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Editorial Report

Linda Peña, Editor-in-Chief
Health Education Assistant

In today's world, it might be assumed that a majority of the population is aware of the dangers posed by Human Immunodeficiency Virus (HIV) and sexually transmitted diseases (STDs). Especially knowledgeable would be college-students because these facts have been presented to them throughout their education. One could hypothesize that based upon their sexual awareness there would be evidence of a decrease in the infection rate amongst students. Surprisingly, the opposite holds true. Currently, it is calculated that one-half of all new HIV infections are among people 25 years and younger with females comprising nearly half (42%) of all new HIV cases for young people.

This increased infection rate is not only with HIV/AIDS, but also STDs. Presently, an ever increasing number of students across the nation have been diagnosed with Human Papilloma Virus (HPV) and Herpes Simplex Virus (HSV). One might ponder how could these statistics be valid if college students know the truth about infection transmittal and prevention techniques. Because of this enigma, the Journal of the Health Resource Center has chosen themes concerning HIV and STDs. However, the articles tend not to focus solely upon disease descriptions, but instead highlight research, prevention and psychological methods in which students can take positive actions for sexual behavior and the acceptance of responsibilities if diagnosed.

An important method of preventing future impacts from these diseases is the development of safe and effective vaccines. It is particularly crucial to develop a vaccine for HIV in order to stem the pandemic. Although less life threatening, HSV and HPV may have devastating outcomes and the transmission could be eliminated with vaccines. The process of vaccine research and development is a long and expensive one, but one well worth the wait if many could be spared.

CSULB is proud to be part of a national clinical study for the development of the Herpes vaccine, which is in the third phase of its development. It must be noted that currently there are 125 female students participating in the Herpes Vaccine Trial (Herpevac) here on our campus. The Herpevac study will eventually lead to an effective vaccine to prevent herpes.

Another article presents activism in the form of individuals positively involved in living with their disease. It is important to remember the search for ways to live with HIV/AIDS has not been limited to the medical field. Those who are searching for different answers have focused upon several major psychological theories indicating the variability in immune system functions. It is concluded that by changing psychological attitudes, a person can take an active part in their own treatment program.

Unfortunately in recent years, both STD and HIV/AIDS infection rates have been on the increase among young people. It is important to remember that education still remains a key element in both areas of prevention and living successfully with these infections. It is through the power of knowledge that one can be provided with ways in which to deal with the consequences and responsibilities. The intent of this journal is to provide information about STDs and HIV/AIDS that can be utilized towards positive benefits for decreasing infection rates and helping those who have already been diagnosed.

Risks of Getting It On: Correlates of Risky Sexual Behavior Among College Students

Kimberlee Morrison

More than half of the annual STD infections occur in young adults between the ages of 19 and 25. Studies have found that three factors can predict whether college students will partake in risky sexual behaviors: perception, acculturation and gender beliefs of the student. A distorted perception of fellow peers' risky behaviors such as binge drinking and unprotected sex can lead students to erroneously justify their own dangerous behavior to be in line with their equals. Acculturation level, rather than ethnicity, has been discovered as a reliable predictor of a student's participation in risky sexual behavior. In addition, a student's gender beliefs can greatly influence not only who provides condoms during sexual activity, but if condoms will be used at all.

For many young adults, college is a time of exploration, experimentation and maturation. Unfortunately, this experimentation sometimes takes the form of high-risk behaviors such as binge drinking or unprotected sex with random people. Sexual exploration is seen as a normal part of healthy growth and maturation even when done with multiple partners or without the use of condoms.^{1,2} The problem with this type of exploration is that sometimes students put themselves at a greater risk for contracting human immunodeficiency virus (HIV) or other sexually transmitted diseases (STDs).

According to the Centers for Disease Control and Prevention (CDC) more than half of the annual new STD infections occurs in young adults between the ages of 19 and 25.³ In a nationwide study, less than half of all students reported having received STD prevention information from their college or university.⁴ Much of the research on risky behavior among college students defined safe sex as the use of condoms. Safer sex refers to protecting oneself from contracting a disease, rather than preventing pregnancy. If a student is sexually active, one of the best ways to protect themselves from diseases transferred through seminal or vaginal fluid is by using a latex condom. There are other methods of practicing safer sex as well, such as choosing less risky sexual behaviors such as having oral sex instead of anal sex.

This article is intended to present and analyze the current research regarding student perceptions, gender role beliefs, acculturation and substance abuse that correlate with condom use and other behaviors that put students at such a high risk for

STDs. Most of the research utilized the self-reporting technique, which could prove to be a misleading limitation for this type of research.

Perception

Research has indicated that college students have a tendency to perceive (incorrectly) that their peers are engaging in a significant amount of high-risk behavior, including risky sexual activity. In a 2004 study, researchers discovered that students not only overestimate the regularity of the sexual activity of their peers, they underestimated the frequency of condom use as well. These misperceptions could "...lull students into a false sense of security when making future decisions about having unprotected sex" and lead them to engage in potentially high-risk sexual activity.¹



Studies have also shown that the realities about risky college activities such as binge drinking and unprotected or multi-partner sex are contrary to most stereotypes and student perceptions. For example, students believe that those involved in Greek groups have more unprotected sex and with multiple partners. This was the group, however, that reported the most consistent condom use; while less than one-quarter

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**Table 1: Actual Versus Perceived Responses to Question:
How often in the last 30 days have (you/most students) used a condom during sexual intercourse?**

	<u>ACTUAL</u>					<u>PERCEIVED</u>				
	A	M	S	R	N	A	M	S	R	N
All	32%	14%	4%	8%	42%	4%	46%	42%	6%	2%
Male	37%	13%	6%	8%	36%	5%	51%	35%	6%	3%
Female	28%	15%	2%	8%	48%	4%	40%	49%	6%	1%
Greek	59%	17%	3%	0%	21%	0%	69%	28%	3%	0%
Male	63%	11%	5%	0%	21%	0%	74%	21%	5%	0%
Female	50%	30%	0%	0%	20%	0%	60%	40%	0%	0%
Non-Greek	29%	14%	4%	9%	44%	5%	43%	43%	7%	2%
Male	33%	14%	7%	9%	38%	6%	48%	37%	7%	3%
Female	26%	14%	2%	9%	50%	4%	39%	50%	7%	1%
Athlete	32%	23%	6%	11%	28%	0%	51%	38%	9%	2%
Male	36%	19%	8%	14%	22%	0%	50%	39%	8%	3%
Female	18%	36%	0%	0%	45%	0%	55%	36%	9%	0%
Non-Athlete	32%	13%	4%	7%	44%	5%	45%	43%	6%	1%
Male	37%	12%	6%	6%	40%	7%	52%	33%	6%	3%
Female	28%	13%	2%	9%	48%	4%	39%	50%	6%	1%

“A = Always; M = Mostly; S = Sometimes; R = Rarely; N = Never (Note: This table excludes students who reported not having sexual intercourse in the last 30 days.” This table has been adapted from Lynch et al., 2004)

of the sexually active non-Greeks reported “always” using condoms. Likewise, many students assume that male athletes are promiscuous, but they were among the group who reported having one or, in many cases, no sexual partners during the past school year. The group who reported using condoms least consistently and having more sex partners were female athletes.¹

A 2001 study showed additional skewed perceptions among college students with regards to risky sexual activity in connection to alcohol (and other substance) abuse. Researchers found that students overestimated the occurrence of high-risk sex among their peers when under the influence of drugs and/or alcohol and that this perception was used to decrease personal anxiety and increase self-esteem.⁵ Unfortunately, since many students believe their peers are engaging in more risky behavior than themselves, it leads them to minimize their own risk factors for STDs and “perceive themselves relatively invulnerable” to the risk of contracting such diseases. In fact, many students refused to make the connection between their own risky sexual activity and a personal risk of becoming infected with STDs.²

However, perception of peer norms seems to play less of a role in high-risk sexual activity than other factors such as a student’s age at the time of first intercourse, which, according to Ratliff-Crain et al., correlates strongly with risky sexual activity and the “persistence” of such activity. Additionally, the researchers determined that one’s sexual history, frequency of

alcohol consumption and past participation in high risk behavior is probably the reason for many of the perceptions held by many students, and this is what made perception itself a strong indication of risky sexual behavior.⁶

Acculturation

Almost half of all students enrolled in California State University (CSU) and University of California (UC) schools are white, with the Hispanic American and Asian American populations as the second largest while other ethnic minorities make up less than 20%.^{7,8} (See Figures 1 and 2 regarding ethnicities on college campuses in California). Since the minority population on college campuses tends to be highly acculturated, ethnicity is not a reliable predictor of risky sexual behavior. Socialization and personal values tend to be stronger factors for predicting risky sexual behaviors.⁹ Of the nearly 90% of college students who reported being sexually active in 1995, almost 30% reported having unprotected sex within the last 30 days. Although more black students reported being sexually active than whites or Hispanics, according to the CDC, black males were not only more likely to receive information about STD prevention, they were most likely to use condoms on a consistent basis.^{4,10} Black students make up less than 10% of the student population at CSU and less than 5% at UC schools.^{7,8} This indicates that one of the groups most consistently taking preventative measures among California college students is also among the smallest percentage of students enrolled, possibly nationwide.

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Although studies indicated that Asian Americans had considerably less sexual experience, this group's risks are growing specifically among men who have sex with men (MSM) and heterosexual college students. Of the near 60% who reported ever having sex in their lifetime, almost 40% also reported doing so without a condom at one point or another. According to So, et al., high levels of acculturation is a predictor of high-risk behavior among Asian-American college students, similar to other ethnic groups. Their research suggested that there is in fact a prevalence of abstinence among Asian American youth. For those that are sexually active, participants reported that they were more likely to use condoms, except for the MSM population who reported having sex without a condom 90% of the time.¹¹

While research by Langer et al, indicated that race/ethnicity were the least relevant predictors of risky sexual behavior, an individual's level of acculturation (adaptation and assimilation of an individual to cultures surrounding them) affects his or her behavior. Many studies about risky behavior among college students focused largely on white males or collegiate Greeks. However, the studies dealing specifically with ethnic/racial minorities suggest that minority students with higher levels of acculturation are more likely to participate in the same high-risk behavior, such as binge drinking, as their white classmates.^{9,12}

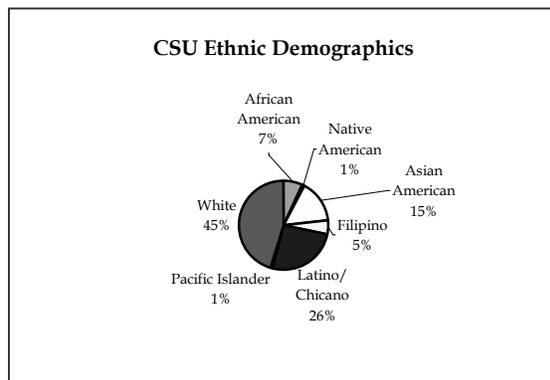
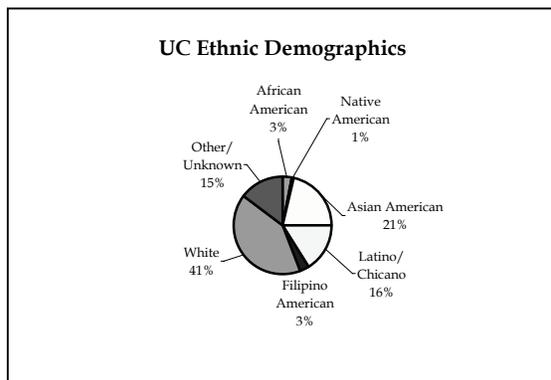
Contrary to studies in the early 1990s that pointed to race or ethnicity as a reliable predictor of risky sexual activity, a recent study indicated that lower acculturation actually correlates with "risk reducing" behaviors among ethnic minorities.¹³ A study by Ford and Norris presented evidence that Hispanic students with high levels of acculturation were more likely to have various types of sex (including oral and anal sex or with non-Hispanic partners), as well as using condoms and other forms of contraception on a more consistent basis than those with low levels of acculturation.¹⁴

Gender and Condom Beliefs

Based on scales measuring the following: condom use self-efficacy, the masculinity ideology, hedonistic (pleasure) expectancies and "gender-based family role attitudes," researchers discovered several things. First, those who believed that men should never behave in a feminine manner, such as expressing pain when emotionally or physically injured, had a higher probability of having sex without a condom. Additionally, both women and men with traditional attitudes toward marriage and child rearing (i.e. women should be the primary care giver or that men should be the primary decision maker) believed that they wouldn't enjoy sex with a condom, thereby decreasing their likelihood of using one while simultaneously increasing their probability of being involved in a monogamous relationship. Another important conclusion to note is that those who believed in the male "status norm" or that men should "always have the respect and admiration of everyone who knows him," are more likely to use condoms on a consistent basis.¹⁵

Not only did women tend to have less traditional values than did men (e.g., espousing the belief that they have power in relationships), they were also less comfortable with purchasing condoms and therefore more likely to report having intercourse without one.¹⁵ There is additional evidence though, suggesting that women tend to think themselves weak when dealing with an older man, which contributes to their resistance to negotiate condom use with a partner. This is important because a significant amount of college women date men at least two years their senior, if not older. Furthermore, a study of the non-Greek population on college campuses revealed that men are "traditionally" the providers of condoms as well as the one who tends to initiate their use. Rarely is the excuse for not using a condom complete refusal on the part of the male; instead the issue is simply never approached.¹⁶

Figures 1 and 2: Ethnic Demographics



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In a study by Casta eda and Collins, women who request their partner to use a condom were seen as more responsible, interesting and exciting than men who request them, specifically among white and Mexican-American students. However, there appears to be a continuing double standard when it comes to male initiation of condom use in comparison to that of a woman as the condom use initiator. In fact, on a scale rating perceived promiscuity, women who requested their partner to use a condom rated significantly higher than men. This is an interesting dichotomy, considering that the same women were considered interesting and responsible. Although women have typically been responsible for birth control, men have been responsible for initiating the use of condoms. This may be the reason for the contradicting perception of women who "...break this traditional script."¹⁷

Risky Sex, Alcohol and Other Drugs

Much of the research about college sexual behavior has suggested that individuals consumed alcohol more as they went through young adulthood and that risky behaviors were either connected to or exacerbated by the use of alcohol.¹⁸ This is probably because when one is under the influence of alcohol, involuntary brain functions and inhibitions are decreased, thus decreasing their resistance to participate in activities they would normally avoid.¹⁹



There has been a strong association with the use of drugs, such as methamphetamine and a higher occurrence of HIV infection, particularly in same-sex intercourse between men. In a recent article in the Press-Telegram, reporter Jenny Marder wrote a feature on the connection to methamphetamine and the increase in HIV. Several injection users of the drug admitted to knowingly putting others at risk by rarely using condoms when high. Apparently methamphetamine use is significantly connected to sex, making the experience very carnal and uninhibited. One user admitted to actively seeking out "...anonymous sexual partners at clubs, sex parties or bathhouses."²⁰

Anal sex without a condom is particularly risky because, "...the lining of the rectum is thin and may allow viruses to enter the body." Usually it is the person being penetrated — whether vaginal or anal — who is at higher risk because they are being injected (so to speak) with seminal fluid. During anal sex both

parties are at equally high risk of contracting HIV because the virus can more easily enter the body through the urethra, small cuts, or open sores on the penis and because the rectum is such a fragile part of the body.²¹

A study by Cooper (2002) revealed that alcohol consumption not only contributes to the odds that a student is sexually active, it also plays a role in the possibility of being sexually assaulted and making irresponsible partner choices (i.e. casual sex with multiple partners).²² Additionally, since the belief that alcohol encourages risky sexual activity is prevalent with college students, this belief reinforces the probability that alcohol will be an element of many sexual encounters.²³ While the CDC indicated that black students drink less frequently than do their white and Hispanic counterparts, those with higher levels of acculturation were found to drink almost 30% more frequently and participate in multi-partner, non-monogamous, or unprotected sex more than those with lower acculturation.^{9,10}

College women are at particularly high risk for sexual assault.⁴ Often the assailant, or both, is under the influence of alcohol or another drug. A study by O'Hare indicated that certain women, who believed that drinking made them feel more feminine or enhanced their sexuality were at higher risk than others.²²

Researchers, Johnson and Stahl, found that many college students participate in "drinking games" as part of normal party activity. These games often include some form of sexual activity, ranging from kissing to actual intercourse; considered by the authors "acquaintance rape" because the participants are often too drunk to consent to anything. They also discovered that men "sometimes use drinking games as a means of targeting women for victimization," citing an unpublished study by Grigor, Johnson and Dye, in which a student recalled going to a fraternity party themed "Around the World." The theme was actually a game with the object being to go on a tour through rooms featuring various drinks and have a drink from each room. However, the subject also reported that there were beds in each of the rooms and male tour guides led the tours. These guides did not drink during the party, putting themselves in a "position to take advantage of women who became highly intoxicated."²⁴ Unfortunately, sexual assault is probably the most dangerous of risky sexual activity, because the assailant is usually reliant on the victim's incoherence and/or inability to thwart unwanted sexual advances due to intoxication.²⁴ This means that the victim is less likely to ask his or her assailant to use a condom, and if he/she does, the victimizer is not likely to consent unless he was planning to anyway.

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Conclusions

Perception among college students regarding the extent of engagement in risky behavior by their peers seems to be among the worst and most relevant predictors of risky sexual activity and more overblown than actual participation in risky behaviors—specifically sexually—among college students. Other correlates include alcohol and/or drug abuse, and adherence to traditional gender roles. However, as researchers point out, an exaggerated perception can lead to a false sense of security regarding personal risks, and it is this perceived lack of personal risk that actually increases one’s likelihood of participating in risky behavior.

While low-income minority youth tend to be considered “at-risk,” those who go to college and are more acculturated are often more likely to engage in generally risky activities including alcohol and drug abuse. However, the majority of the research indicates that it is this perception (there’s that word again) that minorities are “at-risk” that prompts more aggressive education campaigns, so minorities, especially African-Americans, receive quite a bit of information on how to be responsible when engaging in sexual activities.

Another interesting finding was that female students, while becoming more liberated “renaissance women” still considered it the man’s responsibility to provide condoms and this significantly limited their condom use self-efficacy. There are also continuing negative stereotypes associated with women who are sexually assertive and are seen as promiscuous because of this assertiveness. The conflicting values of women’s liberation and the perceived need for docility, specifically when dealing with older men (which is a trend among college women), creates an atmosphere where women are not even comfortable stepping outside of the norms for fear of being branded as less than reputable, while still feeling pressure to be sensual and desirable. The most relevant predictor of risky sexual activity was the use of drugs and/or alcohol. Alcohol is sometimes used to reduce inhibitions and induce sensuality, and is often considered an enhancement for seductiveness. Once again, this perception is what causes the most damage. Since students believe that sensuality is connected to alcoholic intoxication, this perception encourages students to over-indulge and is often a factor in sexual assaults.

There are many factors contributing to high-risk sexual activity among college students, the most dangerous appear to be alcohol and/or drug abuse and their perception of sexual risk taking among their peers. As seen with at-risk minorities and collegiate Greeks, education outreach makes a huge difference

with reference to the probability that one would use a condom. Unfortunately, since the research depends on self-reporting, condom self-efficacy statistics may be inaccurate. Either way, to break the effects of social norms and the resulting perceptions, colleges must go the extra mile to educate students about sexuality, risk-taking behaviors, substance use, and acting responsibly to protect themselves from unwanted outcomes.

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How Positive Attitudes Benefit the Human Immune System

Rudolfo Galindo

A positive outlook about life situations can be beneficial, not only with mental health, but also with physical health. This “looking on the bright side” can have a profound effect when one has been infected with HIV/AIDS. Attitude influences how we feel and affects the function of our immune system. Psychological theories have been historically helpful in describing how this positive attitude can be beneficial in affecting immunity. The three theories discussed are the Self-Discrepancy Theory, Attribution Theory and Cognitive Adaptation Theory. These theories were developed and proven to help us understand why and how human behavior affects all aspects of our lives, including immune systems and living with a long-term disease.

Purportedly, Albert Einstein once said, “We can’t solve problems by using the same kind of thinking we were at when we created them.”¹ Looking back at the end of the twentieth century, this quote seems particularly relevant. We did not create human immunodeficiency virus (HIV) or acquired immune deficiency syndrome (AIDS), but over the years our thinking about solutions for combating this disease have changed. AIDS was first reported in the United States in 1981. Initially, the medical and scientific community was puzzled; they didn’t know anything about this disease or how it was transmitted. All they could identify were symptoms: rapid weight loss, dry cough, recurring fever or profuse night sweats, profound and unexplained fatigue, swollen lymph glands in the armpits, groin, or neck, diarrhea that lasts for more than a week, white spots or unusual blemishes on the tongue, in the mouth, or in the throat, pneumonia, red, brown, pink, or purplish blotches on or under the skin or inside the mouth, nose, or eyelids, memory loss, depression, and other neurological disorders. Doctors were even more frustrated because not long after seeing these symptoms, many victims began to die from infections that are rarely seen in healthy people.²

Scientists now know that HIV causes AIDS, an overwhelming virus that destroys the immune systems by using its cells to duplicate itself. It works by destroying cells found in our body called CD4 T helper cells (CD4 cells). CD4 cells coordinate immune system responses to obliterate threats; however, with HIV they soon find themselves outnumbered and ineffective. HIV destroys the capacity to form new CD4 cells by taking over the production facilities, and using them to reproduce the virus. Without these critical helper cells, infections from microbes (such as viruses or bacteria) otherwise fought by an intact immune system, have devastating effects.²

The death toll from AIDS has been staggering. In 2003, the Centers for Disease Control and Prevention (CDC) estimated the number of deaths from AIDS in the United States to be 18,017 and the cumulative estimated number of deaths through 2003 is 524,060.³ At the National HIV Prevention Conference of 2003, Glynn & Rhodes (2005) estimated in their paper presentation that in the U.S. alone around 1,039,000 to 1,185,000 persons were living with HIV/AIDS, with nearly 30% undiagnosed and unaware of their HIV infection. The latter statistic must not be overlooked, because it means 30% of all HIV cases are outside of the sphere of containment, spreading into the general population. This is significantly important when considering sexually risky behaviors, such as unprotected vaginal and anal sex.⁴

Currently available medical treatments for HIV/AIDS involve a regimen of antiretroviral therapy, to fight the virus. This biological therapy reduces the HIV presence in the body and allows CD4 cells to return to normal functioning levels. According to a report by the U.S. Department of Health and Human Services (2005) goals of antiretroviral therapy include: improvement of the quality of life, reducing the HIV-related morbidity and mortality, restoration and/or improvement of immunological function, and suppression of the viral load. If the viral load (the amount of virus in the body) is suppressed, this gives the immune system a chance to rebuild. Without antiretroviral treatment, which decreases the HIV viral load and increases CD4 cell counts (in order to slow disease progression) the fatality rate of AIDS is 100%. There is no current cure or vaccine for HIV.⁵

However, the search for ways to live with HIV/AIDS has not been limited to the medical field. And as Einstein’s quote reminds us, in order to find solutions, it might be imperative to

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look elsewhere. Those who are searching for different answers have focused upon several major psychological theories indicating the variability in immune system functioning. As a science, psychology statistically takes into account the changes that can occur in a certain dependent variable when based on the manipulation of an independent variable. Taking this psychological approach, HIV research has used positive thinking as an independent variable in order to show an effect on the dependent variable of the immune system functioning. This allows psychologists to make statements about causality, asserting a belief that the explicit changes in the dependent variable (the immune system functioning) can be affected by the manipulation of one's positive thinking (the independent variable).

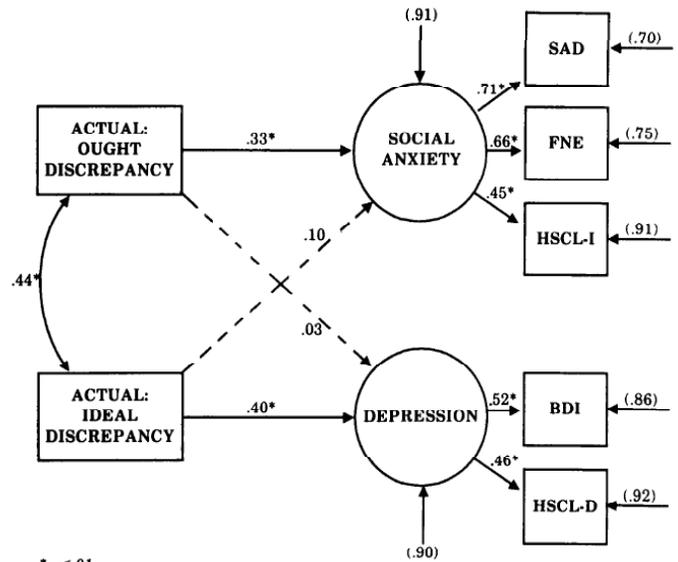
Three major theories supporting this change in the immune system functioning are: Self-Discrepancy Theory (positive self-evaluations from evoking negative psychological situations), Attribution Theory (perceived causes of events impacting our motivations and emotions), and Cognitive Adaptation Theory (adaptability, self-protection and functionality in the face of adversity). All three theories indicate favorable influence on health when an individual's evaluations, attributions, and attitudes remain positive.

The psychological attitudes presented in these theories can compliment and work with advances in the medical field for those afflicted with HIV/AIDS. In this way, medicine and psychology together may improve an infected person's quality of life by reducing the HIV-related morbidity and mortality, restoring and/or improving the immune system function, and maximizing the suppression of the viral load.

Self-Discrepancy Theory

In 1987, E.T. Higgins first introduced Self-Discrepancy Theory as "a theory of self-evaluation and affect." The theory involves an interaction between the different representations of the self that we have. These inward semblances include the actual self (a person's representation of who they are), the ideal self (a person's representation of who they would like to be), and the ought self (a person's representation of who they should be). The latter two representations are self-guides, or self-evaluation standards used to compare the actual self. Any discrepancies between the actual self and the self-guides can evoke negative psychological situations involving particular motivational and emotional states. Conversely, when no discrepancies occur, positive emotions arise.⁶

Figure 1: Model relating type of self-discrepancy to emotional problem⁶



*p < .01

Figure 1. Latent-variable model relating type of self-discrepancy (actual/own/ideal/own discrepancy; actual/own/ought/other discrepancy) to kind of emotional problem (depression, social anxiety). (SAD = Social Avoidance and Distress Scale; FNE = Fear of Negative Evaluation Scale; HSCL = Hopkins Symptom Checklist, I = Interpersonal Sensitivity subscale, D = Depression subscale; BDI = Beck Depression Inventory.)

This model suggests that when a negative discrepancy exists between the actual and ideal self, there is a .40 correlation to depression. By statistical standards, this 40 correlation is considered high. Therefore, if a person can manage to keep this discrepancy low, by evaluating more positively (the actual self), the correlation with depression may be lowered. Evaluators stress that these correlations do not suggest statements of causality, this is not to say this discrepancy causes depression, but simply is one of the cofactors that can further nurture a depressive state.⁶

Negative Self-Evaluation

Strauman, Lemieux, & Coe (1993) were the first to conduct a study that demonstrated negative self-evaluation and how it could alter immune responses, providing credibility to the self-discrepancy theory. Our immune system is regulated by the sympathetic nervous system and the parasympathetic nervous system. The former system activates a person's "fight or flight response," which can inhibit or prohibit the physiological effects of the parasympathetic nervous system. This latter system has direct influence over conserving energy through the following bodily functions: slowing the heart rate, increasing intestinal and glandular activity, relaxing sphincter muscles, reducing digestive secretions, speeding up the heart, and contracting blood vessels.

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This study concluded a person's sympathetic nervous system response could directly affect how the body fights the disease. A negative self-evaluation could influence a person's "fight or flight" response, thus causing the body to not conserve energy. This loss of energy could begin to influence the before-mentioned bodily functions to occur. In other words, these negative changes could cause a person's immune system to lose strength and energy in combating a disease.⁷

In addition, this same study focused upon the Natural Killer (NK) Cells found in the immune system. These cells provide the first line of defense against tumors and virally infected cells. NKs monitor cells to help ensure all is in order. Each normal cell displays a code that NK cells read. This code or password indicates cell order. If the correct code is not read, the NK cells interpret this to mean the cell is damaged or diseased in some way. Therefore, they will attach themselves to that specific cell and destroy it. NKs are sensitive to acute emotional stress.⁷

The study used subjects in two conditions of psychological stress. First, there were subjects with self-evaluation induced anxious states, who were uneasy and apprehensive about an uncertain event or matter. The second group of subjects exhibited dysphoric states, characterized by generalized feeling of distress. Findings indicated that chronic dysphoric states were discriminately associated with actual/ideal discrepancy, whereas chronic anxiety was discriminately associated with actual/ought discrepancy. Using a technique called idiographic self-referential priming, which means that the participant is covertly guided to think a certain way via visual stimulation, a predicted negative affective state is induced. Priming-induced negative states were associated with alterations in NK cytotoxicity. Given brief stressors, significant alterations in immune response occurred, as evidenced by NK cell activity. Later studies have built on these findings and extended them to other immune functioning.⁷

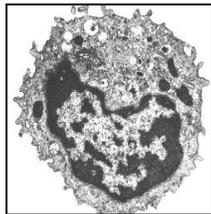


Figure 2: Diagram of a NK Cell⁸

Attribution Theory

Research by Weiner (1985) on Attribution Theory indicates that perceived causes of events have implications for motivation and emotion. This theory postulates that individuals will look into their past for successes and achievements in a desire to learn how they have mastered other hurdles (also known as causal analysis). For example, a student may look back at their academic career to assess their relative mastery of the subjects completed. In

fact, Weiner claims adaptation is not possible without this causal analysis. This implies that self-assessment is necessary in order to become better students. In describing the dynamic of behavior, there are two concepts central to motivation: expectancy (goal attainment) and value (what is the goal worth). Goal expectancy would be a student's ambition to graduate from college at the top of their class. And value attainment would relate to the emotional worth that goal may induce. Pleasure or satisfaction would be examples of a value emotion. Both concepts are fundamental in predicting future behavior based on whether an outcome is judged as positive or negative.⁹

In attribution theory, causal analysis is an essential factor. This component encompasses three dimensions: locus, stability, and controllability. Locus involves an internal-external dimension. Causes are internal (due to the person) or external (due to others), and are linked with self-esteem. An example would be a student's external beliefs of why they scored poorly on a math exam; the exam was too hard or the professor did not provide sufficient material to study. An example of internal locus of control would be that the student chose not to study but to go away for the weekend on a ski trip. Stability involves a stable-unstable dimension. Stable is defined as something that usually happens. Unstable means causes do not always occur with a stimulus, and is linked with repeated effects. In this instance, a student may believe that they are really bad at math because they always score poorly on math tests. Controllability involves a controllable or uncontrollable dimension. The person can or cannot control the causes. Emotions linked with controllability are anger, gratitude, and guilt. In this case, a student ponders how much command one has over their respective math testing ability, as either controllable or not.⁹

Causal Attributions

In regards to HIV/AIDS, research by Segerstrom, Taylor, Kemeny, Reed, & Visscher (1996) suggests that these causal attributions related to self-beliefs, may have an influence on the immune system. This study used the principles of attribution theory to predict the decline rate of CD4 cells in HIV-positive gay and bisexual men. Since CD4 cells are vital for coordinating the immune system response, this was very significant. The research was done over a period of 18 months following an initial assessment of each gay and bisexual man. Those participants attributing negative events to aspects of self, the future, and control significantly predicted faster CD4 decline over 18 months following the interview. For example, patients believing they were infected with HIV because they were a "bad" person, were more likely to have a decline in immune system functioning.¹⁰

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Results of attributions' effects on immune functioning are found when controlling for potential psychological, behavioral, social, and health mediators such as depression and health behavior. Participants with perceptions of illness that are internal, stable, and uncontrollable had significantly lower immune system function. An internal attitude may involve a thought such as, "It is my fault I have HIV. I am being punished for being gay." Attitudes that reflect a belief in negative stability may be expressed as, "My CD4 count is bound to decline consistently." Uncontrollable views may be expressed as "There is nothing I can do to stop the progression of the disease."¹ Table One has been adapted from Segerstrom, et al., 1996 and represents attributional statements that consist of an event and a cause (the attribution).

Cognitive Adaptation Theory

Cognitive adaptation theory, as introduced by S. E. Taylor (1983), views people as adaptable, self-protective, and functional in the face of adversity. Adaptation occurs when positive illusions of meaning, mastery, and self-enhancement are used in response to threatening stimuli and allows people to return to or exceed previous levels of psychological functioning. For example, if a student believes that they will do great on an exam they may have reduced levels of anxiety during the exam itself.¹¹

Building on previous research, Taylor & Brown (1988) found evidence suggesting that overly positive self-evaluations, exaggerated perceptions of control or mastery, and unrealistic optimism concerning outcomes are not only characteristic of normal human thought, but foster the criteria normally associated with mental health and well-being. Traditionally, it has been thought that the opposite, realistic self-evaluations, perceptions of control, and optimism, are the hallmark of mental health. It seems that positive illusions—even if unrealistic—promote better mental health by making people happier, improving social bonding, increasing motivation and persistence, producing more effective performance, and ultimately, greater success. For example (as stated earlier), being very optimistic about an upcoming exam. This optimism could be an illusion because perhaps one didn't study as hard as one could have, but the attitude could prove beneficial because it may reduce test anxiety, or make one more open to taking the test.¹²

Table 1: Examples of Attributional Statements ¹⁰

Event Valence	Attributional Statement
Negative	I lost a couple of friends because I am HIV positive.
	I would imagine that my T cell count would get lower <i>because over time that's the way it goes.</i>
	I think my T cell count dropped <i>because I had a lung infection at the time.</i>
	Sometimes at work I just feel isolated <i>because I'm the only person that's gay there.</i>
Positive	I am less likely than other HIV+ gay men to experience health problems related to AIDS. <i>I think most gay men were promiscuous... I just was not very promiscuous.</i>
	To actually die of AIDS or AIDS-related complications is less likely <i>because I think effective therapies will continue to be developed.</i>
	I've never felt much isolation <i>because I've always benefitted from having these other people there... who share feelings, support, and love with me.</i>
	I'm sure that there will be a lot of things that may come across that would help me <i>because I'm not a stagnant individual.</i>

Individuals who respond to negative, ambiguous, or unsupportive feedback with a positive sense of self, a belief in personal efficacy, and an optimistic sense of the future will be happier, more caring, and more productive. Contrast this with the individual who perceives this same information accurately and integrates it into his or her view of the self, the world, and the future. If feedback is taken too personally, one may start to believe they can do nothing about it. An example, a professor comments that a student has no grasp of the concepts discussed, it is a possibility the student may act upon it as the truth.¹² While on the other hand, a student does poorly on the exam, but perceives the professor's critical comments with optimism he/she is more likely to do better next time.

Positive Illusions

Research by Taylor et al., (2000) indicates that psychological resources and positive illusions of self influence HIV/AIDS disease progression. Cognitive beliefs reflecting an acceptance of death due to AIDS can be associated with

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faster disease progression. Subjects with a psychology akin to unrealistic optimistic beliefs such as thinking they will overcome this illness, may live longer than subjects with negative expectations of their future. Negative, not positive, expectations are also associated with a more rapid onset of symptoms in those who had previously been asymptomatic (not having symptoms of the disease). Also, participants who found meaning in the bereavement of a partner or friend (as in the death served a greater cause, maybe spiritual in nature) had lower levels of CD4 cell decline. These participants also had a longer life span than those who had a negative view of death. The researchers concluded that non-realistic views of death (they died to serve a greater cause), positive expectations (I can defeat this illness), and optimism (even if unrealistic) appear to be biologically protective factors for an individual.¹³

Optimism

Research by Ironson et al., (2005) on cognitive adaptation theory, indicated optimism can also predict slower HIV/AIDS disease progression. Participants in this study were involved in a two-year study period with follow up interviews and testing conducted every 6 months. This was done to monitor the progress of the disease, and in particular the CD4 cell count. Findings showed a correlation between optimism and perceived stress, coping by avoidance, and coping by adapting. Those with high optimism had lower perceived stress, lower avoidant coping and higher adaptive coping. Results indicated optimistic participants demonstrated both a lower decrease in CD4 counts and viral load.¹⁴

How to Think Positively

Since research finds positive thinking slows HIV/AIDS disease progression, it is important to look at how attitudes can be changed. The before cited research implies reducing discrepancies within the self, making positive attributions to one's accomplishments, and having adaptive outlooks may not only contribute significantly to combating and living with HIV/AIDS, but can help anyone have better physical and emotional health.

Reducing Discrepancies

It is important to evaluate oneself positively so that a discrepancy between the actual self and your self-guides (idea and ought) does not occur. The ideal self should not be so extreme that it is practically unreachable—this may prevent self-actualization. Smaller goals/views must be used to insure that one can actually attain them. For example, someone with HIV may want to set a goal of eating healthy on a daily basis because

it will benefit their immune system rather than eating healthy because it will guarantee they feel better each day. Pressure to be in accordance with the ought self may cause problems when it is too far from your actual self.

It is critical not to let the influence of others weigh heavily on one's self. For example, allowing others to persuade one to exercise too much with the objective of attempting to overcome all the negative effects of HIV would be attributable to the ideal self. And if the person were having a particularly bad day and could not exercise, the ought self would be in conflict with the ideal. The person could then begin to feel the stress because this inner battle would influence the actual. No matter how much the ideal and ought self attempt to influence the actual there will be a discrepancy. It is this discrepancy that can actually cause the stress and depression that could later become detrimental to one's health and immune system. By taking a more positive view of one's actual self and taking responsibility for one's actions as dictated by the actual, tension can be reduced. For example, maintaining the belief that the act of exercising despite the days of feeling poorly will allow for one to take positive steps in their care which validates their self-worth and esteem.

Positive Attributions

Attribution theory in application to HIV/AIDS disease progression has a significant impact. A tendency to attribute negative outcomes to causes that are internal, stable, and uncontrollable is also known as pessimism. An example is when one receives poor HIV/AIDS test results (e.g., CD4 cell count is low) and attributes them to an internal reason such as, "I deserve these consequences," or a stable factor, "I will always have poor test results," or an uncontrollable attribute, "There is nothing I can do to change the progression of the disease." If one's beliefs are the result of any one of these negative self-thought processes, this person will be more likely to become pessimistic about all aspects of their future living with HIV/AIDS. In contrast, a tendency to attribute positive events to causes that are external, unstable, and controllable has come to be known as optimism. For example if one attributes poor test results to an external cause, "I received poor test results because I have not been following all the recommended healthy guidelines," or unstable, "I will not always receive poor test outcomes," or controllable, "I can do better by taking all my medications, exercising and eating healthy," may induce a person to take positive action, which can lead to an optimistic opinion about future tests. One's expectancy attitudes should reflect a style that will maximize one's chances for success.

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Adaptive Outlooks

Overly positive self-evaluations, exaggerated perceptions of control or mastery, and unrealistic optimism concerning outcomes can promote mental health. Positive self-evaluations may include, seeing one's self as a person living successfully with HIV/AIDS. Having exaggerated perceptions of control or mastery, such as the belief that one can manage one's life appropriately in spite of the devastating effects of HIV/AIDS can positively assist the immune system. Unrealistic optimism concerning outcomes, such as believing one will have great successes in business, relationships or educational endeavors can promote sound mental health. Although changing one's attitudes may be difficult, the advantages associated with positive views outweigh the hard work.

Conclusions

As reminded by Albert Einstein's quote, "The significant problems we face cannot be solved at the same level of thinking we were at when we created them," this article has offered other alternatives to assist one living with HIV/AIDS. Research has shown that in Self-Discrepancy Theory, positive evaluations of the idea and ought self can reduce the discrepancy between the actual self and account for variability in immune system functioning. This variability can actually positively influence one's own body and its response to HIV/AIDS. Attribution theory findings suggest that casual attributions related to beliefs about the self, contribute to a slower HIV/AIDS progression. Research has indicated that if one is optimistic about the stable, unstable and uncontrollable attributes they can experience positive health results. Similarly, Cognitive Adaptation Theory, with its overly positive self-evaluations, exaggerated perceptions of control or mastery, and unrealistic optimism concerning outcomes contribute to a slower HIV/AIDS progression. Changing psychological attitudes is only one component of finding positive ways to assist those living with HIV/AIDS. However, the most significant element to remember is that for most people they do have the ability to change attitudes, thus allowing them to take an active part in their own treatment program.

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Human Papillomavirus and Cervical Cancer

Melissa Matsuda

HPV has infected about 20 million people and is considered to be the most common STD in the United States. Women under the age of 25 have the highest incident of HPV. Cervical cancer rates are higher for women over age 40, but the pre-cancerous lesion, cervical intraepithelial neoplasia (CIN), are often found in young women. The key to lowering the risk of cervical cancer is through the education and prevention of HPV in women, as well as men. Increasing women's awareness about the importance of annual Pap test screenings and gynecological examinations has never been more crucial. Women who do not regularly have gynecological examinations are more likely to die from cervical cancer caused by HPV, particularly women of color and those of lower socioeconomic status.

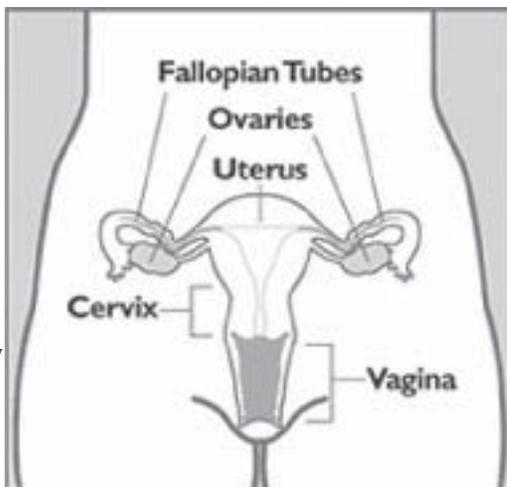
Human papillomavirus (HPV) and cervical cancer are conditions affecting many women worldwide. The two are of major concern for all women, but the knowledge of both is especially important for college students of both sexes.

What is HPV?

HPV is a sexually transmitted disease (STD) that can affect both men and women. It is considered to be the most common STD in the United States, and currently infects about 20 million people. Approximately 80 percent of women will have acquired the infection by age 50, according to the Centers for Disease Control and Prevention (CDC). HPV represents a group of viruses,

30 of which are sexually transmissible. Parts of the body affected by HPV include the penis, vulva, anus, lining of the vagina, rectum, or cervix. People with HPV usually experience no symptoms, thus they may not know they are infected. In some

cases though genital warts or precancerous changes may appear. Diagnosis for genital warts is determined by visual inspection, and diagnosis for precancerous changes in women and HPV in general is determined by abnormal Papanicolaou (Pap) tests. DNA testing of cells may also be used for women in order to



determine which type/strain of HPV infection the person has. There is no simple testing method available for men at this time.¹ However, men who have anal sex can have an anal cytology test (similar to a Pap screening test). Development of anal cancer has been linked to HPV infection of the anus; therefore, a screening tool may be helpful at reducing the effects of this type of cancer.² This article will focus on the effect of HPV and cervical cancer in women.

About Cervical Cancer

When body cells grow out of control it is called cancer. Cervical cancer is cancer originating in the cervix and occurs only in women. The cervix is the part of the uterus that opens to the vagina.⁴ Cervical cancer is rare, but there are risk factors associated with the condition. Risk factors include failing to receive Pap test screenings on a regular basis, HPV infection, and immunosuppressive disorders such as HIV/AIDS. Women with HPV are at greater risk of developing cervical cancer if they smoke or if they have had many children.⁵ Women of all ages need to be concerned about this life threatening disease. Cervical cancer rates are higher for women over age 40, but the precancerous lesion, cervical intraepithelial neoplasia (CIN), is often found in young women.⁶ Neoplasia means an abnormal growth of cells. An estimated 3,710 women will have died from this serious disease in 2005.⁷

Women may unknowingly have cervical cancer because the early stages of the disease present no symptoms or pain. If the disease progresses, the following symptoms may appear.⁸

- Abnormal vaginal bleeding
 1. This includes bleeding occurring between normal menstrual cycles
 2. Bleeding may occur following sexual intercourse, douching, or a pelvic exam.
 3. Be aware if menstrual periods last longer or are heavier

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than before.

4. If bleeding occurs after menopause
- Increase in amount of vaginal discharge
 - Pain in the pelvic region
 - Pain occurring during sexual intercourse

The Connection Between HPV and Cervical Cancer

HPV is the recognized major cause of cervical cancer, but it is important to note that very few HPV infections lead to cervical cancer.⁴ The 30 types of HPV are divided into two groups, “low risk” and “high risk.” Patients with persistent infection of the “high risk” type are most at risk of developing cervical cancer.¹ Cervical cancer is a result of HPV infection, not genital warts. Genital warts result from the “low risk” types of HPV, which do not have the potential to cause cancer.¹

HPV invades cells in order to reproduce. When “high risk” types invade cells in the cervix they have the potential to transform and begin uncontrolled cell division. Persistence of this state results in cervical cancer. Persistence is when a woman has two or more lab test results indicating infection of the same HPV type. HPV-16 is responsible for 50% of cases of cervical cancer and HPV-18 is the second highest contributor to cervical cancer, accounting for about 10% of cases.⁹

The types of HPV that infect women vary throughout the world. Certain “high risk” types are more prevalent in certain areas than others. “High risk” types of HPV are most prevalent in Sub-Saharan Africa. Women in Europe were less likely to acquire HPV of any type.¹⁰ It is important for health educators and physicians to be aware of the incidence and prevalence rates of HPV and cervical cancer in their region so they can properly address the problem.

Men also need to be active participants in the prevention of HPV and cervical cancer. This participation relies on their knowledge of the two diseases. A study of college-aged males, 18 to 25 years, was conducted to determine whether or not knowledge would influence the behaviors of men with regards to limiting sexual partners and encouraging partners to have regular Pap test screenings. A self-report instrument was used to determine actions the men would take if they knew they were positive for HPV. Study results indicated that 95% of the men reported that they would use condoms to help prevent transmission, would limit their numbers of sexual partners knowing the severe possible consequences of transmission to

women, and would encourage sexual partners to participate in receiving regular Pap test screenings.¹² This study shows the importance of education for men with regard to HPV and cervical cancer. Presenting this information to men is a key to the promotion of healthy behavior, which may lead to reduction of transmission and early detection of abnormal cervical cells in women.

Prevention and Treatment

HPV infection is transmitted via genital skin-to-skin contact. The best way to prevent infection is to avoid genital contact with another individual. Use of a latex condom may help to reduce the risk of infection, but does not completely eliminate the risk since HPV infection can occur in genital areas that are not covered by condoms.

Prevention of cervical cancer mainly involves screening with the Pap test. The goal is to detect pre-cancerous lesions early before they turn into cancer. These lesions can be removed to prevent further development. It is recommended that sexually active women be screened once every year and no later than age 21. More frequent screening may be recommended for women with a weakened immune system.⁸

There is no cure for HPV. Treatment of the infection is aimed towards genital warts and pre-cancerous changes. Genital warts are treated with medication applied by the patient and may also be treated with procedures performed by a health care provider. Methods of treatment will be decided on a case-by-case basis.¹

Screening Method for Cervical Cancer

Pap test screening has the ability to detect pre-cancerous and cancerous cells on the cervix. With early detection of these diseases, a more successful treatment approach can be utilized thereby reducing the risk of unnecessary death by cervical cancer.¹ There are two types of Pap tests utilized by medical professionals. One that is commonly known as the “pap smear” is conducted by scraping a small sample of cervical cells from the cervix and then smeared onto a microscope slide. The second technique is the liquid-based Pap test. After a small amount of cervical cells have been gently scraped from the cervix, they are placed into a preservative liquid until reaching a laboratory. At this point, the laboratory technician would place the cells on a microscope slide.⁸ The slides are looked at under a microscope and evaluated for cell abnormalities. These two tests are not perfect, but cervical pre-cancerous cells grow slowly and regular screenings should be able to detect them at a future date before

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they turn into invasive cancer.⁵ In the U.S., health officials have adopted a system of reporting the results, which is called the Bethesda System. The five categories of the Bethesda System include:

1. ASC (atypical squamous cells): The thin, flat cells that form the surface of the cervix are called squamous cells. Abnormalities in these cells are divided into two categories.
 - ASC-US: atypical squamous cells of undetermined significance. The nature of the cell abnormalities are uncertain so further testing is usually performed to determine if the cause is HPV.
 - ASC-H: atypical squamous cells cannot exclude a high-grade intraepithelial abnormality. A diagnosis of this type means the cells are at higher risk for being pre-cancerous.
2. AGC (atypical glandular cells): Glandular cells are found in the opening of the cervix and within the uterus. They are mucus-producing cells.
3. AIS (endocervical adenocarcinoma in situ): A diagnosis of this type means pre-cancerous cells were found in the glandular tissue. The degree of severity of this problem is determined with a CIN rating scale numbered 1-3. AIS is included in CIN-3.
4. LSIL (low-grade squamous intraepithelial lesion): These are early changes in the cells and are considered mild abnormalities. They are caused by HPV and tend to return to normal on their own over a period of a few months to a few years.
5. HSIL (high-grade squamous intraepithelial lesion): This diagnosis means that the abnormal cells are very different in size and shape from normal cervical cells. These are considered severe abnormalities and if left untreated have the potential to turn into cervical cancer.

Women can receive Pap test screenings at a doctor's office, medical clinic, local health department or college health center.¹³ One might want to ask the following questions before receiving a Pap test screening:⁸

- 1) How long will it take until I am notified of the results of my test?
- 2) Do you recommend testing for HPV?
- 3) How much will the procedure cost?
- 4) Is it covered by my insurance?

As mentioned previously, the Pap test is highly beneficial but not always perfectly accurate. Therefore, in order to increase

the accuracy of the Pap test, the American Cancer Society recommends that a woman who is about to have the screening test prepare in the following ways:

- Do not schedule an appointment during the time of a menstrual period.
- Do not douche for 48 hours before screening.
- Do not engage in sexual intercourse for 48 hours prior to the test.
- Do not use tampons, birth control foams, jellies, vaginal creams, or vaginal medications for 48 hours prior to the screening.⁴

The Conditions in the College Population

HPV and cervical cancer should be of concern to college-aged students. Although cervical cancer rarely occurs in women under age 20, research has found that CIN is often found in young women. The presence of this abnormal cell growth, which is pre-cancerous, means that cervical cancer is not just occurring in older women. Any sexually active female would be a candidate for this disease. Women under age 25 have the highest incidence and prevalence of HPV, thus putting them at higher risk for cervical cancer.¹⁴ Prevention of HPV infection in this population is key to preventing cervical cancer.

A recent study followed 1,000 college-aged women over a period of 3 years, testing the women every six months. Of this sample, 60% tested positive for HPV during the study.¹¹ This study shows the degree of prevalence in the college-age population and stresses the importance of education with this age group regarding this health issue.

Men of college-age must also be informed about HPV and cervical cancer. The understanding of the disease can help to promote healthy behavior for both sexes. Men can choose to reduce their number of sexual partners and also encourage women in their lives to visit physicians on a regular basis for Pap test screenings. Without the knowledge of the severe consequences for women, men can continue to behave in ways that will put women at risk.

Healthy People 2010, the prevention agenda for the United States, has set objectives regarding frequency of Pap test screenings and deaths due to cervical cancer. Women, age 18, are the focus of this prevention agenda. The objective for Pap test screenings is to have 90% of women age 18 and older receive a Pap test. In regards to cervical cancer, *Healthy People 2010* hopes to reduce the number of deaths from 3 to 2 women per 100,000.¹⁵ Throughout the county, health education programs have adopted

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the *Healthy People 2010* objectives by implementing free or low cost Pap test screenings for uninsured women.

Support for the Promotion of Pap Test Screening

A study in Texas surveyed 338 women of various ethnicities and socioeconomic status about their knowledge of the importance of regular Pap test screenings. Results of the study indicated that African American and Hispanic women of low socioeconomic status were less likely to be knowledgeable about this health issue.¹⁶ The population with low understanding of the significance is less likely to have regular pap screenings. Longer periods of time between screenings may lead to a higher incidence of cervical cancer for women in this population. Supporting health promotion programs that educate and provide these gynecological services to underserved and uninsured populations is an essential part of changing the devastating effects of this disease.¹⁷

Grounds for Cervical Cancer Prevention Research

Knowledge of the connection between HPV and cervical cancer has resulted in research and development of methods that may reduce the incidence of this cancer. The main focus thus far has been to prevent HPV from occurring. Determining all of the specific types of HPV that cause cervical cancer has been one area of intense research. Better diagnostic tools that are used during a gynecological examination are one technique. Some studies are focused on the self-sampling of cervical cells. This method would be used in developing countries where access to health care professionals is limited. A concern that researchers have with this method is if a woman can reliably collect the cervical cell sample.¹⁸

Development of vaccines to prevent HPV and cervical cancer has been successful and is expected to be available to the public in the near future. According to the American Cancer Society, some of these vaccines will provide immunity to HPV; some will be given to women who already have HPV (this allows the immune system to destroy the virus and cure the infection before a cancer develops); and some vaccines will be given to women who already have advanced cervical cancer (will produce an immune response to the parts of the virus that contribute to the growth of cancerous cells).¹⁸

Conclusion

HPV is a concern for men and women of all ages, particularly those that are sexually active. With the shockingly high rate of 80% of all women being infected with HPV by the age of 50, it is clearly important to educate young people about the symptoms and effects of this disease. College-aged females need to be aware of HPV because it is most commonly detected in this age group. Men are also at risk for HPV infections, particularly genital warts. Thus, they should not feel that they are immune to HPV. They have the potential to pass the infection on to their partners through genital contact.

The connection between “high risk” HPV and cervical cancer has been clearly established, which means that regular Pap test screenings are vital to the reduction of death due to this type of cancer. The American Cancer Society recommends that sexually active women under age 30 have a Pap test screening every year. Men should be aware of any changes or growths in the genital area and seek medical care if they do find something atypical. Future developments of HPV screening tests, vaccines and better treatment tools are on the horizon and will be critical to reducing HPV infections and cervical cancers worldwide.

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HIV, HPV, HSV and Their Emerging Vaccines

Christina Goldpaint

Vaccine development is a long, complicated and expensive process. This tedious development does not guarantee a viable vaccine in the end. Yet the need for vaccines to prevent the spread of viral STDs is ever-present. The desperate call for some kind of vaccination against HIV (Human Immunodeficiency Virus), HPV (Human Papilloma Virus) and HSV (Herpes Simplex Virus) is especially important because there are no cures and these viruses, which are the cause for millions of deaths worldwide. Currently, there are several vaccines in the works that are in various trial stages for HIV, HPV and HSV. This article will explicate the process of vaccine development as well as examine the various stages of progress that these vaccinations have reached.

The Human Immunodeficiency Virus (HIV), Human Papilloma Virus (HPV), and Herpes Simplex Virus (HSV) all share one common theme: they are viruses that have no cure. The traditional way to prevent these diseases is to abstain from risky behavior such as unprotected sex with multiple partners, or engage in safer sex practices including use of latex condoms. However, a new solution is on the rise, prevention through immunity. This journal article will highlight viral STDs including HIV, HPV, and HSV, and their transmission, prevalence, and effects on the body. Also, emerging vaccines for HIV, HPV, and HSV will be examined, focusing on how the vaccines work and their developmental progress.

Importance and Effectiveness of Current Vaccines

For decades, vaccines have been used to prevent debilitating viral and bacterial infections. In 1796, Edward Jenner, an English physician, created the first vaccine by observing the phenomenon that milkmaids with cowpox did not get smallpox. He created the first vaccine by injecting a healthy boy with fluid collected from a cowpox blister. By 1980, smallpox was eradicated due to an updated version of the vaccine created by Dr. Jenner.¹

Currently, there are vaccines for over 20 viral and bacterial infections including polio, diphtheria, tetanus (lock jaw), pertussis (whooping cough), rubella (German measles), measles, mumps, rabies, meningitis, varicella (chicken pox), Haemophilus influenzae type b (Hib), and hepatitis A and B.² Vaccines are important because we are not born with immunity to certain viruses and bacteria that are commonly contracted by young children, such as: diphtheria, polio, tetanus, hepatitis, or Hib. Although many of these vaccine-preventable diseases have been eliminated or significantly reduced, they could potentially become life-

threatening diseases of epidemic proportions if we stop administering and receiving vaccines.³

Vaccine Development

Vaccines are developed in three phases. During Phase I, the vaccine is tested in a small number of healthy, low-risk, non-infected participants. The typical trial size of Phase I is between 20 and 80 participants. Phase I determines vaccine safety and appropriate dosage amount. In Phase II, the vaccine is tested with larger numbers of participants, usually several hundred, healthy, non-infected volunteers. Phase II also further determines dosage and amounts of the vaccine. If the vaccine shows promise and does not produce harmful side effects, it can advance to Phase III. At this stage, the vaccine is at the last step before licensing consideration. Thousands of healthy, non-infected, high-risk participants are involved in Phase III. At this level, participants are divided into two comparable groups. One group is designated as experimental and is administered the vaccine, while the other becomes the control group given only a placebo. The results will be compiled from both groups to determine the vaccine's effectiveness. If the vaccine is successful in Phase III, the manufacturer is able to seek Food and Drug Administration (FDA) approval to produce and distribute the vaccine.⁴



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Vaccine development is a long, expensive process with many obstacles. Inadequate funding and pathogenic power of the virus or bacteria are noted reasons for why it takes such a long time period to bring a vaccine to market. It can be difficult to determine the specific types of immune responses that will be necessary to protect individuals from infection because viruses and/or bacteria are so potent. When vaccines are initially created, their effectiveness among mass populations is unknown. For this reason, vaccines have the potential to fail in clinical trials. If the vaccines are not effective, researchers must redevelop the vaccines. This is a very expensive and long process. Vaccines available today were developed over several decades. For example, the pertussis vaccine took almost 90 years to be developed; the polio vaccine took 45 years, and the measles vaccine, 40 years.⁵

Human Immunodeficiency Virus

Description of the Virus, Transmission, and Prevalence in the United States

Human Immunodeficiency Virus (HIV) is a virus that attacks the immune system by killing the body's CD4 cells until there are not enough to fight against infections. Also, this virus causes Acquired Immune Deficiency Syndrome (AIDS). An AIDS diagnosis is made when the CD4 cell count drops below 200, and an individual has one or more opportunistic infections. Some opportunistic infections include:

- Kaposi's Sarcoma can cause difficult breathing, abdominal pain, or bluish-red lesions on the skin.
- Oral Thrush is a fungus infection of the throat that causes dry mouth, loss of taste and appetite, or difficulty swallowing.
- Cryptosporidiosis is caused by a parasite and affects the gastrointestinal tract, causing watery diarrhea several times a day, abdominal cramps, malnutrition, and/or weight loss.
- Pneumocystis Carinii Pneumonia (PCP) is a fatal type of pneumonia.

Having unprotected vaginal, anal, or oral sex can transmit HIV with an infected person, by sharing needles, being exposed to the blood of an infected person, or from infected mother to child. Ninety percent of HIV cases are contracted through sexual transmission routes.⁵ HIV can only be transmitted through contact with semen, vaginal fluid, blood, or breast milk of an infected person. HIV cannot be transmitted through contact with the tears, saliva, or sweat of an infected person. HIV does not discriminate against people. The virus can infect anyone regardless of age, gender, or sexual preference. There is no cure; only medications can be taken to try to keep the immune system functioning prop-

erly. These drugs are antiretroviral and they suppress the viral load so the immune system can function properly.⁶

According to the U.S. Centers for Disease Control and Prevention, "At the end of 2003, an estimated 1,040,000 to 1,190,000 persons in the United States were living with HIV/AIDS." Males accounted for almost 75% of HIV/AIDS diagnoses in 2003, and females accounted for about 25%. In 2003, African Americans accounted for nearly 50% of HIV/AIDS diagnoses, followed by Whites at 32% and Hispanics at 15%.⁷

HIV Vaccine Progress

Development of an effective vaccine for HIV has been in progress for over 20 years. Due to the complex nature of the virus, an effective vaccine has yet to be developed. Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases (NIAID), describes HIV as "astounding," due to the fact that over 60 million people have been infected with the virus, and there is not one documented case of someone who has cleared the virus from his or her body.⁵ Several dozen HIV vaccines have entered Phase I of clinical trials, and many have advanced to Phases II and III; however, none thus far were proven effective in Phase III.⁴

There are different strategies used to discover an effective HIV vaccine. One strategy is to take small parts of the HIV virus and alter them in a laboratory to create synthetic copies. It is critical that experimental vaccines do not use live HIV. Scientists do not want to create vaccines that could cause HIV. Such vaccines using synthetic copies produce either antibodies or cytotoxic T cells (CTLs) to fight the infection. Types of experimental HIV vaccines that have been developed are:

- **Peptide Vaccine:** made of tiny pieces of proteins from the HIV virus.
- **Recombinant Subunit Protein Vaccine:** consists of bigger pieces of proteins that are on the surface of the HIV virus.
- **Live Vector Vaccine:** non-HIV viruses engineered to carry genes encoding HIV proteins.
- **DNA Vaccine:** uses copies of a small number of HIV genes, which are inserted into pieces of DNA called plasmids. The HIV genes will produce proteins very similar to the ones from HIV.
- **Vaccine Combination:** uses any two vaccines, one after another, to create a stronger immune response. Often referred to as "prime-boost strategy."
- **Virus-Like Particle Vaccine (pseudovirion vaccine):** a non-infectious HIV look-alike has one or more, but not all, HIV proteins.⁸

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Additionally, NIAID has created an experimental vaccine that targets multiple HIV subtypes found worldwide. In October 2005, NIAID announced that this experimental vaccine had successfully passed through Phase I clinical trials. Phase II will begin in Africa, North America, South America, and the Caribbean to test the safety and effectiveness of this experimental vaccine using approximately 480 participants.

Vaccine Research Center director Gary Nabel, M.D., Ph.D., says, "This is the first Phase II study of a vaccine candidate that is broadly relevant to the global AIDS pandemic because it combines components of HIV strains found throughout the world." The Phase II study will target populations that have a high prevalence of HIV including African Americans and other ethnic minorities.⁸

Human Papilloma Virus

Description of the Virus, Prevalence in the United States, and Transmission

Human Papilloma Virus (HPV) is one of the most common sexually transmitted infections in the United States. Approximately 20 million Americans are currently infected with HPV, 9.2 million of which are adolescents and young adults, ages 15-24. Every year, approximately 6.2 million people become newly infected. There are over 100 strains of HPV, and over 30 strains are sexually transmitted through skin-to-skin contact with an infected partner. Sexually transmitted HPV can be divided into two categories: 1) High-Risk and 2) Low-Risk. Unlike HIV and most other sexually transmitted diseases, HPV is not transmitted through bodily fluids such as blood, semen, or vaginal fluids; it is transmitted through skin-to-skin contact with an infected person. In women, sub-clinical HPV can be detected during a pap test. Currently, there is no way to test for HPV in men who do not have genital warts.⁹

High-risk HPV is associated with cancer of the cervix, vulva, penis, or anus. HPV subtype 16 is the most common high-risk virus, and is responsible for almost half of all cervical cancers, and HPV 18 accounts for 10%-12% of all cervical cancers.¹⁰ Low-risk HPV can cause cervical cell changes and genital warts, but most likely will not result in cancer. HPV subtypes 6 and 11 are the low-risk viruses that are most commonly found in genital warts.¹⁰ Infection with high-risk types of HPV is much more common than infection with low-risk types. Up to 30% of individuals infected with HPV are infected with multiple types. Because HPV cannot be detected in men that do not have genital warts, HPV is often transmitted without knowledge that the virus

is present.¹⁰

In the United States, there are 15,000 new cases of cervical cancer diagnosed annually, and approximately 5,000 cervical cancer deaths each year.¹¹ However, rates of cervical cancer are much higher throughout the world. "There are over 500,000 cases of cervical cancer diagnosed worldwide, and of those 300,000 women die annually."¹²

Table 1: HPV Subtypes

x	x	x	x	x	16	18	31	33	35
x	x	x	x	x	39	45	51	52	56
x	x	x	x	x	58	59	68	69	82
x	x	x	x	x	6	11	40	42	43
x	x	x	x	x	44	54	61	72	73
x	x	x	x	x	81	26	53	66	73
x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x

Legend for Table 1

High Risk
Low Risk
Unknown Risk
x = Non-sexually transmitted HPV

Progress of the Vaccine

Currently, two pharmaceutical companies are working on an effective HPV vaccine: Merck & Co. and Glaxo SmithKline. The Merck vaccine is called Gardasil™ and was developed to prevent the onset of cervical cancer. Gardasil™ targets HPV subtypes 6, 11, 16 and 18. These types are associated with 70% of cervical cancers and 90% of genital warts. By including HPV 6 and 11 in the vaccine, researchers anticipate a large reduction in occurrence of genital warts. By the end of the study in 2005, 5,000 women received the Gardasil™ vaccine in a randomized, double-blind placebo-controlled study. Of the 5,000 women that received the vaccine, 93% received all three doses of the vaccine. The results of the study concluded Gardasil™ vaccine was 100% effective at preventing cervical lesions caused by HPV subtypes 6, 11, 16 and 18, whereas there were 37 cases in the placebo

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group. Gardasil™ was also 100% effective at preventing vulvar/vaginal lesions for women who received all three doses of the vaccine, while there were 40 cases in the placebo group. Seven percent of women did not receive all three doses of the vaccine, which brought overall effectiveness to 97%. Merck submitted Gardasil™ to the FDA for approval in December 2005.¹²

The vaccine developed by Glaxo SmithKline (GSK) is called Cervarix™ and targets HPV subtypes 16 and 18, which are associated with 70% of cervical cancers. Unlike Gardasil™, Cervarix™ does not target HPV subtypes 6 and 11, which are associated with genital warts. Cervarix™ was tested in a randomized, double-blind phase III trial to test the effectiveness in girls ages 10-14 and women ages 15-25. The results concluded that girls between the ages of 10 and 14 who received the Cervarix™ vaccine had immune responses twice as strong as women aged 15 to 25 who received the vaccine. The trial was conducted in Europe and Russia and participants included 158 girls, aged 10-14, and 458 women aged 15-25. Each participant received three doses of the vaccine over a six-month period. Cervarix™ is currently undergoing phase III clinical trials and will enroll more than 30,000 women worldwide.¹²

Herpes Simplex Virus

Description of the Virus, Prevalence in the United States, and Transmission

In the United States, approximately 45 million people are living with genital herpes. The herpes simplex virus causes genital herpes, type 1 (HSV-1) or type 2 (HSV-2). HSV-1 is most commonly referred to as oral herpes, and is often called “fever blisters” or “cold sores.” The sores or lesions caused by HSV-1 generally appear on or around the mouth. Genital herpes is most often caused by HSV-2, and is exhibited by blisters or lesions on or around the genitals.¹³

The virus is found in lesions on the skin and is transmitted by skin-to-skin contact with an infected partner, most commonly through vaginal, anal, or oral sex. Lesions are present when an outbreak occurs, and sometimes may be so small, they may not be seen. It is important to understand that HSV can be transmitted at any time, even if an infected individual does not have an outbreak at the time of exposure. Through oral-genital contact (oral sex) HSV-1 can develop in the genital region and HSV-2 can develop on or around the mouth. Number of lifetime herpes outbreaks varies from person to person, and usually become less severe over time.¹³

Currently, there is no cure for herpes. There are medications that can suppress and help prevent transmission of the virus, such as Acyclovir (Zovirax™), Famciclovir (Famvir™), and Valacyclovir (Valtrex™). These medications must be taken every day, and the per-day doses vary per medication.¹³

Progress of the Vaccine

The Herpes Vaccine Trial (Herpevac) for Women has introduced the first trial vaccine for herpes, and was developed by Glaxo SmithKline. The vaccine was shown to decrease the risk of developing symptomatic HSV infection in women who were not previously infected with either HSV-1 or HSV-2. The vaccine is not 100% effective, and is currently reducing the risk of contracting HSV by 75%. The vaccine is not effective for women who are already infected with HSV-1 or HSV-2, and is not effective in men. Herpevac will not cause participants to develop herpes because there is no live virus in the vaccine. The vaccine contains only a specific part of the virus to create an immune response.¹⁴

According to Dr. Michael Carbuto, Chief Staff Physician of the CSULB Student Health Services, “All women should be vaccinated.” When asked about any possible drawbacks of the vaccine, Dr. Carbuto simply stated, “Perhaps a feeling of invincibility [in those vaccinated]. And they may be less likely to use condoms with the feeling that they are protected, although the vaccine will only protect against HSV.”¹⁵

The Herpevac is currently undergoing Stage III of clinical trials. CSULB is a participating study site for the Herpevac, and welcomes all eligible female college students. Eligibility requirements include: healthy women between the ages of 18 and 30 who test negative for both HSV-1 and HSV-2, not pregnant, planning a pregnancy, or breastfeeding; no abnormal immune function, and must be available to return for study visits for 20 months after initial visit.¹⁴

To participate in the study at CSULB, females must be students of CSULB. If you or someone you know may be interested in participating in the Herpevac Trial for Women at CSULB, please contact the CSULB Student Health Services at (562) 985-4874.¹⁶

Conclusion

Unlike bacterial STDs, viral STDs are not curable. Only treatments exist to reduce the severity of the disease and to promote a longer, healthier lifespan. Often these diseases, such as the ones discussed in this article (HIV, HPV, and HSV) are transmitted to others without knowing the virus is present in the body.

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With a simple vaccination, the elimination of these viral diseases could bring the hope of new generations never having to know the pain caused by being infected and living with the outcomes or even dying from the virus.

Production and distribution of an effective HPV vaccine that targets HPV subtypes 16 and 18 has the potential to eradicate almost all cervical cancers. Approval of the HPV vaccine by the FDA appears to be in process according to the developers of the vaccines. With an HSV vaccine, there would be a large reduction in the prevalence of herpes. However, it is imperative that women are immunized early, before transmission of HSV-2 or HSV-1, which can be contracted at a very young age. A vaccine for HIV is in Phase III clinical studies, which brings hope to millions who may face the ramifications of living and dying with this disease.

Vaccinating the population against such diseases would be much more cost effective than treating infected individuals. And for life-threatening diseases such as HIV, stopping the cycle of infection, transmission and death could save millions of lives. Vaccines have come a long way since Edward Jenner developed the smallpox vaccine. HIV, HPV, and HSV are viruses that have no cure to date. However, due to the dedication of many in medical research, there is hope for preventative measures in the near future.

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Condoms from Inception to Now

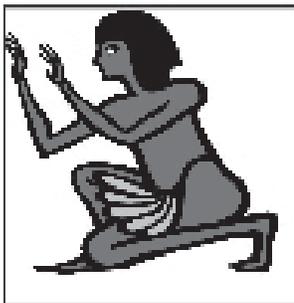
Dannie Allen

The concept of the condom is not a modern one. Ancient Egyptians used a barrier method similar to the modern day condom in approximately 1000 B.C. Condoms have come a long way from the earliest types that were made out of animal skin and other products. These lined sheaths were even washed out for reuse! Currently, there are a multitude of condoms on the market, including condoms to be worn by females in the vagina. No longer is the condom just for males. High standards for manufacturing and testing of the condoms are in place because of the importance of protecting individuals from unintended pregnancies, STDs, and HIV/AIDS.

Human Immunodeficiency Virus (HIV) and sexually transmitted diseases (STDs) continue to spread across the world putting sexually active people at risk. With these highly infectious diseases, it is critically important, now more than ever, to protect your sexual health. Condoms provide protection against HIV, many STDs, and unwanted pregnancy. Condom development has an interesting evolutionary path. Throughout the centuries, condoms have evolved from linen sheaths used by ancient Egyptians to lubricated latex condoms that come in a variety of sizes, colors, and even flavors. This article will detail the evolution of the condom from beginning to present; explore condom effectiveness; examine a research study's creative method for testing the effectiveness of condoms; and stress the importance of condoms in preventing unplanned pregnancy and the spread of HIV and STDs.

Inception to Present

Condoms have had a long and interesting history. From linen pouches in the earliest documented times to liquid latex in our modern era, few people are aware of the details of their evolutionary process. Condoms are not a modern invention, in fact, the Egyptians documented information regarding some of the first uses of condoms. In approximately 1000 BC, the ancient Egyptians used linen sheaths for protecting themselves against diseases. There are chronicles of contraceptive devices being used during the XIX Dynasty (1350-1200 AD). Discovered drawings depict condoms being used; however, it is unclear if the paintings show these sheaths for purposes of sex or religious cults. The contraceptives were decorated with



gems and placed in graves of some men when they died.¹

During early times in the Orient, the Japanese used thin leather tortoise shells to make their contraceptives more decorative, and in order to avoid sexually transmitted infections, the Chinese wrapped oiled silk paper around the penis, and the Romans made their condoms from goat's bladders.²

The earliest evidence of condom use in Europe comes from cave painting scenes at Combarelles in France.² There is also evidence that some form of condom was used in imperial Rome. The claimed inventor of the condom is Gabriello Fallopio (1523-63), an Italian anatomist who recommended it as protection against venereal diseases.³ During the 1500s, the syphilis epidemic spread across Europe and led to the first published account of the condom. After it was realized that condoms were effective against the spread of infection, they were then used for the prevention of pregnancy.

Interestingly, in the late 1500s, one of the first improvements was made to the condom. The cloth sheaths, which were the condoms of the time, were soaked in chemical solutions and laid out to dry. The chemical solutions that they were soaked in acted as a spermicidal to help thwart unwanted pregnancy. According to *The Oxford Companion to the Body*, "There are a number of literary allusions throughout the eighteenth century, most notoriously in the memoirs of Casanova and the diary of James Boswell, to the use of 'armour' or 'implements of safety.' Madame de Sevigne; however, writing of their contraceptive use, considered them "an armour against enjoyment and a spider-web against danger."³

In the 1800s, condoms were positively affected by technological development. "Condom manufacturing was revolution-

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ized with the discovery of rubber vulcanization by Goodyear and Hancock. This meant that it was possible to mass-produce rubber goods including condoms, quickly and cheaply. Vulcanization is a process which turns rubber into a strong elastic material.” In 1919, hand dipping from natural rubber latex was started by Frederick Killian. The latex condoms had the advantage of being thinner, odorless, and aging less quickly. These new types of condoms boomed in sales, and by the mid 1930s, 1.5 million condoms per day were being produced. In the 1980s, due to the recognition of HIV/AIDS, the use of the condom increased rapidly and soon condoms became available in pubs, bars, grocery stores and also supermarkets. Nowadays, due to technology, condoms are thinner and available in various shapes, sizes, widths and lengths.⁴

Today, condoms are made from latex, plastic (also called polyurethane condoms), or animal skin (also called natural membrane condoms). Condoms cover the penis to act as a barrier to prevent semen from entering the vagina or anus and reduce the risk of HIV and STD transmission and infection.⁵ Barring sperm from entering the vagina makes the condom an effective method for preventing pregnancy as well. Condoms are user dependent and they rely on the male partner for effective use. According to the *Contraception and Sexually Transmitted Infections Journal*, “Condoms should not be regarded as able to prevent the transmission of STIs, but rather to reduce the risk.” An interesting fact is that male-to-female transmission of herpes simplex virus (HSV) type 2 has been shown to be significantly reduced with condom use on more than 25% of occasions.”⁶

How Effective Are Condoms?

According to the United Nations Population Fund UN-AIDS Best Practice Collection on Making Condoms Work for HIV Prevention, “Compelling international evidence has been gathered by the U.S. Department of Health and Human Services and the United Nations Population Fund which shows that consistent use of latex male condoms is a highly effective method for preventing HIV transmission. Scientific research by the U.S. National Institute of Health and World Health Organization (WHO) found “intact condoms...are essentially impermeable to particles the size of sexually transmitted disease pathogens, including the smallest sexually transmitted virus.” A study was conducted



with couples and results were reported in a publication titled *Making Condoms Work for HIV Prevention*. One partner in the couple was HIV-positive and the other was not; this is called a serodiscordant couple. Conclusive evidence indicated consistent condom use reduced the probability of HIV transmission during penetrative sex by approximately 90%. Results indicated from this study give evidence that when condoms are used consistently and correctly, there is a reduced risk of HIV transmission by approximately 90%, and with perfect use, the effectiveness rate might be even higher than 90%.⁷

According to the Centers for Disease Control and Prevention (CDC), correct and consistent use of the male latex condom can lower the risk of transmission of STDs. It is important to understand that no protective method besides abstinence is 100% effective, and even with use of condoms there is no absolute guarantee against any STD.⁸ According to the CDC, laboratory studies have shown that latex condoms provide an impermeable barrier to pathogens and particles that are very small in size, such as STDs. “The physical properties of latex condoms protect against discharge diseases such as gonorrhea, chlamydia and trichomoniasis by providing a barrier to the genital secretions that transmit STD-causing organisms.”⁸ Abstinence is the only sure, 100% way to remain completely STD and pregnancy free, but condoms do provide risk reduction to such a level (approximately 90%), that can alleviate fears of contracting HIV, STDs, and unwanted pregnancy. This allows people to relax and enjoy sex, without worrying and having anxiety.

Planned Parenthood Federation of America, Inc. conducted a study of 100 women whose partners use condoms. About 15 women will become pregnant during the first year of typical use, and only two women will become pregnant with perfect use. Typical use was defined as use that was not always consistent and not always correct and perfect use was defined as consistent use and always correct by following the directions and instructions for proper condom use from the packet information guide.¹

There are different types of condoms that are widely available today on the market. The main types are cecum or natural skin condoms (lambskin condoms), latex condoms, and polyurethane condoms. Latex condoms are by far the most widely available and least expensive. Polyurethane condoms are the newest kind of condom on the market and they are made from a type of plastic that is thinner, stronger and offers a less constrict-

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ing fit. Polyurethane condoms, compared to latex condoms, are less elastic and have more of a loose fit (thus less constrictive), which makes them slightly more likely to break or slip off. For this reason, the Food and Drug Administration (FDA) and the CDC recommends polyurethane condom use for people who are sensitive or allergic to latex. For those people who do not have a latex sensitivity, latex condoms are a better bet for safe sex. Unlike latex or natural skin condoms, polyurethane condoms come in both male and female versions, but polyurethane condoms are more expensive than latex condoms.⁹

A good way to maintain effectiveness is to use lubrication on the inside and outside of the condom. Using lubrication helps prevent rips and/or tears that could contribute to ineffectiveness. It is important to only use water-based lubricants, such as K-Y Jelly™ or AstroGlide™ with latex condoms. Oil-based lubricants break down the latex, which increases the risk of a tear or a break in the condom. The chart below, provided by Planned Parenthood Federation of America, Inc., lists both compatible and non-compatible lubrications with latex condoms.

Testing Condoms: One Study's Creative Approach

In the United States, condoms are tested for holes and defects. Condom manufacturers examine each lot of finished packages of condoms for tears, rips, and holes. Condom manufacturers also test condoms for physical characteristics using an airbrush test and a strength test.⁴ Other countries have different regulatory agencies for testing condoms.

A research study entitled *A Simple Method to Test Condoms for Penetration by Viruses*, used a creative method to test and evaluate the effectiveness of latex and natural membrane condoms at reducing permeability and penetration of viruses. Natural membrane condoms are condoms made from animal intestine and are sometimes referred to as Lambskin condoms. Latex condoms are made from liquid rubber that has been through an industrial process known as vulcanization, which turns rubber into a strong, elastic material. The study tested the effectiveness by filling a condom with a chemical buffer (a chemical buffer is a substance that reduces the change in the acid concentration of a solution when an acid or base is added to that solution) that

SAFE WITH ALL CONDOMS	UNSAFE WITH LATEX CONDOMS
Aloe-9™	Aldara cream
Aqualube™	Baby oils
Astro Glide™	Bag Balm
Cornhuskers lotion	Chocolate Syrup
DeLube™	Clindamycin 2% vaginal
ForPlay™	Cream
Glycerin	Cold creams
Gynol II™	Edible oils
K-Y lubrication jelly™	Hand and body lotions
I-D Cream™	Massage oils
I-D Glide™	Mineral oil
I-D Juicy Lube™	Peanut Butter
I-D Millennium™	Petroleum jelly
I-D Pleasure™	Rubbing alcohol
PrePair™	Shortening
Probe™	Suntan oil and lotions
Silicone lubricant	Certain vaginal yeast creams
Water and saliva	Infection medicine
Wet™	Vegetable or cooking oils
H-R lubricating jelly™	Whipped cream

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contained a “challenge virus.”¹⁰ Once filled with the chemical buffer, the condom was submerged into a larger container that also had a buffer solution in it. In the study, the expansion of the condom was restricted with a restrainer, so as to not have it become too big, as well as controlling the pressure inserted. The experiment’s purpose was to test the permeability of the condom to the challenge virus that measures only 27 nanometers in diameter, smaller than human viruses. If the condom were permeable, then the challenge virus would be present in the buffer solution in the container that the condom was placed into. “One brand of un-lubricated latex condoms was tested. Prior to testing, the surfaces of each natural membrane condom were gently rinsed...to remove excess lubricant.”¹⁰ Three of the 60 latex condoms allowed penetration, and 13 of the 19 natural membrane condoms allowed penetration. The viral penetration data confirmed that many samples of natural-membrane condoms allow penetration of virus-size particles. Because 13 of the 19 natural membrane condoms allowed penetration, it can be concluded that latex condoms are more effective against penetration of virus size particles than natural membrane condoms. Results of the data also demonstrated that latex condoms were substantial barriers to viruses. Lastly, the study concluded that, “Because the primary challenge virus is small (27 nanometers in diameter), this test represents a conservative test for safety; i.e., if (27 nanometers in diameter) cannot penetrate a condom, then larger human viruses probably cannot penetrate it.”¹⁰

The Female Condom: An Alternative

The female condom is known to provide protection against most STDs and HIV.⁶ In addition, the female condom is a barrier method of birth control. It is made of polyurethane, which is plastic and is produced in the shape of a pouch. There are flexible rings at each end, allowing it to be easily inserted into the vagina and held in place by the muscular walls of the vagina. It is inserted into the vagina deeply, just like a diaphragm. “The female condom collects semen before, during,



and after ejaculation, keeping sperm from entering the vagina and protecting against pregnancy.”¹ The female condom can be an alternative product in place of a male condom. However, it is important to know that a male

condom and a female condom should never be used simultaneously. Friction caused by the rubbing between the condoms will increase the risk of tearing or breaking in one or both, thereby decreasing each person’s protection against HIV, STDs and pregnancy.

How to Get Condoms? & What Do They Cost?

An advantage for using condoms is that they are available at many convenient places. They can be found in drugstores, grocery stores, family planning clinics, gas stations, and even from some vending machines. Each condom costs about \$0.50 or less. Female condoms are more expensive, costing approximately \$2.50 per condom. At many family planning clinics, condoms are given away for free. Condoms come in a wide variety of colors and sizes. They can be transparent, tinted, opaque, nipple-ended, rippled, dry, powdered, lubricated, and can also have spermicide. The spermicide nonoxynol-9 is a chemical that kills sperm. A disadvantage of using condoms with spermicide is that sometimes this chemical solution can irritate skin and tissue, causing the skin to open, crack, and possibly bleed. These openings in the skin and mucosal membrane can increase a person’s risk of getting HIV or STDs. Most condoms are not made with spermicide, but with non-irritating lubricants. Some novelty condoms may not protect against STDs and pregnancy, so it is important to read labels. Condom sizes are not marked on the package, but they do come in different lengths, widths, and thickness.¹

Do not let embarrassment get in the way of purchasing condoms and protecting your sexual health. Instead, take positive steps by obtaining condoms and asking your doctor or pharmacist questions about use and effectiveness. Buying the condoms and preparing yourself to use them will help you begin taking control of your sexual health and accepting responsibility.

Advantages, Disadvantages, and Side Effects of Condoms

Using condoms has many advantages. Besides protecting men and women against HIV, STDs and unwanted pregnancy, they are inexpensive and easily accessible. They are lightweight, disposable, and do not require a prescription. “Many women and men say they have better sex when they use condoms. They are able to focus on their sexual pleasure without distractions about unintended pregnancy and sexually transmitted infections. Some couples put the condom on as part of their foreplay.”¹

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The disadvantages of using condoms are that some people report having dulled sensation, particularly men. Others complain that if they are “caught-up in the heat of the moment,” stopping to put on a condom can reduce their sexual excitement. These points aside, many people overcome these disadvantages based on the advantages and learn to incorporate condom use into their sex lives. Physical side effects of using condoms could apply to people who have allergies to latex or allergies and/or negative reactions to nonoxynol-9 (the spermicide).



In these instances, people have the option of purchasing natural membrane animal skin condoms or polyurethane condoms. Also, plastic female condoms are a viable option.

Being in Love

A main issue with couples when they are in a relationship and “in love” is that they tend to not use condoms. This is an issue for both individuals not properly preventing unwanted pregnancy and protection from contracting or spreading HIV and STDs. A research study that examined heterosexual male participation in unsafe sex found five principal themes recurring in young men’s accounts of the non-use of condoms. Seventeen males participated in the study; their ages ranged from 18-26 years. The common themes identified for not using condoms when having sex were: 1) The men felt pregnancy was more of a risk than contracting HIV or STDs, and they felt the prevention of pregnancy was taken care of by their female partners taking the birth control pill. 2) The men felt condoms were too difficult to use and that they decreased sensation during sex. 3) The men felt that spontaneity and passion made it too difficult to use condoms. 4) The men felt that trust and monogamy with their partners meant they did not have to use condoms. 5) The men believed that in their heterosexual peer circles, HIV was not a true risk and that HIV was more of a risk to homosexual populations.¹¹



Although we would all like to believe that if we are monogamous, our partner will be too. The reality is that some people cheat. “Even when two people are in a monogamous relationship, neither

partner can be 100 percent certain that the other is faithful.”¹² Surveys have revealed that there are people who claim to be emotionally loyal, but consider an occasional physical intimacy with another as not cheating. One must remember no matter what definition a partner gives for monogamy, if one chooses to have unprotected sex with someone else they not only place themselves but their committed partner at risk for HIV and STDs. This is why it is critical to use condoms every time, even when you are in a relationship.¹²

According to a similar research study in 2005 titled *Adolescent Relationships and Condom Use: Trust, Love and Commitment*, inner-city minority groups were considered high risk for HIV infection. The study proposed that adolescents are at increased risk for HIV/STD transmission and infection. Statistics indicate that four in ten sexually active adolescents report not having used a condom during their last sexual act. Adolescents in the study described many reasons for not consistently using condoms or for not ever using condoms. Reasons ranged from not having one available, becoming aroused too quickly, or interference with pleasure. An interesting conclusion from the study was that adolescents who had access to condoms, were knowledgeable about both the proper use of condoms and the facts related to HIV/STD transmission still did not intend to use condoms with their ‘in love’ and committed partner.¹³ Interestingly, these results provide insight of how being romantically involved might adversely affect condom use.

If your partner is hesitant to use condoms, a good idea to break the ice is honesty. Within the relationship, discuss your desires to be with someone in the best possible way. One can read literature and discuss it together. The recurring theme in the literature that “sexual health is important” is not something that is easily deflected, and this should help to positively persuade your partner.¹⁴ Not using condoms does not prove love and commitment to your partner. In fact, the opposite proves one’s love and care for their partner. Sexually protecting yourself and your partner is one of the best and most direct ways of saying, “I love you.”

Conclusion

From collected historical data, it has been revealed that humans throughout the ages have been concerned about protecting themselves from sexually transmitted diseases and unwanted pregnancies. In spite of concerted efforts, HIV and STDs continue to spread throughout all regions of the world. And as they did long ago, condoms still play an important role for prevention according to the Joint United Nations Program on HIV/AIDS.⁷

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Even though condoms have been proven to have a high effectiveness rate for prevention of these diseases and pregnancy, this truth has very little impact for protection if people do not use them correctly and consistently.

Today, students have a wide variety and selection of condoms from which to choose. If one is involved in an intimate relationship, condoms provide one of the best methods to help prevent STDs, HIV and pregnancy. By choosing and using different types, a couple can discover condoms best suited for their preferences while enjoying safe sex. Condom use among young people is critical because they are at greatest risk for STDs and HIV infection. Not only are students being responsible for their wellness, but also are establishing patterns of behavior that will allow them to enjoy a lifetime of healthy sex.

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Sounding the Alarm and Spreading the Word

Antonya Jackson

HIV/AIDS is increasingly affecting young people worldwide, whether they are losing friends, family members or even themselves being infected. Effective, proactive education and awareness campaigns targeted to youth may help young people understand how to protect themselves and how to help others. Many youth feel frustrated and alienated regarding the disease and the education provided to them. As a result, many youth have taken an affirmative stance to educate their fellow peers and community against this deadly virus by both radical and peaceful activism. Whether using the system or fighting it, activism has historically been an effective method for reaching the mainstream population about important issues by bringing attention to the plight of others by using media and other techniques.

Some youths feel Human Immunodeficiency Virus (HIV) will not affect them because they believe old stereotypes about the disease. Such as only homosexual males and injection drug users can be infected. Sexually active young people, including college students, put themselves at risk when they do not use condoms during sex or are engaging in other high-risk behaviors known to be implicated in transmission of HIV.

The media does not support safe sex values as indicated by the manner in which it portrays young men and women in music videos, television and advertisements. Often times these venues promote sex as a behavioral action without consequences. It is critically important that youth are exposed to messages detailing the risks associated with sexual behaviors. Statistics show that there is a definite increase in the number of American youth infected with HIV. As cited by the Advocates for Youth in 2005, newly reported HIV cases among youth, ages 13-19, were highest among young women (57%) and then young men (43%).¹

“Many sexually active teens have not been tested for HIV, the actual number of those living with the HIV infection is estimated to be much higher than the reported 6,587.”¹ Youths exposed to this information are becoming frustrated about the lack of HIV awareness and this infection’s effects on their peers. College students who are aware of the profound impacts of this disease have become motivated to speak out about this pandemic (a worldwide epidemic). Whether it is through protesting and demanding change or working with others in the community to educate and assist those in need, students are becoming activists by bringing the message to their peers about the life altering effects of HIV.

HIV will continue to alter the lives of our youth, especially if the lack of education about the disease continues. According to

Advocates for Youth (2005a), “Seventy-one percent of those with unrecognized HIV infection said it was very unlikely that they were infected.” This high percentage of youth, unaware they are carrying the disease, is alarming. In order to stop HIV from taking the lives of friends, sisters, brothers, and loved ones, today’s youth must forcefully confront this virus. A way in which this “showdown” can occur is through student activism. By taking this course of action, students not only become educated, but also are able to sound the alarm in order to alert their peers about this insidious disease.

Defining Youth Activism

Youth activism are the actions taken to bring about social change to unjust laws and policies. There are two types of youth activism. Both important because when combined, the message can reach many different groups of people in our society. One type is classified as radical because these activists go against the mainstream society. Radical members are more vocal and are not afraid to defy laws in order to have their voices heard. These youth demand rapid change and will not stop until their issues are addressed. When youth speak out from a radical viewpoint, they are not just speaking to a few of their peers. Usually events such as demonstrations are held to catch the attention of people in power, such as politicians. Radicals may call upon a visible personality (a movie star, rap artist or athlete) to promote their cause to gain wider coverage for the issue at hand. Utilizing the media to get the word out to the rest of society is a critical element of this technique.

The second form of youth activism includes peer education, which is where the youth of the community educate other young people. An example of this type of activism has been very successful in HIV education and awareness programs. Peer educators teach other youth about the realities of HIV, and how

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to reduce their own HIV risks. It is hoped that the targeted youth will listen to those of a similar background and viewpoint. Peer educators work not only in their own community, but reach out beyond and help others, through the Internet, television, and mail.

Peer Education Organizations

There are different types of organizations that participate in HIV activism in the United States. A peer education organization, My Sistahs, is part of Advocates for Youth, a nonprofit organization dedicated to "...creating programs and supporting policies that help young people make informed and responsible decisions about their reproductive and sexual health."²² This organization was created for young women of color in order to provide information and support on sexual issues through education. Even if a person is not able to attend an education workshop they can go online via www.Mysistahs.org and talk on the message boards, and receive online peer education about activism, culture, sexual health, and other important issues that might spark their interest.

Another local program that engages in HIV prevention activism is the Long Beach AIDS Foundation. "The goal of the foundation is to embark on a new road that would rededicate the communities' efforts to raising funds for local HIV/AIDS services and education agencies, which make a real impact on HIV/AIDS in Long Beach, and begin a course for growth and change. The Long Beach AIDS Foundation operates the program AIDS Walk Long Beach, (formerly AIDS Walk of Greater Long Beach) and operates as an all-volunteer organization."²³ People who are interested in volunteering are encouraged to contact the organization for more information.

California State University, Long Beach has many activist groups on campus that seek to raise awareness about HIV. The LGBTRC (Lesbian, Gay, Bisexual, Transgender Resource Center) is a student run organization, which aims to provide services and support to CSULB's students, staff and faculty who are Lesbian, Gay, Bisexual, and Transgender. "The LGBTRC encourages and supports events and dialogues which attempt to create an environment free of racism, classism, sexism, and blatant forms of discrimination."²⁴ Some of the services offered through the LGBTRC are discussion groups directed by different organizations on campus such as Gay Lesbian Bisexual Transgender Students United-student group, Delta Lambda Phi (men's fraternity), and the Eastern Ethnicity and Pacific Islander Group. These discussion groups allow students the opportunity to talk about HIV and have their questions answered.

The United Student Activist (USA) coalition allows participants to be a part of a cohesive and powerful student activist community. "The networking of communication and cooperation across our large and diverse campus, strengthens organizations both individually and collectively."²⁵ Some of these organizations include The African Student Union, CSULB Campus Progressives, Circle-K International, History Students Association, La Raza Student Association, Muslim Students Association, Sociology Students Association, and United Methodist Campus Ministries. These organizations on campus reach out to all different types of students. Some of these organizations have been involved with the promotion of increasing awareness about HIV.

The on-campus African Student Union (ASU) is not a group recognized specifically for youth activism dealing with HIV, but did facilitate an HIV/AIDS awareness session in Fall 2005. The meeting discussed HIV/AIDS and how it is affecting African American youth. At the meeting, a certified HIV counselor was there to answer questions regarding the disease and its effects. The session lasted about an hour and many important issues were discussed amongst the attending groups. The importance of this discussion was to get the message across that HIV affects youth of all colors.

Activist Organizations

"The Community HIV/AIDS Mobilization Project (CHAMP) is a powerful community-based movement bridging HIV/AIDS, human rights, and struggles for social and economic justice. It is revitalizing AIDS activism by training and mobilizing people living with HIV, community activists, researchers, academics, and policy advocates. They also educate new generations of leaders with tools and resources to change unjust and inaccurate HIV/AIDS prevention policies, and link them with different places around the world to attack the root causes of the epidemic such as poverty, homophobia and racism."²⁶ The organization demands that all people have access to complete information in order to avoid HIV or to not pass the virus on to others. One of CHAMP's methods is to pressure politicians, society, and corporations to address and help end this crisis. Also, CHAMP utilizes the media to fight for increased funding for HIV/AIDS programs, protests for wider access to medications for people living with HIV/AIDS and a comprehensive HIV prevention campaign. This organization can be reached at www.champnetwork.org.



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“The Student Global AIDS Campaign (SGAC) is a U.S.-based network of student and youth organizations committed to the global fight against AIDS. The Student Global AIDS Campaign’s major goal is to end the HIV/AIDS pandemic in the United States and around the world. SGAC seeks to mobilize a multi-racial student movement, in partnership with students internationally, to make claims upon governments, and civil society through education, leadership training, and direct action. SGAC demands sufficient resources, effective prevention, and guaranteed access to AIDS treatment and care as a matter of moral urgency.”⁷ They also pledge themselves to the struggle against AIDS by forming a global youth movement.

ACT UP is a national diverse, non-partisan group of individuals united and committed to direct action to end the AIDS crisis. Advising, informing, and demonstrating are key activities of ACT UP. Groups like ACT UP vehemently disagree with the abstinence-only sexual education programs that are being adopted across the United States. “Religious Right” organizations in America have promoted the abstinence-only sex education programs, perhaps without considering the long-term effects that the lack of education will have on our youth. According to the ACT UP website, authors Esther Kaplan and Kate Barnhart stated that, “Right now the HIV Prevention Organizing Project (H-POP/CHAMP) is addressing the right wing’s dramatic attack on science-based HIV prevention in the U.S. and throughout the world.”⁸ This project stresses the facts about HIV and how to educate those from becoming infected.

AIDS Project Los Angeles is a leader among national, state and local organizations working to advocate for fair and effective HIV/AIDS-related public policy. The most important mission of the Government Affairs Division at AIDS Project Los Angeles is to speak on behalf of the people living with and affected by HIV/AIDS. “Working with legislators, nonprofit agencies, clients and grassroots activists, the Government Affairs Division addresses critical issues that impact the HIV/AIDS community at the national level, which includes grassroots trainings, policy position papers, informing and educating decision-makers at all levels of government, working with coalitions of other HIV/AIDS advocates to achieve high-quality care, treatment and prevention services for people with HIV/AIDS.”⁹

The Treatment Action Group (TAG) was the first and only AIDS organization dedicated to speaking out for more efficient research efforts, both public and private, for finding a cure for AIDS. “TAG’s work on basic science advocacy is devoted to speeding the conduct of research on the pathogenesis of HIV infection (how the virus causes AIDS) and the interactions between

the virus and the immune system. TAG advocates for responsible public policy on AIDS research and treatment with our nation’s leaders, including members of Congress and officials from the relevant agencies in the Executive Branch.”¹⁰ The organization pushes for more funding for AIDS research and sensible legislative initiatives to foster better biomedical research.

Peer Education Really Works

Each organization that is listed above is making a conscientious group effort to take action, both personally and socially, towards fighting HIV/AIDS. Some organizations are trying to find vaccines or medicines to help the youth with HIV live longer, while others strive through education to influence this generation of youth to make informed choices about HIV prevention. Both methods are effective and encourage change.

“Several studies from different countries show that quality sex education can actually decrease the likelihood that young people will have sex, and increase condom use among those already sexually active.”¹¹ A Centers for Disease Control & Prevention (CDC) study showed “comprehensive sexuality education is effective in reducing teen age sexual activity and increasing safer sex among teens who do have sex.”¹² These studies validate the need for comprehensive sex education in schools so youth are informed about HIV and how to prevent it.

Another very effective method for raising awareness and educating youth about HIV prevention is to have young people teach one another. Many organizations rely on peer educators to get the message out to other youth. The success of these programs reaffirm that young people tend to listen to those who understand their situation best, and peers are often the only ones who can identify with their problems. In addition, young people do not always feel comfortable discussing serious topics such as HIV openly with older people. So, “the most effective way for youth to learn about sexual health is to learn from a peer.”¹³

It’s Not Too Late To Become Active

Students need to realize that their one voice, combined with others can be an effective force in furthering the cause for HIV prevention. It is more important than ever before that students become involved in a cause that they can truly demonstrate their activism for a positive outcome. Young people who are interested in becoming part of the HIV prevention movement should remember that their voices are worthy of being heard and they have many important ideas to share with others.

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The importance of listening and communicating with one another needs to be emphasized when engaging in activism, particularly among those who are in positions of control, such as the older veterans in these programs. Serving as role models and allowing the youth to become empowered activists should be critical elements to remember for the veteran activist. Hopefully, students will consider becoming involved with any of the organizations previously mentioned or even starting their own. Not only will they gain from the experience of having participated in group activism, but will also have positively given back to their community.

Conclusion

Sadly, HIV continues to spread because many young people fail to use safer sex practices and lack the knowledge about the disease itself. Education continues to be one of the foremost ways to disperse information to our youth about the threat of HIV. There are many methods in which HIV information can be presented through education. As past history has proven, education through activism can bring about great social change. This article has highlighted many such HIV activist groups in existence.

The reason these groups are so effective is their membership is comprised of young people. Research has indicated that youth are far more likely to listen to someone their own age when discussing the facts about HIV prevention. Therefore, students interested in bringing about change should consider becoming an activist towards combating this extremely crucial threat. By joining one of these organizations, they will be afforded the opportunity to fight against the spread of HIV in their community. Become an activist and ring the alarm for all to hear!

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• NOTES •

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