

# Sexual Risk Behavior in HIV-Infected Injection Drug Users

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(See the article by Tun et al. on pages 1167–74)

Injection drug use continues to be a very important mode of transmission of HIV infection, particularly in Asia, Eastern Europe, and South America, where effective needle-exchange programs and access to antiretroviral therapy for injection drug users (IDUs) are often limited [1, 2]. Still, sexual intercourse remains the most important mode of HIV transmission worldwide. IDUs may transmit HIV not only by needle-sharing but also by unprotected sexual intercourse. Likewise, they may expose themselves to HIV through high-risk sexual behavior. In this context, IDUs may exchange sex for drugs or money to support their drug use.

An important concern is the reports of increased sexual risk-taking among HIV-infected individuals, in particular among IDUs receiving HAART. Nonetheless, only a few prospective studies have investigated risk behavior for HIV transmission among IDUs. Active IDUs may not have the same access to antiretroviral therapy as do HIV-infected individuals from other risk groups, may seek less medical advice, and

thus may forego opportunities for HIV-infection counseling [3]. Hence, it is of particular interest for caregivers and policy-makers to know whether HAART, while dramatically improving the prognosis of HIV-infected patients, has an influence on sexual risk behavior among HIV-infected IDUs.

In this issue, Tun et al. [4] present a study that examines changes in sexual risk behavior in HIV-infected IDUs after initiation of HAART. This prospective study investigated 190 HIV-infected IDUs who initiated potent antiretroviral therapy between 1996 and 2000. An increase in CD4<sup>+</sup> T cell count after initiation of therapy was an independent predictor for engaging in any sexual intercourse and engaging in unprotected sexual intercourse (for which the hazard ratio increased more than 3-fold). An important finding was that ~80% of the investigated study population did not change their sexual and needle-sharing behavior after the initiation of HAART. Thus, engaging in unsafe sex prior to initiation of HAART was associated with engaging in unprotected sex after initiation of HAART. However, once adjusted for past behavior, an increase in the CD4<sup>+</sup> cell count remained the most powerful predictor of engaging in unsafe sex after the initiation of HAART [4].

The study by Tun et al. [4] is relevant in several ways. Only a few studies report

longitudinal data on risk behaviors among IDUs after initiation of HAART. So far, results of recent studies are conflicting. For example, a study of HIV-infected French IDUs showed a significant decrease in sexual risk behavior with receipt of HAART [5]. A recent cross-sectional study from the Swiss HIV Cohort Study investigating 4948 individuals, of whom approximately one-third reported injection drug use, showed that IDUs were more likely to report engaging in unsafe sexual behavior [6]. However, this study found no association between receipt of antiretroviral therapy and achievement of optimal viral suppression, on the one hand, and engaging in unsafe sex, on the other. Other studies have found some increased sexual activity among IDUs after HAART initiation [7]. Differences between studies may be linked to the type of assessment of risk behavior that is used. In the study by Tun et al. [4], risk behavior was measured by trained study interviewers and by audio-computer-assisted self-interviews, which may have limited underreporting of unprotected sex behavior and thus strengthens the validity of the results.

One of the particularities of the study is the longitudinal evaluation, which included risk assessment and measurement of CD4<sup>+</sup> cell counts prior to HAART initiation, which allowed for an evaluation of behavioral changes associated with

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therapy [4]. Analysis revealed that feeling healthier per se was not associated with a higher probability of engaging in risky sexual behavior. Nevertheless, a better health status would be a likely explanation. In general, feeling well remains an important predictor of sexual behavior. In a small Swiss study that used anonymous questionnaires to evaluate sexual behavior among HIV-infected individuals, good subjective health status was associated with increased sexual activity and with the wish to conceive a child [8]. Also, the cumulative probability of engaging in unprotected sex may be increased just by years of survival with this disease. Since untreated HIV-infected individuals in the cohort of 693 participants were not used as a control in the study by Tun et al. [4], it is impossible to rule out the possibility that sexual risk behavior has not increased generally in the group of HIV-infected IDUs during the observation period.

A limitation of this study is the lack of information about the nature of the IDUs' partnerships—whether they were in a stable relationship or were occasional partners, and, in particular, whether the partner(s) were HIV infected or not. A recent study from the Swiss HIV Cohort has found differences in the rates that respondents report engaging in unsafe sex with stable partners and with occasional partners (T. R. Glass, P. Vernazza, J. Young, and the Swiss HIV Cohort Study Group, unpublished data). In this Swiss study, HIV-infected individuals with stable HIV-positive partners reported more frequently engaging in unsafe sex, but, of major concern, this was also reported by those with occasional partners. It is notable that a number of experts still recommend safe sex practices for HIV-infected patients in HIV-concordant partnerships to avoid transmission of a resistant strain of the virus, but, as yet, there is little evidence to support this recommendation.

In her recent article, Latka [9] summarized data that sexual risk behavior depends on personal factors (e.g., perceived vulnerability and protective behav-

iors), interpersonal factors (e.g., relationship type and partner's risk profile), social factors (e.g., gender roles), and community-level factors (e.g., access to methods for prevention of infection and prevalence of sexually transmitted pathogens within a network). For female drug users, multiple factors may elevate their risk of sexually acquired HIV infection [9]. Muga et al. [10] found that, among women IDUs, prevalence of HIV infection remained relatively high between the late 1980s and 2001. The prevalence was more than twice as high among women as among men during the first 2 years of injection drug use, and this difference persisted over time. One explanation for the excess of early prevalence among female IDUs may be the high frequency of exchanging sex for drugs [11].

HIV-infection counseling has a very important place [12]. In particular, outreach interventions by peers helping each other to understand the importance of safe sex practices may be successful. Infectious diseases physicians and specialized nurses, as well as other care givers in the field of HIV/AIDS care, have additional opportunities to contribute to slowing the spread of the epidemic. IDUs may benefit from personalized prevention-counseling models that use exact goals and referral to drug treatment and/or needle-exchange programs. However, this is difficult for IDUs, because they may not want to seek support and medical advice on a regular basis. For IDUs, factors that may strongly limit the opportunities for behavioral interventions are poverty and, partly, a disorganized lifestyle. These factors may influence whether IDUs take advantage of programs providing free access to sterile needles and other harm-reduction strategies. Nevertheless, specific measures, including counseling and heroin-injection treatment programs at clinics, might help to drastically reduce the risk of HIV transmission due to injection drug use. In a cohort of 145 HIV-negative individuals among 172 IDUs enrolled in a heroin-injection treatment program, only 1 experienced HIV sero-

conversion after a median follow-up of 20 months [13].

Sexual behavior is very difficult to change, even when such behavior may transmit a serious disease. It is important to prospectively examine high-risk behavior in larger cohort studies and to investigate intervention strategies, such as counseling.

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