AIDS Education in
College Biology Courses

DR. SUSAN P. SPEECE
Anderson University

Today, a greater percentage of our population is taking advantage of the opportunity to attend college. Most hope to expand the possibilities of their life through education and the people that they meet. Yet, for a frightening number, college experiences, sexual encounters, drug use, etc., may also end those possibilities before they really begin. Many of our students, who perceive themselves to be not at risk, will become infected with the Human Immunodeficiency Virus (HIV).

Since 1981 more than 192,000 persons in the United States have been diagnosed as having full blown AIDS. Full blown AIDS is defined by the Centers for Disease Control (CDC) as having the presence of certain opportunistic diseases, wasting syndrome, encephalopa-

thymy and evidence of the presence of the HIV-1 pathogen. It is estimated that there are more than 1 million persons in the U.S. who are HIV infected, though many of those persons do not realize that they are infected (CDC, Morbidity & Mortality Weekly Report, June 1991). The disease has spread into all sectors of the U.S. population, and the number of heterosexual cases is now on the rise and the age patterns are quite clear. For approximately 67-72% of adults with AIDS, the Human Immunodeficiency Virus - type 1 (HIV-1) has been acquired by sexual transmission, either homosexual or heterosexual (see Graph 1). For another 20-25%, the HIV-1 has been acquired through intravenous (IV) drug use (Indiana State Board of Health, June 1991).

GRAPH 1: AIDS CASES BY EXPOSURE CATEGORY 10/91

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One percent of male AIDS patients have been between the ages of 15 and 19 when diagnosed with AIDS, 21% have been between 20 and 29, and 46% have been between 30 and 39. For female AIDS patients between 20 and 29 years of age the rate is 26% and between 30 and 39 it is 43% (CDC, 1991). Research suggests that the average incubation time for adolescents (ages 15-22) is 8.26 years (Schwartz, 1988). This means that a significant percentage of persons with AIDS very likely were exposed to the HIV-1 pathogen when they were adolescents. Perhaps as many as 50% of all persons with full blown AIDS many have first encountered the virus when they were teenagers or early adolescents. This is also the most likely time when they are also beginning to become pregnant (see Graph 2). These are sobering statistics. They provide a compelling argument for more rigorous actions on the part of schools, communities, parents, and particularly educators. More effective AIDS/HIV education is not suggested, it is required!

Until recently, most of the college level HIV instruction has been facilitated by the institutional health care provider(s) or the student life offices. Biology instructors occasionally introduce HIV education as part of a discussion of virology, but the premise of this paper is that that level of instruction is insufficient to alter the behavior of our college students. Biology instructors are well suited to assist in HIV education, we usually have a deep understanding of the immune system and the nature of viruses. This can serve as a starting point for AIDS/HIV education. There is, however, far more to AIDS/HIV education than scientific facts. In a recent presentation made to science teachers, Dr. Beverly Bradley, Director of AIDS Education for Youth Project in San Francisco, stressed that it is not necessary to know all of the facts about HIV infection. What is important is to thoroughly understand how the HIV can be transmitted, how it cannot be transmitted, how one can protect themselves, what the difference is between HIV and AIDS, and where to go for help. A scientific

GRAPH 2: PEDIATRIC CASES OF AIDS 10/91

[Diagram showing pediatric cases of AIDS with percentages: 84% undetermined, 5% transfusion, 2% mother at risk, 9% other]
underpinning is excellent, but the most important factor in stopping the epidemic is education about behavior.

The education must go beyond academic content and work on students' abilities to make healthy decisions and to take responsibility for their actions. Ultimately our AIDS/HIV education must be interpreted into behavioral changes. C. Everett Koop has stated that:

"Adolescents and pre-adolescents are those whose behavior we wish to especially influence because of their vulnerability when they are exploring their own sexuality (heterosexual and homosexual) and perhaps experimenting with drugs. Teenagers often consider themselves immortal, and these young people may be putting themselves at great risk...Education about AIDS should start in early elementary school and at home so that children can grow-up knowing the behavior to avoid to protect themselves from exposure to the AIDS virus. The threat of AIDS can provide an opportunity for parents to instill in their children their own moral and ethical standards. Those of us who are parents, educators and community leaders, indeed all adults, cannot disregard this responsibility to educate our young. The need is critical and the price of neglect is high. The lives of our young people depend on our fulfilling our responsibility." (Koop, 1988)

In spite of Koop's warnings and the media hype about AIDS, our youth do not see the relationship between their knowledge, behavior and their future health. There are several reasons why college students do not change behavior: 1) students do not believe themselves to be at risk for AIDS; 2) they believe AIDS is a disease that strikes members of stigmatized groups; 3) they lack the necessary communication skills; 4) they lack the technical skills (i.e., knowledge of how to use condoms or how to practice safer sex); and 5) they value immediate gratifications." (Sheehan, 1990)

The Health Belief Model (HBM, Brown et al; 1991) has been used by many to describe the difficulties in altering health related behaviors. Much like Sheehan's premises, the HBM postulates that four factors account for most of health behavior: 1) perceived susceptibility, 2) perceived severity, 3) perceived benefits, and 4) perceived barriers. If a person perceives that they are vulnerable, they may be motivated to change their behavior. If a person perceives there is a real and serious health risk, they may be motivated to alter their behavior. The gay population watched in horror as hundreds of their friends and lovers died. This was a graphic illustration of their vulnerability and the reality of the disease. The motivation was so great that educational programs have been very effective. If a person considers the benefits of changed behavior to truly be positive, they may take action to change their behavior. Finally, if a person sees the adversities to changed behavior too great, they likely will not take actions to change their behavior. The most compelling factors of the four are the perception of susceptibility and the perception of barriers. Most of our adolescent college students, both homosexual and heterosexual, do not consider themselves to be susceptible and the belief that altering sexual behavior infringes on their "fringe benefits" is usually sufficient to prevent any positive behavioral changes. After an extensive advertising campaign in New York City to promote safer sex, the target population was surveyed. While more than 80% agreed condoms should be carried, more than 60% had failed to use a condom (Fineberg, 1988).

Gibbs (1991) reports that 84% of all 19 year old males and 75% of all females 19 years of age or older are sexually active. Of those who are sexually
active, it is estimated that only 50% of the female and 25% of the male teens practice serial monogamy (National Institute of Health, 1989). A 1989 national survey indicated one third of college students never have safe sex and as many reported their partners never want to practice safe sex (NIH, 1989). Recently Perlman (1990) reported that only 12% of females used condoms. Perlman maintains that there is less than a 0.1% failure rate of condoms with respect to HIV-1 transmission. In spite of this statistic, our youth are not protecting themselves. This is evident in the increased incidence of sexually transmitted diseases (STD’s). In the ten years between 1977 and 1987, resistant gonorrhea increased 12,765%, chancroid was up 697%, primary and secondary syphilis was up 77%, genital herpes up 57%, and genital warts was up 44% (NIH, 1989). Since AIDS is predominantly a sexually transmitted disease, it is hard to avoid the conclusion that the incidence of new infections among young people is also increasing greatly.

As biology teachers we should not abdicate the responsibility for comprehensive AIDS/HIV education. What can biology teachers do to become active performers in the AIDS/HIV education process? We need to stress how the disease is spread and how it is NOT spread. Only four fluids contain the virus in sufficient quantities to infect - blood, semen, vaginal secretions, and mother’s milk. Contact with these fluids has the potential of transmitting the disease. In a February 8, 1991 address to the Hoosier Association of Science Teachers, Inc. (HASTI) Convention, Otis Bowen, an M.D., former Secretary of Health and Human Services stated, “You, as science teachers, and in fact all teachers need to know these facts and figures because you will be dealing more and more with them — perhaps not so much with full blown AIDS, but with those who have HIV positive blood...there is a need for fairly explicit instruction at a fairly early age if we want to be realistic and have a greater impact...When we talk about the AIDS virus, we must try to implant both morals and practical knowledge to get the greatest good for our efforts.”

As biology teachers we need to:

1. Stress abstinence as a solution, we need to let them know that it is okay to say “no”. On the other hand, we must face the fact that nationally our students are sexually active, therefore, we must, even in biology classes, discuss the alternatives.

2. As scientists and educators we MUST stress the importance of modifying behavior. The types of classroom activities that have been shown to be effective in promoting behavior modification include:

   a. Positive peer pressure - discussions where students learn what positive steps are being taken by their peers. By contacting a local AIDS support center, you may be able to invite an HIV positive adolescent to come and talk with your students.

   b. Role playing - scenarios where students practice saying no to a variety of difficult situations. These should include situations that relate to drug and alcohol uses as well as peer pressure for sex.

   c. Paired problem solving - students work in pairs as they propose solutions to hypothetical problems. One student acts as the problem solver and the other one interprets the steps of the solution.

   d. Analogical Reasoning - students study hypothetical problems to identify the variables in the problem and propose the options available.

In all activities it is essential that frank, open discussions be fostered, where direct and appropriate biological terms are used.
If we are to be totally effective, however, we must also address the issue of IV drug use and the use of alcohol among college students. According to C. Everett Koop, the greatest cause of condom failure is alcohol, which results in the lack of use or misuse of condoms.

Biology teachers must become proactive in the battle against AIDS. We need to work with our colleagues, administrators and community to mount a more effective campaign against the disease. We cannot afford to comfortably sit back in our laboratories and assume someone else will do something about AIDS education. We must become the ones who do something about the problem.

REFERENCES


