Report on

Syringe Access in New York State

The New York State
AIDS Advisory Council

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Introduction

In 1996, the AIDS Advisory Council convened a Subcommittee on Harm Reduction to consider expanded availability of sterile syringes as a means of strengthening New York State's HIV prevention efforts targeting drug injectors. In developing recommendations for the Council's consideration, this 15-member Subcommittee examined the following: the history and scope of the State's then four-year-old syringe exchange initiative; the laws and regulations of other jurisdictions governing access to, and possession of syringes; legislation proposed in New York State since 1991 to amend the Public Health Law to permit persons 18 years of age or older to obtain syringes without a prescription from pharmacies, Article 28 facilities and health care professionals; and the already formidable body of research supporting syringe access as a means of reducing new HIV and other blood-borne infections among injection drug users (IDUs). The Subcommittee developed eleven recommendations, all of which were unanimously adopted by the Council in April 1996. These recommendations are attached as Appendix G.

In November 2004, the AIDS Advisory Council convened a Subcommittee on Syringe Access. The charge of this Subcommittee was to revisit syringe access and related issues and to present again for the Council's consideration an updated series of recommendations.

Injection Drug Use and HIV Infection in New York State

HIV-contaminated syringes are a driving force behind New York's ongoing distinction as an epicenter of the national HIV/AIDS epidemic. Of the 157,776 AIDS cases in the State diagnosed through December 2002, 62,860 (39.8%) were attributable to syringes shared with someone already HIV-infected.[1] An additional 4,690 cases (3%) were among men who have sex with men (MSM) who also had a history of injecting drugs. There were 61,835 individuals in the State who were presumed to be living with AIDS diagnoses as of December 2002. Of these, 19,205 (31.1%) had a history of drug injection as their principal risk for HIV infection. There were an additional 1,361 AIDS-diagnosed MSM whose likely vector for infection was either a non-sterile syringe or unprotected sex with another man.

The relative role of injection drug use in New York's HIV epidemic fluctuates but has always been one of paramount significance. By 1988, new AIDS cases among drug injectors surpassed for the first time new cases among MSM. The most current incidence data strongly suggest that new AIDS cases and HIV infections among MSM are once again surpassing those among IDUs; however, the role of non-sterile syringes in fueling the epidemic remains undeniable. In 2002, there were 4,852 individuals with new AIDS diagnoses. If one excludes those cases for which the associated risk was "other or unknown," 26.7% of the new AIDS cases that year were among IDUs. There were 3,925 initial HIV cases reported to the State Health Department in 2002. Of the 2,174 of these HIV infections for which a risk was identified, 19.5% were attributable to the use of non-

sterile syringes. In addition to HIV infection, the use of non-sterile syringes is linked to numerous other serious diseases, most notably hepatitis C.

One needs to pay particular attention to the central role of contaminated syringes in the ongoing HIV epidemic in New York State's communities of color, particularly among Blacks, who made up more than 53% of new AIDS cases and HIV infections in 2002, and among Hispanics who represented approximately one-quarter of new cases and infections for that year. Blacks comprise more than 48% of the cumulative AIDS cases among IDUs in New York State through December 2002; they make up 51% of the incident IDU AIDS cases for 2002 and more than 49% of the incident IDU HIV infections. Hispanics comprise more than 35% of cumulative AIDS cases among IDUs through December 2002; they make up 35% of incident IDU AIDS cases for 2002 and almost 33% of the incident HIV infections. Among HIV-positive and AIDS-diagnosed IDUs, there are also Asian/Pacific Islanders and Native Americans, though they represent less than 1% of the totals.

Access to Syringes in New York State

Currently in New York State, there are two principal means by which IDUs have legal access to sterile syringes: 1) through syringe exchange programs (SEPs); and 2) through the Expanded Syringe Access Demonstration Program (ESAP).

Syringe Exchange Programs in New York State

Syringe exchange began in New York with a very limited program under the auspices of the New York City Department of Health and approved by the State Department of Health. This pilot program, which lasted only 14 months starting in November 1988, enrolled 317 participants and included an evaluation component. Although this early syringe exchange effort was short-lived and limited in other respects, it demonstrated the following: 1) that it was possible to operate a syringe exchange in New York City; 2) that such a program could be evaluated; and 3) that HIV risk behaviors were modified by syringe exchange program participants.

After the officially sanctioned syringe exchange program ended in 1990, three extralegal programs continued to provide syringe exchange services in New York City. The following year, the New York State AIDS Institute began developing regulations to permit syringe exchange in the State. On May 12, 1992, State Health Commissioner Dr. Mark Chassin approved emergency regulations permitting, as an HIV prevention measure, authorized personnel from community-based and government organizations to possess and furnish hypodermic syringes without a prescription.[2] These regulations, which were subsequently renewed and achieved non-emergency status on July 26, 1993, require that authorized syringe exchange operations take place within the context of a comprehensive harm reduction program. Fundamental policies and procedures for the operation of these SEPs were developed in consultation with several community partners including the American Foundation for AIDS Research (amfAR), the New York City Department of Health, the Legal Action Center, the Beth Israel Chemical Dependency

Institute (now the Baron Edmond Rothschild Chemical Dependency Institute), Gay Men's Health Crisis and a number of harm reduction advocates.

Within one year of the initial regulations, five syringe exchange programs---all within New York City---were operating in New York State as legal programs. Through a contract with amfAR, harm reduction supplies including syringes were provided to these programs. Through a subcontract with the Chemical Dependency Institute, process and outcome evaluations of the programs were conducted. These important relationships continue to this day.

Currently there are 13 organizations that have waivers to operate syringe exchange programs in New York State; four of these programs are outside of New York City (Buffalo, Rochester, New Rochelle and Ithaca). The authorized SEPs are:

- AIDS Center of Queens County
- AIDS Rochester, Inc.
- AIDS Work/Southern Tier AIDS Program
- Citiwide Harm Reduction Program
- Family Services Network of New York
- Foundation for Research on Sexually Transmitted Diseases
- Housing Works
- Kaleida Health
- Lower East Side Harm Reduction Center
- New York Harm Reduction Educators, Inc.
- Positive Health Project
- St. Ann's Corner of Harm Reduction
- Urban League of Westchester

As of January 1, 2005, one additional waiver application has been submitted to the State Department of Health for consideration, and another is expected in the very near future.

As of March 31, 2004, there have been 111,304 participants enrolled in authorized exchanges in New York State. Of these, approximately 73% have been male and 27% female. SEPs are utilized by transgendered persons as well. Consistent with the demographics of both the HIV/AIDS epidemic and the demographics of syringe injectors, the overwhelming majority of SEP participants have been persons of color: twenty-six percent of the participants have been African-Americans; 46% have been Hispanic; 27% have been White; fewer than 1% have been Asian/Pacific Islander; and fewer than 1% have been Native American. Sixty-six percent of the cumulative SEP enrollees have been between the ages of 30 and 49, with fewer than one percent having been under the age of 20; 9% of the SEP participants have been between the ages of 20 and 29, and 25% were 50 years of age or older.

To support the necessary regulatory and contractual responsibilities associated with the harm reduction/syringe exchange initiative, the AIDS Institute created in 1992 a Harm Reduction Unit. The Harm Reduction Unit reviews and processes all syringe exchange waiver applications, provides ongoing technical assistance to proposed and existing

SEPs, monitors approved programs for regulatory compliance, manages the contracts which the AIDS Institute maintains with the SEPs for the delivery of services, and works collaboratively with these programs to plan strategically so that the harm reduction needs of injectors are optimally met. The Harm Reduction Unit's other roles include educating law enforcement bodies and others about the legality of syringe access and providing technical assistance to prospective SEPs in eliciting the community involvement mandated by the regulations.

Research on Syringe Access

The exchange of used syringes for new, sterile ones was first carried out in Amsterdam in 1984 to reduce the spread of hepatitis B among drug injectors. An evaluation of this first syringe exchange found that 1) it did not increase drug use; 2) it diminished the sharing of syringes; 3) it did not result in increased needle sticks among the general public; 4) it stabilized the transmission of HIV; and 5) it decreased the transmission of hepatitis B.[3] Other evaluations of the early programs had similar findings supportive of syringe exchange. An evaluation of one of the first syringe exchanges in the United States, an underground operation in San Francisco, found that the median frequency of injections per day more than halved between 1987 and 1992, and participation in the SEP was found to be positively correlated with the non-sharing of syringes.[4] A comprehensive summary of the public health impact of the early syringe exchange efforts in the United States and abroad was funded by the CDC in 1993; its findings were overwhelmingly supportive of syringe exchange as a means of addressing the HIV epidemic among IDUs.[5] In spite of the Federal ban on funds directly supporting syringe exchange---a decision not based on science but rather on political exigencies---public health experts, including those in the Federal government have examined the research identified access to sterile syringes as a component of a comprehensive HIV prevention strategy to reduce HIV infections among injectors.[6]

In 2005 there can be no doubt based on solid research findings that syringe exchange programs are highly effective, and the research in New York has been ample. Because of improved syringe access and education among injection drug users---much of which is attributable to syringe exchange programs---risk-taking behaviors by injectors have been reduced and the HIV seroincidence and seroprevalence among them have dropped significantly. Seroprevalence prior to syringe exchange reached approximately 50% by 1984 in New York City[7] and continued at that level through 1992.[8] Soon after the introduction of syringe exchange programs, risk-taking behaviors were noted to have declined.[9] [10] These positive behavioral changes persisted.[11] Seroincidence began to fall following the introduction of syringe exchange, as indicated by 10 studies conducted from 1992 through 1997.[12] HIV seroprevalence has also declined markedly among IDUs in New York City. From 1991 to 1996, seroprevalence decreased from 53% to 36% in the Beth Israel Medical Center (BIMC) detoxification program; from 45% to 29% in a blinded seroprevalence study of entrants in BIMC methadone maintenance programs; from 44% to 22% in a research storefront on the Lower East Side; from 48% to 21% in a research storefront in Harlem; and from 30% to 21% in STD clinics.[13]

Part of the value of SEPs is to be found in their cost effectiveness—a measure that other interventions would be hard-pressed to match. In a 1996 study of seven of New York State's SEPs, an impressive cost-effectiveness ratio of $20,947 per HIV infection averted was calculated based on the 87 HIV infections presumed to have been averted.[14] Had the 87 HIV infections actually occurred, a plausible model calculates that there would have been $17 million (more than $195,000 per case) in treatment costs.[15] [16] The New York State syringe exchange programs were able prevent these substantial costs with approximately $1.8 million in funding. Of course substantially more HIV cases have been averted since the 1996 study, and cost effectiveness remains a strong, credible reason to support syringe exchange.[17] [18]

The impact of the syringe exchange programs in New York has been well-documented. The Chemical Dependency Institute, in an outcome evaluation of the SEPs, interviewed 3,436 participants. This study found that the borrowing of syringes declined by over 62% after enrollment; the buying or rental of syringes "on the street" declined by more than 75%; and the use of alcohol pads almost trebled. The most recent, as yet unpublished, seroprevalence rates are also encouraging; they may be as low as 13%. Syringe exchange is working.

New York State law prohibits syringe exchange program participants from furnishing syringes to other individuals, a practice referred to as secondary distribution. Secondary distribution, however, does occur, generally in response to a clear need for syringes by individuals who are unable or unwilling to access syringes through either syringe exchange programs or ESAP. The reasons for secondary distribution include limited syringe exchange hours and the stigma attached to drug use, particularly for women as they are generally more stigmatized for using drugs than men.

While enrollment in a comprehensive harm reduction program is optimal for injection drug users not ready for treatment, researchers from California and elsewhere are finding clear benefits for non-SEP enrollees who are provided sterile syringes by SEP participants. Secondary exchange could remove access barriers for IDUs who cannot or will not access services directly from an SEP.[19]

There are two general syringe distribution strategies employed by syringe exchanges in the United States: one-for-one exchange and need-based distribution. There are findings that the need-based distribution policy results in less sharing of syringes than the one-for-one approach.[20] There are also substantial justifications for New York State to migrate to more of a need-based approach for its syringe exchange programs because of participant considerations. Many participants are reluctant to return syringes to programs because of concerns about arrest. There are also many program participants who, because of homelessness, do not have a secured place to store syringes prior to bringing them back to the SEPs. A need-based approach is also the one that most strongly ensures that an individual has as many syringes as necessary to prevent the spread of blood-borne infection. In New York State, particularly with the implementation of ESAP, there has been a greater emphasis on proper disposal of used syringes to prevent needlestick transmission of infections, and several disposal options are now available for syringe

exchange program participants. They should not be limited to disposing of their syringes at the exchange.

Although evaluations of the impact of pharmacy sales of non-prescription syringes in NYS are still ongoing, a comprehensive objective evaluation of ESAP conducted by researchers at the New York Academy of Medicine, NDRI and Beth Israel Medical Center showed a small decline in rates of needle and syringe sharing, slow but steady increase in program utilization, no increase in improperly discarded needles and syringes, no increase in accidental needle stick injuries among police or sanitation workers, and no increases in syringe-related criminal activity or substance abuse.[21]

Syringe Exchange Program Funding

For the first year of operations, amfAR funded New York State's original five syringe exchange programs at approximately $60,000 per program. In 1994, there was a State appropriation in the amount of $500,000. Funding at that level continued for two years. In 1996, there was a total State allocation of $2,000,000, which was used to support the operations of eleven programs. In addition, the AIDS Institute budget has covered the purchase of harm reduction supplies through a contract with amfAR.

Current AIDS Institute funding to support New York State's harm reduction/syringe exchange initiative has not increased in recent years. It includes $2,239,969 in State funds; $1,596,743 in funding from the federal Centers for Disease Control and Prevention (CDC), including some funds redirected by the New York City Department of Health and Mental Hygiene (NYCDOHMH); $1,901,331 in Ryan White Title I funding and $100,000 in Ryan White Title II funds. A ban on Federal funding for syringe exchange has been in effect since 1988.[22] Federal funding for the harm reduction/syringe exchange programs in New York State may only be used for ancillary services such as HIV testing, support groups, outreach and recovery readiness and mental health services.

Beginning in 2002, NYCDOHMH has also made over $500,000 in city tax levy funds available annually for syringe exchange, first as a pass through to the AIDS Institute, and now directly to the SEPs themselves.

Expanded Syringe Access Demonstration Program (ESAP)

ESAP is the other major mode of legal syringe access in New York for IDUs. In May 2000, Chapter 56 of the Laws of 2000 created the Expanded Syringe Access Demonstration Program. This program authorizes the sale or furnishing of up to 10 syringes per transaction to persons 18 years of age or older without a prescription by pharmacies, health care facilities and health care practitioners who have registered with the New York State Department of Health. ESAP became effective on January 1, 2001 with an initial sunset of March 31, 2003; the program was subsequently extended to 2007. It is important to note that the 1996 recommendations from the AIDS Advisory Council specifically recommended that this program come into being. The Council is pleased with the continuing State support for this program.

As of November 30, 2004, there were 2,757 ESAP providers registered with the Health Department. Approximately 38% of these registered providers are within New York City. All counties throughout the State have ESAP providers except for Hamilton (which has no pharmacy). More than 98% of the registered providers are pharmacies, with chain pharmacies accounting for almost three-fourths of the total.

An important aspect of ESAP is its emphasis on proper disposal of syringes and other sharps. All individuals acquiring syringes through this program receive a "safety insert" which informs them, among other things, of proper disposal options.

Currently there are 930 health care facilities mandated to provide for collection of household sharps in New York State. Of these, 251 were hospitals and 679 were nursing homes. There are sharps collection sites in all counties except for Hamilton. Twenty-eight percent of collection sites are located in the five boroughs of New York City.

In addition to the 930 facilities mandated to provide for collection of household sharps, there are 45 other sharps collection sites, which have been identified. Of these, 8 are at health centers, 21 are at pharmacies, 4 are at housing authorities, and 12 are at community-based health and human service agencies.

This emphasis on proper disposal is consistent with the AIDS Advisory Council's 1996 recommendations.

Need for Expanded Syringe Access

Additional funding is urgently needed to establish and support syringe exchange programs for geographic areas not currently being served and to respond to the exponential growth since 1992 in the number of program participants. In 1992 there were approximately 1,200 cumulative participants; as of 2003, more than 111,000 individuals have participated in these programs since the inception of the SEPs. Only 18 to 25 percent of the approximately 160,000 IDUs in the State will receive harm reduction services via the existing thirteen SEPs in the current year. SEPs have tried to meet the challenge of adequately serving the needs of drug injectors by expanding their hours of operation, establishing new exchange sites, and maximizing their capacity to provide comprehensive services, but there is a continued need for increased syringe exchange services throughout the State.

The AIDS Advisory Council has identified 12 areas which have high indicators of substance abuse and HIV infection warranting consideration of introduction or expansion of syringe exchange programs: Albany, Binghamton, Nassau/Suffolk, Lower Hudson, Mid Hudson, Syracuse, West Harlem/Morningside Heights, Southeast Queens, North Brooklyn (Williamsburg, Bushwick, East New York), Central Brooklyn (Bedford-Stuyvesant, Flatbush, East Flatbush), Central Bronx (Fordham, Bronx Park, and West Bronx (Crotona, Tremont). These recommendations are based in part on those from a study by the New York Academy of Medicine.[23]

ESAP, including its funded demonstration projects, is an essential component of the State's strategy to maximize syringe access and disposal. The current allocation of $250,000 for the demonstration projects should be increased to support syringe access, safe disposal, and ongoing education of pharmacists, health care providers and consumers.

Included in budget recommendations to Commissioner Novello for the 2005-2006 State fiscal year, the AIDS Advisory Council cited the devastating impact of methamphetamine, particularly its impact on HIV transmission, primarily among gay men. Although heroin and cocaine remain the most frequently injected substances in New York, reports from syringe exchange programs indicate that methamphetamine is increasingly being administered through injection. Because methamphetamine injectors frequently do not have a prior history of injecting drugs, they are often unfamiliar with harm reduction practices, such as the consistent use of sterile syringes. In addition, methamphetamine use frequently occurs at private parties and in places that may not have been reached through previous SEP outreach efforts. There is a significant need for education, prevention and treatment targeting this population.

Endorsements of Syringe Access

The list of national organizations and those in New York endorsing syringe access, including syringe exchange, is impressive. It includes the following:

- National Commission on AIDS
- National Institutes of Health
- National Institute on Drug Abuse
- United States Conference of Mayors
- New York State AIDS Advisory Council
- American Public Health Association
- American Medical Association
- American Pharmaceutical Association
- American Bar Association
- Association of State and Territorial Health Officials
- National Alliance of State and Territorial AIDS Directors
- New York Academy of Medicine
- Latino Commission on AIDS
- National Black Leadership Commission on AIDS
- New York State Association of Substance Abuse Programs
- New York State Department of Health
- New York City Department of Health and Mental Hygiene
- New York State Office of Alcohol and Substance Abuse Services

Community planners in New York have also been strong in their advocacy for syringe exchange. Both the New York State and New York City HIV Prevention Planning

Groups are long-term supporters of syringe exchange, and they have both consistently encouraged the expansion of these programs. In the New York State 2004 HIV Prevention Plan Update, injection drug users remain a priority population, and harm reduction/syringe exchange remain priority interventions.

Recommendations

It is the opinion of the New York State AIDS Advisory Council that syringe access programs have demonstrated their efficacy as a strategy to reduce drug-related risk behavior that facilitates transmission of HIV, hepatitis C and other blood-borne infections and that these interventions should be supported, expanded, and fully integrated into existing and developing health care systems.

1. The Public Health Law and the Penal Code should be amended to permit an individual 18 years of age or older to give legally obtained syringes to another adult, a practice commonly known as secondary distribution.

2. The Department of Health should revise its regulations and policies and procedures governing syringe exchange programs to ensure that the interests of public health are well served and that best practices are supported. Among the revisions to be implemented are the following:
    a. Permitting secondary distribution of legally-obtained, unused, sterile syringes to persons 18 years of age or older;
    b. Removing the current requirement that SEPs have policies and procedures for identifying program syringes;
    c. Removing the cap on the number of syringes exchanged in one transaction, and authorizing the programs to furnish syringes based on participant need; and
    d. Removing the requirement that returned syringes be counted.

3. The State should increase funding for SEPs by a minimum of $2,675,000 to expand program capacity beyond its current reach of between 18 and 25 percent of the State's drug injectors.
    a. Half of this new allocation should be devoted to the creation of new programs. Among the regions to consider for new programs are Albany, Binghamton, Nassau/Suffolk, Lower Hudson, Mid Hudson, Syracuse, West Harlem/Morningside Heights, Southeast Queens, North Brooklyn (Williamsburg, Bushwick, East New York), Central Brooklyn (Bedford-Stuyvesant, Flatbush, East Flatbush), Central Bronx (Fordham, Bronx Park, and West Bronx (Crotona, Tremont). Creation of new programs will need to include regionally appropriate models.
    b. The other half of this additional allocation should be used to strengthen existing programs and to support the purchase of harm reduction supplies by the AIDS Institute.

   c. These funds should also support more intensive one-on-one interventions for those enrolled to maximize HIV risk reduction and to increase the number of referrals to drug treatment, health care and social services.

4. The State should support a social marketing campaign that helps connect individuals who inject methamphetamine to a source of sterile syringes. Existing and new syringe exchange programs should be provided with technical assistance to reach methamphetamine injecting drug users.

5. The State should increase ESAP funding to a minimum of $500,000 to support the following:
   a. Ongoing education of pharmacists, health care providers and consumers statewide;
   b. Social marketing efforts informing injection drug and steroid users about the benefits and availability of syringe access and disposal programs;
   c. Existing and new local ESAP demonstration projects;
   d. Increased availability of syringe disposal kiosks to ensure that used syringes are disposed of safely.

6. The State should ensure the availability on demand of drug treatment services for all individuals who seek them, including pregnant women and those with dependent children. These services should include a full range of modalities for treatment of users of any type of injectable drug, including opiates and stimulants.

7. The State should continue to support effective, bi-directional links between syringe exchange programs and providers offering health care and support services to injection drug users and HIV-infected individuals. The State should ensure coordination of these services through agencies at all levels of government and full integration of syringe exchange programs into existing and developing health care systems.

8. The Department of Health should continue and strengthen the outreach and education directed to law enforcement agencies, local departments of health, non-profit agencies and other relevant government and community leaders by the AIDS Institute's Harm Reduction Unit to increase their understanding of syringe access as an effective public health measure and to elicit their cooperation in supporting these programs.

9. The Department of Health should support ongoing evaluation of syringe access programs in order to ensure continuous improvement in their effectiveness at reducing risk behavior among injecting drug users and their ability to reach the full spectrum of potential participants.

10. The Federal government should remove restrictions on the use of federal funds for syringe exchange activities.

Notes

[1] All of the data in this section are from the New York State Department of Health's Bureau of HIV/AIDS Epidemiology and represent cases reported and confirmed as of March 2004.
[2] *Official Compilation of Codes, Rules and Regulations of the State of New York*, Title 10, Section 80.135, "Authorization to Conduct Hypodermic Syringe and Needle Exchange Programs."
[3] Buning EC. Effects of Amsterdam needle and syringe exchange. Int J Addict 1991; 26:1303-11.
[4] Watters JK, Estilo MJ, Clark GL, Lorvick J. Syringe and needle exchange as HIV/AIDS prevention for injection drug users.[comment]. JAMA 1994; 271:115-20.
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[6] U.S. Department of health and Human Services (HHS). Evidence-Based Findings on the Efficacy of Syringe Exchange Programs: An Analysis for the Assistant Secretary for Health and Surgeon General of the Scientific Research Completed Since April 1998. Washington D.C. March 17, 2000. This report states: "…syringe exchange programs play a unique role in facilitating engagement of [IDUs] in meaningful prevention interventions and treatment opportunities when implemented as part of a comprehensive HIV prevention and substance abuse strategy."
[7] Des Jarlais DC, Friedman SR, Novick DM, et al. HIV-1 infection among intravenous drug users in Manhattan, New York City, from 1977 through 1987. JAMA 1989; 261:1008-12.
[8] Des Jarlais DC, Friedman SR, Sotheran JL, et al. Continuity and change within an HIV epidemic. Injecting drug users in New York City, 1984 through 1992. JAMA 1994; 271:121-7.
[9] *Ibid.*
[10] Paone D, Des Jarlais DC, Caloir S et al. New York City syringe exchange : An overview In: *Proceedings: Workshop on needle exchange and bleach distribution programs*. Washington, DC. National Academy Press. 1994: 47-59.
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[15] Pinkerton SD, Holtgrave DR. Assessing the cost-effectiveness of HIV prevention interventions: A primer. In: Holtgrave DR, ed. *Handbook of economic evaluation of HIV programs*. New York: Plenum, 1998;33-43.
[16] Holtgrave DR, Pinkerton SD. Updates of cost of illness and quality of life estimates for use in economic evaluations of HIV prevention programs. J Acquir Immune Defic Syndr Hum Retrovirol 1997; 16:54-62.
[17] Lurie P, Gorsky R, Jones TS, Shomphe L. An economic analysis of needle exchange and pharmacy-based programs to increase sterile syringe availability for injection drug users. Journal of Acquired Immune Deficiency Syndromes & Human Retrovirology. 1998; 18:S126-32.
[18] Lurie P, Drucker E. An opportunity lost: HIV infections associated with lack of a national needle-exchange programme in the USA.[comment]. Lancet. 1997; 349:604-8.
[19] Murphy S, Kelley M, Lune, H. The health benefits of secondary syringe exchange. J Drug Issues 2004; 34: 245-268.
[20] Kral, A. H., J. Lorvick, L. Gee, P. Bacchetti, B. Rawal, M. Busch and B. R. Edlin (2003). "Trends in human immunodeficiency virus seroincidence among street-recruited injection drug users in San Francisco, 1987-1998." Am J Epidemiol 157(10): 915-922.
[21] New York Academy of Medicine. *New York State Expanded Syringe Access Demonstration Program Evaluation: Evaluation Report to the Governor and New York State Legislature*, January 15, 2003.
[22] The current ban is in the Consolidated Appropriations Act, 2004. 108 P.L. 199, Title V, Section 505.
[23] Finkelstein R, Vogel A. *Towards a comprehensive plan for syringe exchange in New York City*. New York Academy of Medicine. New York. 2001.