



Published in final edited form as:

Subst Use Misuse. 2011 ; 46(0): 316–319. doi:10.3109/10826084.2011.523324.

Current and Emerging Research Needs in Studying the NYC HIV–Drug Use Epidemic

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Abstract

As we begin the fourth decade of the epidemic, it is clear that, as demonstrated by the articles in this Special Issue, much has been learned about factors contributing to the decline in HIV prevalence among drug users in New York. However, there are a number of outstanding research questions that remain or are emerging. Following is a summary of some of the topics requiring further research. While this summary does not represent a comprehensive list, it is based on many of the questions raised in the articles in this Special Issue and identifies some of the directions to be investigated during the next decade.

Keywords

HIV; drug use; NYC

Continued Efforts to Reduce Injection-Related Risk Behaviors

While incidence and prevalence has declined among injection drug users (IDUs) in New York City, HIV appears to have reached an endemic phase, with prevalence of 10%–15% among drug users (Des Jarlais, Arasteh, & Friedman, 2011). Research to identify methods to achieve greater reductions is a priority at this stage. For example, despite the development of multiple sources of sterile syringes (e.g., needle exchange programs [NEPs] and the Expanded Syringe Access Demonstration Program), many IDUs are not accessing them consistently (Jenness, Hagan, Liu, Wendel, & Murrill, 2011), and continued efforts to

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Declaration of Interest

The authors report no conflict of interest. The authors alone are responsible for the content and writing of this article.

reduce blood-borne infections among IDUs (e.g., hepatitis C virus [HCV]) are needed (Vlahov, Ompad, Fuller, & Nandi, 2011). Efforts to understand barriers to consistent utilization of sterile syringes and other injection-related equipment, and to promote safer injection and drug use practices, are needed.

The possibility that HIV transmission might rebound among New York drug users should also be considered. This concern is fed by two types of influences: Current economic difficulties and the political responses to them have led to severe pressure on HIV prevention and care services. As an example, the National Development and Research Institutes' AIDS Outreach Project in New York City, funded since 1985 and at one time employing approximately two dozen outreach workers focused on preventing HIV transmission among drug users, was eliminated in 2009 because of budgetary decisions. Syringe exchanges have also faced budgetary difficulties. These services have helped reduce HIV spread and caused the epidemic to recede, and their elimination or reduction poses the threat of epidemic rebound. In addition, as shown by injection and sexual network research in New York (Friedman et al., 2000), the lowered rate of HIV seroprevalence among IDUs may facilitate the rapid spread of HIV. This is due to high-viral-load early HIV infection spreading through long infection chains of uninfected IDUs, unimpeded by the "firewalls" created by large numbers of infected IDUs whose antibody response will prevent high-viral-load responses to reexposure. Thus, ongoing research to monitor the potential for a rebound of the epidemic and to develop methods of preventing such rebounds is needed.

As chronicled in several of the articles in this Special Issue, the HIV epidemic in New York among drug users has been through several phases. Continued monitoring to study trends in HIV and other infectious diseases among drug users are needed. Furthermore, monitoring sexually transmitted infection (STI) and Hepatitis C incidence (as indicators of HIV-related risky behaviors) are also important, as they are early warning indicators of potential increases in HIV, and targeted prevention and treatment efforts can be undertaken.

Sexual Risk Reduction and the Role of STIs

Addressing sexual risk among IDUs and noninjection drug users remains a high priority (Des Jarlais et al., 2011; Hagan, Perlman, & Des Jarlais, 2011). Methods to promote STI screening and treatment and to improve knowledge and awareness of STI symptoms among drug users are needed, and more research is necessary to identify effective approaches, including how best to control herpes simplex virus 2 as a cofactor in HIV transmission (Des Jarlais et al., 2011).

Efforts to understand sexual risk and to prevent sexually-transmitted HIV and other infections should expand beyond the thus-far dominant focus on increasing condom use into other ways affecting the probability of infection during individual sex acts. Sexual mixing patterns also need to be addressed. First, sexual network patterns have been shown to be important in shaping both individual risk for and community transmission patterns of HIV and other STIs (Friedman et al., 2007; Neaigus, Miller, Gyarmathy, & Friedman, 2011). Second, there is increasing evidence that group sex events may be implicated in HIV epidemics and in shaping risk behaviors (Friedman et al., 2008). Further research on how

these events shape both sexual networks and sexual behaviors, and how harm reduction or other approaches might reduce HIV and STI transmission due to these events, is needed.

Hepatitis C Prevention and Treatment

Early in the epidemic it was expected that HIV prevention efforts would also prevent HCV infection in drug users. However, research on HCV prevention has been disappointing in showing minimal or inconsistent effects on transmission (Hagan et al., 2005). Moreover, although treatment of chronic HCV has improved, only a very small proportion of drug users in the United States and elsewhere are engaged in any kind of medical management of HCV infection. Improved strategies to engage and retain IDUs in HCV care are needed. Further, additional data are needed regarding the outcomes of therapy for acute HCV, and improved laboratory methods for identifying acute HCV are needed. Vaccine development must remain a goal, but since an effective vaccine is not on the immediate horizon, behavioral strategies that may help prevent HCV are urgently needed.

The findings of the Staying Safe study (Friedman, Sandoval, Mateu-Gelabert, Melylakhs, & Des Jarlais, 2011) suggest the potential importance of a new approach to both the epidemiology and the prevention of HIV, HCV, and perhaps other infections among people who inject drugs. This approach moves backward in the causal chain from the infection event (whether sexual or injection) to ask how drug users might conduct their lives in ways that help them avoid engaging in high-risk behaviors with partners who are likely to be infected. An article in this issue has pointed to the importance of “symbiotic goals” and has led to current research to see how these findings might be translated into a new generation of prevention models (Mateu-Gelabert, Sandoval, Meylakhs, Wendel, & Friedman, 2010).

Timeliness of HIV Testing, and HIV Care Needs for HIV-Positive Drug Users

It has been established that the early or acute phase of HIV infection is related to higher rates of transmission (Brenner et al., 2007) and that knowledge of HIV-positive serostatus is related to lowered risk behaviors (Marks, Crepaz, Senterfitt, & Janssen, 2005). Thus, research to further the identification of those newly infected is a critical aspect of reducing transmission. Several studies have found that IDUs are more likely to be tested later in the progression of HIV disease than those in other risk categories, and highly active antiretroviral therapy (HAART) initiation among IDUs continues to be delayed (Mehta, Kirk, Astemborski, Galai, & Celentano, 2010). Early entry into care and initiation of HAART are related to survival, and research to encourage early testing can enhance earlier entry into care.

Adherence to HIV medications for HIV-positive drug users remains an important research topic (Cunningham et al., 2011). In addition, increased research efforts are needed in how to recruit, engage, and support drug users in AIDS clinical trials, both to improve the generalizability of research findings and to ensure that drug users have access to the high level of care and attention and new treatments available through clinical trials (Gwadz, Cylar, et al., 2010; Gwadz, Leonard, et al., 2010). Innovative efforts that integrate HIV and drug treatment require further development and testing (Cunningham et al., 2011; Strauss & Mino, 2011).

The growing number of people aging with HIV, including many drug users, has become an emerging area of research, especially relevant to the New York HIV epidemic. New York is the home of over 120,000 people living with HIV/AIDS, more than any state in the United States (Centers for Disease Control and Prevention, 2009), and the population of those people living with HIV/AIDS who are aged 50 and above is estimated to reach 50% by 2015 (Centers for Disease Control and Prevention, 2009). What is “successful aging” for this population? The comorbidities (Klein, 2011) and quality-of-life issues that arise for this population indicate that a narrow focus on adherence, CD4, and viral load should be expanded to incorporate other aspects of aging such as addressing other health issues and engagement in life. As seen in the article by Pfeiffer et al. (2011), addressing preventable causes of death among HIV-positive drug users, e.g., through overdose prevention efforts, has the potential to make a significant impact on reducing mortality in this population.

Other Health and Social Service Needs of Drug Users

As seen in many of the articles in this Special Issue, drug users with HIV or at high risk of HIV experience a range of health and social disparities (Freudenberg, 2011; Furst, Curtis, & Balletto, 2011; Heller & Paone, 2011; Strauss & Mino, 2011). Many of these individuals are minority, low income, and poorly educated, with high rates of incarceration and comorbidities. Methods to affect the social and structural influences that have produced and sustained these disparities remain a priority focus for study and intervention. Such efforts might usefully target a range of large-scale sociopolitical factors that have been found to be related to increases in drug injection, HIV infection, or HIV-related morbidities among IDUs, e.g., arrest rates for drug possession and racial residential segregation (Friedman, Pouget et al., in press). In addition, as indicated by Heller and Paone (2011), Strauss and Mino (2011), and El-Bassel, Gilbert, Witte, Wu, and Chang (2011), building on services that are used by drug users, e.g., NEPs and drug treatment, may be a strategy for identifying needs and increasing the delivery of a broad range of services. For many subpopulations at risk of HIV, e.g., immigrants (Deren, Shedlin, Kang, & Cortes, 2011) and sexual minorities, such as men who have sex with men (Halkitis et al., 2011) and women who have sex with women (Ompad et al., 2011), other cofactors related to risk may include lack of access to health and social services and psychosocial stresses. Research addressing this broader constellation of risks and influences appears to be needed to produce sustained risk reduction related to HIV.

Multilevel Influences on Risk

As seen in the articles in this Special Issue, research has been conducted on many levels of analysis, e.g., individuals, groups, environments, and organizations. Multilevel studies are needed to examine the interaction of institutional, community, and individual influences on HIV among drug users. Several articles in this Special Issue indicate that a new generation of interventions is called for to address the historical structural factors that have sustained racial disparities (Amesty, Rivera, & Fuller, 2011) and the partner relationship factors that contribute to risk (e.g., El-Bassel et al., 2011). In addition, increasing our understanding of the role of advocacy (e.g., in addressing the development of NEPs; Heller & Paone, 2011),

and its relationship to communities at risk and political institutions, should be part of the research agenda to further reduce HIV and its consequences among drug users.

Workforce Training and Organizational Readiness for Change

Training providers who deliver services to drug user populations has been an important aspect of the history of the epidemic. Several waves of training have been noted (Osborne & Luniewicz, July 2009 personal communication). For example, early in the epidemic a first wave of training required raising awareness of issues related to HIV and building a knowledge base around risk behaviors and confidentiality issues. A second wave, by the end of the 1990s, involved a greater emphasis on HIV testing and HIV treatments (with the introduction of the efficacy of HAART), cultural competency issues, and interventions that included a broader emphasis on STIs rather than HIV-specific training. The third and current wave is consonant with some of the changes in the epidemic noted in this Special Issue—i.e., a greater emphasis on addressing sexual transmission and use of evidence-based interventions. This requires greater technical assistance and capacity building within programs and organizations so that they can be engaged in identifying, adapting, and implementing evidence-based practices that are most appropriate for their populations. Research on enhancing readiness to incorporate new practices and efforts to enhance organizational readiness to utilize new methods of delivery are also needed. Web-based interventions using real-time interactions, Webinars, and online chat rooms, have all emerged in recent years as new training and intervention tools, and research on how organizations and programs can best use these technologies is needed.

Workforce training will remain a priority in the next decade, and more complex training related to the implementation of interventions that have been developed and found to be effective may be needed. Further, this training should be targeted to an expanded trained workforce, which makes optimal use of a full range of providers (e.g., nurses, physicians' assistants, community health workers). Efforts to evaluate training of providers, including follow-up to assess the success of training as measured by its impact on the use of new knowledge and skills that serve to improve services, continue to be needed. Work by Strauss et al. (2009) provides an example of workforce training, within drug user treatment and HIV service provision settings, regarding the importance of addressing alcohol use among HIV-positive patients. It identifies the importance of not just focusing on training individuals but engaging whole organizations in training efforts to implement new evidence-based interventions.

CONCLUSION

While the fourth decade of the epidemic in New York presents us with many successes and many lessons that may be valuably applied elsewhere, multiple challenges remain—to be addressed by drug users, their advocates, their communities, and their service providers. The agencies and programs that have been established to serve these populations, those at the helm of health and policy agencies, and research investigators who work in this arena must also all strive to bring the most effective services to the individuals and communities affected by HIV and to bring HIV epidemics under control.

Acknowledgments

The Center for Drug Use and HIV Research, established in 1998, is funded by the National Institute on Drug Abuse (P30DA011041), S. Deren, Principal Investigator. It was the first center for the sociobehavioral study of drug use and HIV in the United States. Coauthors of this article are all Core Directors and Deputy Directors of the Center for Drug Use and HIV Research. For more information, see www.cduhr.org.

REFERENCES

- Amesty S, Rivera A, Fuller C. Overview of HIV among injection drug users in New York City: Critical next steps to eliminate racial/ethnic disparities. *Substance Use & Misuse*. 2011; 46(2–3): 285–294. [PubMed: 21303248]
- Brenner BG, Roger M, Routy JP, Moisi D, Ntemgwa M, Matte C, et al. High rates of forward transmission events after acute/early HIV-1 infection. *Journal of Infectious Diseases*. 2007; 195(7): 951–959. [PubMed: 17330784]
- Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. Jul 2.2009 2010 2007 from <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/2007report/table14.htm>.
- Cunningham C, Sohler N, Cooperman N, Berg K, Litwin A, Arnsten J. Strategies to improve access to and utilization of health care services and adherence to antiretroviral therapy among HIV-infected drug users. *Substance Use & Misuse*. 2011; 46(2–3):218–232. [PubMed: 21303242]
- Deren S, Shedlin M, Kang S-Y, Cortes D. HIV risk and prevention among Hispanic immigrants in NY: The salience of diversity. *Substance Use & Misuse*. 2011; 46(2–3):254–263. [PubMed: 21303245]
- Des Jarlais D, Arasteh K, Friedman S. HIV among drug users at Beth Israel Medical Center, New York City, the first 25 years. *Substance Use & Misuse*. 2011; 46(2–3):131–139. [PubMed: 21303233]
- El-Bassel N, Gilbert L, Witte S, Wu E, Chang M. Intimate partner violence and HIV among drug-involved women: Contexts linking these two epidemics—Challenges and implications for prevention and treatment. *Substance Use & Misuse*. 2011; 46(2–3):295–306. [PubMed: 21303249]
- Freudenberg N. HIV in the epicenter of the epicenter: HIV and drug use among criminal justice populations in New York City, 1980–2007. *Substance Use & Misuse*. 2011; 46(2–3):159–170. [PubMed: 21303236]
- Friedman SR, Bolyard M, Khan M, Maslow C, Sandoval M, Mateu-Gelabert P, et al. Group sex events and HIV/STI risk in an urban network. *Journal of Acquired Immune Deficiency Syndromes*. 2008; 49(4):440–446. [PubMed: 19186355]
- Friedman SR, Bolyard M, Mateu-Gelabert P, Goltzman P, Pawlowicz MP, Singh DZ, et al. Some data-driven reflections on priorities in AIDS network research. *AIDS and Behavior*. 2007; 11(5):641–651. [PubMed: 17053857]
- Friedman SR, Kottiri BJ, Neaigus A, Curtis R, Vermund SH, Des Jarlais DC. Network-related mechanisms may help explain long-term HIV-1 seroprevalence levels that remain high but do not approach population-group saturation. *American Journal of Epidemiology*. 2000; 152(10):913–922. [PubMed: 11092433]
- Friedman S, Pouget E, Chattejee S, Cleland C, Tempalski B, Brady J, et al. Do drug arrests deter injection drug use? *American Journal of Public Health*. in press.
- Friedman S, Sandoval M, Mateu-Gelabert M, Meylakhs P, Des Jarlais DC. Symbiotic goals and the prevention of blood-borne viruses among injection drug users. *Substance Use & Misuse*. 2011; 46(2–3):307–315. [PubMed: 21303250]
- Furst T, Curtis R, Balletto R. The transformation of drug markets and its impact on HIV outreach to injection drug users in New York City, 1987–2008. *Substance Use & Misuse*. 2011; 46(2–3):150–158. [PubMed: 21303235]
- Gwadz MV, Cyilar K, Leonard NR, Riedel M, Herzog N, Arredondo GN, et al. An exploratory behavioral intervention trial to improve rates of screening for AIDS clinical trials among racial/ethnic minority and female persons living with HIV/AIDS. *AIDS and Behavior*. 2010; 14(3):639–648. [PubMed: 19330442]

- Gwadz, M.; Leonard, N.; Cleland, C.; Colon, P.; Banfield, A.; Middleton, S., et al. Peer-driven intervention increases rates of screening for AIDS Clinical Trials among persons living with HIV/AIDS from racial/ethnic minority backgrounds. Paper presented at the XVIII International AIDS Conference; Vienna, Austria: Jul. 2010
- Hagan H, Perlman D, Des Jarlais D. Sexual risk and HIV infection among drug users in New York City: a pilot study. *Substance Use & Misuse*. 2011; 46(2-3):201-207. [PubMed: 21303240]
- Hagan H, Thiede H, Des Jarlais DC. HIV/hepatitis C virus co-infection in drug users: Risk behavior and prevention. *AIDS*. 2005; 19(Suppl. 3):S199-S207. [PubMed: 16251818]
- Halkitis P, Pollock J, Pappas M, Dayton A, Moeller R, Siconolfi D, et al. Substance use in the MSM population of New York City during the era of HIV/AIDS. *Substance Use & Misuse*. 2011; 46(2-3):264-273. [PubMed: 21303246]
- Heller D, Paone D. Access to sterile syringes for injecting drug users in New York City: Politics and perception (1984-2010). *Substance Use & Misuse*. 2011; 46(2-3):140-149. [PubMed: 21303234]
- Jeness S, Hagan H, Liu K-L, Wendel T, Murrill C. Continuing HIV risk in New York City injection drug users: The association of syringe source and syringe sharing. *Substance Use & Misuse*. 2011; 46(2-3):192-200. [PubMed: 21303239]
- Klein R. Trends related to aging and co-occurring disorders in HIV infected drug users. *Substance Use & Misuse*. 2011; 46(2-3):233-244. [PubMed: 21303243]
- Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *Journal of Acquired Immune Deficiency Syndromes*. 2005; 39(4):446-453. [PubMed: 16010168]
- Mateu-Gelabert P, Sandoval M, Meylaks P, Wendel T, Friedman SR. Strategies to avoid opiate withdrawal: Implications for HCV and HIV risks. *Journal of Drug Policy*. 2010; 21(3):179-185.
- Mehta SH, Kirk GD, Astemborski J, Galai N, Celentano DD. Temporal trends in highly active antiretroviral therapy initiation among injection drug users in Baltimore, Maryland, 1996-2008. *Clinical Infectious Diseases*. 2010; 50(12):1664-1671. [PubMed: 20450418]
- Neaigus A, Miller M, Gyarmathy A, Friedman S. HIV heterosexual risk from injecting drug users among HIV seronegative non-injecting heroin users. *Substance Use & Misuse*. 2011; 46(2-3):208-217. [PubMed: 21303241]
- Ompad D, Friedman S, Hwahng S, Nandi V, Fuller C, Vlahov D. HIV risk behaviors among young drug using women who have sex with women (WSWs) in New York City. *Substance Use & Misuse*. 2011; 46(2-3):274-284. [PubMed: 21303247]
- Pfeiffer M, Hanna D, Begier E, Sepkowitz K, Zimmerman R, Sackoff J. Excess mortality among injection drug users with AIDS, New York City 1999-2004. *Substance Use & Misuse*. 2011; 46(2-3):245-253. [PubMed: 21303244]
- Strauss S, Mino M. Addressing the HIV-related needs of substance misusers in New York State: The benefits and barriers implementing a "one stop shopping" model. *Substance Use & Misuse*. 2011; 46(2-3):171-180. [PubMed: 21303237]
- Strauss SM, Tiburcio NJ, Munoz-Plaza C, Gwadz M, Luniewicz J, Osborne A, et al. HIV care providers' implementation of routine alcohol reduction support for their patients. *AIDS Patient Care and STDs*. 2009; 23(3):211-218. [PubMed: 19866539]
- Vlahov D, Ompad D, Fuller C, Nandi V. Comparison of HIV risk by duration of injection drug use. *Substance Use & Misuse*. 2011; 46(2-3):181-191. [PubMed: 21303238]