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HIV and AIDS





# Objectives:

1. the basic description of HIV ■
  2. the clinical features of HIV ■
  3. The diagnosis of HIV infection ■
  4. the treatment of HIV infection. ■
  5. The complications of HIV infection ■
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- Basics
- Description
- HIV is a retrovirus that integrates into CD<sub>4</sub> T lymphocytes (a critical component of cell-mediated immunity), causing cell death and resulting in severe immunodeficiency, opportunistic infections (OI), and malignancies:
- Due to treatment advances, HIV is now a chronic disease.
- The natural history of untreated HIV infection includes viral transmission, acute retroviral syndrome, recovery and seroconversion, asymptomatic chronic HIV infection, and symptomatic HIV infection or AIDS.
- Without antiretroviral treatment, the average patient develops AIDS ~10 years after transmission.
- All HIV-infected persons with CD<sub>4</sub> <200 cells/mm<sup>3</sup> or having AIDS defining illnesses are categorized as having AIDS.

- Risk Factors
- Sexual activity (70% of world transmission). Viral load strongest predictor of heterosexual transmission with ulcerative urogenital lesions (3)[B].
- Male-to-male sexual contact accounts for 53% of newly diagnosed HIV/AIDS cases in 2007.
- Injection drug use
- Children of HIV-infected women:
  - Maternal HIV-1 RNA level is the best predictor of transmission risk.
  - HIV testing and use of antiretroviral drugs in pregnant women and their newborns has reduced the incidence of perinatal HIV transmission by >70% (from 25–29% without treatment to 8% with treatment) (4)[B].
  - Pregnant women should be treated until viral load is undetectable.
  - Can be transmitted through breastfeeding
- Recipients of blood products between 1975 and March 1985
- Occupational exposure

- Diagnosis
- Acute retroviral syndrome: Precipitous decline in CD4 lymphocyte count and increased viremia, about 1–4 weeks after transmission. Confirmed by demonstrating a high HIV RNA in the absence of HIV antibody.
- Mononucleosis-like syndrome, including:
  - Fever (97%)
  - Adenopathy
  - Pharyngitis (73%)
  - Rash (77%)
  - Myalgias/Arthralgia (58%)
  - Less commonly: Headache, diarrhea, nausea, vomiting, hepatosplenomegaly, weight loss, thrush, and neurologic symptoms (12%)
  - Seroconversion: Development of a positive HIV antibody test usually occurs within 4 weeks of acute infection and invariably by 6 months.
  - Asymptomatic infection: Variable duration (average 8–10 years) and is accompanied by a gradual decline in CD4 cell counts and a relatively stable HIV RNA levels (the viral “set point”). Persistent lymphadenopathy: >1 cm in ≥2 extrainguinal sites, persists >3 months

- AIDS: defined by a CD4 cell count <200, a CD4 cell percentage of total lymphocytes <14% or one of several AIDS-related opportunistic infections: Pneumocystis jiroveci (carinii) pneumonia, cryptococcal meningitis, recurrent bacterial pneumonia, Candida esophagitis, CNS toxoplasmosis, tuberculosis and NHL, progressive multifocal encephalopathy. HIV nephropathy, Kaposi's sarcoma, NHL, Hodgkin's, invasive cervical cancer.
- Advanced HIV disease: CD4 cell count of <50. Most AIDS related deaths occur at this time. Common late opportunistic infections: CMV disease (retinitis, colitis) or disseminated Mycobacterium avium complex. Also HIV wasting syndrome (>10% wt loss) and HIV encephalopathy/dementia/minor cognitive-motor disorder.

- Physical Exam
- Focus on weight, skin, retinal exam, oropharynx; lymph nodes; liver, spleen, mental status, sensation, genital and rectal examinations.
- Diagnostic Tests & Interpretation
- Lab
- Screening: Enzyme-linked immunoabsorbent assay (ELISA) reported as reactive or nonreactive; sensitivity and specificity >98%. Obtain HIV RNA if acute HIV infection is suspected.
  - New rapid and oral test available (Home test kit, OraSure, OraQuickAdvanced Rapid HIV test).
- Confirmatory: Western blot:
  - Results positive, negative, or indeterminate
  - Per Centers for Disease Control (CDC): Positive test is reaction with 2 of these 3 bands: P24, gp 41, and gp 120/160. If indeterminate, repeat test in 3–6 months.
- CD4 cell count and percentage (6)[A]
- HIV-RNA viral load (6)[A]
- Complete blood count (CBC) with differential
- Serum chemistry
- Serologies: Hepatitis A, B, C; syphilis.
- Urine screen for sexually transmitted infections (*N. gonorrhoeae*, *C. trachomatis*)
- Cervical cytology
- PPD
- Glucose-6-phosphate (G-6PD) levels
- Lipids at baseline and during highly active antiretroviral therapy (HAART)
- Genotypic tests for resistance to antiretrovirals for patients who have pretreatment HIV RNA >1000 copies/ml regardless of whether therapy will be initiated immediately (6)[A].

- Treatment
- Antiretroviral therapy should be initiated in all patients with a history of an AIDS-defining illness or with a CD4 count <350 (6)[A]
- Antiretroviral therapy should be initiated regardless of CD4 count in patients with the following conditions: Pregnancy, HIV-associated nephropathy and HBV coinfections when treatment of HBV is indicated [A], rapidly declining CD4 counts (e.g., >100 cells/mm decrease per year, higher viral load (e.g., >100,000 copies/ml) (6)[B]
- Antiretroviral therapy is recommended for all patients with CD4 count between 350 and 500 (6)[A].
- Consider for patients with CD4 count >500 (6)[B].
- Medication
- Nucleoside reverse transcriptase inhibitors (NRTI):



- Prognosis
- When untreated HIV infection leads to AIDS, the life expectancy is 3.7 years.
- AIDS-defining opportunistic infections usually do not develop until CD4 <200.
- In HIV-untreated infection, CD4 counts decline at a rate of 50–80/yr, with more rapid decline as counts drop <200.
- Drug resistance is not the most common cause of treatment failure, its adherence failure (7)[B].
- Complications
- Immunodeficiency
- Opportunistic infections
- Malignancy, including cervical or anal cancer

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THANCK YOU ■

