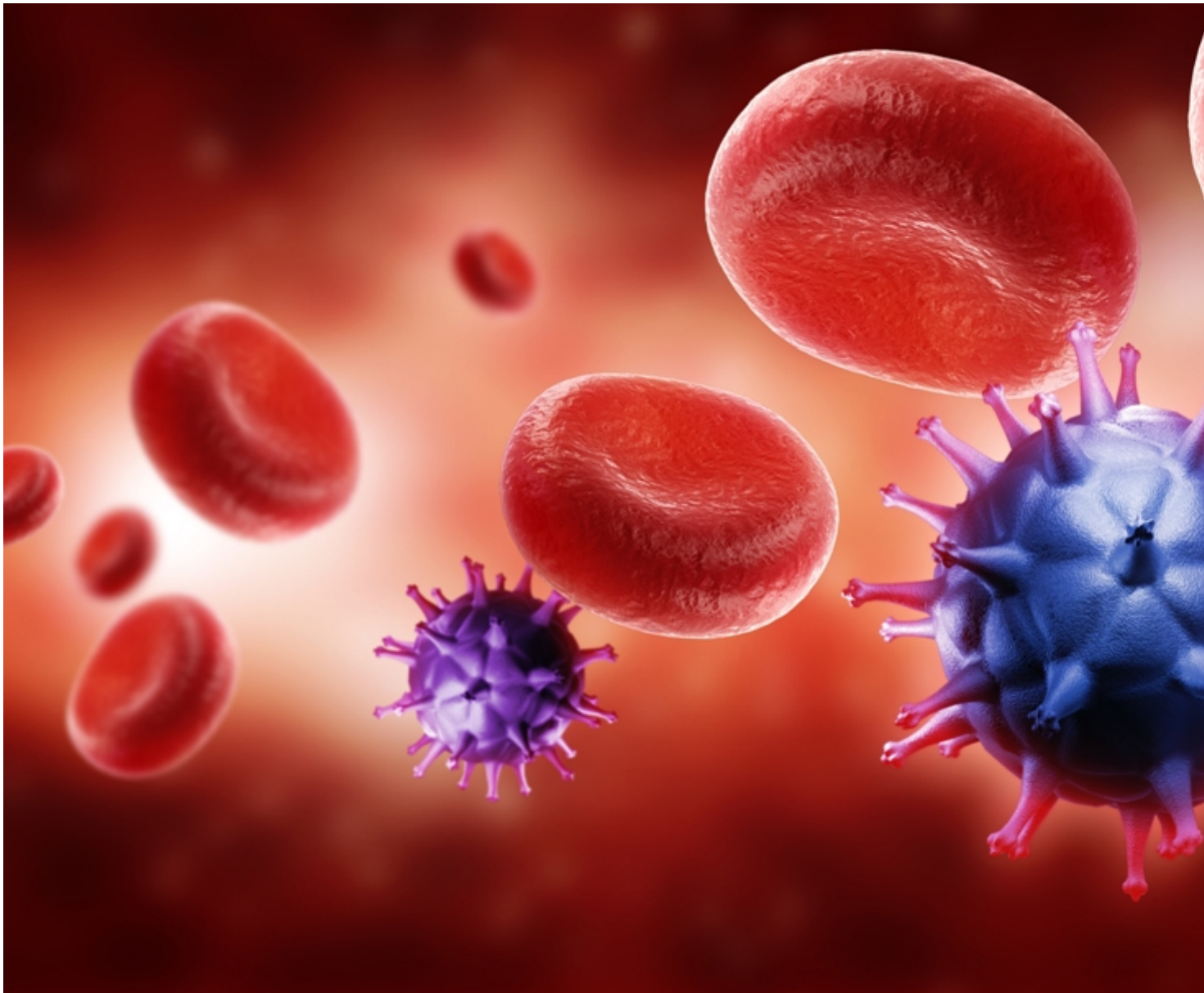


What Are Opportunistic Infections? ^[1]

Submitted on Apr 8, 2014



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Basic Facts

While many viruses can be controlled by the [immune system](#) [2], HIV targets and infects the same cells in the immune system that are supposed to protect us from illnesses. These are a type of white blood cell called [CD4 cells](#) [3]. HIV takes over CD4 cells and turns them into virus factories that produce thousands of viral copies. As the virus grows, it damages or kills CD4 cells, weakening the immune system.

When your immune system loses too many CD4 cells, you are less able to fight off infection and can develop serious illnesses, [cancers](#) [4], and neurological (nerve system) problems. These are called opportunistic infections (OIs) because they take advantage of the body's weakened defenses. In other words, they take an opportunity to infect you when your defenses are down. OIs can lead to hospitalization and disability, and are responsible for most of the deaths in people with AIDS (acquired immune deficiency syndrome).

The US Centers for Disease Control and Prevention (CDC) define a person living with HIV (HIV+) and with a CD4 cell count of 200 or less as having AIDS. People are also diagnosed with AIDS if they have or have had one of the AIDS-defining conditions. The CDC has developed a list of more than 20 opportunistic infections that are considered [AIDS-defining conditions](#) [5].

People with AIDS can rebuild their immune system with the help of HIV drugs just like people with HIV who do not have AIDS. Even if your CD4 cell count goes back above 200 or an OI is successfully treated, you will still have a diagnosis of AIDS. This does not necessarily mean you are sick or will get sick in the future. It is just the way the public health system counts the number of people who have had advanced HIV disease.

Preventing and Treating OIs

The best way to prevent OIs is to keep your immune system as strong as possible by taking HIV drugs as soon as you know you are HIV+. This allows the immune system to do its job of controlling infections.

If your CD4 cell count falls below 200, taking appropriate medication can prevent many OIs from developing. Taking medication to prevent disease is called "prophylaxis."

Effective treatment options are available in most cases if you do develop an OI. The earlier you tell your health care provider about any symptoms, the sooner you can get diagnosed and treated, and the better your chances that the treatment will work and you will make a full recovery. After you recover, you may still need to get on-going maintenance treatment to keep the OI from coming back.

You may be able to stop prophylaxis or maintenance treatments if your CD4 cell count goes up and stays up. However, you should not stop any treatment without discussing it first with

your health care provider.

OIs and Women

Some opportunistic infections occur differently in women than in men:

- Men are eight times more likely than women to develop Kaposi's sarcoma (KS)
- Women are more likely than men to develop bacterial pneumonia and yeast infections [6]
- Women may have higher rates of herpes simplex infections than men

Dysplasia is a pre-cancerous condition that can occur in the female reproductive system. It is often more severe and difficult to treat in women living with HIV than in HIV-negative women. Untreated dysplasia can lead to cervical cancer, a life-threatening illness and an AIDS-defining condition. It is important for HIV+ women to have regular Pap smears and gynecological exams to identify infection, dysplasia, or cancer. For more information on women's health exams, see The Well Project's article "Caring for a Woman's Body [7]."

In addition, HIV+ women should have regular appointments with their HIV provider to check their health. On-going medical care allows for the effective prevention or early diagnosis and treatment of OIs. Ultimately, taking your HIV drugs regularly and staying as healthy as you can ? in body, mind, and spirit ? is the best way to avoid opportunistic infections. It will keep your viral load [8] lower and your CD4 count higher, thus making your immune system stronger and better able to fight off any type of infection.

Most Common Opportunistic Infections (OIs) in HIV+ People

- **Candidiasis** is caused by the common fungus *Candida albicans*. It can occur in the mouth (oral thrush), throat, esophagus (food pipe), or vagina (yeast infection). Both HIV+ and HIV-negative people can develop candidiasis. If you are HIV+, candidiasis can occur no matter what your CD4 count is. However, it is more likely to develop deeper in the body (e.g., the esophagus) if your CD4 count is below 200. For more information on candidiasis, see The Well Project's Fungal Infections [6] article.
- **Cytomegalovirus (CMV)** is caused by a virus that most commonly infects the eyes. The first signs of CMV infection in the eyes are moving black spots (called "floaters"), blind spots, light flashes, or generally reduced or distorted vision. CMV can also infect the brain, lungs, esophagus (food pipe), and gut. CMV usually occurs in HIV+ people with CD4 counts below 50. Prophylaxis is generally not recommended.
- **Cryptococcosis (Crypto)** is caused by a fungus that infects the brain and causes meningitis (inflammation of the soft lining inside the brain and spinal cord). People with crypto usually have a headache, fever, and generally feel unwell. When it occurs, it is mostly in HIV+ people with CD4 counts below 50. It is important to note that treatment of Cryptococcus in pregnant women should not include azole antifungal medications (e.g., fluconazole, ketoconazole), as these medications may damage the developing baby.
- **Cryptosporidiosis** is caused by a protozoal parasite that typically infects the gut (small and large intestines). It causes watery diarrhea, nausea, vomiting, and abdominal cramping. HIV+ people at greatest risk usually have CD4 counts less than 100. Since the parasite that causes cryptosporidiosis lives in contaminated water and stool, it is important to wash your hands well after using the bathroom or handling someone else's

waste. It is also important to drink clean water. If you are unsure if the water is safe to drink, boiling it for at least 3 minutes will eliminate the risk of cryptosporidiosis.

- **Mycobacterium avium complex (MAC)** is caused by a bacterium that can infect many different organs in the body. Symptoms include fever, chills, night sweats, weight loss, fatigue, diarrhea, and abdominal pain. The majority of HIV+ people with MAC have CD4 counts below 50. Prophylaxis is recommended for those with CD4 counts below 50.
- **Mycobacterium tuberculosis (TB)** is caused by a bacterium that can infect many organs. TB in HIV+ people with CD4 counts over 350 looks very similar to TB infection in HIV-negative people and usually involves the lungs. Symptoms include cough, weight loss, fever, night sweats, and fatigue. In HIV+ people with CD4 counts below 200, TB more often infects other organs as well, including the liver, heart, gut, and central nervous system (spinal cord and brain). The CDC recommends that pregnant women who do not have a documented test for TB in the year before becoming pregnant be tested while they are pregnant. If you need treatment for TB, be sure to tell your health care provider if you are pregnant [9] or plan to become pregnant [10], as there are some special considerations about which medications to choose.
- **Pneumocystis pneumonia (PCP)** is caused by a fungus that infects the lungs. People with PCP commonly report being short of breath, having a fever, and having a dry cough (no phlegm or mucus). It usually occurs in those whose CD4 count is below 200. While fairly uncommon among people taking their HIV drugs regularly, it is unfortunately still common among those who have not been tested or treated for HIV. It is suggested that people with a CD4 count below 200 take medication to prevent this infection.
- **Progressive multifocal leukoencephalopathy (PML)** is caused by a virus that infects the brain. Symptoms vary from person to person depending on where in the brain infection occurs. They can include changes to a person's thinking or personality, vision, speech, and ability to balance or coordinate movements. Symptoms often continue to get worse ("progressive") and can lead to paralysis, coma, and death. There is currently no specific treatment for PML. Consequently, the focus is on taking HIV drugs regularly to keep the person's immune system as healthy as possible.
- **Toxoplasmosis (Toxo)** is caused by a protozoan that infects the brain and causes encephalitis (inflammation of the brain). People with toxoplasma encephalitis report having headache, fever, confusion, weakness, seizures, and abnormal behavior. This disease is rare among HIV+ people with CD4 counts above 200; those with CD4 counts below 50 are at greatest risk. To avoid toxo, do not eat raw or undercooked lamb, beef, pork, or venison (deer meat). Also avoid touching cat feces, kitty litter, or dirt where cats might have been. Prophylaxis is recommended for those with CD4 counts below 100.

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Additional Resources

Select the links below for additional material related to opportunistic infections.

[Opportunistic Infections \(AIDS.gov\)](#) [21]

[Opportunistic Infections \(AIDS InfoNet\)](#) [22]

[Opportunistic Infections \(AIDSmeds.com\)](#) [23]

[Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-infected Adults and Adolescents \(CDC\)](#) [24]

[Opportunistic Infections and Other Conditions \(WomensHealth.gov\)](#) [25]

[HIV Related Opportunistic Infections: Prevention and Treatment \(Avert\)](#) [26]

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Links:

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- [21] <http://aids.gov/hiv-aids-basics/staying-healthy-with-hiv-aids/potential-related-health-problems/opportunistic-infections/>
- [22] http://www.aidsinfonet.org/fact_sheets/view/500
- [23] <http://www.aidsmeds.com/lessons/StartHere8.htm>
- [24] http://aidsinfo.nih.gov/contentfiles/adult_oi.pdf
- [25] <http://www.womenshealth.gov/hiv-aids/opportunistic-infections-and-other-conditions/>
- [26] <http://www.avert.org/hiv-opportunistic-infections.htm>