

# HIV/AIDS

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## HIV- Human Immunodeficiency Virus

- Person is infected with virus.
- May have no s/s (but may transmit virus)
- More common to have brief flu-like illness 2-6 wks after becoming infected (swollen lymph nodes)
- Virus multiplies in lymph nodes
- Destroys helper T cells (**CD 4 lymphocytes**)
- CD4 lymphocytes coordinates entire immune system
- May remain symptom free for 8-9 years
- 10yrs- mild infections/chronic symptoms
- Such as diarrhea, wt loss, fever, cough, SOB, swollen lymph nodes
- Last phase of HIV (10yrs >) serious s/s
- AIDES- presence of positive HIV antibody plus at least one of the following:
- Opportunistic infections (impaired immune system) such as Pneumocystis carini pneumonia or
- a CD4 lymphocyte count of 200 or less- normal count range is 600-1,000



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## AIDS immune system severely damaged

- Soaking night sweats
- **Shaking chills/fever > 100F X several weeks**
- Dry cough and SOB
- Chronic diarrhea
- Persistent white spots or unusual lesions on tongue or mouth
- Headaches
- Blurred and distorted vision
- Weight loss
- Persistent unexplained fatigue
- Swelling of lymph nodes > 3 months
- Cancers (esp Kaposi's sarcoma) cervical cancer and lymphoma.
- Improved treatment has reduced the risk of cancers.



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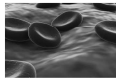
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### How HIV is Transmitted

- Sexual- vaginal, anal, or oral sex with an infected person.
- Shared sexual devices
- People with other STD's much greater risk of contracting HIV
- Infected blood transfusions or blood products. (1985 began testing blood)
- HIV from blood transfusions rare now
- Needle sharing
- Accidental needle sticks (< 1%)
- Perinatal (pregnancy, labor, delivery, or breastfeeding).
- Rare- organ, tissue transplants, unsterilized dental/surgical equipment



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### Risk Factors

- Unprotected sex with multiple partners
- Unprotected sex with HIV positive person
- Have other STD's
- Share needles
- Have hemophilia and received blood products between 1977- April 1985
- Received a blood transfusion or blood products before 1985
- Have fewer copies of a gene called CCL3L1 that helps fight HIV
- Newborns or nursing infants whose mothers tested positive for HIV but did not receive treatment



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### Screening and Diagnosis

- CDC 9/2006 recommends that all people ages 13-64 be tested once.
- Yearly testing for people at high risk
- HIV tests aren't accurate immediately after infection
- Rarely may take up to 6 months for antibodies to show up on test
- ELISA Test- (enzyme-linked immunosorbent assay) detects antibodies to the virus in blood
- If ELISA is positive- it is repeated
- **2<sup>nd</sup> Positive ELISA- a Western Blot Test is done**
- Western Blot- tests for HIV proteins
- Non HIV antibodies can cause false positives
- If all three tests positive, a diagnosis is made



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### Screening and Diagnosis (con't)



- ELISA / Western Blot may take 2 wks
- Now several rapid tests (20 min) are highly accurate
- A sample of blood or fluids collected on a treated pad that's rubbed on upper and lower gums tested for antibodies
- Oral test almost as sensitive as blood test
- Rapid tests may not be available in all areas
- Home tests- Only one approved by FDA is The Home Access HIV test from Home Access Health
- A drop of blood is mailed in and Positive results are automatically re-tested
- Call a toll free number for results in 3-7 business days.
- A diagnosis of HIV/AIDS will warrant a viral load test to help predict the probable progression of disease and when to start treatment.

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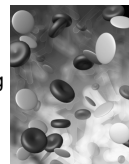
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### Opportunistic Bacterial Infections

- Bacterial Pneumonia- one of the most common opportunistic infections
- Mycobacterium avium complex- a group of bacteria that usually causes a resp infection, s/s fever, night sweats, wt loss, stomach pain and diarrhea.
- TB- often in a site outside the lungs
- Salmonellosis- bacterial infection from contaminated food or water. Fever, chills, severe diarrhea, abdominal pain and vomiting
- Bacillary angiomatosis- rarely in non-HIV , purple to bright red patches on skin also affects liver and spleen



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### Opportunistic Viral Infections



- Cytomegalovirus- a healthy immune system de-activates the virus. Damages lungs, digestive system, eyes, and other organs.
- Viral hepatitis-
- Herpes simplex- more severe in AIDS
- Human papillomavirus- Aids more susceptible to disease can cause cervical cancer. Vaccine available, most effective for girls before becoming sexually active, but gives sexually active women 26 and under protection
- **Progressive multifocal leukoencephalopathy- a serious brain infection only seen in patients with severely damaged immune systems.**

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### Opportunistic Fungal and Parasitic Infections

- Candidiasis Yeast- inflammation, thick white coating on tongue, mucous membranes, esophagus, vagina
- Cryptococcal meningitis Fungus present in soil
- Pneumocystis carinii pneumonia (parasitic)
- Toxoplasmosis -parasite from cats that can lead to encephalitis in AIDS patients
- Cryptosporidiosis – a parasite that causes severe, chronic diarrhea in AIDS patients

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### Cancers

- **Kaposi's sarcoma**- tumor of the blood vessel walls
- Rare in non-infected HIV people
- Common in AIDS patients
- Pink, red, or purple lesions on skin and mouth
- Also affects internal organs
  
- Non-hodgkin's lymphoma- cancer of lymphocytes a type of white blood cell. Painless swelling of lymph nodes in neck, armpit, or groin

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### Treatment - 3 or more drugs used in combination

- HAART- Highly active antiretroviral therapy- aim is to reduce the amount of virus in blood to very low or even nondetectable
- Antiretroviral drugs- 6 classes of drugs available
- CCR5 antagonists - new class of drug that targets a human protein rather than components of the HIV virus itself. It blocks the virus from entering the cell. Usually used in combination with antiretroviral drugs.
- **Vaccine probably won't be found soon. Virus keeps mutating**
- More promising is search for microbicides to prevent HIV infection during sex. Won't be as effective as condoms which offer nearly 100% protection when used properly
- Male circumcision significantly reduces mans risk of acquiring HIV infection during heterosexual intercourse

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### Interesting Facts

- Aids dementia complex- a common neurological complication
- **Women having sex with women no confirmed cases of transmission**
- Pregnant women who receive Zidofudine dramatically reduce risk of transmission to infant
- Incidence- approx 40,000 people in US become infected ea yr
- 2005- largest estimated proportion of HIV/AIDS diagnosis were for men who have sex with men.
- Oral sex is not safe sex. Use of rubber latex sheets, dental dams, cut condoms spread open, or plastic wrap may offer some protection from contact with body fluids.
- Oral sex- smaller risk than vaginal or rectal sex, but risk increases with bleeding gums, mouth ulcers, genital sores, or presence of other STD's
- Race Ethnicity- (2005) 50% cases black, 31% white, 18% Hispanic, 1% Asian/Pacific Islander
- Gender- (2005) males 74%, females 26%
- Female heterosexual contact 80%, 19% IV drug use, 1% other
- Males- 67% male to male contact, 15% heterosexual contact, 13% IV drug use, 5% male to male contact plus IV drug use, <1% other

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