

LESSON GUIDE

GRADE 5

How Does the Body Protect Itself from Disease?

Performance Objectives

Students will understand:

- How the immune system works.
- How HIV affects the immune system.

Motivation

- Say, “It is a fact of life that there are things we have to protect ourselves from. We learn to expect these possibilities and prepare for them. We look both ways before crossing the street because we know that some drivers cannot be depended upon to look out for us. We lock our doors because we know thieves can take advantage of people who leave doors unlocked.”
- Say, “The human body also expects dangers and prepares for them. Our bodies know that germs can cause disease and are part of life. So our bodies have ways to keep germs out and to fight them if they do get inside.”

Procedure/Development

- Ask, “What are some of the body's ways to keep germs out?”
- Explain, “The skin is one of the body's most important means of protection. Eyelashes keep dust out of eyes. Tears cleanse eyes. Dirt and germs are caught and swept out of the body by cilia (tiny hair-like structures) and mucus in the nose and wax in the ears.”
- Say, “The body expects that some germs will enter the body. So inside the body there is more protection against germs: the organs and cells of the immune system.”

Review the functions of the immune system and discuss these terms:

Antigen: A foreign substance, such as a virus or bacteria, that enters the body and stimulates the production of antibodies.

Antibodies: When an antigen such as a virus enters the body, cells in the immune system respond by producing antibodies. An antibody is used by the immune system to identify and help *neutralize* foreign objects like bacteria and viruses. Each antibody recognizes a specific antigen.

Immunity: Some antibodies stay in your blood to protect you if you are exposed to the same antigen again. This is called immunity. If you get measles, the measles antibodies that form in your blood will protect you from developing measles if the measles virus ever enters your body again.

GRADE 5 Lesson 1

NEW YORK STATE LEARNING STANDARDS 1

SKILLS

Self-Management

MATERIALS

Newsprint

VOCABULARY

Antibodies

Antigen

Bacteria

Cilia

Immune System

Immunity

Mucus

Mutation

Neutralize

Syndrome

Vaccine

Virus

Vaccines: Vaccines are substances containing weakened or dead viruses or bacteria known to cause certain diseases. When you are vaccinated or immunized, these substances are injected into the body or are taken orally. The body develops antibodies to these harmless viruses or bacteria as if they were alive and dangerous. These antibodies stay in the body and protect you in case any live versions of these viruses or bacteria enter your body in the future.

- Ask students to name some diseases they can be vaccinated against (smallpox, diphtheria, measles, mumps, rubella, chickenpox [varicella virus], and Hepatitis A and B). Ask them to name what diseases they cannot be vaccinated against (colds, HIV). Record responses on the newsprint. If students do not name HIV, tell them that no vaccination protects against infection by HIV, the virus that may lead to AIDS. Many scientists are working on developing HIV vaccines.
- Ask, “What would happen if the body's immune system could not work properly?” (The body would not have a defense against antigens that invade it.)
- Write out “HIV: Human Immunodeficiency Virus” and “AIDS: Acquired Immune Deficiency Syndrome” on the newsprint. Explain that HIV and AIDS are related but different, and that you will discuss what the terms HIV and AIDS stand for, how they are related, and how they are different.

WHAT IS HIV?

HIV stands for *Human Immunodeficiency Virus*. The best way to understand what this means is to take it one word at a time.

Human refers to people. HIV can infect humans but not animals. HIV does not infect mosquitoes, cats (cats can get their own acquired immune deficiency syndrome, but from a different virus), dogs, hamsters, or fish. Evidence suggests that the first human infections came from a mutation of a virus that affected chimpanzees (SIV, Simian Immunodeficiency Virus). Mutation means change; SIV mutated so it could affect humans; it moved from chimpanzees to humans and became HIV. People acquire HIV only from other people.

Let's separate “immunodeficiency” into two words:

Immune is defined as protected and invulnerable. Things that are immune cannot be hurt or defeated. Our bodies have an immune system. It is the job of the immune system to protect us from disease by fighting diseases like colds, the flu, and others. Sometimes, even though our immune systems are working, we may still get sick, but our immune systems continue to fight and we get better. The immune system works by creating antibodies to fight the source of the disease that is in us. The immune system is what prevents us from getting sick all the time.

Deficiency means a shortage or not enough of something. For example, people eat nutritious foods every day to prevent vitamin deficiency (a lack of vitamins in their body.) When we talk about HIV/AIDS, we put the two words immune and deficiency together. If someone is immune deficient, it means the immune system is not able to fight germs and diseases the way it is supposed to. When this happens, the body is vulnerable to various germs and diseases, some of them very serious, and the person gets sick from diseases that people with healthy immune systems would not get.

A **virus** is a microscopic organism that causes disease. Viruses cause illnesses such as measles, chickenpox, the flu, and colds.

So, HIV is a virus that only infects humans, that weakens or compromises the immune system, and that may cause AIDS.

WHAT IS AIDS?

AIDS stands for *Acquired Immune Deficiency Syndrome*. The best way to understand what this means is to take it one word at a time.

Acquired refers to things that people get from outside themselves. Things people have but that they were not born with are acquired. Diseases like the measles or chickenpox are acquired, because people are not born with them. HIV is acquired and is only transmitted from person to person by specific means. A baby can be born HIV-positive, but it “acquires” HIV from its mother. We have already defined **immune** and **deficiency**.

A **syndrome** is a group of related symptoms or health problems that combine to create a particular condition and which has one underlying cause. AIDS is a syndrome that is defined by a specific list of symptoms (in addition to the presence of HIV infection). This list of symptoms is compiled and reviewed regularly by the U.S. Department of Health and Human Services' Centers for Disease Control and Prevention. The same list of symptoms is used all over the U.S. to define cases of AIDS. The underlying cause of AIDS is HIV infection.

So, AIDS refers to a syndrome that people acquire from somewhere outside themselves, which weakens the body's ability to protect itself from diseases. AIDS develops because a person has been infected with HIV.

- Terms used in today's lesson should be written on newsprint so they can be reviewed.

Assessment/Homework

Students should write letters to their bodies thanking them for helping to protect them against germs and disease. They should thank three to five separate parts of their bodies, and explain how each of those body parts protects them. Students can also write three ways that they will help protect their bodies against germs and disease.

Remember that some students may be HIV-positive, and the ways that their bodies support them in staying generally healthy will be different from the ways that other students' bodies protect them from disease.

Teacher Note: Students diagnosed with HIV infection or AIDS have a right to privacy and a free appropriate public education and are entitled by law to confidentiality about their HIV/AIDS status, HIV-related illness or AIDS, or information that can reasonably be used to identify an individual as having HIV or AIDS.

Disclosure of HIV and AIDS information is governed by the New York State Public Health Law which went into effect in 1989 (i.e., Section 2782, Confidentiality and Disclosure, and Section 2783 Penalties; Immunities). Willful commission of an unauthorized act of disclosure is a misdemeanor and punishable accordingly; a person is also subject to a civil penalty not to exceed five thousand dollars (\$5,000) for each occurrence of unauthorized disclosure.

No disclosure of confidential HIV-related information involving a student shall be made without first obtaining the informed written consent of the student (if he/she has the capacity to consent to such disclosure) or his/her parent or guardian on the New York City DOHMH-approved form.

SKILLS

Advocacy
Communication
Self-Management

MATERIALS

Activity Sheet 1:
HIV and AIDS – Fact Sheet

Newsprint

VOCABULARY

Abstain/Abstinence
Injection Drug Use (IDU)
IV/Intravenous
Transmission

How Is HIV Transmitted?

Performance Objectives

Students will be able to:

- Identify how HIV is transmitted.
- Understand myths and facts about HIV transmission.
- Explain why HIV is hard to get.

Teacher Note: You may wish to invite a health educator or HIV/AIDS educator to visit your classroom to explain about modes of transmission. *Remember to obtain approval from your principal before inviting a guest to speak about HIV/AIDS or related topics. Meet or talk by phone with the guest speaker in advance to determine appropriateness for the grade level. Examine all materials with your principal at least 72 hours prior to the presentation.*

Motivation

Say, “You have heard many things about HIV and AIDS. How do you think HIV gets transmitted from one person to another?” List students’ answers on newsprint.

Possible answers may include:

- Sharing of infected needles or syringes or other equipment for injecting drugs.
- Blood transfusions from an infected person.
- From an infected pregnant woman to her baby.
- Unprotected sexual intercourse.

Procedure/Development

- After listing students’ comments about HIV transmission, ask them to mention everything else they know about HIV and AIDS. Record these comments on the newsprint.
- Develop a key, using circles and squares or underlining words with different colors, to represent the following categories:
 - Medical terms.
 - Modes of transmission.
 - Feeling words.
 - Prevention.
- Have students codify the list according to the key.
- Explain modes of transmission. For example, exposure to HIV-infected fluids can occur through:
 - **Unprotected sexual intercourse with an HIV-positive person.** Abstinence from sexual intercourse is the safest and only 100 percent effective way to prevent the sexual transmission of HIV.

- **Needle-sharing** for drugs, steroids, vitamins, or prescription medications; **sharing of other drug equipment**; or **sharing of other sharp objects** that could be infected, such as razors, pins, and scissors.
- **Pregnancy, childbirth, breastfeeding.** In the U.S., transmission of HIV from mother to baby has been dramatically reduced by giving antiretroviral medicines to HIV-positive women during pregnancy and delivery, and to the babies of HIV-positive mothers in the first weeks of life. It is recommended that the babies of HIV-positive mothers use formula, because HIV can be transmitted through breast milk.
- **Blood transfusions with HIV-infected blood.** The U.S. blood supply has been routinely tested for HIV antibodies since 1985, and donors are screened for potential risk behaviors. This mode of transmission is highly unlikely, though not impossible.
- Explain that there is no evidence that HIV can be transmitted through the sharing of utensils and meals, using the same toilet seat, etc.
- Divide students into small groups. Distribute Activity Sheet 1: “HIV and AIDS – Fact Sheet.” Have students take turns reading the facts aloud—then instruct the groups to determine which entries on the newsprint are inaccurate. Reconvene the full class. Ask a representative from each group to share his or her group’s findings. Revise the list on the newsprint, and add to it any additional facts learned from the activity sheet. Emphasize that abstinence from drug use and other risk behaviors is a sure way to prevent HIV infection.
- Ask, “How will having the correct information about HIV/AIDS reduce some of the fears people may have about HIV and AIDS?” Emphasize that many fears come from not having correct information about how one can get it.
- Emphasize that HIV/AIDS elicits many reactions from people. If the following have not been listed on the newsprint, bring them up for discussion:
 - *Fear* of getting HIV or AIDS, often because of ignorance or myths (define terms).
 - *Worry* that someone you know has or might get HIV.
 - *Anger* that the virus is destroying so many people’s lives.
 - *Misinformation* that HIV and AIDS are the same thing.
 - *Sadness* because people are dying.
 - *Prejudice* against members of certain groups that have been hardest hit by HIV/AIDS, such as gay men and people who inject drugs. Stress that HIV infection results from engaging in risk behaviors, not from being a member of a particular group of people, and that these prejudices are not based on facts.
- “Hanging out” with people who are practicing unsafe behaviors, such as using drugs, may be risky because they may persuade you to join in these behaviors. Have compassion for them; at the same time have compassion for yourself and choose companions who share your beliefs, values, and interests.

Assessment/Homework

Have students interview a friend or family member about how HIV is transmitted, and the difference between HIV and AIDS. Have students record their responses.

Then have students make a list of the ways a person can and cannot get HIV (identify common misconceptions such as kissing, saliva transmission from cups, sharing silverware, being in the same room as an infected person, etc.), and compare this list with their interviewee’s responses, correcting any misinformation.

Have students bring findings back to the class, and share responses. Discuss how personal ideas and myths about HIV can affect how people living with HIV/AIDS are treated.

Activity Sheet 1

HIV and AIDS – Fact Sheet

1. AIDS is caused by a virus called HIV.
2. HIV weakens the immune system.
3. A person can look and feel healthy but still be infected with HIV.
4. HIV is not transmitted in the air.
5. HIV is not transmitted by sneezing.
6. Anyone who has unprotected sexual intercourse with an HIV-positive person can get the virus, even if that person looks and feels healthy. Anyone who shares needles, syringes, or other drug equipment with an infected person can get the virus, even if the infected person looks and feels healthy.
7. HIV can be transmitted through exchange of blood. Since blood supplies are now tested for HIV and anyone with risk for HIV is discouraged from donating blood, blood transfusion is highly unlikely, though not impossible, to transmit infection.
8. HIV can be passed from an HIV-positive woman to her baby during pregnancy, childbirth, or through breastfeeding. However, in the U.S., transmission of HIV from mother to baby has been dramatically reduced with the use of antiretroviral therapy during pregnancy, childbirth, and in the first weeks of the newborn's life, and through avoidance of breastfeeding.
9. There is no cure for HIV, but there are many treatments for HIV infection and HIV-related illnesses.
10. Abstaining from the use of alcohol and other drugs will help a person avoid risk behaviors.
11. HIV is a transmissible virus.
12. HIV can affect all people who engage in risk behaviors, regardless of their race, ethnicity, color, gender, age, sexual orientation, or economic status.
13. Many forms of affection—hugging, touching, etc.—carry no risk of transmitting HIV from one person to another.
14. There is no vaccine that effectively prevents infection with HIV.

How Can We Reduce Our Risk Behaviors?

Performance Objectives

Students will be able to:

- Identify risk behaviors and their consequences (positive and negative).
- Identify ways to support a friend's positive health behaviors.

Motivation

Ask students to define the terms *risk*, *positive risk*, and *negative risk*. (Positive risk can result in a beneficial consequence that can improve someone's life and help a person to grow. Negative risk can result in a harmful consequence that can impair or endanger someone's life.)

Procedure/Development

- Brainstorm reasons people take positive and negative risks (experimentation, adventure, peer pressure, triumph over fear or nervousness, curiosity, to get attention, to gain someone's approval, to prove something, to feel grown-up, to act on a dare, etc.).
- Have students identify risks for HIV infection.

Possible answers may include:

- Unprotected sexual intercourse with an infected person.
 - Sharing of infected needles or syringes or other injection drug equipment with an infected person.
 - Receiving a blood transfusion from an infected person. (Since 1985 the blood supply in the United States has been routinely tested for HIV antibodies, and donors are screened for potential risk behaviors, so that this mode of transmission is now highly unlikely, though not impossible.)
 - Being born to or breastfed by an infected mother. (In the U.S., the transmission of HIV from mother to baby has been dramatically reduced through the use of antiretroviral medications and emphasis on not breastfeeding. Antiretroviral medications are given to the woman during pregnancy and delivery, and given to the child of an HIV-positive mother in the first weeks of life.)
- Distribute Activity Sheet 1, "Risks."
 - Discuss each situation's type of risk (positive or negative) and possible consequences. You may want students to write their own "risk" scenarios.

Activity/Assessment

Divide the class into small groups. Assign each group to explore a positive or negative risk behavior. Ask each group to identify a specific risk behavior. Have them develop a skit showing how they would decide whether to proceed with the behavior, and how friends could help with the decision-making process. Groups must document "pro and con" lists, assessing short- and long-term consequences of this behavior.

GRADE 5 Lesson 3

Prevention

**NEW YORK STATE
LEARNING STANDARDS
1, 2**

SKILLS

Advocacy
Communication
Decision Making
Planning and Goal Setting
Relationship Management
Self-Management

MATERIALS

**Activity Sheet 1:
Risks**

Newsprint

VOCABULARY

Abstain/Abstinence
Beneficial Consequence
Harmful Consequence
Negative Risk
Positive Risk

Activity Sheet 1

Risks

Identify whether the following risks are positive risks or negative risks and what their short-term and long-term consequences could be.

1. Darnell skips school at least one day a week and hangs out with friends.
2. Two of Julio's friends smoke cigarettes and offer them to him, but he decides not to start smoking.
3. Antonio's parents are out of town. He decides to have a party and arranges for an older friend to bring beer.
4. Nina sees an ad in the newspaper for a volunteer for an animal shelter. She has never gone to that part of the city before but decides to ask a parent/guardian for permission to go there and apply for the volunteer job.
5. Ernesto's friend Tyrone is HIV-positive. Ernesto's other friends say they will not hang out with him if he continues to be friends with Tyrone. Ernesto decides to continue the friendship with Tyrone and tells his other friends that they have no right to demand he stop seeing his friend.
6. Mark and Bobby have been friends for a year. Mark has started using drugs, and Bobby tells him he must choose between him and drugs.

How Has HIV/AIDS Affected Society?

Performance Objective

Students will be able to evaluate the impact of HIV/AIDS on various aspects of society.

Motivation

- Ask, “How has HIV/AIDS changed the world? How has it affected our communities?” Write answers on the newsprint. (Possible answers: people are more careful about their choices; there has been more awareness of risk behaviors; there are changed attitudes toward certain groups, like gay and lesbian people, who are sometimes unfairly blamed for HIV; many people have died; many people have been infected.)
- Remind students that HIV/AIDS is not a “gay” or “lesbian” disease, and that all people who engage in risk behaviors can become HIV-positive, regardless of who they are. Mislabeled HIV/AIDS as a “gay” disease has increased bias against gay and lesbian people. HIV is transmitted based on behavior, not on who one is. (If students ask, clarify limited definitions. Gay men are men who feel attracted to other men, and lesbians are women who feel attracted to other women.)

Teacher Note: As of December 2004, The Joint United Nations Programme on HIV/AIDS (UNAIDS) estimated that 39 million people in all parts of the world were living with HIV or AIDS, one million of them in the United States. In 2004, there were an estimated 4.9 million new cases, and 3.1 million deaths worldwide. In New York City, it is estimated that over one percent of the adult population is living with HIV. HIV can affect anyone who engages in risk behaviors that may expose them to the virus. The vast majority of HIV transmissions worldwide occur as a result of unprotected sexual contact where one person is infected with HIV.

Teacher Note: One strategy for getting youth to think about risk behaviors rather than risk groups is to ask, “Does the virus care how it is transmitted? The virus never does an interview before it infects someone.”

Procedure/Development

Select from the following activities:

- Invite a speaker to discuss the impact of HIV/AIDS on an individual’s life or on society. The speaker may be a teen or adult with HIV/AIDS, a representative of an HIV/AIDS service organization, or a healthcare worker who works with people with HIV/AIDS.

GRADE 5 Lesson 4

NEW YORK STATE LEARNING STANDARDS 1, 3

SKILLS

Advocacy
Communication
Decision Making
Relationship Management
Self-Management

MATERIALS

Newsprint

VOCABULARY

Impact

Teacher Note: Remember to obtain approval from your principal before inviting a guest to speak about HIV/AIDS or related topics. Meet or talk by phone with the guest speaker in advance to determine appropriateness for the grade level. Examine all materials with your principal at least 72 hours prior to the presentation.

- Have students brainstorm a list of how they and others can be helpful to people with HIV/AIDS (e.g., raise funds, visit, send cards, volunteer).

Teacher Note: To help children better understand the experience of a child with HIV, have them read and discuss the poem, “Later Will I Be Well?” included in Grade 2, Lesson 2.

Assessment/Homework

Have children draw a poster or design a public service announcement that depicts (a) ways that they and their friends can avoid HIV risk, and (b) ways that they and their friends and family can be supportive of people with HIV/AIDS.

What Resources Provide HIV/AIDS Information and Help?

Performance Objective

Students will be able to identify individual, family, and community resources that provide HIV/AIDS information and help.

Motivation

Say, “Education about how HIV is and is not transmitted is the greatest asset we have in stopping the HIV/AIDS epidemic. An epidemic is a widespread outbreak of an infectious disease, affecting many people in a short amount of time. If young people broke the chain of infection by abstaining from risk behaviors, then the number of HIV-positive people would drop dramatically. For example, young people should abstain from unprotected sexual intercourse and drug use. The more people who know the scientific facts about HIV transmission, the sooner its spread can be stopped.” Have the class brainstorm how people can get information about HIV/AIDS. Record their responses on the newsprint.

Procedure/Development

- Review students’ list. Add resources they may not have listed, such as: HIV/AIDS service organizations; clinics; counselors; doctors; public agencies, such as health departments; libraries; hospitals; television; books, magazines, and newspapers; radio; the Internet; telephone hotlines. Have students copy the list.
- Say, “Each of you is a resource, too. You now know more about HIV/AIDS than many people, so you can serve as a resource by helping to educate others.”
- Have students sit in a circle. Tell them the child sitting next to them is their partner. Pass around the box of “HIV/AIDS Questions,”* and have each pair take one. Give the pairs a minute to confer about what is the correct answer. Then have one member of the pair read their question aloud and the other member give the answer. If the answer is incorrect or incomplete, ask other students to correct or add to the answer.

Assessment/Homework

Have children take home their HIV/AIDS questions and ask one parent, guardian, caregiver, or older sibling and one friend the questions. Children should write down the responses and indicate if they are correct or incorrect.

* Answers to HIV/AIDS Questions: 1. A; 2. True; 3. To defend the body against organisms that cause disease; 4. False; 5. True; 6. False; 7. True; 8. Drug users who share needles, syringes, or other drug equipment used by injectors risk infection with HIV. People who use alcohol or other drugs are more likely to engage in risk behaviors than those who do not because alcohol or other drugs may affect their judgment; 9. A widespread outbreak of an infectious disease affecting many people in a short amount of time; 10. True; 11. False; 12. False; 13. True; 14. In New York City call 311 for information, find out at the library, read an HIV/AIDS information brochure, ask a trusted adult; many other possibilities. 15. How is HIV/AIDS spread? How is it treated? Many other possibilities; 16. False; 17. False.

GRADE 5 Lesson 5

NEW YORK STATE LEARNING STANDARDS 1, 2, 3

SKILLS

Advocacy
Communication
Decision Making
Planning and Goal Setting
Self-Management

MATERIALS

Activity Sheet 1:
HIV/AIDS Questions,
Cut Into Strips

Box
Newsprint

VOCABULARY

Hotline
Epidemic
Resource

Activity Sheet 1

HIV/AIDS Questions

1. The virus that may lead to AIDS is called:
a) HIV b) AIV c) IHV
2. True or False: HIV attacks the immune system, and affects every system in the body.
3. The role of the immune system is _____.
4. True or False: You can get HIV if you hug someone who has the disease.
5. True or False: A pregnant woman who has HIV may pass the virus to her baby during pregnancy or childbirth if she doesn't get the proper treatment.
6. True or False: All people who use drugs have HIV/AIDS.
7. True or False: A person can be infected with HIV for many years without knowing it.
8. Why is a person who uses alcohol or other drugs at special risk for getting HIV/AIDS?
9. Define the word "epidemic."
10. True or False: Abstaining from sexual intercourse and use of alcohol and other drugs can protect you against HIV infection.
11. True or False: A person can get immunized against HIV/AIDS.
12. True or False: Gay men are the only men who are at risk for getting HIV/AIDS.
13. True or False: Donated blood is tested for HIV antibodies.
14. How do you get the phone number for an HIV/AIDS hotline?
15. Name two questions an HIV/AIDS hotline can answer.
16. True or False: You can get HIV from sitting on a bus next to someone who has AIDS.
17. True or False: HIV is a disease found only in the United States.