Overview of HIV

The right clinical information, right where it's needed

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Introduction

Human immunodeficiency virus (HIV) is a retrovirus that destroys CD4 T cells and is the aetiological agent of acquired immunodeficiency syndrome (AIDS). HIV is divided into 2 types, both of which cause AIDS: HIV 1, responsible for the global epidemic; and HIV 2, less pathogenic and restricted mostly to West Africa. AIDS, which usually develops over 10 to 15 years of HIV infection (median 11 years), is a constellation of opportunistic and other infections, conditions, or malignancies.[1] [2] Without effective antiretroviral treatment, these will occur as a result of increasing immune depletion over time.[3]
## Conditions

### HIV infection

- **HIV infection**

  » see our comprehensive coverage of HIV infection

  HIV infection is a pandemic infectious disease whose impact on societies is without precedent. It is caused by a retrovirus that infects and replicates in human lymphocytes and macrophages, eroding the integrity of the human immune system over a number of years, culminating in immune deficiency and a susceptibility to a series of opportunistic and other infections as well as the development of certain malignancies.

### HIV infection in pregnancy

- **HIV infection in pregnancy**

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  Pregnancy in women living with HIV is complicated not only by HIV infection itself but also by the medical and psychosocial comorbidities associated with HIV. HIV infection in pregnancy poses a threat to maternal immune health and can lead to perinatal transmission of HIV in utero, intrapartum, or through breastfeeding postnatally.

### Post-exposure HIV prophylaxis

- **Post-exposure HIV prophylaxis**

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  The administration of antiretroviral therapy to HIV-negative people who may have been occupationally or sexually exposed to HIV. Once exposed to HIV, there may be a brief period before the infection is established, during which antiretroviral therapy may successfully prevent viral replication.

### HIV-related opportunistic infections

- **HIV-related opportunistic infections**

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  Clinical syndromes that arise as a consequence of impaired immunity in advanced stages of HIV infection. These illnesses tend to occur most often in patients who have untreated HIV infection or who fail to benefit from antiretroviral therapy. Tuberculosis, *Pneumocystis jirovecii* pneumonia, candidiasis, cryptococcosis, toxoplasmosis, cytomegalovirus infection, mycobacterium avium complex (MAC) infections, *Herpes simplex* infection, and cryptosporidiosis are among the HIV-related opportunistic infections often encountered in clinical practice.

### Pneumocystis jirovecii pneumonia

- **Pneumocystis jirovecii pneumonia**

  » see our comprehensive coverage of Pneumocystis jirovecii pneumonia

  The most common AIDS-defining opportunistic infection. It is an infection of the lung caused by the fungal organism *Pneumocystis jirovecii* (formerly known as *Pneumocystis carinii*). Typically causes clinical disease in severely immunocompromised patients, such as HIV-positive patients with CD4 cell counts <200 cells/microlitre, bone marrow transplant patients, solid-organ transplant patients, or patients on chronic immunosuppressive therapy.
Pulmonary tuberculosis

One of the most common causes of death among patients with AIDS worldwide. It is an infectious disease caused by *Mycobacterium tuberculosis*. In many cases, *M tuberculosis* becomes dormant before it progresses to active tuberculosis. It most commonly involves the lungs and is communicable in this form, but may affect almost any organ system including the lymph nodes, central nervous system, liver, bones, genitourinary tract, and gastrointestinal tract.

Mycobacterium avium-intracellulare

*Mycobacterium avium-intracellulare* (MAI), also known as mycobacterium avium complex (MAC), consists of 2 mycobacterium species, *M avium* and *M intracellulare*. It traditionally causes 3 disease syndromes: pulmonary disease, cervical lymphadenitis, and disseminated disease. People living with HIV with a CD4 count <50 cells/microlitre are at increased risk of infection.

Toxoplasmosis

Caused by the protozoan parasite *Toxoplasma gondii*. People living with HIV with CD4 counts <50 cells/microlitre are at greatest risk. Cats are the definitive hosts for the parasite. Humans are intermediate hosts, and become infected by ingesting uncooked meat infected with tissue cysts (bradyzoites), from ingestion of other food or water contaminated with oocysts, or by transplacental spread of tachyzoites. Infection in humans is life-long and often asymptomatic, unless a patient becomes immunosuppressed.

Cryptococcosis

Caused by *Cryptococcus* species. *Cryptococcus neoformans* var. *grubii* and *Cryptococcus neoformans* cause morbidity and mortality, especially in immunosuppressed populations, such as those with HIV. Patients with compromised cell-mediated immunity are at higher risk of acquiring cryptococcosis, particularly those with CD4 cell counts <100 cells/microlitre.

Cytomegalovirus infection

Cytomegalovirus (CMV) is a ubiquitous beta-herpes virus that infects the majority of humans. Primary infection in individuals with normal immune function is usually asymptomatic. After primary infection, CMV establishes a state of lifelong latency in various host cells, with periodic sub-clinical re-activations that are controlled by a functioning immune system. When re-activation occurs in patients with severely compromised immune function (transplant patients, or patients with AIDS with a CD4 count <50 cells/microlitre), uncontrolled CMV replication often ensues, which leads to the clinical manifestations characterised by fever, bone marrow suppression, and tissue-invasive disease.
### Oral candidiasis

**see our comprehensive coverage of Oral candidiasis**

One of the most diagnosed opportunistic infections among people living with HIV. It involves a local infection of oral tissues by yeasts of the genus *Candida*, mostly *C. albicans*. Although *Candida* are considered normal flora in the gastrointestinal and genitourinary tracts in humans, they are capable of local infection of mucous membranes (oropharyngeal candidiasis, oesophagitis, vulvovaginitis), focal invasion (endophthalmitis, meningitis, endocarditis), and dissemination (candidaemia).

### Kaposi's sarcoma

**see our comprehensive coverage of Kaposi's sarcoma**

The most common neoplasm arising in HIV-infected people. It is a low-grade vasoformative neoplasm associated with human herpesvirus-8 or Kaposi sarcoma herpesvirus infection. Lesions frequently involve mucocutaneous sites, but may become more extensive to involve the lymph nodes and visceral organs. Skin lesions evolve from an early patch, to a plaque, and later to ulcerating tumour nodules.

### Assessment of dermatological disorders in HIV

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Cutaneous manifestations often reflect immune status and may offer insight into the long-term prognosis of HIV-infected patients. The aetiologies of different diseases involving the entire spectrum of skin and HIV vary, but a useful aetiological distinction to note is that some skin diseases are fairly specific to HIV (e.g., Kaposi's sarcoma, oral hairy leukoplakia, papular pruritic eruption of HIV, HIV photodermatitis), and other skin diseases may appear in non-HIV-infected populations but have altered presentation with HIV.

### Assessment of HIV-related mental status changes

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Causes of altered mental status in HIV infection include both acutely presenting conditions (which often represent HIV-related opportunistic infection or associated systemic illness) and more progressive neurocognitive disease or psychological comorbidity. Neuropsychological issues arise as a direct effect of HIV infection: for example, as part of a spectrum of HIV-associated neurocognitive disorders or as a psychiatric comorbidity (e.g., depression or alcohol/substance abuse).
Key articles


References

1. Centers for Disease Control and Prevention. 2015 sexually transmitted diseases treatment guidelines. 2015 [internet publication]. Full text

2. World Health Organization. HIV/AIDS. Nov 2017 [internet publication]. Full text

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