

Editorial: Janus Considers the HIV Pandemic—Harnessing Recent Advances to Enhance AIDS Prevention

At this time of year, like Janus, the Roman god of beginnings whose two faces simultaneously gaze at the past and the future, one looks back over the milestones of the past year while choosing among paths for the year ahead. In the intertwined arenas of the management of human immunodeficiency virus (HIV) progression and the prevention of HIV transmission and other sexually transmitted diseases (STDs), recent milestones are striking both in their importance and in their parallels. Advances in HIV clinical care and prevention may finally be ushering in an era in which the personal health concerns of persons with HIV infection are becoming aligned with the public health imperative to limit the further spread of this pandemic.

Two of the most widely heralded new findings presented at the XI International Conference on AIDS in Vancouver and elsewhere this year concerned the advent of tools to quantitate risk of HIV progression and to limit the rate of progression of HIV disease.^{1,2} The quantification of plasma HIV RNA concentration ("viral load") by means of reverse transcriptase polymerase chain reaction, branched DNA assays, or nucleic acid sequence-based amplification appears useful not only as a prognostic marker but also as a guide in the initiation and evaluation of antiviral therapy. Several studies indicate that baseline plasma viral load is the strongest independent predictor of rate of progression to acquired immunodeficiency syndrome (AIDS) and death, and that therapeutic suppression of plasma viral load correlates with reduced rates of progression to these clinical endpoints.³⁻⁹ Simultaneously, advances in multidrug therapy and the introduction of protease inhibitors have permitted sustained suppression of plasma viral load to undetectable levels in patients followed in various trials.¹⁰⁻¹⁶ These findings make plausible, for the first time, the possibility of substantially altering the survival and quality of life of HIV-infected persons through chemotherapy directed against HIV.

Parallel progress has been made in understanding factors related to the prevention of HIV transmission. New research tools have the potential to quantitate risk for sexual transmissibility of HIV, and a

clinically based intervention to reduce the incidence of heterosexual HIV transmission has been rigorously documented. These advances received less media attention than those related to management of HIV disease, but they are equally exciting. We now know that the prevalence of HIV shedding in the genital tracts of both men and women increases substantially in the presence not only of accelerating immunosuppression but also of other STDs.¹⁷⁻¹⁹ Furthermore, the quantification of viral load in genital secretions indicates that the concentration of HIV shed may increase as much as sevenfold among men who are co-infected with HIV and STDs such as gonorrhea.²⁰ Perhaps most importantly, both the prevalence and the concentration of HIV shedding can be reduced rapidly to baseline levels with appropriate STD treatment.^{17,18,20} Together with observations suggesting that HIV susceptibility is augmented in women by nonulcerative STDs through recruitment of endocervical CD4 lymphocytes,²¹ these data provide a biologically plausible mechanism for the markedly increased risk of HIV transmission associated with other STDs, estimated to range between threefold and fiftyfold, depending on the STD involved.^{22,23} Just as therapeutic strategies to slow progression of HIV disease must be designed to reduce viral load in plasma, it is likely that prevention strategies to limit sexual transmission of HIV infection must be designed to reduce viral load in genital secretions.

Such strategies are already being designed and tested. Arguably one of the most important and undoubtedly the most rigorously documented study of a population-level, HIV prevention strategy since the beginning of the AIDS epidemic builds on the epidemiological and biological evidence that other STDs facilitate HIV transmission.²⁴ This randomized, controlled, community-level trial of management of symptomatic STDs documented a 40% reduction in HIV incidence in six intervention communities, compared with six control communities, in Mwanza, Tanzania. Among the remarkable findings of this landmark study was the trials' substantial impact on HIV incidence despite a relatively modest primary health care intervention that was designed to be feasible in rural Tanzania (i.e., training staff in syndromic manage-

ment algorithms, making effective STD drugs available, providing STD health education in the villages, and implementing a quality assurance system). The incremental cost of these STD clinical services over routine care was \$64 000 per year, and the per capita cost was \$0.45 annually, with an estimated 254 HIV infections averted at a cost of approximately \$250 per case prevented.²⁵ In that setting, this translates to about \$11 per disability-adjusted life year saved, placing STD treatment for the prevention of heterosexually transmitted HIV infection among the health services with the highest estimated benefit-to-cost ratio (along with tuberculosis chemotherapy and measles immunization), and a step above such public health fundamentals as the provision of prenatal care.²⁶

So, as we shift our gaze from the past to the future, which path do we choose in the year ahead? These recent findings have implications for intervention mix, targeting, and the relationships between HIV and STD prevention programs in addressing the HIV pandemic.

In terms of intervention mix, these advances offer an opportunity to think more strategically and holistically about the interrelated goals of optimal HIV management for infected individuals and optimal HIV prevention for uninfected individuals at risk. For example, new antiviral regimens that improve the survival and quality of life of people living with HIV infection could reduce viral load not only in plasma but also in genital secretions, and these regimens should be developed and evaluated with both considerations in mind. In addition, the once-sharp contrast between the emphasis on interventions to reduce risky sexual behaviors to prevent HIV infection and the emphasis on early detection and treatment to prevent other STDs and their sequelae has become an anachronism. Early detection and treatment of HIV infection appears increasingly to be important to optimal HIV management; early detection and treatment of other STDs have a key role to play in optimal HIV prevention (as well as in achieving important objectives in women and infant health); and interventions to reduce risky sexual behaviors clearly are central to the prevention of all

activities, particularly at the local, implementation level.

To harness the full potential of these important clinical advances in the battle against AIDS, we must carefully consider their implications for HIV prevention. For those dedicated to HIV and AIDS prevention, the charge is to create a new care-prevention continuum, incorporating routine STD detection and treatment as a fundamental HIV prevention strategy along with condom promotion and interventions to reduce risky sexual and drug use behaviors. Equally urgently, STD researchers and program staff, who have long promoted a role for STD control in HIV prevention, must (1) embrace the broad range of intervention approaches that spring from the lessons learned during the last 15 years of HIV prevention efforts, (2) forge an expanded vision of prevention of *all* STDs and their severe consequences, and (3) redesign STD prevention programs to maximize their effect on HIV prevention. It is time for a new beginning, and time to marshal our full resources, diverse partners, and new tools to bear on what remains an emergency and a defining public health issue of our time. □

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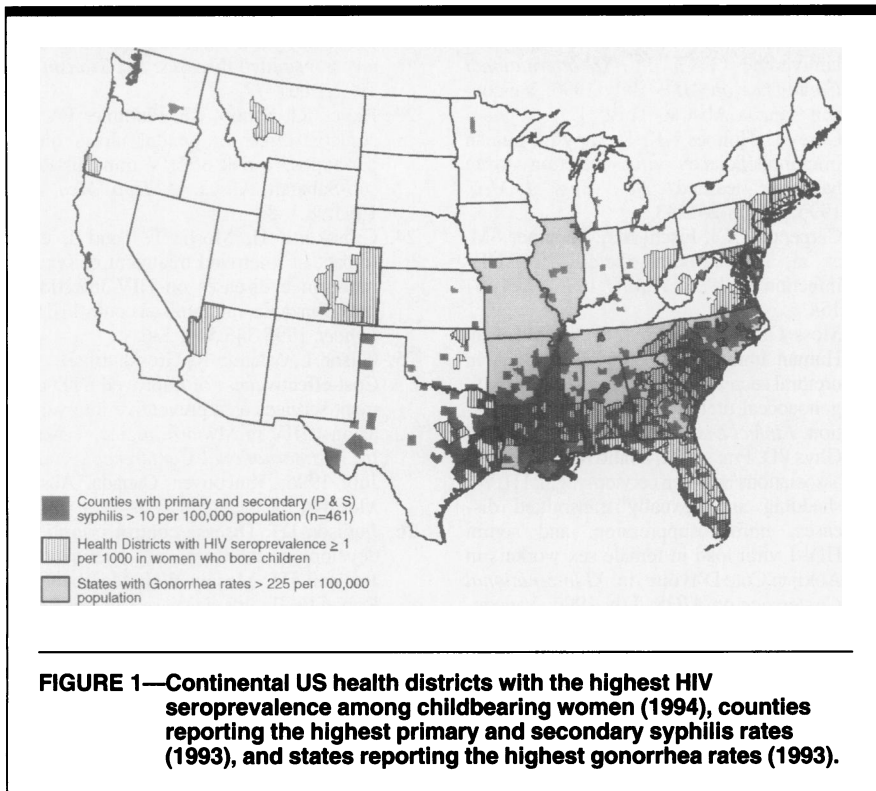


FIGURE 1—Continental US health districts with the highest HIV seroprevalence among childbearing women (1994), counties reporting the highest primary and secondary syphilis rates (1993), and states reporting the highest gonorrhoea rates (1993).

STDs, including HIV infection. Therefore, optimal HIV management and prevention demand that we understand and develop interventions to address health care-related behaviors (at the client, provider, and health system levels), as well as sexual and drug use behaviors. Finally, STD detection and treatment is unequivocally a highly effective HIV prevention strategy in communities with substantial STD rates. In such communities, the question is no longer whether STD treatment is one of the pillars of HIV prevention, but rather which approach to delivering STD treatment works best to reduce HIV transmission, in light of the high burden of asymptomatic disease.^{27,28} Recognition and translation of this concept into action was one of the central recommendations of the recent Institute of Medicine report on STD prevention in the United States.²⁹

Implications for targeting HIV prevention efforts and aligning our prevention programs flow from these same considerations. In the United States, the health districts with the highest HIV rates in childbearing women are predominantly located in areas with high gonorrhoea and syphilis rates (Figure 1). Particularly in the absence of routine surveillance data on HIV risk behaviors, STD surveillance can be an essential resource in targeting HIV prevention efforts. Furthermore, the con-

figuration and operating procedures of HIV and STD prevention programs may either facilitate or hinder the establishment of a more holistic approach that links HIV management and prevention, integrates STD treatment as an HIV prevention strategy where epidemiologically appropriate, and uses STD surveillance data to target HIV prevention efforts, thereby maximizing their cost effectiveness. While there is no single "magic" organizational configuration that will work for all programs, the challenge is clear. At national, state, and local levels across the United States, those who run programs or influence policy to prevent HIV infection and AIDS, and those in charge of STD prevention programs must reassess the nature (e.g., information sharing, collaborative planning and implementation, or integrated staff and resources) and scope (e.g., program planning and management, health promotion, clinical and partner services, laboratory services, surveillance, training, and program evaluation) of coordination both between HIV treatment and prevention services, and between HIV and STD prevention activities. The pivotal, recent advances in HIV management and HIV prevention suggest that we may be most successful in battling the HIV pandemic if we can achieve higher degrees of coordination across a broader scope of program

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Comment: Health Insurance Coverage of Foreign-Born US Residents—The Implications of the New Welfare Reform Law

In its closing days, the 104th Congress cut public services for immigrants. In this issue of the Journal, Thamer and colleagues report that rates of health insurance coverage are significantly lower for foreign-born populations than for those born in the United States.¹ While diminishing with time, differences in coverage persist until at least 15 years after immigration. Under the terms of Public Law 104-93, most new residents will be ineligible for public assistance to assure access to care during the first 5 to 10 years of their residency, when they are most likely to need it.

The article by Thamer et al. provides important information, but more work needs to be done to understand how

immigrants acquire coverage. The authors ascribe the observed differences to maturation effects—adaptation to the host country over time—but at least some of the differences may be due to cohort effects: differences among successive waves of immigrants. To the extent that cohorts differ, lower levels of coverage may persist even without the exacerbation of the new law. This comment explores that interpretation and discusses the possible consequences of the new law in light of the distribution of vulnerability among immigrants.

Health insurance coverage is lowest among young and low-income workers, those in service, retail or construction trades, and for small businesses' employ-

ees. Thamer et al. find that duration of residence also is related to coverage, with the likelihood of coverage increasing with length of residence. Immigrants approach parity with nonimmigrants only after about 15 years. Differences in coverage among ethnic and racial immigrant groups mirror those in the same groups within the native-born.

Because of limitations in the National Health Interview Survey (NHIS), it is not clear to what extent changes in coverage are maturation effects, as the authors of the study suggest, and to what extent they are cohort effects. The initial

Editor's Note. See related article by Thamer et al. (p 96) in this issue.