



# HIV/AIDS Today

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## Opportunistic Infections

As HIV/AIDS progresses, it weakens the host immune system, leaving the body vulnerable to “opportunistic infections.” This week’s factsheet reviews common opportunistic infections and measures to reduce their incidence.

### COMMON OPPORTUNISTIC INFECTIONS

Opportunistic infections that affect people with untreated HIV fall into multiple categories: Bacterial diseases (e.g. tuberculosis); protozoal diseases (e.g. pneumocystis pneumonia); fungal diseases (e.g. candidiasis); viral diseases (e.g. hepatitis); and HIV-associated cancers (e.g. Kaposi’s sarcoma).

The risk of opportunistic infections rises as a patient’s level of CD4 T-cells, a key component of the immune system targeted by HIV, drops. Early in the disease, people have a heightened risk of tuberculosis, malaria, bacterial pneumonia, herpes zoster, staphylococcal skin infections, and septicemia. As untreated HIV infection progresses and T-cell counts fall, the risk of other opportunistic infections increases.<sup>i</sup>

In more advanced stages of AIDS, people are prone to developing pneumocystic pneumonia (PCP), toxoplasmosis, and cryptococcosis. These and other infections can become “systemic” or “disseminated,” spreading to multiple organs and often leading to death.<sup>ii</sup>

### REGIONAL POPULATIONS AND OPPORTUNISTIC INFECTIONS

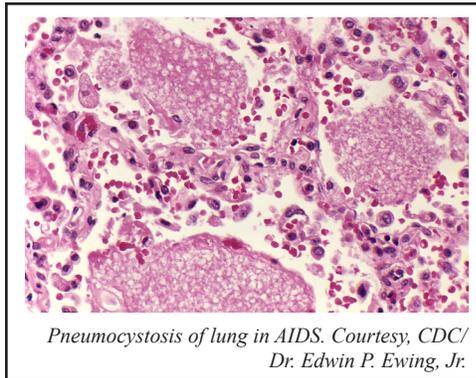
Different HIV subtypes throughout the world, particularly in developing countries, may be associated with different opportunistic infections.

Tuberculosis is the most frequent serious opportunistic infection in the developing world, such as in Sub-Saharan Africa, where other common opportunistic infections include septicemia and bacterial pneumonia. Pneumocystis carinii is also common in South Africa, but for unknown reasons is uncommon among adults in

East and West Africa. Similarly, Penicillium marneffei infection is relatively common in Thailand, but is relatively uncommon in other parts of the world.<sup>iii</sup>

### WOMEN AND OPPORTUNISTIC INFECTIONS

Women with HIV have a heightened susceptibility to more difficult-to-treat versions of certain gynecologic infections and diseases. For example, dysplasia, the presence of pre-cancerous cells in or on the cervix, is more aggressive and eight times more common in women with HIV than in uninfected women. Dysplasia can progress into cervical cancer and result in death.<sup>iv</sup> Pelvic inflammatory disease (PID) is also more aggressive and more common in HIV positive women. PID may become chronic as a woman’s immune system deteriorates.<sup>v</sup>



*Pneumocystosis of lung in AIDS. Courtesy, CDC/ Dr. Edwin P. Ewing, Jr.*

### CHILDREN AND OPPORTUNISTIC INFECTIONS

Children with AIDS are susceptible to the same opportunistic infections as adults with AIDS. They may also have severe forms of typical childhood infections such as conjunctivitis (pink eye), ear infections and tonsillitis.<sup>vi</sup>

### OPPORTUNISTIC INFECTION PREVENTION

Because highly active antiretroviral therapy (HAART) improves immune function by raising a patient’s CD4 count, HAART reduces the incidence of opportunistic infections.<sup>vii</sup>

(continued on next page)

The risk of several opportunistic infections, including tuberculosis, bacterial pneumonia, malaria, septicaemia, and PCP, can also in some cases be decreased with drug prophylaxis.<sup>viii</sup> In addition, vaccinations can boost a patient's resistance to some infections such as seasonal influenza.

When feasible, behavioral risk-avoidance measures can also reduce the chances of contracting an opportunistic infection. These include frequent hand-washing, the use of latex condoms, using sterile syringes, refraining from consuming certain raw or undercooked foods, and avoiding river or lake water.<sup>ix</sup>

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## ENDNOTES

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<sup>i</sup> BBC News, *The Biology of AIDS* (accessed Mar, 2008) (online at [http://news.bbc.co.uk/2/shared/spl/hi/africa/03/biology\\_of\\_aids/html/default.stm](http://news.bbc.co.uk/2/shared/spl/hi/africa/03/biology_of_aids/html/default.stm)).

<sup>ii</sup> AVERT. *HIV-Related Opportunistic Infections: Prevention and Treatment* (Aug. 8, 2007) (online at <http://www.avert.org/aidscares.htm>).

<sup>iii</sup> Centers for Disease Control and Prevention. *Opportunistic Infections in Immunodeficient Populations*. Emerging Infectious Diseases, Vol. 4 No. 3 (Jul.-Sept., 1998) (<http://www.cdc.gov/ncidod/eid/vol4no3/kaplan.htm>).

<sup>iv</sup> San Francisco AIDS Foundation, *Women with HIV/AIDS* (Sept. 14, 2007) (online at <http://www.sfaf.org/default.aspx?pid=207>).

<sup>v</sup> U.S. Department of Health and Human Services, *Women and HIV/AIDS: Opportunistic Infections (OIs)* (Dec. 2006) (online at <http://www.4woman.gov/hiv/livingwith/ois/pid.cfm>).

<sup>vi</sup> National Institute of Allergy and Infectious Diseases, National Institutes of Health, U.S. Department of Health and Human Services, *HIV Infection and AIDS: An Overview* (Oct. 2007) (online at <http://www.niaid.nih.gov/factsheets/hivininf.htm>).

<sup>vii</sup> U.S. Centers for Disease Control and Prevention, *Treating Opportunistic Infections Among HIV-Infected Adults and Adolescents* (Dec. 17, 2004) (online at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5315a1.htm>).

<sup>viii</sup> *Id.*, *supra* note <sup>ii</sup>

<sup>ix</sup> U.S. Public Health Service, Infectious Diseases Society of America, *Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons – 2002* (June 14, 2002) (online at <http://aidsinfo.nih.gov/ContentFiles/OIpreventionGL.pdf>).