No One Is Immune To HIV...

HIV and AIDS Information For Schools

James R. Ginder, MS, NREMT, PI, CHES, NCEE
Health Education Specialist
Hamilton County Health Department
www.hamiltoncounty.in.gov
• List three ways HIV can be transmitted.
• Recall three ways HIV can be prevented.
• Explain how HIV develops into AIDS.
• Identify two types of HIV testing.
• Locate where a person can find a testing site.

The Reader Will Be Able To
• What year was HIV first diagnosed? 1981
• What states was HIV first seen in? New York and California
• When (year) was the blood supply first tested? 1985
What Is HIV?

• **H** – *Human* – This *virus* can only infect people

• **I** – *Immunodeficiency* – HIV weakens the *immune system* by destroying important cells that fight disease and infection.

• **V** – *Virus* – A virus can only reproduce itself by taking over a cell in the body of its host.
• **A** – *Acquired* – AIDS is not something a person inherit from their parents. A person *acquires* AIDS after birth.

• **I** – *Immune* – The body's immune system includes all of the organs and cells that work to fight off infection or disease.

• **D** – *Deficiency* – A person develops AIDS when the immune system is "deficient," or isn't working the way it should.

• **S** – *Syndrome* – A syndrome is a collection of symptoms and signs of disease.

---

**What Is AIDS?**
Where Did HIV Come From?

- Three theories:
  - Came in contact with chimpanzee blood
  - Bit by a chimpanzee
  - Ate uncooked chimpanzee meat

Source: CDC

Green Monkey
• CDC estimates that more than one million people are living with HIV in the United States (U.S.).

• One in five (21%) of those people living with HIV is unaware of their infection.

• It is estimated 56,300 Americans becoming infected with HIV each year.

Source: CDC
• People who don't know they have HIV have a **higher risk** of serious medical problems and early death.

• People who don't know they have HIV can also **pass the virus on** to others without knowing.
• Every 9 1/2 minutes, someone in the U.S. is infected with HIV!

Source: CDC
• More than 17,000 people with AIDS still die each year in the U.S.

• Through 2008, more than 617,000 people with AIDS in the U.S. have died since the epidemic began.

Source: CDC
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 1983  N = 4,793

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico Cumulative through 1985 \( N = 23,141 \)

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 1987  N = 71,189

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico Cumulative through 1989  N = 149,528

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico Cumulative through 1991  N = 257,594

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico Cumulative through 1993  N = 413,074

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 1995  N = 552,002

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico Cumulative through 1997  N = 660,763

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 1999  N = 742,557

Each Dot Represents 50 Cases

Note: Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 2003  N = 900,883

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays.
Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 2005  N = 976,474

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
Estimated AIDS Cases in the United States and Puerto Rico
Cumulative through 2007  N = 1,049,714

Each Dot Represents 50 Cases

Note. Data have been adjusted for reporting delays. Data are presented for AIDS cases reported to CDC through June 2008. All data are provisional.
HIV DISEASE CASE DEATHS REPORTED AS OF JUNE 30, 2011*

Total Deaths among Persons with HIV Disease Reported Since 1981: 5,742

NOTE: A Vital Records and CDC match was performed, which resulted in unreported deaths from previous years.

* The subject heading ‘HIV Disease’ found within this document refers to a combined total of persons with HIV or AIDS including those where progression to AIDS has occurred.
Adults and Children Infected with HIV in 2010

TOTAL 34.0 Million

Source: UNAIDS 2010
INFECTION OF HOST CELL
HIV binds to the receptor on the surface of the host cell. HIV’s genetic core and enzymes are injected into the host cell.

INTEGRATION INTO HOST CELL
HIV’s DNA is inserted into the host cell’s nucleus, the site of its DNA.

How HIV Works

Source: http://www.bavarian-nordic.com
How HIV Works

**ACTIVATION OF THE VIRUS**
The host cell is now infected. And HIV is formed in the infected cell.

**BUDDING AND FURTHER INFECTION**
The newly-formed HIV then “buds” out and is released from the infected host cell to repeat the same process of infection in other cells.

Source: http://www.bavarian-nordic.com
HIV-2 has the same modes of transmission as HIV-1 and is associated with similar opportunistic infections and AIDS.

HIV-2 develops more slowly and tends to be milder. Those with HIV-2 are comparatively less infectious early in the course of infection.

HIV-2 is more common in Africa than here in the United States.
The Stages of HIV Infection

Person becomes infected with HIV

Acute Infection
- Person may have flu-like symptoms—
  - Fever
  - Headache
  - Tiredness
  - Enlarged lymph glands

Asymptomatic Period
- Person may look healthy and feel well.

Symptomatic Period
- Person may have enlarged lymph glands, tiredness, weight loss, fever, chronic diarrhea or yeast infections (oral or vaginal) among other conditions.

Need to wait 3 months after an exposure to be tested.

Window Period

Incubation Period

- A person who has HIV can infect others even if they look healthy and feel well.
- One person with HIV may have a different combination of signs and symptoms from someone else who is also infected.
- Only an HIV test can show if someone is infected with HIV.
- Only a doctor can diagnose AIDS.

1. Window Period: Time it takes for antibodies to become detectable in the body; usually within three months.
2. Incubation Period: Time from point of infection to development of AIDS.

Note: This handout intentionally leaves out time because people are affected differently by HIV. Their health, access to treatment and many factors determine how long they stay in one stage. For detailed information about the stages of infection, please see the Facts Book.
WHY DOES THE INTERNET PLAY A ROLE IN HIV TRANSMISSION?
Bodily Fluids That Transmit HIV

- Blood products
- Semen
- Vaginal secretions
- Breast milk
- Saliva in dental settings
- Any body fluid that is visibly contaminated with blood
• The U.S. blood supply is among the safest in the world.

• Nearly all people infected with HIV through blood transfusions received those transfusions before 1985, the year HIV testing began for all donated blood.

  • All blood donors and organ donors are screened for their risk of HIV.
  • All donated blood and organs are tested.
  • All blood and organs that test positive for HIV are destroyed.

Blood Supply And HIV
### How Is HIV Spread?

- By having oral, vaginal and anal sex with an infected person.
- Blood to blood.
- By sharing needles or syringes and drug equipment with an infected person.
- Sharing tattoos and body piercing equipment.
- Mothers to infants, during pregnancy.

### Sexual Exposure Chart

<table>
<thead>
<tr>
<th>Number of Sexual Partners</th>
<th>Number of People Exposed to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>6</td>
<td>63</td>
</tr>
<tr>
<td>7</td>
<td>127</td>
</tr>
<tr>
<td>8</td>
<td>255</td>
</tr>
<tr>
<td>9</td>
<td>511</td>
</tr>
<tr>
<td>10</td>
<td>1023</td>
</tr>
<tr>
<td>11</td>
<td>2047</td>
</tr>
<tr>
<td>12</td>
<td>4095</td>
</tr>
</tbody>
</table>
• Indiana Code IC-16-41-7-2.

• A person who tests positive for HIV **MUST** tell his or her sex and needle sharing partner.

• They can not donate blood, organs, or any other body fluid (sperm, breast milk).

• If the person does not disclose the information they will be arrested.
THESE PEOPLE ALL HAVE HIV NOW

Person To Person
A Greenwood man is in jail for allegedly **not telling the women he dated he is HIV-positive.** The man's ex-girlfriend now fears for her life and the health of others.

"I will never be right again because of this monster," the woman said.

Tony Perkins, 47, was arrested after the ex-girlfriend turned him in for what he didn't tell her.

"**At this time, we have the names of 11 women he had sexual relations with,**" said Greenwood Police Chief Joe Pitcher.

Although diagnosed in 2004, investigators say **Perkins broke the law by not informing the women he slept with that he was HIV-positive. The ex-girlfriend believes "hundreds" of women may be affected.**

Perkins was twice warned by the state health department that it was his duty and the law to inform partners of his condition.

The victim who came forward told police Perkins **often meets women on a dating web site**

Source: WTH 2/20/10
How Is HIV Not Transmitted?

- Causal contact
- Eating after someone
- By mosquitoes
- Saliva
- Sweat
- Tears
- Using the bathroom after someone
- Drinking after someone
- Hanging out with someone as long as there is not drugs or alcohol
• Cause a person to make unhealthy choices.
• Can lower a person's immune system.
• May cause a person not to use a latex condom.
• Sharing needles/syringes and drug equipment increases the risk of HIV.
• Coughing & shortness of breath
• Fever
• Severe & persistent diarrhea
• Weight loss & extreme fatigue
• Difficult or painful swallowing
• Nausea, abdominal cramps & vomiting
A person who is HIV + must have three things to move to AIDS:

- CD4 and T-Cells (white blood cells) must be below 200 to move to AIDS.
- A person without HIV usually has a CD4 and T-Cell count of 800 to 1,200 or more. (NIH)
- The person must also have TWO of the opportunistic infections to move to AIDS
### Opportunistic Infections

<table>
<thead>
<tr>
<th>AIDS INDICATOR DISEASES</th>
<th>Initial Diagnosis</th>
<th>Initial Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Def.</td>
<td>Pres.</td>
</tr>
<tr>
<td>Candidiasis, bronchi, trachea, or lungs</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Candidiasis, esophageal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Carcinoma, invasive cervical</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Coccidioidomycosis, disseminated or extrapulmonary</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Cryptococcosis, extrapulmonary</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Cryptosporidiosis, chronic intestinal (&gt;1 mo. duration)</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Cytomegalovirus disease (other than in liver, spleen, or nodes)</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Cytomegalovirus retinitis (with loss of vision)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>HIV encephalopathy</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Herpes simplex: chronic ulcer(s) (&gt;1 mo. duration); or bronchitis, pneumonitis or esophagitis</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Histoplasmosis, disseminated or extrapulmonary</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Isosporiasis, chronic intestinal (&gt;1 mo. duration)</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Kaposi's sarcoma</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AIDS INDICATOR DISEASES</th>
<th>Initial Diagnosis</th>
<th>Initial Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Def.</td>
<td>Pres.</td>
</tr>
<tr>
<td>Lymphoma, Burkitt's (or equivalent term)</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Lymphoma, immunoblastic (or equivalent term)</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Lymphoma, primary in brain</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Mycobacterium avium complex or M. kansasii, disseminated or extrapulmonary</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>M. tuberculosis, pulmonary*</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>M. tuberculosis, disseminated or extrapulmonary*</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mycobacterium, of other species or unidentified species, disseminated or extrapulmonary</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pneumocystis carinii pneumonia</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pneumonia, recurrent, in 12 mo. period</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Progressive multifocal leukoencephalopathy</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Salmonella septicemia, recurrent</td>
<td>1</td>
<td>NA</td>
</tr>
<tr>
<td>Toxoplasmosis of brain</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Wasting syndrome due to HIV</td>
<td>1</td>
<td>NA</td>
</tr>
</tbody>
</table>
Opportunistic Infections

Kaposi's Sarcoma

Candidacies Esophageal

Source: www.cdc.gov
• The most commonly used HIV tests detect **HIV antibodies** – the substances the body creates in response to becoming infected with HIV.

• There are tests that look for HIV's genetic material or proteins directly; these may also be used to find out if someone has been infected with HIV.

**HIV Test**
• Blood test:
  • One tube of blood is taken and sent to the lab.

• Oral Testing
  • Cells are taken from the inside of the mouth and are tested for HIV (if this test is reactive, a blood test must be done to confirm the test.)
• No name is used.

• A number given only (10001234).

• If the test is positive, the person will have to have a confidential test done.

• This test is given at the Hamilton County Health Department

Anonymous HIV Testing
• Records the person's name with the test result.

• Records are kept locked from everyone except medical personnel, or in some states, the state health department.

• Individuals should ask who will know the results and how the record will be stored.

• If the HIV antibody test is confidential, a release form can be signed to have the test results sent to the individual's physician.

• At some centers, however, such as doctor offices or clinics, test results may become part of the individual's medical record and may be seen by health care workers, insurers, or employers.

• This test is performed at the Hamilton County Health Department
• ELISA (Enzyme Linked Immunoassay):
  • A screening test for the diagnosis of HIV antibodies.
  • If the ELISA is negative, the person is negative for HIV.
  • If the test is positive a second ELISA is done with a new sample. If the second sample is positive a confirmatory test is done called the Western Blot.

• Western Blot:
  • More specific and will confirm if someone is truly HIV positive

ELISA & Western Blot
• Negative or Non Reactive Results:
  • No HIV antibodies were found in the sample.

• Positive or Reactive Results:
  • Antibodies were found in the sample. The person is then said to be HIV +.

• Indeterminate Result:
  • The person is not negative or positive. A new sample should be taken in two weeks.
• Have you injected drugs or shared equipment (such as needles, syringes,) with others?

• Have you had unprotected vaginal, anal, or oral sex with men who have sex with men, multiple partners, or anonymous partners?

• Have you exchanged sex for drugs or money?

• Have you been diagnosed with or treated for hepatitis, tuberculosis (TB), or a sexually transmitted disease or infection (STD/STI)

• Have you had unprotected sex with someone who could answer yes to any of the above questions?

Who Should Be Tested
There are 31 antiretroviral drugs (ARVs) approved by the Food and Drug Administration to treat HIV infection.

These treatments do not cure people of HIV or AIDS. Rather, they suppress the virus, even to undetectable levels, but they do not completely eliminate HIV from the body.
• By suppressing the amount of virus in the body, people infected with HIV can now lead longer and healthier lives.

• However, they can still transmit the virus and must continuously take antiretroviral drugs in order to maintain their health quality.
• 50%-90% of people who have HIV also have Hepatitis C
• Can lead to liver damage more quickly
• Hepatitis C is more severe in a person who is HIV +
• Symptoms of Hep. C are more severe
• Co-infection will affect treatment of HIV & Hep. C
• 70% of people who tested positive for Syphilis in Indianapolis, also tested positive for HIV in 2010.

Source: ISDH

Syphilis of brain. This person did not get treated for the infection.
• **Abstinence** (Not having sex).

• Do not get a tattoo or body piercing at a “tattoo party”.

• Use a latex condom correctly for every sexual act.

• Stop using drugs.

• Use clean needles and drug equipment every time.

How To Stop HIV Transmission
Available at the Hamilton County Health Department

Call or E-mail For An Appointment
317-776-8500
www.health@hamiltoncounty.in.gov

Test Results Given In 20 Minutes
Pre-test and post-test counseling will be given to every client

FREE HIV/STD/STI Testing
• AIDS.gov
  • www.AIDS.gov

• Centers For Disease Control and Prevention
  • www.cdc.gov

• Indiana State Department of Health
  • http://www.in.gov/isdh

• National Institute of Allergy and Infectious Diseases
  • www.niaid.nih.gov/pages/default.aspx?wt.ac=tnHome

• UNAIDS
  • www.unaids.org

Reference