

AIDS UPDATE FOR TEACHERS

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BY JOYCE W. HOPP AND GARY L. HOPKINS

The fatal disease known as AIDS is caused by the human immunodeficiency virus (HIV). This is one of a class of viruses known as retroviruses because they reverse the normal flow of genetic information.¹ The primary target of HIV is a white blood cell called CD4+ T-lymphocyte, which coordinates many important functions of the immune system. Loss of these functions cripples one's response to infection. HIV has a special affinity for the cell because of the cell's CD4 surface marker, where the HIV virus can attach itself.² This enables HIV to enter the cell, after which it multiplies and mounts an attack on the body.

Viruses are the smallest agents that cause disease in living organisms. They can multiply only while inside a living cell. Once they get a foothold, they use the body's cells to reproduce themselves.

Each virus prefers a specific type of cell. For example, the common cold virus attacks the cells of the respiratory tract, while hepatitis viruses attack the cells of the liver. HIV invades white blood cells, which defend the body against infection. Without white blood cells, humans would probably catch every communicable disease with which they come in contact. When a person's body cannot ward off disease because his or her immune system functions inadequately, the person is referred to as immunodeficient. This explains the reason for HIV's name—it is a virus that causes humans to become immunodeficient. In many cases, people do not die from AIDS but from another disease that their weakened immune system could not repel.

How HIV Is Transmitted

HIV can be spread in several ways, all of which require direct contact. These means of transmission include: (1) unprotected sexual activity with an in-

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fecting person (including anal, oral-genital, and vaginal intercourse), (2) sharing contaminated needles with an infected person (as in intravenous drug users), (3) transfusion or major contact with infected blood, and (4) transmission between mother and child during fetal development, delivery,

or breast-feeding. These are the only ways HIV is spread.

Table 1 shows the modes of HIV transmission. Four types of HIV-infected body fluids can enter the body through any one of four different sites or openings to cause an HIV infection.

Table 1. The four types of body fluids and the openings in the body that can allow for HIV transmission

<i>HIV-Infected Body Fluids:</i>	<i>Body Openings:</i>
Vaginal Fluid	Mouth
Semen	Vagina
Blood	Rectum
Breast Milk	Cuts in the Skin

There is a substantial risk of infection every time an HIV-positive person engages in unprotected intercourse with someone who is not infected. Factors that increase the likelihood of contracting HIV include prior infection with another sexually transmitted disease, open sores on the genital organs, and anal sex.

How HIV Is Not Transmitted

HIV is not spread through casual or indirect contact. A person will not catch it by being in the same room with or touching an HIV-infected person, by donating blood, being bitten by a mosquito, using toilet seats, touching door handles, or being hit by droplets from a sneeze. The reason HIV cannot be transmitted by these means is that in order to survive, it needs special cells to attach to, such as

CD4 cells or macrophages.

Particles of HIV may be found in saliva and tears in very small numbers. Transmission of HIV by contact with these body fluids is unlikely.

HIV Positive Versus Having AIDS

Everyone who has AIDS is infected by HIV. However, everyone with an HIV infection does not have AIDS, although nearly all of them will eventually develop the disease.

When HIV enters a person's body and attaches itself to blood cells, he or she is then infected. HIV infection is detected by a blood test that measures the body's reaction to the virus.

There is a lag time, called "the window," between the time when a person becomes infected with HIV and when enough antibodies have formed to produce a positive HIV blood test. In other words, if a person is infected but his or

HIV is not spread through casual or indirect contact.

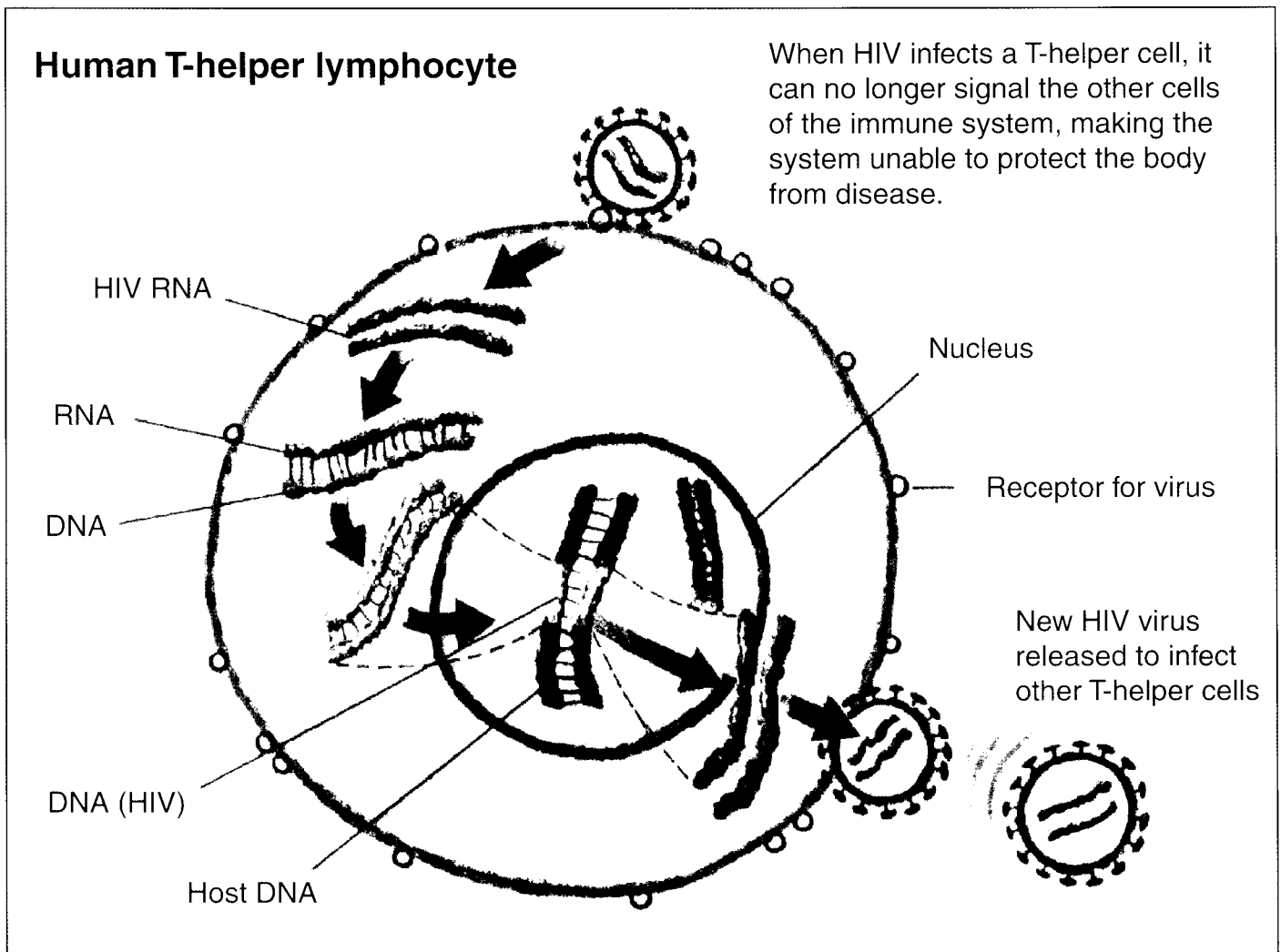
her body has not yet produced a certain level of antibodies against HIV, the blood test will be negative.

Estimates of the length of time between HIV infection and a positive blood test range up to six months or more.³ The existence of this "window" poses a great problem. If two people decide to enter into a sexual relationship, they may decide to get HIV tests as a safety precaution. If both have negative HIV tests, it means only that there were no detectable antibodies. Either or both might be in the "window" period and not

know it. If, based on negative HIV tests, they begin sexual activities, they would be at high risk for transmitting HIV.

AIDS in Adolescence

AIDS represents only the final stage of a prolonged infection with the human immunodeficiency virus.⁴ The latency period (also called the incubation period) from the time of infection with HIV until one develops AIDS is generally between five and 10 years.⁵ The Centers for Disease Control and Prevention (CDC) report that nearly 19 percent of the diagnosed cases of AIDS in the U.S. are in the 20- to 29-year-old group.⁶ We must therefore conclude that many people contract HIV in their teens, but do not develop AIDS until they are in their 20s.⁷ The number of reported U.S. cases of AIDS in 13- to 21-year-olds is doubling every 14 months, although the total number of HIV-infected youth is unknown.⁸



Anatomic and Physiologic Considerations

Because teenage women's menstrual patterns and vaginal, ovarian, and cervical function are incompletely developed, their bodies are biochemically different from adult women. These differences in their anatomy and physiology make them more susceptible to acquiring certain sexually transmitted diseases (STDs) and their complications and to being infected with AIDS.

In early puberty, the tissue that extends from the cervix into the vagina is one layer thick, and therefore not very protective. This columnar tissue later becomes squamous tissue, which is many cells thick and more protective. The fragile columnar epithelium is the primary site of invasion by pathogens that cause chlamydia and gonorrhea. It is possible that this vulnerable zone of columnar tissue also makes the young female more vulnerable than older women to HIV. As a result, young women are much more likely than men of any age to be infected with HIV through heterosexual contact. This is due in part to the more efficient transmission of HIV from men to women than from women to men.

Over the past century, women have been reaching sexual maturity at increasingly younger ages in the U.S. Women are experiencing their first menstrual period between 12 and 13 years and getting married at around 24 years, which means that they are sexually mature for about 12 years before marriage. During this period, they experience a sexual drive, are seen as sexually appealing and "grown up" and capable of being sexual partners.

In the 1860s, young women did not begin to menstruate until nearly 18 years of age. The average age of marriage was 18 to 20 years. At that time, the adolescents did not have as long a sexually mature interval before marriage as today.

Adolescent Sexual Behaviors

The CDC reports that in the U.S., the number of adolescent females engaging in premarital sexual intercourse has increased dramatically since 1970. In 1970, 28.6 percent of women 15 to 19 years of age reported having engaged in premarital sex, compared to 51.5 percent

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in the same age group in 1988. A 1995 CDC publication showed that 53 percent of all students enrolled in the 12th grade were sexually experienced.⁹ Every year, some three million U.S. teenagers contract a sexually transmitted disease.

The lag time between physical maturity and marriage and the glorification of sex in the media make it imperative that parents and teachers inform young people about the dangers of sexually transmitted diseases and AIDS, as well as the

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emotional and spiritual hazards of premature intimacy. As they bond with the youth, they can share strategies to help them prepare for happy married life.

HIV in Adolescence

According to a December 1996 report by the Joint United Nations Programme on HIV/AIDS, the majority of newly infected persons worldwide are under 25 years of age.¹⁰

Very little data exist on the number of U.S. adolescents who are HIV infected. One study¹¹ of 1,141,164 teenage applicants for U.S. military service revealed that 48 of 150,013 women and 345 of 991,445 men tested positive for HIV. It is impossible to know how many of these individuals were infected by the HIV virus but were in the “window” period. Studies of high-risk populations have revealed a higher incidence of HIV infection.¹²

Only a very small percentage of adolescents worldwide have been tested for HIV, so the total number infected is unknown. But millions are at risk for contracting the disease because of their lifestyles.

Psychological Considerations

Adolescents tend to engage in risk taking¹³ and impulsive behaviors,¹⁴ actions that may become difficult to mod-

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ify later in life.¹⁵ Although most adolescents know about the dangers around them, they frequently feel that they are immune, invulnerable,¹⁶ and immortal. As a result, they may think that “AIDS can’t happen to me.”

Conclusion

Young people are central to any discussion of HIV/AIDS. There are more than one billion 15- to 24-year-olds in the world today, and their numbers are growing, particularly in developing countries where more than 80 percent of the world’s young people already live. Young people are and will continue to be the sector of the population most affected by HIV/AIDS.

More than 50 percent of new HIV in-

fections currently occur among this age group.¹⁷ At present rates, more than 3,750 young people aged 15 to 24 are infected every day, which implies over 1,350,000 every year—some 13 young people every five minutes! This is just the global average—in some places, it is much worse.

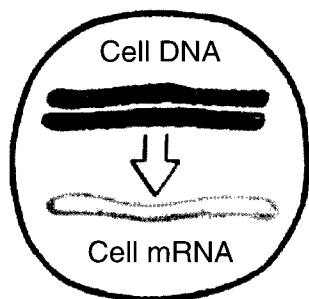
There are now an estimated 22.6 million people living with HIV/AIDS worldwide.¹⁸ This figure is rising daily. The prospect for young people is frightening.

So What Can We Do?

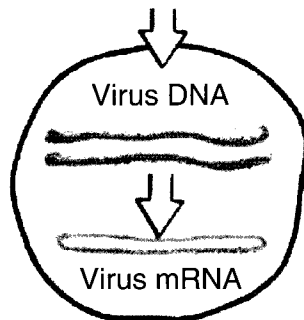
HIV/AIDS is a preventable disease. The spread of HIV infection can be stopped. It’s a question of awareness, education, and resources. This is why young people are a priority when it comes to HIV/AIDS prevention. Young people are much more receptive to new ideas, and they learn more quickly.

Public schools have recently turned to implementing abstinence programs intended to delay or postpone intercourse. Evaluations of many of these programs report little or no change in rates of sexual activity. SDA schools teach abstinence along with biblical values. This combination has been shown to be effective in recent research on SDA schools. The message of abstinence and sexual fidelity after marriage as instituted by the

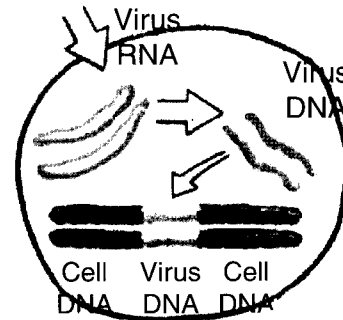
In normal viruses, the flow of information goes from the DNA of the virus to the RNA of the host cell. In retroviruses, the flow is from the RNA of the virus to the DNA of the host cell.



Normal Transfer of Genetic Information



Retrovirus (DNA core)



Normal Virus (RNA core)

Bible is best and it is effective. Our students' lives depend on our sharing this message and making it attractive. ✍

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