

**Urinary tract infections**
Urinary tract infections occur when germs get into the urinary tract. Symptoms include: burning or pain with urination, increased pressure, or feeling the need to urinate urgently, increased frequency of urination with little output each time, cloudy or foul-smelling urine, and fever or chills.

Fungal Infections

There are different types of fungal infections. They can be difficult to treat in transplant patients and most often will require the use of anti-fungal medicines.

**Thrush**
The most common fungal infection after transplant is a yeast infection called *thrush*. Right after transplant, you will be on a medicine called Nystatin to help prevent a fungal infection in your mouth.

Symptoms include small, white bumps or patches in your mouth or throat. They may be painful or cause problems swallowing.
**Athlete’s Foot**

**Athlete’s Foot** is another common fungal infection. You may use over-the-counter remedies to relieve the symptoms of athlete’s foot. Contact your transplant coordinator or local doctor if symptoms persist.

Another common fungal infection after transplant is in the **fingernails or toenails**. Avoid sharing manicure and pedicure tools with others. It is very hard to get rid of a fungal infection in the nail beds.

You may also develop symptoms of a yeast infection in your surgical incision, in skin folds, in the vagina, urinary tract, lungs, or eyes. Symptoms of a fungal infection anywhere else in your body may include white or yellow discharge or film, itching and pain. If you develop any of these symptoms, contact your transplant coordinator or local doctor.

**What do I do if I think I have an infection?**

Many of these infections can be treated by your local doctor. However, you should tell the transplant team whenever you have symptoms of infection. You may need medicine to treat infections. Most of these medicines are safe to take. Be sure to contact the transplant team with any new medicine you are taking.