# ***HIV & OPPORTUNISTIC INFECTIONS***

**Opportunistic infections** are infections caused by organisms that usually do not cause disease in a person with a healthy immune system, but can affect people with a poorly functioning or suppressed immune system. They need an "opportunity" to infect a person

In our bodies, we carry many germs - bacteria, protozoa, fungi, and viruses. When our immune system is working, it controls these germs. But when the immune system is weakened by HIV disease or by some medications, these germs can get out of control and cause health problems.

Infections that take advantage of weakness in the immune defenses are called "opportunistic". The phrase "opportunistic infection" is often shortened to "OI".

You can be infected with an OI, and "test positive" for it, even though you don't have the disease. For example, almost everyone with HIV tests positive for Cytomegalovirus (CMV). But it is very rare for CMV disease to develop unless the CD4 cell count drops below 50, a sign of serious damage to the immune system.

To see if you're infected with an OI, your blood might be tested for antigens (pieces of the germ that causes the OI) or for antibodies (proteins made by the immune system to fight the germs). If the antigens are found, it means you're infected. If the antibodies are found, you've been exposed to the infection. You may have been immunized against the infection, or your immune system may have cleared? The infection or you may be infected. If you are infected with a germ that causes an OI, and if your CD4 cells are low enough to allow that OI to develop, your health care provider will look for signs of active disease. These are different for the different OIs.

People who aren't HIV-infected can develop OIs if their immune systems are damaged. For example, many drugs used to treat cancer suppress the immune system. Some people who get cancer treatments can develop OIs.

## The following are just a few of the OPPORTUNISTIC INFECTIONS that particularly affect people living with HIV.

### Bacterial pneumonia

Pneumonia can be caused by various bacteria. Symptoms among HIV-positive people are much the same as in those without HIV infection, and include chills, rigors, chest pain and pus in the

sputum. Because other forms of respiratory infection including PCP are common among HIV-infected people, doctors must be certain of diagnosis before administering antibiotics. This may require a chest radiograph, blood cultures, a white blood cell count and tests to eliminate other infections. Treatment is usually aimed at the most commonly identified disease-causing bacteria.

### Candidacies

There are two main types of candidacies: localized disease (of the mouth and throat or of the vagina) and systemic disease (of the esophagus, and disseminated disease). The mouth and throat variant (commonly known as thrush or OPC) is believed to occur at least once in the lifetime of all HIV-infected patients. Occurrence of the vaginal variant is common among healthy women and is unrelated to HIV status.

### Cryptococcus

Cryptococcus is caused by a fungus that primarily infects the brain. It most often appears as meningitis and occasionally as pulmonary or disseminated disease. Untreated Cryptococcus meningitis is fatal.
Cryptococcus is relatively easy to diagnose. However, its treatment and secondary chemoprophylaxis are often impossible in developing countries because of high cost and limited availability of the drugs required.

### Cryptosporidiosis and isosporiasis

Cryptosporidiosis (crypto) and isosporiasis are both caused by protozoan parasites. These diseases are easily spread by contaminated food or water, or by direct contact with an infected person or animal. Both crypto and isosporiasis cause diarrhea, nausea, vomiting and stomach cramps. In people with healthy immune systems, these symptoms do not last more than about a week. However, if the immune system is damaged then they can continue for a long time. Diarrhea can interfere with the absorption of nutrients and this can lead to serious weight loss.
To confirm diagnosis of either disease, the stool is normally checked for parasites and their eggs. There is no cure for crypto, but antiretroviral therapy to restore immunity can effectively clear up the infection.

### Cytomegalovirus

Cytomegalovirus (CMV) is a virus that infects the whole body. It most commonly appears as retinitis, which causes blurred vision and can lead to blindness. CMV can also affect other organs, and is capable of causing fever, diarrhea, nausea, pneumonia-like symptoms and dementia.

### Herpes simplex and Herpes zoster

The usual symptoms of herpes simplex virus infection (HSV, which causes sores around the mouth and genitals) and herpes zoster virus infection ('zonal' herpes or shingles) are not life-threatening but can be extremely painful. Both viruses are also capable of causing retinitis and encephalitis (which can be life-threatening).

### Histoplasmosis

Histoplasmosis is a fungal infection that primarily affects the lungs but may also affect other organs. Symptoms can include fever, fatigue, weight loss and difficulty in breathing.

Disseminated histoplasmosis infection may be diagnosed using an antigen test, and can be fatal if left untreated.

### Kaposi's sarcoma

HIV-associated Kaposi's sarcoma causes dark blue lesions, which can occur in a variety of locations including the skin, mucous membranes, gastrointestinal tract, lungs or lymph nodes. The lesions usually appear early in the course of HIV infection.

### Leishmaniasis

Leishmaniasis is transmitted by sand flies and possibly through sharing needles. The most serious of its four forms is visceral leishmaniasis (also know as kala azar) which is characterized by irregular bouts of fever, substantial weight loss, swelling of the spleen and liver and anemia (occasionally serious). In its more common forms, leishmaniasis can produce disfiguring lesions around the nose, mouth and throat, or skin ulcers leading to permanent scarring.
Treatment of leishmaniasis with pentavalent antimony is relatively expensive, partly because of the cost of drugs but also because hospital admission is recommended (in milder cases, trained health workers may administer the injections or infusions at a patient's home). If left untreated, visceral leishmaniasis is usually fatal.

### MAC

The germs of the mycobacterium avium complex (MAC) are related to the germ that causes tuberculosis. MAC disease generally affects multiple organs, and symptoms include fever, night sweats, weight loss, fatigue, diarrhea and abdominal pain.
MAC should be treated using at least two antimycobacterial drugs to prevent or delay the emergence of resistance.

### PCP

PCP is caused by a parasite that infects the lungs, which was formerly called pneumocystis carinii but has now been renamed pneumocystis jiroveci. PCP is a frequent HIV associated opportunistic infection in industrialized countries but appears to be less common in Africa. The symptoms are mainly pneumonia along with fever and respiratory symptoms such as dry cough, chest pain and dyspnoea. Definitive diagnosis requires microscopy of bodily tissues or fluids.
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Prevention of PCP is strongly recommended for HIV-infected persons with very weak immune systems wherever PCP is a significant health problem for HIV-infected persons, and also after their first episode of PCP.

### Toxoplasmosis

Toxoplasmosis (toxo) is caused by a protozoan found in uncooked meat and cat faeces. This microbe infects the brain and can cause headache, confusion, motor weakness and fever. In the absence of treatment, disease progression results in seizures, stupour and coma. Disseminated toxo is less common, but can affect the eyes and cause pneumonia.

### Tuberculosis

Tuberculosis (TB) is a bacterial infection that primarily infects the lungs. Tuberculosis is the leading HIV-associated opportunistic disease in developing countries. For people who are dually infected with HIV and TB, the risk of developing active tuberculosis is 30-50 folds higher than for people infected with TB alone. And because mycobacterium can spread through the air, the increase in active TB cases among dually infected people means:

- More transmission of the TB germ
- More TB carriers
- More TB in the whole population.

Tuberculosis is harder to diagnose in HIV-positive people than in those who are uninfected. The diagnosis of TB is important because TB progresses faster in HIV-infected people. Also, TB in HIV-positive people is more likely to be fatal if undiagnosed or left untreated. TB occurs earlier in the course of HIV infection than many other opportunistic infections.

A proper combination of anti-TB drugs achieves both prevention and cure. Effective treatment quickly makes the individual non-contagious, which prevents further spread of the TB germ. The DOTS (directly observed short course) treatment strategy recommended by WHO treats TB in HIV-infected persons as effectively as it treats those without the virus. A complete cure takes 6 to 8 months and uses a combination of antibiotics. In addition to curing the individual, it also prevents further spread of the disease to others. This is why treating infectious cases of TB has important benefits for society as a whole.
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