

Human Immunodeficiency Virus Prevention for Adolescents

Windows of Opportunity for Optimizing Intervention Effectiveness

IN RESPONSE to the human immunodeficiency virus (HIV) epidemic among adolescents, there is an overriding urgency to develop and implement prevention interventions designed to motivate adolescents' adoption and maintenance of HIV-preventive practices. In the past decade, numerous HIV prevention programs have been designed, implemented, and evaluated. Modifying adolescents' HIV risk behavior has been a formidable challenge, but accumulating empirical evidence suggests that in general these programs are effective.¹ However, estimating the magnitude of intervention efficacy across these studies has been difficult given the diversity of research designs and the heterogeneity of adolescent populations.

See also page 381

In this issue of the ARCHIVES, Johnson et al² present their findings from a meta-analysis of HIV prevention interventions for adolescents conducted between 1985 and 2001. Johnson and colleagues synthesized the data from 56 HIV interventions. The authors calculated mean effect sizes as a measure of the magnitude of HIV intervention efficacy for relevant psychosocial and behavioral outcomes. Their findings are encouraging: HIV prevention interventions were found to enhance theoretically important psychosocial mediators of HIV-preventive behavior (ie, condom use negotiation skills, condom use skills, and communication with sexual partners). More important, HIV interventions were also effective for modifying adolescents' behavior; specifically, increasing adolescents' condom use and reducing the frequency of sexual intercourse. However, marked differences were observed in mean effect sizes for psychosocial mediators and preventive behaviors. Psychosocial mediators demonstrated larger mean effect sizes (range, 0.27-0.50), whereas statistically significant but modest mean effect sizes were identified for HIV-preventive behaviors (range, 0.05-0.07).

The findings of Johnson et al² substantiate a growing body of evidence indicating that HIV prevention interventions can effectively enhance the acquisition of preventive skills and behaviors.^{3,4} It is unclear, however, whether the changes observed, particularly for HIV-preventive behaviors, are of sufficient magnitude to substantially affect the HIV epidemic among adolescents from a public health perspective. A critical question is whether we can enhance the efficacy of HIV prevention interventions. As the lessons of history have shown, there are unfortunately no magic bullets or easy answers.⁵ Given the

scope and complexity of the HIV epidemic among adolescents, new and innovative intervention research is critical to optimize prevention efficacy. In this article, we briefly describe some discrete but cognate areas that hold considerable promise for enhancing the effectiveness of HIV prevention interventions.

RECONCEPTUALIZING ADOLESCENTS' HIV RISK BEHAVIOR

Historically, research conducted by scientists in the field of HIV prevention was useful in characterizing factors associated with adolescents' sexual risk behavior. Many of these studies implicitly conceptualized HIV-associated sexual behavior as an individual-level phenomenon. However, emerging evidence indicates that a spectrum of contextual factors and exposures are prominent and interact with each other in promoting or preventing adolescents' HIV-associated sexual behavior, including psychological, social, relational, familial, developmental, structural, environmental, and cultural factors.⁶ Given the scope and complexity of influences that can affect adolescents' sexual behavior, it is not likely to be understood in unidimensional or simplistic terms.

This individual-level perspective has also dominated the field of HIV intervention research. The theories guiding the design of these interventions and behavior-change techniques have focused to a large extent on the adolescent. In general, interventions at this level were designed to enhance adolescents' HIV prevention knowledge, attitudes, and beliefs, foster the development of perceived peer norms as supportive of HIV-preventive practices, promote mastery of risk reduction skills, and finally, motivate adolescents to adopt these preventive practices.^{3,4} Although they are effective at reducing HIV-associated sexual behavior, individual-level interventions may not be sufficient to promote the adoption and maintenance of HIV-preventive behaviors for prolonged periods. Adhering to HIV-preventive sexual practices may be particularly challenging in the face of pervasive countervailing pressures, such as peer pressure or media exposure, that encourage risky behavior. Furthermore, addressing behavioral change at the individual level, whether targeting adolescents through individualized counseling or group-based interventions, may lack sufficient breadth to reach large segments of the at-risk adolescent population. To amplify prevention efficacy, there is a clear, cogent, and compelling need to expand and diversify the portfolio of HIV prevention interventions

to include programs that transcend individual-level interventions and effectively target the broader range of influences that promote and reinforce adolescents' risk and protective behavior.⁶

THE SEARCH FOR CONTEXTUAL INTERVENTIONS

Contextual interventions offer a promising approach for optimizing the efficacy of HIV prevention interventions for adolescents.⁷ Contextual interventions are designed to affect important socializing networks at the family, relational, and community levels. These interventions promote behavioral change by providing adolescents with the information and skills to motivate change through naturally occurring channels of influence (ie, their community, family, or relationships). Simultaneously, these interventions provide a supportive environment that encourages maintenance of these behaviors. Furthermore, contextual interventions recognize the power and potential of supportive relationships. They take advantage of the diverse social networks within which adolescents are embedded by enhancing network linkages, creating health-promoting norms, and building supportive relationships designed to encourage the adoption of HIV-preventive behaviors.

DEVELOPMENT OF A NEW GENERATION OF THEORETICAL MODELS

As the focus of intervention research shifts from individual-level to contextual interventions, a cognate area of research that holds promise for optimizing intervention efficacy is the development of a new generation of theoretical models. In HIV prevention, as in any field of health promotion, theory is integral for guiding the development, implementation, and evaluation of behavioral change interventions. Contextual frameworks including the behavioral ecological model,⁸ the theory of gender and power,⁹ and prevention marketing¹⁰ posit risk behavior as the result of diverse social and environmental influences. Accordingly, these models provide a theoretical blueprint for constructing and implementing interventions tailored toward an array of social and environmental influences.

CONCLUSIONS

As Johnson et al² demonstrate, the scales of evidence weigh in favor of interventions designed to reduce adolescents' HIV-associated sexual behavior. Although a lot has

been achieved, much remains to be accomplished. Optimizing HIV prevention efforts for adolescents will require a sustainable and coordinated infrastructure to stimulate and support contextual intervention research. Contextual HIV intervention research can marshal new kinds of data, ask new and broader questions regarding adolescents and their risk of HIV, and most important, create fresh options for prevention. Ultimately, to be optimally effective, the primary prevention of HIV infection among adolescents must become a public health priority.

Ralph J. DiClemente, PhD
Gina M. Wingood, ScD, MPH
Atlanta, Ga

Corresponding author and reprints: Ralph J. DiClemente, PhD, Rollins School of Public Health, Emory University, 1518 Clifton Rd NE, Suite 554, Atlanta, GA 30322 (e-mail: rdiclem@sph.emory.edu).

REFERENCES

1. DiClemente RJ, Crosby R. Sexually transmitted diseases among adolescents: risk factors, antecedents, and prevention strategies. In: Adams G, Berzonsky M, eds. *The Blackwell Handbook of Adolescence*. Oxford, England: Blackwell Publishers. In press.
2. Johnson BT, Carey MP, Marsh KL, Levin KD, Scott-Sheldon LAJ. Interventions to reduce sexual risk for the human immunodeficiency virus in adolescents, 1985-2000: a research synthesis. *Arch Pediatr Adolesc Med*. 2003;157:381-388.
3. Kirby D. School-based interventions to prevent unprotected sex and HIV among adolescents. In: Peterson JL, DiClemente RJ, eds. *Handbook of HIV Prevention*. New York, NY: Kluwer/Plenum Press; 2000:83-101.
4. Jemmott JB III, Jemmott LS. HIV behavioral interventions for adolescents in community settings. In: Peterson JL, DiClemente RJ, eds. *Handbook of HIV Prevention*. New York, NY: Kluwer/Plenum Press; 2000:103-128.
5. Brandt AM. *No Magic Bullet*. New York, NY: Oxford University Press; 1987.
6. DiClemente RJ, Wingood GM. Expanding the scope of HIV prevention for adolescents: beyond individual-level interventions. *J Adolesc Health*. 2000;26:377-378.
7. DiClemente RJ, Wingood GM, Crosby RA. Contextual perspective for understanding and preventing STD/HIV among adolescents. In: Romer D, ed. *Reducing Adolescent Risk: Toward an Integrated Approach*. Thousand Oaks, Calif: Sage Publications. In press.
8. Hovell MF, Wahlgren DR, Gehrman CA. The behavioral ecological model: integrating public health and behavioral science. In: DiClemente RJ, Crosby R, Kegler M, eds. *Emerging Theories in Health Promotion Research and Practice: Strategies for Enhancing Public Health*. San Francisco, Calif: Jossey-Bass Inc; 2002:347-385.
9. Wingood GM, DiClemente RJ. Application of the theory of gender and power to examine HIV-related exposures, risk factors, and effective interventions for women. *Health Educ Behav*. 2000;27:539-565.
10. Kennedy MG, Crosby RA. Prevention marketing: an emerging integrated framework. In: DiClemente RJ, Crosby R, Kegler M, eds. *Emerging Theories in Health Promotion Research and Practice: Strategies for Enhancing Public Health*. San Francisco, Calif: Jossey-Bass Inc; 2002:255-284.