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ADOLESCENT HEALTH BRIEF

HIV Immunization: Acceptability and Anticipated Effects on Sexual Behavior Among Adolescents

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Adolescents rated hypothetical human immunodeficiency virus vaccines described as 90% and 50% efficacious and discussed how immunization might influence behavior of their peers. The low-efficacy vaccine was largely unacceptable and most believed immunization with the high-efficacy vaccine would cause increased risk behaviors. Immunization programs will need to address vaccine acceptability issues and behavioral responses to immunization. © ***Society for Adolescent Medicine, 1999***

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Although a human immunodeficiency virus (HIV) vaccine would represent an effective tool in the fight against HIV infection, two emerging lines of research suggest that several psychosocial issues will need to be addressed to ensure effective implementation of immunization programs. Our prior research, which has examined attitudes about HIV vaccination, indicates that many individuals may be reluctant to accept immunization and that acceptability may be determined, in part, by health beliefs and vaccine characteristics (e.g., efficacy) (1–3). A second line of research involves mathematical modeling to evaluate the likely effectiveness of HIV immunization (4–6). These studies suggest that the degree to which infection rates drop will depend on vaccine efficacy, duration of protection, disease prevalence, vaccine coverage, and behavior change (reduction or increase in behavioral risk factors). If an increase in risk behaviors is an unintended consequence of vaccination, it is conceivable that an HIV vaccine might have the paradoxical effects of increasing rates of other sexually transmitted infections (STIs), and of making the vaccine itself less effective at reducing the incidence of HIV (5). However, the potential for increased sexual risk behaviors in response to HIV immunization has not previously been studied in this country, and only one study to our knowledge has examined this issue elsewhere (7). In that study of Ugandan military recruits, approximately one-half of the subjects indicated that they would not use condoms if immunized for HIV.

The purposes of this study were to evaluate adolescents' attitudes about hypothetical HIV vaccines of 90% and 50% efficacy and to explore their predictions of how receiving a 90% efficacious HIV vaccine might influence sexual behavior of their peers.

Methods

Subjects were adolescents who were receiving medical services at urban community health clinics located in a large Midwestern city. The clinics provide care for youth who are primarily of lower socioeconomic status. Participants (ages 13–18 years) were recruited during scheduled clinic visits. Written informed consent was obtained from each adolescent. The requirement for parental consent was waived

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because the majority of adolescents use the clinics for confidential health care. The study was approved by the university's institutional review board.

Subjects were administered brief interviews which consisted of three related questions. First, they were asked, "Imagine that a vaccine to prevent acquired immunodeficiency syndrome (AIDS) has been developed that works 90% of the time. Some people may decide to get it and some people may not. Do you think adolescents would want to get this vaccine?" Second, they were asked the same question about a vaccine that works 50% of the time. Finally, subjects were asked, "Imagine if adolescents got an AIDS vaccine that prevented AIDS 90% of the time. How do you think getting this AIDS vaccine would influence their sexual behaviors?"

Results

Of the 142 adolescents recruited, 140 agreed to participate (99%). The subjects were 13–18 years of age (mean = 16.2 years, standard deviation = 1.2), 83% were African-American, and 81% were female.

Eighty-nine percent of the adolescents said that a 90% efficacious vaccine would be acceptable, whereas only 28% indicated that a 50% efficacious vaccine would be acceptable to their peers: $\chi^2 = 108.9$, $p < .001$. Of the 101 subjects who indicated that a 50% efficacious vaccine was unacceptable, 62 elaborated on their reaction, indicating that people would not get the vaccine because the probability was too high that they could still get infected with HIV. Several adolescents stated that the vaccine would be unnecessary because it would not represent an improvement over condom use.

Seventy-seven percent of adolescents indicated that people would increase HIV-related risk behaviors (e.g., decreased use of condoms, more sexual partners, less care taken with partner selection) after getting immunized with a 90% efficacious vaccine. A smaller percentage (14%) felt that HIV immunization would constitute a cue to action, leading to a reduction in HIV-related risk behaviors. The remaining subjects (9%) believed that HIV immunization would have no appreciable impact on sexual behavior. This distribution of percentages is significantly different from what would be expected on the basis of chance: $\chi^2 = 116.6$, $p < .001$.

Discussion

Consistent with findings from a prior study (2), most adolescents in this study indicated that a 50% efficacious HIV vaccine would be unacceptable to their peers. Given that HIV vaccines ultimately may have limited efficacy (8), this finding is of concern. Diffusion theory suggests that to be successful, innovations must be perceived as having an advantage over existing technology (9). Therefore, the innovation of HIV immunization must be viewed as having an advantage over condoms, an existing technology. HIV vaccination programs should anticipate resistance to vaccines of limited efficacy and develop interventions to clarify the benefits of vaccine acceptance.

Although most of the subjects thought that a 90% efficacious vaccine would be acceptable to their peers, most also indicated that such a vaccine could lead to increases in risky sexual behaviors. This unintended outcome of HIV immunization could have the paradoxical effect of increasing the incidence of other STIs and unplanned pregnancies, and reducing the effectiveness of the HIV immunization program itself. Given that STIs can increase susceptibility to HIV (10), the increased incidence of STIs could further increase risk for HIV infection.

There are limitations to this study which should be kept in mind. It is not clear to what extent anticipated reactions to HIV immunization will predict actual behavioral responses once the vaccine is available. Also, the study sample represented a relatively small group of adolescents seeking care at urban health clinics. It will be important to examine acceptability of HIV immunization among other groups of subjects, including parents and health care providers. It would be of interest as well to examine the relationship of current HIV-risk and self-protective behaviors to anticipated changes in those behaviors following immunization. Finally, to minimize social desirability, subjects were not asked about their own behavior, but rather were asked to predict how others would behave. This approach may have increased optimistic bias, the tendency to perceive others at greater risk than oneself (11).

If the findings from this study are confirmed by additional studies, increases in risky sexual behavior should be anticipated and addressed through counseling at the time of vaccine administration.

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References

1. Liau A, Zimet GD, Fortenberry JD. Attitudes about human immunodeficiency virus immunization: The influence of health beliefs and vaccine characteristics. Sex Transm Dis 1998;25:76–81.
2. Zimet GD, Liau A, Fortenberry JD. Health beliefs and intention to get immunized for HIV. J Adolesc Health 1997;20:354–9.
3. Zimet GD, Fortenberry JD, Blythe MJ. Adolescents' attitudes about HIV immunization. J Pediatr Psychol 1999;24:67–75.
4. Anderson RM, Garnett GP. Low-efficacy HIV vaccines: Potential for community-based intervention programmes. Lancet 1996;348:1010–3.
5. Blower SM, McLean AR. Prophylactic vaccines, risk behavior change, and the probability of eradicating HIV in San Francisco. Science 1994;265:1451–4.
6. Pinkerton SD, Abramson PR. HIV vaccines: A magic bullet in the fight against AIDS? Eval Rev 1993;17:579–602.
7. Hom DL, Johnson JL, Mugyenyi P, et al. HIV-1 risk and vaccine acceptability in the Ugandan military. J Acquir Immune Defic Syndr 1997;15:375–80.
8. Cohen J. The HIV vaccine paradox. Science 1994;264:1072–4.
9. Rogers EM. Diffusion of Innovations. 3rd ed. New York: Free Press, 1983.
10. Wasserheit JN. Epidemiological synergy: Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. Sex Transm Dis 1992; 19:61–77.
11. Weinstein ND. Unrealistic optimism about susceptibility to health problems: Conclusions from a community-wide sample. J Behav Med 1987;10:481–500.