

HIV & AIDS

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What is HIV?



Human Immunodeficiency Virus

- “**HIV** is a virus spread through body fluids that affects specific cells of the immune system, called CD4 cells, or T cells”.
- HIV kills the body’s CD4 cells (T cells) and damages the immune system.
- HIV replicates inside the human body. It must invade a healthy cell in the body to survive.

There is NO
cure, but
there is
treatment.

What is AIDS?



- AIDS is a late stage of the HIV infection
- Once diagnosed, body has hard time fighting disease and certain cancers.
- NO cure for AIDS, but there is treatment

Diagnosis

Positive HIV Test
+
Very low CD4 count (<200 cells)
OR
presence of specific cancers or
infections
=
AIDS

HIV-1 and HIV-2

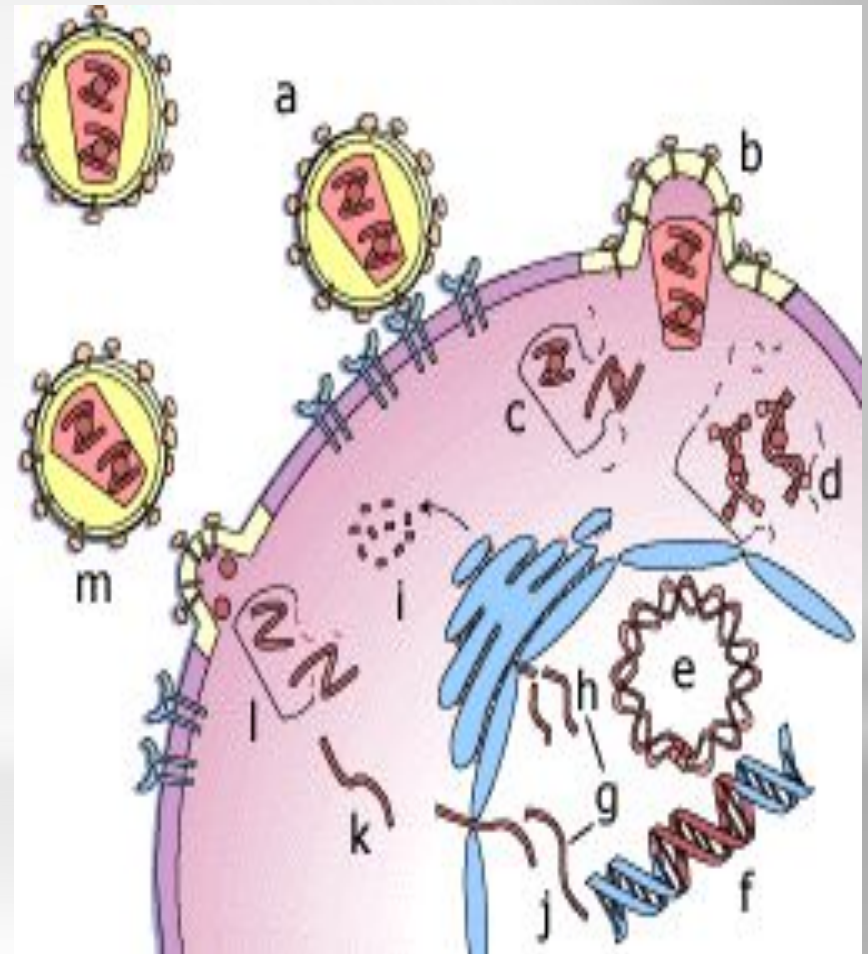
- HIV-1 and HIV-2 are
- Transmitted through the same routes
- Associated with similar opportunistic infections
- HIV-1 is more common worldwide
- HIV-2 is found in West Africa, Mozambique, and
Angola

HIV-1 and HIV-2

- HIV-2 is less easily transmitted
- HIV-2 is less pathogenic
- Duration of HIV-2 infection is shorter
- MTCT is relatively rare with HIV-2

Life Cycle

- * (a) HIV (red) attaches to two cell-surface receptors (the CD4 antigen and a specific chemokine receptor).
- * (b) The virus and cell membrane fuse, and the virion core enters the cell.
- * (c) The viral RNA and core proteins are released from the virion core and are then actively transported to the nucleus.
- * (d) The viral RNA genome is converted into double-stranded DNA through an enzyme unique to viruses, reverse transcriptase (red dot).
- * (e) The double-stranded viral DNA moves into the cell nucleus.
- * (f) Using a unique viral enzyme called integrase, the viral DNA is integrated into the cellular DNA.
- * (g) Viral RNA is synthesized by the cellular enzyme RNA polymerase II using integrated viral DNA as a template. Two types of RNA transcripts shorter spliced RNA (h) and full-length genomic RNA (j) are produced.
- * (h) Shorter spliced RNAs are transported to the cytoplasm and used for the production of several viral proteins that are then modified in the Golgi apparatus of the cell (i).
- * (j) Full-length genomic RNAs are transported to the cytoplasm (k).
- * (l) New virion is assembled and then buds off.
- * (m) Mature virus is released.

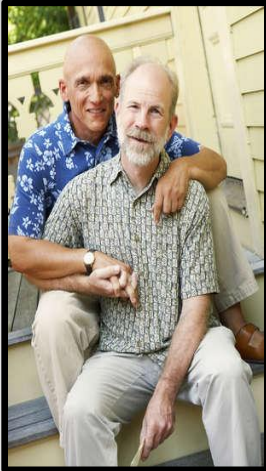


How is HIV Spread?

HIV is passed from person to person through the exchange of bodily fluids.

3 Main Ways:

1. Unprotected sex with people living with HIV (vaginal, oral, or anal)
2. Blood to blood contact
3. Exposure to HIV before or during birth **or** through breastfeeding



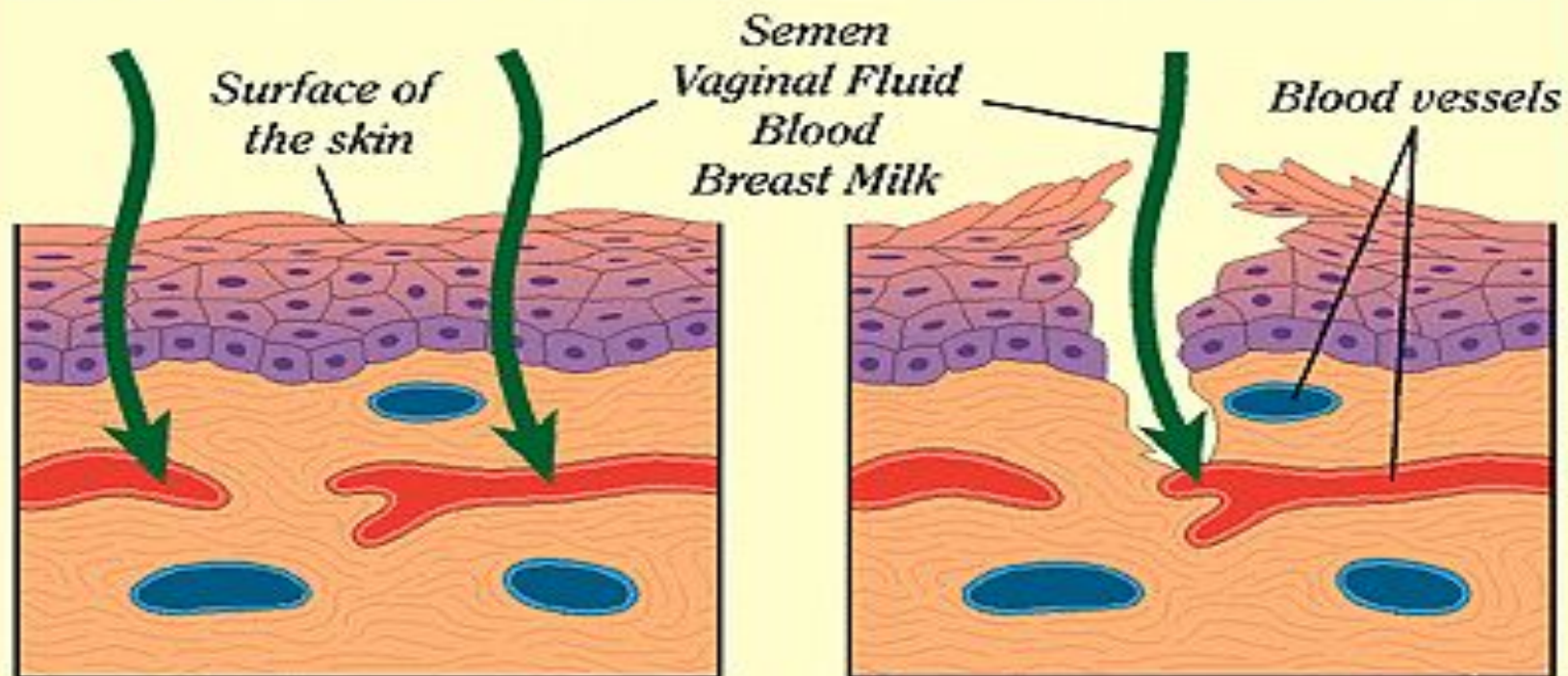
What Fluids Can Transmit HIV?

Blood
Vaginal fluids
Semen
Breast Milk

HIV can enter the body through:

- Mouth -Vagina**
- Nose -Penis**
- Eyes -Anus**
- Ears -Break in Skin**

HOW THE HIV VIRUS CAN ENTER THE BODY



The HIV virus may penetrate through the outer membrane of fragile skin (eg, the wall of the vagina) and into the bloodstream.

The virus may also penetrate through small microscopic tears in the skin.

The virus may enter the body through a cut, sore, scratch, or needle puncture, and travel into the bloodstream.

HIV Disease

Direct infection of organ systems:

HIV can directly infect the;

- Brain (HIV dementia)
- Gut (wasting)
- Heart (cardiomyopathy)

Primary HIV Syndrome

Mononucleosis-like, cold or flu-like symptoms may occur 6 to 12 weeks after infection.

- * lymphadenopathy
- * fever
- * rash
- * headache
- * Fatigue
- * diarrhea
- * sore throat
- * neurologic manifestations.

Symptoms of HIV

-Many people who are infected with HIV have NO symptoms at all for 10 years or more.

-Currently 300,000-500,000 in U.S. have HIV and do not know it.

-Symptoms vary.

Some people who are infected with HIV report having flu-like symptoms 2-4 weeks after exposure.

- Fever
- Enlarged lymph nodes
- Sore throat
- Rash

WINDOW PERIOD

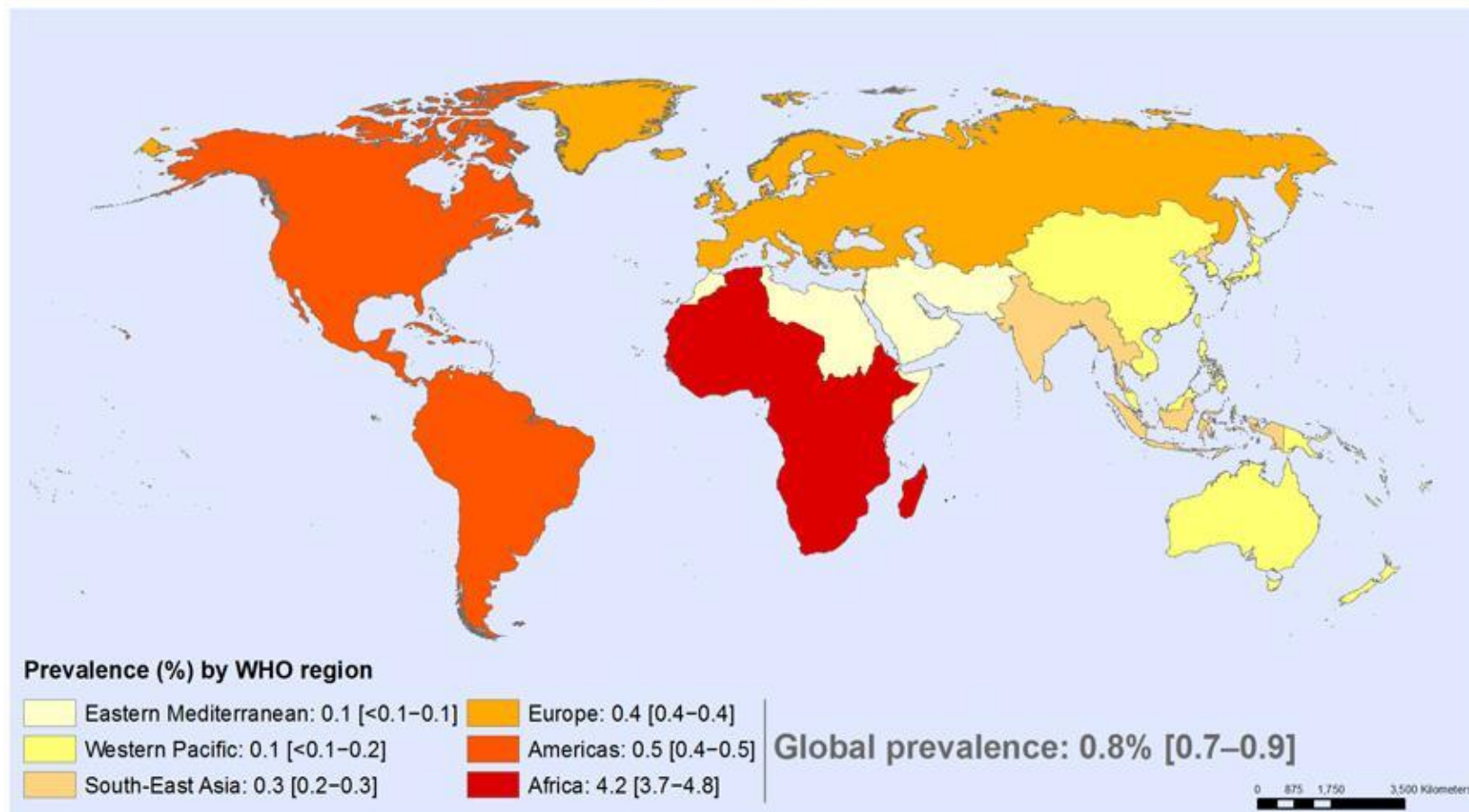


- The period of time after you may have been exposed to HIV, but before a test can detect it (at least 3 months)¹³
- Antibody tests cannot accurately identify infection during this time.
- **Immediately** contagious

Incubation period-

Time from exposure to HIV to time when antibodies can be detected through an HIV test.

Prevalence of HIV among adults aged 15 to 49, 2016 By WHO region



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Information Evidence and Research (IER)
World Health Organization



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What Does the HIV Test Mean?

Positive

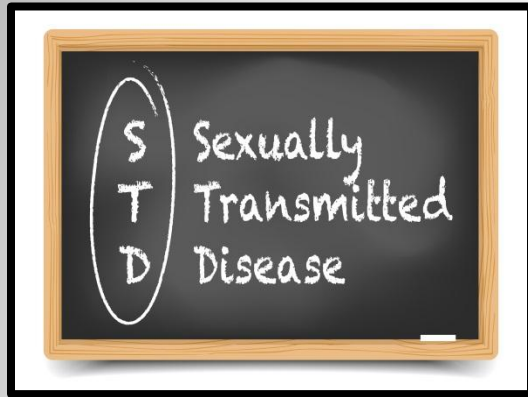
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- HIV antibodies present
- Infected and can infect others
- Need to begin treatment

Negative

-

- No HIV antibodies detected
- May not be infected (consider the window period)
- Consider retesting



&



The presence of an STD increases the
possibility of:

acquiring infection with HIV

&

transmitting HIV

Why?

- Compromised immune system
- Infection from STD
- Irritation and inflammation of mucous membranes

HIV Testing

- CDC recommends **routine** HIV testing for ALL patients:
 - Aged 13-64
 - Initiating TB treatment
 - Seeking treatment for STI's
 - Who are pregnant
- Repeat Screening Recommended
 - Annually people at high risk
 - Before beginning a new sexual relationship
 - When clinically indicated
 - After an occupational exposure



Reducing your risk of HIV

No Risk —

Abstinence (sex): not having oral, vaginal or anal sex

Abstinence (drugs): not using drugs

Mutual monogamy between non-infected partners

Reduced Risk —

Protected Sex: “Correct and consistent” use of condoms/barriers¹⁶

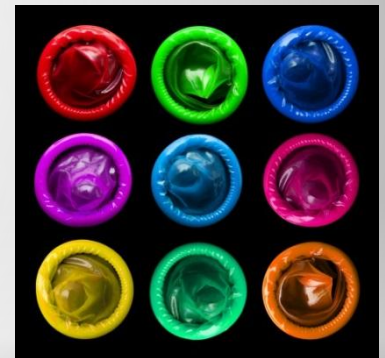
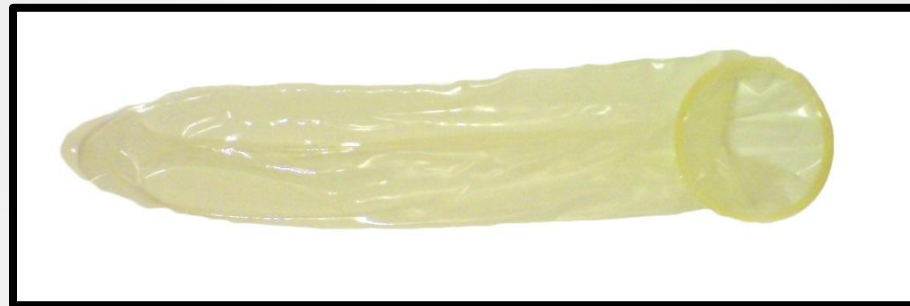
Fewer sexual partners

Never sharing needles/”works”¹⁷

Regular HIV/STD testing¹⁸

Male Condoms

More than **98%** effective when used correctly and consistently



Different kinds:¹⁹

- Latex
- Polyurethane (“Non-Latex”)
- Lambskin

Do's and Don'ts of male condom use²¹

Do's

- **DO** keep condoms in a cool, dry place
- **DO** put the condom on an erect (hard) penis before any genital contact
- **DO** hold the condom in place at the base of the penis before withdrawing (pulling out) after sex
- **DO** throw the condom away after it's been used
- **DO** use water-based lubrication (vaginal sex) or silicone-based (anal sex)



Don'ts

- **DON'T** use expired condoms.
- **DON'T** unroll the condom before putting it on the penis
- **DON'T** leave condoms in hot places (wallet, car, etc.)
- **DON'T** use oil-based products (baby or cooking oils, hand lotion, Vaseline, etc.) as lubricants with latex condoms
- **DON'T** use your fingernails or teeth while opening the condom wrapper.
- **DON'T** reuse a condom
- **DON'T** use more than one condom at a time

More Protection



Female Condoms

- Worn inside the vagina or anus
- Thicker, more tear-resistant
- Always latex-free
- Wider opening covers more pelvic area



Dental Dams

- Used for oral sex
- Could make your own dental dam



Drugs of HIV

World Health Organisation (WHO) has recommended a combination of antiretroviral drugs for people starting HIV treatment:

- TDF (tenofovir)
- 3TC (lamivudine) or FTC (emtricitabine)
- EFV (efavirenz)



Diagnosis of HIV

- **Antibody test**

These tests check for a kind of protein that your body makes in response to the HIV infection, 2-8 weeks later. They're also called immunoassay or ELISA tests. They're generally very accurate, but they won't catch early infections.

Usually, a technician will take a small blood sample and send it to a lab for testing. Some immunoassay tests check urine or fluids from your mouth (not saliva), but there aren't as many antibodies in these, so you may not get a positive result even if you're infected. (That's called a false negative.)

Rapid versions of these blood and oral fluid tests can give results in under 30 minutes, but they may give false negatives, too.

- **Antibody antigen test**

The CDC recommends these blood tests.

They can detect HIV as soon as 20 days earlier than antibody screening tests. They check for HIV antigen, a protein called p24 that's part of the virus that shows up 2-4 weeks after infection, as well as HIV antibodies.

A rapid antibody/antigen test can give you results in 20 minutes.

- **RNA/DNA test**

This looks for the virus itself and can diagnose HIV about 10 days after you've been exposed. It's expensive, though, so it's usually not the first test. But if you're at high risk and you have flu-like symptoms, your doctor may want to use it.

Treatment does extend the lives of many people living with HIV, however....

Medication can be:

Expensive - \$30,000 a year
\$379,668 (lifetime)

Complicated - Different pills at specific times
of the day

Toxic - side effects are common

Ineffective - not all strains of HIV respond

**THANK YOU FOR YOUR
ATTENTION!**