

Sexually Transmitted Diseases (STDs), Day 2: HIV/AIDS - Understanding the Disease

Grades 9 and 10, Lesson #25

Time Needed:

1-2 class periods

Student Learning Objectives:

To be able to...

1. Distinguish between the definitions of HIV and AIDS.
2. Describe how HIV affects the body.
3. Identify the 3 ways in which HIV is commonly spread.
4. Identify the ways in which HIV *cannot* be passed.
5. Recognize that AIDS is preventable. Identify 3 ways to avoid getting HIV.

Agenda:

1. In small groups, students read assigned part (Part 1, 2, 3, or 4) of the HIV/AIDS Reference Sheet in groups.
2. They discuss and each group makes a presentation poster. Allow each group time to present their information to the class. Students in the audience can ask questions after each presentation.
3. After the group presentations and questions, teacher uses AIDS Transparency 1 to share current, local, state and national statistics.
4. Use Homework quiz as test of comprehension. It can be given in class or as homework. (Answers appear in Lesson 26.)
5. Summarize the lesson and remind the class about upcoming Field Trip Reports.

Materials Needed:

Student Materials (one per student):

- *HIV/AIDS Reference Sheet*
- *Individual Homework Exercise: HIV/AIDS*

Classroom Materials:

- 1-2 sheets of easel paper for each small group
- A couple of markers for each small group
- *HIV/AIDS Transparency 1* *

* TO DO LIST: A day or two before this lesson, please call an HIV/AIDS hotline or go on the web to get the statistics for Transparency 1. Most areas have web sites and local or state hotlines.

- ☛ For **Seattle**, go to: <http://www.metrokc.gov/health/apu/epi/epistats.htm> or call 206-205-7837,
- ☛ **Washington** State, go to <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi> or call 1-800-272-AIDS.
- ☛ **Elsewhere in the U.S.**, call the national hotline: 1-800-CDC-INFO [800-232-4636], 1-888-232-6348 TTY, 24 Hours/Day or E-mail: cdcinfo@cdc.gov or visit <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi> to get state facts and <http://www.cdc.gov/hiv/topics/surveillance/basic.htm#hivest> for national statistics. (Note: Depending on your state, state statistics for HIV/AIDS cases may be unavailable.)

Activities

1. Remind people doing reports on “STD Tests and Treatment” that their reports are due the day after tomorrow (as part of lesson 27).

Summarize the lesson plan by explaining that, if students remember only one thing from today’s lesson, you hope it is the last statement from the Reference Sheet:
HIV/AIDS IS ONE OF THE FEW ENTIRELY PREVENTABLE DISEASES ... YOU CAN DECIDE NOT TO RISK GETTING IT.

2. Split students into 4 groups. (You may make more than 4 groups depending on the size of your class and give one part to more than one group, if necessary.) Give each group several copies (enough so that each student has his or her own copy) of Part 1, 2, 3, or 4 of the HIV/AIDS Reference Sheet, a large sheet of butcher paper, and a couple of markers.
3. Each group will read its assigned part of the Reference Sheet to become ‘experts.’ Together the group will decide how to present the information briefly to the rest of the class, using the markers and butcher paper as a visual aid. The teacher should circle the room while the students are reading and discussing, in order to make sure that the groups understand their material.
4. Each group is responsible for presenting their expert knowledge to the rest of the class, using the poster they made. (Posters can then be put on the classroom walls.) Student questions will follow each presentation, which the teacher can help answer if necessary.
5. Use Transparency 1 to show how many cases of **HIV** and **AIDS** there are **nationally** and in **your state or province**. Ask for guesses and then give the correct data. Ask for their reactions to these numbers.

NOTE: You will have called an HIV/AIDS hotline or gone on the web a day or two before this lesson to get the statistics for Transparency 1 – see page 25-2.

HIV/AIDS Reference Sheet

What is HIV/AIDS and how does it act in the human body?

“A.I.D.S.” is the last stage of **“H.I.V. Disease.”** **“A.I.D.S.”** stands for **Acquired Immune Deficiency Syndrome**. It’s a disease caused by a virus carried in the blood and other body fluids. The virus is called **“H.I.V.”**, which stands for **Human Immunodeficiency Virus**.

A virus is a bundle of genes with a protein coating. It is able to copy itself and it needs to be in a living cell to do so. Once this virus -- HIV -- gets into the blood, it invades the white blood cells, especially the “T-Helper cells” which are the coaches of the immune system. HIV turns T-Helper cells into little virus factories, producing more and more viral copies. Eventually, the T-Helper cell disintegrates, and the new HIV particles drift off and infect other T-Helper cells, and so on. Even when the HIV is not actively making copies of itself, it remains in the body and cannot be completely killed by drugs.¹ Most importantly, the infected person’s bodily fluids can still be transmitted to other people, infecting them!

With its coaches (the T-Helper cells) out sick and declining in number, the other parts of the immune system no longer work correctly. So they stop fighting off new diseases that can cause illness and death.

The terms HIV and AIDS are often used together or interchangeably, but they are not the same. HIV is the virus that causes harm to and can even destroy the immune system. When you hear about a person who has AIDS, this means that his or her immune system is so badly damaged by the HIV virus that it has trouble fighting a certain kind of diseases that we call “opportunistic diseases” that ordinarily are not a threat to healthy persons. A weak immune system means that the body has fewer T-helper cells to fight off disease.

A healthy person has about 600-1200 T-helper cells in each cubic milliliter of blood. If left untreated, HIV invades the immune system, and the person loses T-helper cells. People with 200 or fewer T-helper cells per cubic milliliter of blood or any of these “opportunistic diseases” are said to have AIDS. If not effectively treated, AIDS is a fatal disease, meaning people with AIDS will die. However, it is not AIDS that causes death; rather, an opportunistic disease that a healthy immune system would have been able to control, which can infect the person and lead to illness and death. There are more than 30 common opportunistic diseases; one is a rare kind of cancer called Kaposi’s Sarcoma caused by an ordinarily harmless virus,² another is a rare kind of pneumonia called

pneumocystis carinii pneumonia, or PCP.³

Even though scientists have not found a cure for HIV, there are medicines that people with HIV can take in order to stay healthy. One collection of meds is called Antiretroviral Therapy (ART or ARV) which interferes with the replication process of the virus. This lowers the amount of HIV in the body so that the T-Helper cells are not destroyed so rapidly.⁴ These drugs make it possible for someone infected with HIV to live for many years, more than ten to twelve years on average, without developing AIDS. (Since they were only recently developed, doctors don't know how long they will be effective for patients.)

However, these drugs are expensive and can have severe side effects.

About 75% of HIV-infected people have flu-like symptoms, such as a sore throat, fever, or tiredness 1 to 6 weeks after being infected with HIV,^{5, 6} while about 25% do not notice any symptoms at all.⁷ They can pass the virus to others if they have sex, share needles, or get pregnant, but they are not sick themselves. Once their immune system produces enough antibodies to show up on an HIV test they are "HIV positive." Some of them will develop symptoms of AIDS within a year or two; others may take up to 10 or 15 years. Maybe some will not, particularly with the help of antiretroviral drugs.

Where did HIV come from?

AIDS is found all over the world today on every continent. Because of how easy it is to travel from place to place, infected people traveled, taking the virus with them to new places. It took a long time to figure out where the virus originated. It was long suspected that the virus passed from animals to humans, changing (mutating) just enough to become deadly in its new host. However, many animals carry HIV-like viruses that do not harm humans. After years of research, we now know that the virus originated in a chimpanzee species from West Africa. It is likely that an infected chimpanzee passed the virus to a hunter when he caught and killed the animal, being exposed to its blood. If someone was cleaning the meat and got a cut, that virus could have infected the human.⁸

Our natural environment is constantly mutating. No matter where it came from,



HIV is an STD, so once it got into a human host, it began to spread from person to person through sex.

In Africa and elsewhere, HIV infected the heterosexual population. Since heterosexual people have sex with people of another gender, and since HIV is an

STD, the virus spread mostly from male to female and female to male. In North America, the virus first infected the male homosexual population, so it passed mostly from male to male. (Lesbian women don't exchange body fluids as much during sex, so HIV and other STDs are less likely to be passed from woman to woman, although it can happen.)

Before 1985, donated blood was not tested for HIV. Therefore, some people became infected with HIV by transfusions of blood or blood clotting factor which were infected with HIV. Some of these people were in the hospital for operations; others were people with a disease called

hemophilia. Hemophilia is a disorder that prevents people's blood from clotting. When most people get a cut, it forms a scab and heals; when hemophiliacs get a cut or bruise, their blood doesn't clot, they bleed longer, and can experience complications.⁹ One way to treat hemophilia is to receive blood transfusions regularly, so some hemophiliacs received infected blood. But since 1985, all donated blood in the United States is tested for HIV. Transfusions are very unlikely to transmit the virus and the risk of contracting HIV from donated blood is extremely low.¹⁰ Today, in preparation for an operation, people can bank their own blood!

How is HIV spread today?

For HIV to be transmitted, it has to get directly into the blood. There are 3 ways HIV can be spread:

(1) The most common way is **during sex**, if infected blood, semen or vaginal fluid passes from one person to another through either a break in the skin or a mucous membrane. Mucous membranes lines certain body cavities (i.e., the tip of the penis (where the urethra is), mouth, rectum, or vagina), and is very delicate. A break in the membrane can be so small it can't be seen or felt. Anal sex (where the penis is in the anus) is riskiest because a mucous membrane lines the rectum and can tear easily, and blood vessels are close to the surface of the skin.¹¹ For women especially, vaginal sex can be risky if infected semen is ejaculated into the vagina. The skin on your arm, on the other hand, could only be penetrated by the virus if you had a cut, scrape, or skin

disease. HIV cannot travel through unbroken skin.

(2) HIV infection can also happen when an infected person **injects drugs into a vein** ("shoots up"), then **shares the needle** with someone else. There is residual blood on the needle after the first person uses it. If that blood is infected with HIV, the second user is putting infected blood into his or her bloodstream. HIV could be transmitted by sharing needles for tattoos and piercings, as well.

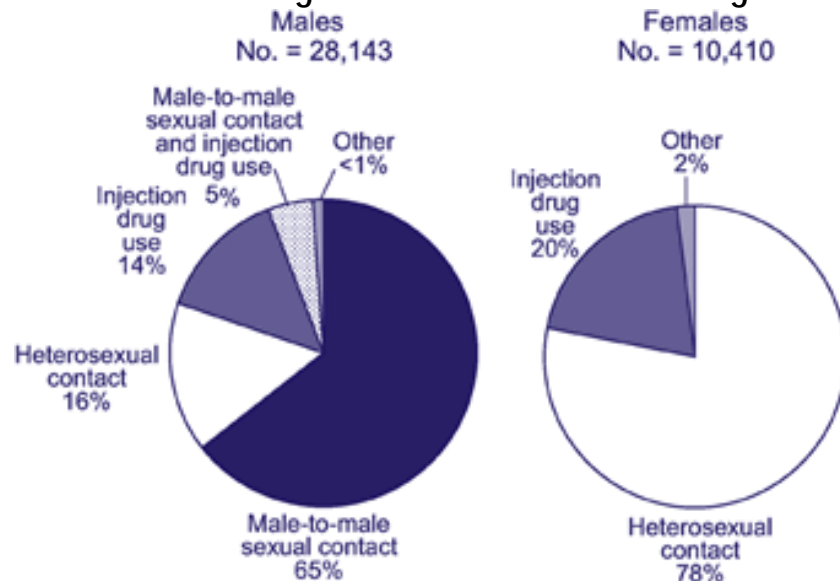
(3) HIV infection can be passed from an HIV-positive **mother to her baby** when the mother is pregnant; HIV travels from her blood to the baby's through the placenta. This can occur during labor and delivery or through breast feeding.¹² Today, antiretroviral drugs can greatly reduce the chance of a mother passing HIV to her baby before and during birth, and HIV positive mothers are encouraged

to use baby formula instead of breastfeeding. However, these drugs are not available in all parts of the world, and in some places breast feeding is a mother's only option if she does not have access to clean water or baby formula.

The Centers for Disease Control and Prevention estimate that approximately

40,000 people in the United States become HIV positive each year.¹³ The charts below show how adolescents and adults diagnosed with HIV in the United States got infected. About $\frac{1}{4}$ of the adults and adolescents diagnosed with HIV in 2004 were women; about $\frac{3}{4}$ were men. (About 50% are 24 or younger.)

Modes Of Transmission Of Adults And Adolescents With HIV/AIDS Diagnosed in the U.S. During 2004¹⁴



These data are for all people with HIV+ diagnoses (HIV Disease), including those with AIDS.

Will Everyone Eventually Catch HIV?

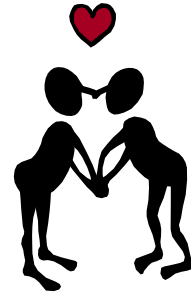
NO! Now that we understand what causes it and how people catch it, it's clear that HIV/AIDS is completely preventable. After all, it's hard to get, since it has to get directly into the blood. It's not like a cold or measles, which you can get just by being in the same room with an infected person. HIV does not survive well in the environment, outside of body fluids.¹⁵

Don't forget, there are only 3 ways HIV is normally spread:

1. **Certain kinds of sexual touch:** Anal intercourse (penis in anus), vaginal intercourse (penis in vagina), and oral intercourse (mouth on genitals or anus).

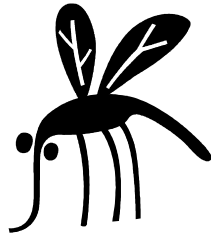
2. **Blood to blood transmission:** usually by sharing needles, even needles for piercing or tattooing
3. **Mother to child** (during pregnancy, labor and delivery, and breastfeeding)

There is also **probably** no risk from French (open mouth) kissing.



That means you don't have to worry about:

- social kissing (the kind friends and family members exchange)
- sharing food, forks, cups, or drinking fountains
- mosquitoes



Even though HIV has been found in small quantity in the saliva of some AIDS patients, there are no documented cases where HIV was passed through saliva. It's theoretically possible that HIV could be passed through cuts in the mouth during French kissing, but the risk is believed to be very, very low.¹⁷

- hugging, backrubs or any touch that doesn't involve semen or vaginal fluids (Even if your friend has AIDS, a hug or a backrub is perfectly safe.)
- sharing a seat on the bus
- going to school with a friend who has HIV or AIDS
- living with a family member who has HIV or AIDS
- giving blood at a blood bank¹⁶

Because all blood is tested, and has been since 1985, there is almost no risk of contracting HIV through a blood transfusion in the U.S. and other developed countries.



These things are completely safe.

How Can HIV Infection be Prevented?

ABSTAINING FROM SEX:

Not forever, just for now. The safest thing is to wait to have sex until you're older... when you find someone you want to stay

with for years, someone who you trust to only have sex with you and vice versa, someone who doesn't share needles to shoot drugs. If you are both free of HIV in the first place, sex will be 100% safe.

People who *don't* abstain from sex can reduce the risk of getting or giving HIV by using a latex or polyurethane **condom**, and using it correctly. Condoms, when used correctly and during every sexual encounter, greatly reduce the risk of transmitting HIV and other STDs.

People can also reduce the risk of getting the virus by not having sex with people they think *might* have it. The problem is, you can never tell if people have HIV by looking at them, and in many cases they don't know if they have it either. So, it is their current or past behavior that would make sex with a particular person "risky." For example, it would be wise to avoid sex with someone, for example, who *used* to shoot drugs a couple of years ago, unless she or he had a negative blood test 3 months or more after the *last* time she or he shot up. (A negative blood test is one that says there are no antibodies to the virus.) It would also be wise to avoid sex with someone that you know has had sex with a lot of people.

ABSTAINING FROM DRUGS:

The safest thing is to never shoot up or use *any* kind of mind-altering drugs. Even using alcohol can mess up people's ability to make decisions. After drinking, people are more likely to have unsafe sex, because they stop thinking clearly.

People who are *already* addicted to injection drugs (drugs that they shoot up) can protect themselves and others, until they are able to quit, by never **sharing** needles and/or by learning how to **sterilize** their needles.

People who think they might have HIV can prevent giving it to a baby, by getting tested before starting a pregnancy. An HIV-positive mother can take certain medicine to lessen the chance of passing HIV to her baby.¹⁸

**HIV/AIDS IS ONE OF THE FEW
ENTIRELY PREVENTABLE DISEASES.
YOU CAN DECIDE NOT TO RISK
GETTING IT!**

HIV/AIDS Transparency 1

CASES OF HIV DISEASE as of _____

ESTIMATED NUMBER OF PEOPLE INFECTED
WITH H.I.V. IN THE COUNTRY

ESTIMATED NUMBER OF PEOPLE INFECTED
WITH H.I.V. IN OUR STATE OR PROVINCE

CASES OF AIDS as of _____ (CUMULATIVE)

IN THE COUNTRY: _____ cases
(____% have died)

IN OUR STATE/PROVINCE: _____ cases
(____% have died)

Individual Homework

Exercise: HIV/AIDS

NAME: _____ PERIOD: _____

1. Mark the following true (T) or false (F).

- _____ a. People can catch HIV by having sex with someone who has it.
- _____ b. Only homosexual sex transmits HIV.
- _____ c. People who share needles to “shoot up” drugs can pass along HIV.
- _____ d. People are very unlikely to catch HIV from transfusions anymore.
- _____ e. Teens are safe from HIV if they only have sex with other teens.
- _____ f. Most people who have the HIV virus know it.
- _____ g. If a person has the HIV virus, they can transmit it, even if they don’t have AIDS.
- _____ h. Mosquitoes can transmit the HIV virus.
- _____ i. People can have the HIV virus for many years without developing symptoms.
- _____ j. People can catch HIV by using the same dishes or silverware as a person who has it.
- _____ k. Sneezing can transmit the HIV virus.
- _____ l. Sexual intercourse (penis/vagina) can transmit HIV from male to female and vice versa.
- _____ m. It is very risky to French kiss.
- _____ n. People have gotten HIV through sweat and tears.
- _____ o. Oral sex (mouth/genitals) can possibly transmit the virus.
- _____ p. Anal sex (penis/anus) can transmit the virus.

2. Which of the following really are ways people can reduce their risk of getting HIV? (check all that apply)

- a. Don't have sex.
- b. Don't go to school or work with anyone who has AIDS.
- c. Don't shoot up drugs.
- d. Only ever have sex with one person, who only ever has sex with them.
- e. Don't hug or shake hands with anyone who has AIDS.
- f. Always use latex or polyurethane condoms when they have sex.
- g. Take a bath or shower every day.
- h. Don't give blood.
- i. Only have sex with people who look clean.
- j. Always use sterile needles (whether getting a shot, giving blood, piercing an ear, getting a tattoo, or whatever).

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