

Promoting Early Detection of Human Immunodeficiency Virus Infection Among Adolescents

Mary Jane Rotheram-Borus, PhD; Donna Futterman, MD

While a significant and increasing number of adolescents are infected with the human immunodeficiency virus (HIV), few youth are identified as seropositive and even fewer are linked to medical care and social services. If more youth were identified, transmission to sexual partners and offspring would be reduced and individuals could benefit from treatment. Prior to initiating wide-scale early detection for HIV, we must (1) examine alternative strategies of conducting pretest and posttest counseling; (2) address barriers to prevention and testing within the HIV system of care; and (3) mount community-level intervention campaigns that address youth at high risk of infection.

Arch Pediatr Adolesc Med. 2000;154:435-439

The World Health Organization estimates that 50% of the 30 million human immunodeficiency virus (HIV) infections worldwide occurred in young people between the ages of 15 and 24 years.¹ In the United States about one quarter of new infections are among adolescents,² yielding estimates of between 110 000³ and 220 000² youth living with HIV (YLH). Like adults, YLH are unlikely to be aware of their serostatus until 10 years after they were infected.⁴ Only 19 904 YLH have been identified in the 30 states that report HIV status.⁵ These data suggest that only about 16% of YLH may be aware of their serostatus, compared with the estimate that two thirds of infected adults are aware of their serostatus.⁶ Among HIV-infected adults in the United States, about one half are receiving adequate care,⁷ yet reports from adolescent medicine clinics⁸ suggest that only about 11% of identified YLH are linked to care, with substantial geographic variations in these rates among high-risk youth.⁹ Substantial benefits may result for the individual and society if early detection is increased and health care is initiated. This article discusses the barriers that must be overcome to more effec-

tively implement and mainstream HIV testing programs for youth, and outlines opportunities for innovation and efficiency in adolescent HIV testing.

IMPORTANCE OF EARLY DETECTION

Benefits to the Youth

Several recent scientific advances have heightened the importance of encouraging early detection of HIV infection.¹⁰⁻¹² First, those identified as seropositive for HIV can potentially prolong the duration and quality of their lives by early intervention with combination antiretroviral therapies.^{12,13} Second, young women who are seropositive and pregnant can, by taking medications and having a cesarean delivery, reduce the risk of transmitting the virus to their infants to about 2%.¹⁴ The United States has one of the highest rates of teenage parenthood among developed nations.¹⁵ Third, it is critical to reduce the likelihood of transmission during the period of new infection, which has been identified as a time when there is high viral load¹⁶ and thus an increased likelihood of transmitting the HIV virus to others.¹⁷ By identifying those who are newly infected and teaching both those at high risk and the health care community to recognize

From the Department of Psychiatry, AIDS Institute, University of California, Los Angeles (Dr Rotheram-Borus); and Department of Pediatrics, Adolescent AIDS Program, Montefiore Medical Center, Bronx, NY (Dr Futterman).

the physical signs of early infection (eg, flulike symptoms), reductions in transmission may result.¹⁸ Because adolescents are at high risk, both behaviorally and biologically, for sexually transmitted diseases,¹⁹⁻²¹ which further facilitate viral transmission,²² it becomes even more important to detect early infection among youth. Fourth, knowing one's HIV status can significantly contribute to reducing risk behaviors and thus decrease HIV transmission.²³ The importance of stopping transmission behaviors has increased because the period when people can transmit the virus has lengthened with improved treatments and prolonged life among YLH. In addition, there is emerging evidence that misperceptions about the benefits of antiretrovirals may lead to the reemergence of risky acts among the HIV-infected.²⁴ Finally, given that viral load appears to be related to transmission,^{25,26} initiating therapy is likely to reduce transmission of the virus across different stages of illness because viral loads will be lower.

In addition to identifying seropositive persons, HIV testing may also be useful as a component of a prevention strategy.²³ First, each successful multisite HIV prevention trial demonstrating reductions in risk behaviors has included HIV testing as a key component of a multicomponent program.²⁷⁻²⁹ Second, HIV testing is an important prevention tool for young people, most of whom will have families at some point (85%-90%).³⁰ Persons must abandon condom use to have children. Kutchinsky³¹ in Holland and, more recently, a national program in Australia,³² advocated a multistage strategy for personal protection from HIV: (1) condom use until commitment to a single partner; (2) after commitment to monogamy, both partners are tested for HIV; (3) condom use for another 6 months; (4) both partners are again tested for HIV and stop using condoms within the relationship; and (5) continued condom use with other partners. Among gay men, 91% of partners seem to keep such commitments.³² This strategy allows conception and recognizes that lifetime condom use is an unrealistic expectation. Adolescents who rely on condom use as their HIV prevention strategy will not be able to protect themselves when "true love" is found.³³ Finally, in communities with high seroprevalence rates, the potential preventive impact of routine early detection of HIV may be greater than the impact of increased condom use.³⁴

Benefits to Society

The reduction of transmission rates remains a major goal of identifying seropositive youth and linking them to effective prevention and care programs. Building on earlier reviews,³⁵⁻³⁷ a recent metaanalysis examining the impact of HIV testing²³ indicates that seropositive persons who know their serostatus reduce their transmission acts, a finding that is similar among YLH.^{38,39} In response to being identified as seropositive (n = 307), most seropositive youth from 4 acquired immunodeficiency syndrome (AIDS) epicenters reported changing their sexual behavior (70%), and about half of the youth injecting drugs stopped their use.^{38,39} The YLH who are then provided interventions to reduce secondary transmission continue to make positive behavioral changes. After receiving an intensive, behaviorally focused intervention, YLH reduced their substance use on

a weighted index by 31%, reduced the number of their seronegative sexual partners by 52%, increased condom use by 84%, and decreased their overutilization of health care services.⁴⁰ These data point to the benefits to society if YLH receive care and preventive interventions.

ALTERNATIVE STRATEGIES AND BARRIERS TO EARLY DETECTION

Similar to adults, HIV testing among adolescents typically occurs after a pretest counseling session, either in the context of anonymous or confidential testing in health care settings,⁴¹ and with brief posttest counseling. Most adolescents prefer anonymous testing,⁴¹ although some high-risk adolescents doubt that the results are confidential (eg, 25% of runaways⁴²) and doubt that the results will remain confidential.⁴³ If confidential testing is conducted, health care providers are better able to follow up with youth and link YLH to care.⁴⁴ In addition, partner notification is more successfully accomplished.⁴⁵ Requiring 2 clinic visits and conducting individual pretest and posttest counseling has created barriers to identifying seropositive adolescents soon after infection. First, the public HIV testing sites primarily test adolescents who could be called the "worried well"⁴⁶ (similar to most adults who are tested⁴⁶), indicating a need to reach and test youth who frequently engage in HIV risk behaviors.

Second, health care providers are underutilized as promoters of HIV testing. Clinicians' attitudes will significantly influence whether youth get tested for HIV.⁴⁷ In one study,⁴⁸ almost all adolescents who had regular physicians wanted their physician to provide HIV-related information to them; however, only 27% ever discussed HIV with their physician. Strong preferences emerged: adolescents wanted to discuss HIV testing with their physicians and friends, rather than their teachers or family members.⁴⁸ While only about 12% of youth who state that they intend to be tested actually receive an HIV test the same day,⁴⁹ repeated encouragement to be tested by clinicians increases HIV testing.⁵⁰ These data suggest the importance of implementing interventions with providers to encourage them to discuss sexuality, sexual orientation, and HIV testing with their adolescent patients.⁵⁰

Health care providers may be concerned about youths' reactions to receiving a positive result, and this may delay HIV testing. However, there is little empirical evidence that YLH respond to HIV testing with clinical emergencies.^{38,39,51-53} Some YLH report engaging in routine daily activities on learning of their serostatus (eg, "I went to play basketball"⁵¹). It appears that strong emotional reactions are more typically triggered at the onset of physical health symptoms or at the death of a friend, not on notification of serostatus.⁵¹

Third, the available methods to test for HIV must be expanded to include testing with new technologies (with health care providers' endorsement), including rapid tests that do not require a laboratory analysis.^{54,55} The technology exists to conduct HIV testing with a field kit that requires a fingerstick test or oral fluid collection and a 10-minute wait while reagents interact with the sample.^{55,56} Despite this technology, HIV test results are typically delivered 2 to 4 weeks after testing.⁹ When a second visit

is required to receive results from HIV testing, about 40% of youth do not return to receive the results of their tests.⁴⁶ We must look overseas to hypothesize about the impact of rapid testing on adolescents. In Uganda, when rapid testing was provided (ie, the person received the results the same day of the initial test), at least 27% more seropositive persons received their results.⁵⁷ Providing results by telephone (similar to the procedures used in home tests), rather than requiring a second clinic visit, also resulted in higher rates of persons being informed of their serostatus in Jamaica.⁵⁸ These technological breakthroughs are likely to require substantial revision of our procedures for pretest and posttest counseling. Two options that require research with adolescents are (1) home testing, wherein the purchaser obtains results through a toll-free telephone number, that is followed by posttest counseling,⁵⁹ and (2) client-controlled testing, which is not currently available in the United States. In particular, as policy initiatives to encourage early detection and testing become mainstreamed within the health care system, the procedures may become routine, as is currently occurring with perinatal counseling.⁴⁷

In addition, alternative formats exist for HIV testing. Presenting a videotape in the waiting room seems to be an attractive strategy for adolescents.⁶⁰ About 76% of youth will choose to watch the videotape, and 41% will test for HIV following the video. Street outreach is a successful strategy to solicit testing by adolescents,⁶¹ as it has been with adults.⁶² Rather than providing individual pretest counseling, a small-group intervention for youth may effectively provide information, help youth engage in self-evaluation so as to determine whether to seek testing, and motivate them to get tested.⁶¹ The group intervention could then be followed by an individual decision by the youth in consultation with his or her health care provider.

National HIV-prevention social marketing campaigns have been mounted and evaluated in 16 countries; the best example of such programs, the Swiss program, resulted in increases in HIV testing, particularly among youth.^{63,64} Louisiana has the only evaluated social marketing program in the United States,⁶⁵ yet several unevaluated programs have been implemented.⁴⁰ Social marketing campaigns must be coordinated with accessible services for youth, including HIV counseling, testing, prevention, and linkage to care. Currently, a 6-city program ("HIV. Live With It. Get Tested.") is being mounted by the Adolescent Medicine HIV/AIDS Research Network that uses street language (eg, "Gettin' Busy" and "Hitin' It") to encourage youth at risk to be tested for HIV and to seek health care services.⁴⁰ Building on campaign messages delivered on the radio, in movie theaters, and in advertisements on the transit system, peer leaders diffuse a prevention and HIV-testing message when distributing materials and leading town forums in their communities. Each campaign city builds a coalition of youth-friendly testing sites and provides access to care, particularly for those youth who test seropositive. A major problem with such interventions in the United States is to maintain the interventions for a sustained period of time,⁶⁶ similar to the national programs in Switzerland⁶³ and Australia.⁶⁷ Only when prevention programs aimed at the general population of youth are sustained can results be demonstrated. Unex-

plored alternative testing modalities are media and computerized interventions to prepare youth for HIV testing. Adolescents are far more familiar with media and computer games than are adults^{68,69}; experimentation with more innovative modalities to encourage HIV testing needs to be implemented.

Fourth, increased access to care is needed. Human immunodeficiency virus testing is often provided in clinics for sexually transmitted diseases that are not typically designed for adolescents. Counseling and testing can and should take place in settings where youth can be reached, such as school-based clinics (currently only 39% provide HIV testing⁷⁰) and adolescent drug treatment programs, and not just in traditional medical venues. There is a need for health care providers to learn about adolescent-specific consent and confidentiality (eg, by utilizing a youth-friendly guide to HIV counseling and testing⁷¹) as well as address teenagers' fears about HIV name reporting and partner notification.⁷² Clinics may not have experience in gaining access to Medicaid for youth, particularly in states requiring parental consent for HIV testing. Subgroups of adolescents at highest risk (young gay and bisexual men,⁵ homeless youth,^{42,73} young pregnant African American and Latino women in neighborhoods with high rates of injecting drug use^{5,74}) may be the youth who are most in need of publicly funded care.

The requirement that adolescents have parental consent to test for HIV remains a significant barrier to adolescents being tested in many states.⁷⁵ There are substantial variations in the accessibility of HIV tests for youth who do not have parental consent, as well as in the consequences of learning one is seropositive. For example, while adolescents can be tested without parental consent in Iowa,⁷⁶ the state requires that parents be informed if the adolescent is seropositive; Colorado⁷⁷ allows health care providers to inform parents if the health care provider believes it is in the best interests of the child. Connecticut⁷⁸ urges providers to work toward involving the parent, and Washington State⁷⁹ denies health care providers the option to inform parents. Clearly, there is no consensus on the best policy of providing access and responsible care for seropositive adolescents.

The Institute of Medicine⁴⁷ recently outlined that making universal perinatal testing available to women required simultaneous universal access to antiretroviral therapies. Adolescents rarely have such access. State and regional variations in access to the AIDS Drug Assistance Program make it ethically challenging to recommend early detection in states that do not ensure adequate access to care when youth learn that they are seropositive.⁸⁰ Access also must be linked to programs to increase utilization and adherence. A recent study of YLH found that 85% had been offered combination therapies at some point, but fewer than 55% had used antiretroviral therapies in the previous 3 months.⁸¹

Finally, the "mainstreaming of HIV" is anticipated to increase HIV testing. The concept of mainstreaming was adopted from the field of special education,⁸² and, similar to the recommendations for perinatal HIV testing,⁴⁷ indicates that HIV testing may become a routine procedure in health care; albeit a procedure that requires special consideration, high levels of protection for

confidentiality, and specific informed consent. While there are now substantially more benefits to HIV testing and, therefore, more reasons to be tested, the need for adolescents to retain personal control and responsibility remains. This is a particularly acute need for young women; health care providers are more “protective” of young women and attempt to shelter the women from disturbing information, compared with providers’ behaviors with young men.⁵¹ Training providers and establishing organizational procedures to both encourage testing and safeguard individuals’ rights remains an unmet need.

In summary, early detection of HIV among adolescents has emerged as a significant challenge to policy-makers, service providers, and communities. Substantial benefits could be derived from identifying seropositive youth. To realize these benefits, new HIV testing technologies must be implemented, different procedures and settings for conducting testing must be identified, and community-level social marketing programs must be mounted to change public knowledge and attitudes regarding HIV testing. While similar strategies may benefit adults, the language, settings, facilitators, and guidelines for such programs must be tailored to adolescents’ developmental characteristics. For example, small-group interventions to prepare youth for pretest counseling may only be advisable for late adolescents (age >16 years), not younger adolescents. Information for adolescents must be highly concrete (consistent with the youth’s level of cognitive development) and engaging (to compete with activities such as video games and MTV). Given the expanded opportunities, a strategic plan for implementing HIV prevention programs nationally—one that targets persons at differing levels of risk and that includes more cost-efficient testing methods—is a high priority. At the local level, Ryan White planning councils must reconsider the setting and procedures for adolescent HIV testing, particularly managed care settings and programs for those at highest risk, and consider and recommend to policymakers the specific conditions under which parental consent for HIV testing can be waived. While the costs of unrecognized HIV infection are rising, the commitment and policies needed to make early detection a reality have yet to be realized.

Accepted for publication November 9, 1999.

This research was supported by grant R01 DA-07903 from the National Institute on Drug Abuse, and grant 3R01 MH-49958 and P3 MH-58107 from the National Institute of Mental Health, Bethesda, Md.

Reprints: Mary Jane Rotheram-Borus, PhD, 10920 Wilshire Blvd, Suite 350, Los Angeles, CA 90024.

REFERENCES

- World Health Organization. Report on the global HIV/AIDS epidemic. Available at: <http://www.unaids.org/highband/document/epidemioreport97.html>. Accessed November 1997.
- Office of National AIDS Policy. *Youth & HIV/AIDS: An American Agenda: A Report to the President*. Washington, DC: Office of National AIDS Policy; 1996.
- Rotheram-Borus MJ, O’Keefe Z, Kracker R, Foo H. Prevention of HIV among adolescents. *Prev Sci*. 2000;1:15-30.
- Centers for Disease Control and Prevention. 1998 Guidelines for treatment of sexually transmitted diseases. *MMWR Morb Mortal Wkly Rep*. 1998;47(RR-1): 1-118.
- Centers for Disease Control and Prevention. HIV/AIDS surveillance report: US—HIV and AIDS cases reported through June 1999. *HIV/AIDS Surveill Rep*. 1999; 11:1-42.
- Centers for Disease Control and Prevention. Statistical projections/trends, May 13, 1999. Available at: http://www.cdc.gov/nchstp/hiv_aids/hivinfo/vfax/260210.htm. Accessed February 2000.
- Shapiro MF, Morton SC, McCaffrey DF, et al. Variations in the care of HIV-infected adults in the United States: results from the HIV Cost and Services Utilization Study. *JAMA*. 1999;281:2305-2315.
- Rogers AS, Futterman D, Levin L, D’Angelo L. A profile of HIV-infected adolescents receiving health care services at selected sites in the US. *J Adolesc Health*. 1996;19:401-408.
- Rotheram-Borus MJ, Gillis JR, Reid HM, Fernandez MI, Gwadz M. HIV testing behaviors, and knowledge among adolescents at high risk. *J Adolesc Health*. 1997; 20:216-225.
- Stephenson J. New anti-HIV drugs and treatment strategies buoy AIDS researchers. *JAMA*. 1996;275:579-580.
- Volberding PA. Improving the outcomes of care for patients with HIV. *N Engl J Med*. 1996;334:729-731.
- Centers for Disease Control and Prevention. Report of the NIH Panel to Define Principles of Therapy of HIV Infection. *MMWR Morb Mortal Wkly Rep*. 1998;47 (No. RR-5):1-41.
- McNaghten AD, Hanson DL, Jones JL, Dworkin MS, Ward JW, for the Adult/Adolescent Spectrum of Disease Group. Effects of antiretroviral therapy and opportunistic illness primary chemoprophylaxis on survival after AIDS diagnosis. *AIDS*. 1999;13:1687-1695.
- The International Perinatal HIV Group. The mode of delivery and the risk of vertical transmission of human immunodeficiency virus type 1: a meta-analysis of 15 prospective cohort studies. *N Engl J Med*. 1999;340:977-987.
- The Alan Guttmacher Institute. Into a new world: young women’s sexual and reproductive lives. Available at: http://www.agi-usa.org/pubs/new_world_engl.html. Accessed February 2000.
- Ho DD. Viral counts count in HIV infection. *Science*. 1996;272:1124-1125.
- Pantaleo G, Graziosi C, Fauci AS. New concepts in the immunopathogenesis of human immunodeficiency virus. *N Engl J Med*. 1993;328:327-335.
- Clark SJ, Saag MS, Decker WD, et al. High titers of cytopathic virus is plasma of patients with symptomatic primary HIV-1 infection. *N Engl J Med*. 1991;324: 954-960.
- Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance*. Atlanta, Ga: Centers for Disease Control and Prevention; 1993.
- Chabon B, Futterman D. Adolescents and HIV. *AIDS Clin Care*. 1999;11:9-16.
- Braverman PK, Strasburger VC. Sexually transmitted diseases. *Clin Pediatr*. 1994; 33:26-37.
- Aral SO, Wasserheit JN. Interactions among HIV, other sexually transmitted diseases, socioeconomic status, and poverty in women. In: O’Leary A, Jemmott LS, eds. *Women at Risk: Issues in the Primary Prevention of AIDS*. New York, NY: Plenum Press; 1995:13-41.
- Weinhardt, LS, Carey MP, Johnson BT, Bickham NL. Effects of HIV counseling and testing on sexual risk behavior: a meta-analytic review of published research, 1985-1997. *Am J Public Health*. 1999;89:1397-1405.
- Kravcik S, Victor G, Houston S, et al. Effect of antiretroviral therapy and viral load on the perceived risk of HIV transmission and the need for safer sex practices. *J Acquir Immune Defic Syndr Hum Retroviro*. 1998;19:124-129.
- Pedraza MA, del Romero J, Roldan F, et al. Heterosexual transmission of HIV-1 is associated with high plasma viral load levels and a positive viral isolation in the infected partner. *J Acquir Immune Defic Syndr Hum Retroviro*. 1999;21: 120-125.
- Ragni MV, Faruki H, Kingsley LA. Heterosexual HIV-1 transmission and viral load in hemophilic patients. *J Acquir Immune Defic Syndr Hum Retroviro*. 1998;17: 42-45.
- Kamb ML, Fishbein M, Douglas JM Jr, et al. Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases: a randomized controlled trial. *JAMA*. 1998;280:1161-1167.
- The National Institute of Mental Health (NIMH) Multisite HIV Prevention Trial Group. The NIMH Multisite HIV Prevention Trial: reducing HIV sexual risk behavior. *Science*. 1998;280:1889-1894.
- Fishbein M, Higgins DL, Rietmeijer C, Wolitski RJ, for the CDC AIDS Community Demonstration Projects Research Group. Community-level HIV intervention in 5 cities: final outcome data from the CDC AIDS community demonstration projects. *Am J Public Health*. 1999;89:336-345.
- Bachu A. *Fertility of American Women: June 1994*. Washington, DC: US Bureau of the Census; 1995. Current Population Reports, P20-484.

31. Kutchinsky B. *The Role of HIV Testing in AIDS Prevention*. Copenhagen, Denmark: University of Copenhagen; 1988.
32. Kippax S, Noble J, Prestage G, et al. Sexual negotiation in the AIDS era: Negotiated safety revisited. *AIDS*. 1997;11:191-97.
33. Civic D. The association between characteristics of dating relationships and condom use among heterosexual youth adults. *AIDS Educ Prev*. 1999;11:343-352.
34. Frerichs RR. Personal screening for HIV in developing countries. *Lancet*. 1994;343:960-962.
35. Fox R, Odaka NJ, Brookmeyer R, Polk BF. Effect of HIV antibody disclosure on subsequent sexual activity in homosexual men. *AIDS*. 1987;1:241-246.
36. Ostrow DG, Monjan A, Joseph J, et al. HIV-related symptoms and psychological functioning in a cohort of homosexual men. *Am J Psychiatry*. 1989;146:737-742.
37. Kalichman SC, Greenberg J, Abel GG. HIV-seropositive men who engage in high-risk sexual behaviour: psychological characteristics and implications for prevention. *AIDS Care*. 1997;4:441-450.
38. Rotheram-Borus MJ, Murphy DA, Coleman CL, et al. Risk acts, health care, and medical adherence among HIV+ youths in care over time. *AIDS Behav*. 1997;1:43-52.
39. Rotheram-Borus MJ, Murphy DA, Swendeman D, et al. Substance use and its relationship to depression, anxiety, and isolation among youth living with HIV. *Int J Behav Med*. 2000;6:293-311.
40. Longo HL. Prevention and intervention programs reduce HIV-risky behaviors. *Infect Dis Child*. In press.
41. The Henry J. Kaiser Family Foundation. *Hearing Their Voices: A Qualitative Research Study on HIV Testing and Higher-Risk Teens*. Menlo Park, Calif: The Henry J. Kaiser Family Foundation; 1999.
42. Goodman E, Berecochea JE. Predictors of HIV testing among runaway and homeless adolescents. *J Adolesc Health*. 1994;15:566-572.
43. Friedman LS, Strunin L, Hingson R. A survey of attitudes, knowledge, and behavior related to HIV testing of adolescents and young adults enrolled in alcohol and drug treatment. *J Adolesc Health*. 1993;14:442-445.
44. Rotheram-Borus MJ, Koopman C, Rosario M. Developmentally tailoring prevention programs: matching strategies to adolescents' serostatus. In: DiClemente RJ, ed. *Adolescents and AIDS: A Generation in Jeopardy*. Newbury Park, Calif: Sage Publications; 1992:212-229.
45. Kassler WJ, Meriwether RA, Klimko TB, Peterman TA, Zaidi A. Eliminating access to anonymous HIV antibody testing in North Carolina: effects on HIV testing and partner notification. *J Acquir Immune Defic Syndr Hum Retrovirol*. 1997;14:281-289.
46. Centers for Disease Control and Prevention. *HIV Counseling and Testing in Publicly Funded Sites: 1996 Annual Report*. Atlanta, Ga: Centers for Disease Control and Prevention; 1998.
47. Stoto MA, Almarino DA, McCormick MC. *Reducing the Odds: Preventing Perinatal Transmission of HIV in the United States*. Washington, DC: National Academy Press; 1999.
48. Rawitscher LA, Saitz R, Friedman LS. Adolescents' preferences regarding human immunodeficiency virus (HIV)-related physician counseling and HIV testing. *Pediatrics*. 1995;96:52-58.
49. Wilson TE, Jaccard J, Minkoff H. HIV-antibody testing: beliefs affecting the consistency between women's behavioral intentions and behavior. *J Appl Soc Psychol*. 1996;26:1734-1748.
50. Goodman E, Tipton AC, Hecht L, Chesney MA. Perseverance pays off: health care providers' impact on HIV testing decisions by adolescent females. *Pediatrics*. 1994;94:878-882.
51. Luna GC. *Youths Living With HIV: Self-Evident Truths*. New York, NY: Harrington Park Press; 1997.
52. Rotheram-Borus MJ, Murphy DA, Coleman CL, et al. Risk acts, health care, and medical adherence among HIV+ youths in care over time. *AIDS Behav*. 1997;1:43-51.
53. Rotheram-Borus MJ, Miller S. Secondary prevention for youths living with HIV. *AIDS Care*. 1998;10:17-34.
54. Frerichs RR. HIV antibody testing with saliva. Available at: <http://www.ph.ucla.edu/epi/saliva.html>. Accessed February 2000.
55. Kassler WJ. Advances in HIV testing technology and their potential impact on prevention. *AIDS Educ Prev*. 1997;9:27-40.
56. Saliva Diagnostic Systems. Hema Strip HIV. Available at: <http://www.salv.com>. Accessed February 2000.
57. Kassler WJ, Alwano-Edyegu MG, Marum E, Biryahwaho B, Kataaha P, Dillon B. Rapid HIV testing with same-day results: a field trial in Uganda. *Int J STD AIDS*. 1998;9:134-138.
58. Green M, Hoffman IF, Brathwaite A, et al. Improving sexually transmitted disease management in the private sector: the Jamaica experience. *AIDS*. 1998;12 (suppl):S67-S72.
59. Food and Drug Administration. *Testing Yourself for HIV-1, the Virus that Causes AIDS*. Washington, DC: Food and Drug Administration; 1999.
60. Goodman E, Chesney MA, Tipton AC. Relationship of optimism, knowledge, attitudes, and beliefs to use of HIV antibody testing by at-risk female adolescents. *Psychosomatic Med*. 1995;57:541-546.
61. Kennedy M, Spingarn R, Stanton A, Rotheram-Borus MJ. A continuum of care model for adolescents living with HIV: Larkin Street Youth Center. *Drugs Society*. In press.
62. Levy JA, Fox SE. The outreach-assisted model of partner notification with IDUs. *Public Health Rep*. 1998;113:160-169.
63. Dubois-Arber F, Jeannin A, Konings E, Paccaud F. Increased condom use without other major changes in sexual behavior among the general population in Switzerland. *Am J Public Health*. 1997;87:558-566.
64. Dubois-Arber F. HIV testing [letter]. *Am J Public Health*. 1998;88:683-684.
65. Cohen DA, Farley TA, Bedimo-Etame JR, et al. Implementation of condom social marketing in Louisiana, 1993 to 1996. *Am J Public Health*. 1999;89:204-208.
66. Crawford I, Jason LA, Riordan N, Kaufman J. A multimedia-based approach to increasing communication and the level of AIDS knowledge within families. *J Community Psychol*. 1990;18:361-373.
67. Kault D. Assessing the National HIV/AIDS Strategy evaluation. *Aust N Z J Public Health*. 1996;20:347-351.
68. Greenfield PM, Cocking RR, eds. *Interacting With Video*. Norwood, NJ: Ablex Publishing Corp; 1996.
69. Resnick H, Sherer M. Computer games in the human services: a review. *Comput Hum Serv*. 1994;11:17-29.
70. McKinney DH, Peak GL. *School-Based and School-Linked Health Centers*. Washington, DC: Advocates for Youth; 1995.
71. Ryan C, Futterman D. *Lesbian and Gay Youth: Care and Counseling*. New York, NY: Columbia University Press; 1998.
72. Samet JH, Winter MR, Grant L, Hingson R. Factors associated with HIV testing among sexually active adolescents: a Massachusetts survey. *Pediatrics*. 1997;100:371-377.
73. Greene JM, Ennett ST, Ringwalt CL. Prevalence and correlates of survival sex among runaway and homeless youth. *Am J Public Health*. 1999;89:1406-1409.
74. Centers for Disease Control and Prevention. Young people at risk: epidemic shifts further toward young women and minorities. Available at: http://www.cdc.gov/nchstp/hiv_aids/pubs/facts/youth.htm. Accessed February 2000.
75. English A. The HIV challenge and prevention education for young people. In: Quackenbush M, Nelson M, eds. *Adolescents and HIV: Legal and Ethical Questions*. Santa Cruz, Calif: Network Publications; 1995.
76. Iowa Code Ann §141.22 (suppl 1997).
77. Colorado Rev Stat Ann §25-4-1405 (1989 and suppl 1996).
78. Conn Gen Stat Ann §19a-582 (suppl 1997).
79. Wash Rev Code Ann §70.24 (suppl 1997).
80. The National Alliance of State and Territorial AIDS Directors and The AIDS Treatment Data Network. *Paying for the Promise: A National Status Report on Access to State AIDS Drug Assistance Programs*. Menlo Park, Calif: Henry J. Kaiser Family Foundation; 1997.
81. Gwadz M, De Vogli R, Rotheram-Borus MJ, et al. Behavioral practices regarding combination therapies for HIV/AIDS. *J Sex Educ Ther*. 1999;24:81-88.
82. Hoben M. Toward integration in the mainstream. *Except Child*. 1980;47:100-105.