

There Will Be Blood: HIVictory in the Intravenous Drug User Community through Clean
Needle and Syringe Exchange Programs

By

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Abstract

This paper evaluates the effectiveness of clean needle and syringe exchange programs (NSP) in the United States in reducing the rate of HIV transmission in the intravenous drug user (IDU) community. By tracing the epidemiological history of HIV in the United States, this paper examines the formulation, adoption and implementation of NSP policy in various cities. This paper also discusses the social, political and moral issues associated with NSPs. Through examining current literature on NSPs and HIV rates, this paper will argue that NSPs are effective in reducing rates of HIV transmission in the IDU community.

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Introduction

As a young adult, Louis found drug use as the only way to escape a troubled childhood filled with abuse, neglect, and homelessness.¹ At age 16, Louis ran away from his home in New Jersey to join a street gang. Beginning with cocaine, Louis quickly dove in to the dark world of drug abuse. However, like many drug users driven by feelings of anonymity and powerlessness, cocaine no longer numbed Louis' emotional pain. At the age of 19, Louis turned to heroin. He quickly spiraled towards the bottomless hole of intravenous drug use addiction, living each day with one purpose: getting high. It became impossible for Louis to end this "empty routine" and despite multiple attempts to stop the abuse, Louis became a desperately hopeless heroin addict before graduating his teenage years (Firshein 1998).

Louis used heroin religiously for ten years, obsessed with fulfilling his addiction. Louis frequently engaged in risky behavior, including injecting heroin with second-hand needles from dozens of different users. In the early 1980s, he believed "emotionally and psychologically...this was it" and life could not get any worse (Ibid.). But in 1986, his life changed forever. At the young age of 29, Louis was diagnosed with Human Immunodeficiency Virus (HIV). Until only a few months after Louis' diagnosis, there was no treatment plan for living with HIV. In the 1980s, a positive HIV status guaranteed a torturous and inevitable death within months to two years (Jacobs 1997). As a result of the careless choice to use shared needles infected with HIV to inject heroin, Louis self-prescribed an inescapable death sentence (Barrow 2008).

History of the HIV/AIDS Epidemic in the United States

Luckily for Louis, he was diagnosed with HIV in the same year scientists developed antiretroviral treatment therapy (ART), preventing his infection from developing in to the deadliest outcome of HIV: Acquired Immunodeficiency Syndrome (AIDS) (Firshein 1998). But

¹ Last name withheld for confidentiality

in the years prior to Louis' diagnosis, HIV was a silent predator baffling the scientific and public health community. The virus known as HIV today first appeared in the United States in 1981, when health care officials in Los Angeles reported to the Centers for Disease Control (CDC) several outbreaks of a rare type of pneumonia called *Pneumocystosis carinni* and Kaposi's sarcoma cancer in young males (National 1986, 37). A few months after the outbreaks in Los Angeles, several cases of *Pneumocystosis carinni* and eight cases Kaposi's sarcoma were reported in young males in New York City (Maulitz and Duffin 1990, 5). Prior to the HIV epidemic, *Pneumocystosis carinni* and Kaposi's sarcoma were found predominantly in elderly male populations with "rare genetic diseases" or individuals undergoing "immunosuppressive treatments for organ transplants or cancer chemotherapy" (Feinberg 2007; National 1986, 37). Of all the reported cases of Kaposi's sarcoma prior to the discovery of HIV, 90 percent of victims were elderly males "of well-defined ethnicity: Jews... eastern European descent... [and] certain black African tribes" (Maulitz and Duffin 1990, 5).

Despite the fact that none of the infected individuals fit the traditional profile of *Pneumocystosis carinni* or Kaposi's sarcoma victims, doctors realized they had three important traits in common: they were young, male and homosexual (Ibid.). Health care officials also noted that each of the atypical infected individuals demonstrated an overall compromised immune system, unable to defend against even the most basic "viral, bacterial, and parasitic infections" (National 1986, 37). According to a CDC report in the early 1980s, "the occurrence of *Pneumocystosis* in these five previously health individuals without a clinically apparent underlying immunodeficiency [was] unusual" (Ibid.). By the end of March 1981, four of the first reported victims of Kaposi sarcoma were dead (Ibid.).

Only a month later, cases of the rare pneumonia and cancer were reported in San Francisco. The unnamed epidemic began sweeping the country and by 1982, the CDC recorded over 200 cases of Kaposi Sarcoma and *Pneumocystosis carinni* - limited entirely to the young homosexual community (Id., 10). Without a scientific name and the limitation of instances to the homosexual community, newspapers coined the terms “gay cancer”, “gay pneumonia” and “gay plague” to describe the epidemic (Ibid.). Some members in the health community quickly adopted the acronym GRID (Gay-Related Immune Deficiency), reaching the “conviction that the causal agent was infectious and that it was spread by sexual contact” in the homosexual community (Ibid.).

With the epidemic spreading uncontrollably, research efforts by the Centers of Disease Control (CDC), National Institutes of Health (NIH), the Pasteur Institute, and the World Health Organization (WHO) exploded rapidly (Id., 13). In the summer of 1982, the CDC identified and characterized the disorder, adopting the term Acquired Immunodeficiency Syndrome (AIDS) to describe the final stage symptoms caused by the Human Immunodeficiency Virus (HIV) (Id., 32).

In 1983, the focus on the homosexual community shifted when the first cases of HIV were diagnosed in heterosexual communities (MacQueen 1994, 509). Again, the infected individuals did not fit the traditional victim profile, but now had a different trait in common: they were intravenous drug users (Maulitz and Duffin 1990, 10). Sprouting rates were then noted in populations of other needle-using persons, such as hemophiliacs and blood transfusion recipients, and in certain ethnic groups, such as Haitians and Africans (MacQueen 1994, 509). The presence of infections outside the homosexual community contributed to the understanding of the basic modes of transmission: sexual intercourse, blood transfusions with HIV infected

blood, needle and syringe sharing between infected individuals, transplantation of organs from infected individuals, and mother-to-child transmission to a child with an infected mother or father (Osborn 1989, 124).

By 1984, scientists understood the biologic and etiologic structure of HIV (Maulitz and Duffin 1990, 10). HIV is an RNA virus infecting cells with CD4 molecules on their membranes, leading to decreased immunological defense responses. Individuals with HIV may be asymptomatic for many months or years, leading to unnoticeable spread of the virus. With normal defense mechanisms compromised, HIV infected individuals are suspect to dangerous opportunistic infections and health problems that healthy individuals are naturally able to eliminate. These issues include cancer, neurologic problems, fevers, diarrhea and sore throat. The presence of these symptoms in individuals infected with HIV is called ARC, or AIDS-related complex. Individuals with opportunistic infections such as pneumonia caused by a protozoan, *Pneumocystis carinni*, and certain rare cancers fit the CDC criteria for full-blown AIDS (National 1986, 7). Patients with HIV that transgresses to AIDS are difficult to treat, as infections are recurring and often irreversible. According to the NIH, “there have been no recorded cases of prolonged remissions of AIDS”, and most patients that reach AIDS status die within two to three years (Ibid.).

After understanding the etiology of HIV, scientists began working to develop tests that determine seropositivity.² Through isolation of the HIV virus, scientists determined that Enzyme-Linked Immuno-Sorbent Assay tests (ELISA) could be used to detect the presence of specific HIV viral components. In 1985, the first HIV testing kits were released for public use (Maulitz

² Seropositivity refers the presence of specific antibodies determined through a blood test indicating the presence of an infection (Cambridge 2005)

and Duffin 1990, 85). In the same year, the United States government mandated HIV testing of all blood donations and civilian military applicants (Ibid.).

In 1987, scientists made the greatest stride towards treating the epidemic when a series of anti-HIV drugs (now called highly active antiretroviral therapy, or HAART) were developed. HAART improves symptoms of HIV infected individuals, prevents opportunistic infections, and suppresses the HIV virus to eliminate or slow down transgression to AIDS. The introduction of HAART eliminated the notion that AIDS is a death sentence. With HAART, seropositive individuals are able to live long and fairly normal lives, reducing morbidity and mortality rates (McNeil 2004). Furthermore, HAART minimizes chances of sexual transmission and prevents mother-to-child transmission (Gallo and Montagnier 2002, 1730). Despite the groundbreaking benefits of HAART in extending the lives of infected individuals, many seropositive individuals cannot afford treatment and are ineligible for financial assistance.

Policy Responses to HIV in the United States

With the ability to test, track and treat new HIV infections - along with the spread of transmission outside the homosexual community - interest groups, government agencies and policymakers began taking policy steps towards combating the epidemic. Due to the lack of a cure and the provocative transmission routes, HIV healthcare policy is primarily centered on preventing risky behavior - assuming HIV infection results from “inadequate or incomplete information” about the dangers of engaging in unprotected sex or intravenous drug use (Valdiserri 2011, 483). HIV policy in the United States typically angles to “modify behavior, theoretically reducing the incidence of specific unsafe practices” to prevent infection altogether (Salbu 1996, 106). Thus, early policies focused on HIV awareness - in 1986, the Institute of Medicine recommended that “the nation expand the availability of serologic testing” so infected

individuals (at the very least) are aware of their status (Valdiserri 2011, 483). In the same year, the CDC recommended “counseling and voluntary serologic testing of asymptomatic persons in high risk groups as a way to prevent further transmission of this virus” (Ibid.).

In the early years of the epidemic through the Public Health Service (PHS), the federal government contributed over \$108 million for AIDS and HIV research. Of the agencies in the PHS including the NIH, CDC, and FDA, each provided funding, surveillance, therapeutic aid and research for the epidemic (National 1986, 240). As a result of CDC HIV policy guidelines, public pressure and growing HIV rates, President Ronald Reagan, President Bill Clinton, and President George W. Bush adopted national plans for responding to HIV. In 1987, President Reagan adopted the Presidential Commission on HIV, issuing hundreds of recommendations for agency level policy approaches (Yehia and Frank 2011, 1). In 1996, President Clinton released the National AIDS Strategy (NHAS) with six goals: to “strengthen HIV-related research; reduce number of new HIV infections; give persons with HIV access to high-quality services...eliminate HIV-related discrimination; support international efforts to address the HIV epidemic; and ensure that research advances are translated into care and prevention” (Ibid.). The NHAS was a unique approach in that it delegated directions of the NHAS Federal Implementation Plan, which details anti-HIV responsibilities and tasks to federal agencies. NHAS also imposed a President’s Memorandum to Federal Agencies, requiring federal agencies to implement anti-HIV plans (Ibid.).

Congress approved the most valuable anti-HIV policy, the Ryan White CARE ACT, in 1990. The act, through the Department of Health and Human Services (DHHS), authorizes the distribution of federal funding to states to promote treatment, research and preventative services for seropositive individuals (Akuwke 2001, 1). The federal funding trend continued in 2003

when President George W. Bush introduced the President's Emergency Plan for AIDS Relief (PEPFAR), providing the historically largest amount of funding for combating HIV. Most recently, PEPFAR authorized over \$48 billion from the years of 2009-2013 to prevent infections and treat seropositive individuals (PEPFAR 2011).

Among hundreds of agencies and interest groups working to combat the HIV epidemic, federal funding provides the greatest source of revenue and support for anti-HIV policy. However, federal funding greatly relies on state-level implementation - through federal funding, states are given block grants for implementing anti-HIV policy. Due to the nature of block grants, each state has a fairly high level of latitude in terms organization, eligibility and implementation of anti-HIV programs (Leibowitz and Sood 2007, 60). Thus, states can chose to opt out of or promote offensive or risky anti-HIV programs depending on each state's political and public environment.

Scholars note that the many states have been "malignly sluggish" in proposing and adopting public efforts to confront the HIV epidemic "due to bias against the socially peripheral groups whose members comprise a large proportion of the number of persons with AIDS" (Osborn 1989, 124; Nelkin 1991, 299). Since the discovery of HIV, "a pervasive theme...has been the placing of blame" (Nelkin 1991, 299). For health officials, the media, and the public, HIV is "attributed to dangerous lifestyles, immoral behavior, [and] illegal drug use (Nelkin 1991, 297). HIV is often viewed as a "disease for others", especially "those who are somehow immoral" (Id., 300). It is considered a "problem of those engaged in particular lifestyles" and "not a disease of society" (Ibid.). Religious conservative Jerry Falwell commented that the high rates of HIV in the homosexual and IDU community is "God's will, [because] a man reaps as he sows" (Id., 301). HIV infection continues to carry an overwhelming social stigma based on a

notion that infected individuals are wholly guilty for their infection as a result of dangerous behavioral choices (although this is not always the case) (Id., 301).

Clean Needle and Syringe Exchange Programs (NSPs)

Problem Definition – IDUs and NSPs

Among populations engaging in unsafe practices that increase likelihood of HIV infection are intravenous drug users (IDUs) – a community of individuals perhaps considered the most “blameful” and “immoral” victims of HIV (Alcabes and Friedland 1995, 1468). In the late 1980s and early 1990s, intravenous drug users accounted for over 33% of HIV rates. Quickly however, IDUs became the “major vehicle for transmitting HIV infection to heterosexual adults who do not inject drugs and to children”, posing the greatest threat to the “innocent” members of society (Ibid.). In the 1990s, almost 70% of women with HIV seropositivity were sexually active with male IDUs, while 64% of children with HIV were born to intravenous drug using mothers and fathers (Ibid.).

The HIV epidemic skyrocketed among the IDU population in the mid-1980s and 1990s, demanding the attention of policymakers and interest groups alike. While needle sharing is a commonplace practice among the IDU community, it became a necessity for drug users in the 1970s as states increasingly adopted policies prohibiting the purchases of syringes and criminalizing transportation or possession of injection equipment (Alcabes and Friedland 1995, 1468). In response to anti-injection equipment laws, a series of “shooting-galleries” opened in big cities such as New York, Baltimore and Philadelphia as a safe haven for IDUs to securely rent injection equipment (Id., 1469). In the galleries, injection equipment is used by hundreds of drug users “before the needle [is] finally too dull and [has] to be retired” without sterilization between users (Ibid.). Sterilization is vital for preventing transmittable infections as IDUs

frequently engage in “booting”, a practice in which “blood is drawn up into the syringe to be sure that a vein was entered”, contaminating the needle and the syringe with HIV and other blood borne viruses (Ibid.).

Many scholars attribute shooting galleries as the most important factor influencing the spread of HIV in the IDU community, as studies show increased HIV rates in IDU communities in “association with an increasing proportion of injections in shooting galleries” (Alcabes and Friedland 1995, 1469; Celentano et al. 1991, 1291-1295; Robles et al. 1998, 477-483). In 1997, while the CDC reported that approximately 50% “of annual new HIV infections occur among IDUs, their sexual partners, and their offspring”, many states experienced difficulty mustering support for public policy to target this difficult population (Gent 2000, 125).

Although HIV is found in a variety of populations, IDUs are among the most “marginalized and hard-to reach population in society” in terms of HIV prevention and treatment policy (Li et al. 2009, 2). IDUs typically ostracize themselves from the general population by only socializing with other IDUs, making it difficult for officials to extend aid. Due to the nature of their lifestyle, they face “social discrimination...[and] a unfriendly environment”, dissuading them from seeking treatment altogether (Id., 7). Most difficult is that due to the inebriating effects of drug use, they are often incapable of making good judgment and controlling their behaviors, placing themselves and others in danger. They are therefore most suspects to “peer influence”, particularly manifesting in risky behaviors such as “needle sharing, syringe reuse, multiple sex partners and unprotected sex” (Id., 2).

Agenda Setting: The Tacoma NSP

Taking the difficulties of controlling blood borne infections in the unstable and often unchangeable IDU population, groups began advocating controversial methods such as needle

exchanges to reduce HIV infection. In 1970, the concept of sterile needle distribution was introduced in North America at San Francisco State University to combat yellow jaundice and abscesses resulting from heroin use (Stryker and Smith 1993, 2). Compared to current NSPs, this early program was informal and impersonal – sterile needles were simply left in the open at health services offices for free and anonymous access by heroin users (Ibid.).

In the early 1980s in the Netherlands, a drug activist group called the Amsterdam Junkiebond implemented the first formal needle exchange program to prevent outbreaks of the highly contagious hepatitis B virus. The program was unique because it legally collaborated with the government operated Amsterdam Municipal Health Service to provide sterile needles, gaining widespread support from health officials and the community (Id., 3). Considering the concept of clean needle exchanges to prevent infectious viruses, “health professionals, researchers, and activists in North America spearheading the fight against the acquired immunodeficiency syndrome (AIDS)” began to focus on the effectiveness of the Amsterdam program in preventing the spread of HIV in the IDU community (Ibid.)

Anti-HIV advocates for the IDU community, influenced by the excitement surrounding the Amsterdam program, began illegally distributing sterile syringes as “acts of civil disobedience...to publicly test the prescription laws” that made it illegal to purchase sterile needles without a prescription (Ibid.). In 1988, drug rehabilitation activist named Dave Purchase organized the first legal Clean Needle and Syringe Exchange program (NSP) in Tacoma, Washington. With the support of numerous anti-HIV activist groups, Purchase rallied support from public officials in the city to adopt a legally functioning NSP (Id., 4). The innovativeness

and success of this program is attributed to placing NSP policy on a nationwide political agenda (Gent 2000, 127).³

In the 1980s, Tacoma was home to one of the strongest anti-HIV policy communities as a “less socially conservative” state (Id., 141). At this time, the uncontrollable severity and magnitude of new HIV infections directly transmitted from IDUs in Washington “spur[ed] officials to take action” in local government (Id., 140). The Tacoma Health Department noted that HIV infections transmitted from IDUs more than tripled in 1988, and more than 75% of IDUs reported needle-sharing practices (Id., 142). At the same time, there was an increase in IDU political activism during the late 1980s, especially from the interest group ACT-UP (AIDS Coalition to Unleash Power) (Ibid.). ACT-UP, among other government agencies such as the CDC and NIH, physicians, researchers and specialists in the medical community began advocating solutions to this problem, readily agreeing on the potential success of NSPs. In 1988, Dave Purchase, ACT-UP and other members of the pro-NSP movement opened an illegal NSP in Tacoma, Washington. In light of the “trend setter” attitude and “progressive heritage” of Washington, local officials voted to legalize the program and turn operations over to the King County Health Department (Ibid.). Quickly, a rally of support for and interest in the innovative policy sparked in Washington, focusing on the benefits and feasibility of NSP (Ibid.).

While the progressive and liberal nature of Tacoma is likely the reason the city is home to the first legal NSP, its implementation did not occur without some difficulties, revealing the “complexity involved in setting up an [NSP]” (Tempalski et al. 2007, 438). At the time of the program’s implementation, it received high levels of support from community residents and health/social service administrators, including the King County Health Department. However,

³ Other acronyms for Clean Needle and Syringe Exchange Programs are Needle Exchange Program (NEP), Syringe Exchange Program (SEP), Needle Exchange Program (NEX); Clean Syringe Exchange Program (CSEP)

the program initially received opposition from city officials responsible for allocating funding. To prevent the legalization of the NSP, city officials withheld funds for its set-up arguing that such a program “violated paraphernalia laws” (Ibid.). In response, the King County Health Department sued the city to “obtain [these] promised funds” (Ibid.). The health department won the case, a decision resulting in statewide legalization of NSPs. Most importantly, the Tacoma NSP introduced a “standard for other counties in the state” to implement, operate and fight for NSPs (Ibid.)

Policy Formulation and Adoption – Expanding NSPs

The success of the Tacoma program and “agreement over the NSP paradigm...helped to structure and anchor the AIDS agenda squarely around NSP[s]”, allowing “ease of passage” for the development of NSPs in Washington State and across the country (Gent 2000, 142).

Advocates touted the easy implementation of NSPs and their perceived success in reducing the spread of HIV among IDUs, appealing to policymaker’s desires for technically feasible and efficient policies (Id., 143). Thus, the Tacoma “city council approval of [NSP] provided a policy window”, focusing attention on the issue and encouraging pro-IDU interest groups to push for NSP policy in more states (Id., 144). Proponents began to structure a multi-faceted argument for NSPs, suggesting that they “provide a means for public health officials to locate IDUs and get them into treatment programs”, are cost-effective compared with lifetime treatment of seropositive individuals, and protect the “innocents, particularly children, [who] are needlessly becoming victims of a disease that could easily be contained through the availability and use of clean needles” (Id., 128).

NSPs are formulated around two underlying principles: the philosophy of harm reduction, and the “circulation theory” (Strathdee 2004, 373). The former refers to an approach that accepts

the reality of drug use: it is a immeasurable public threat that is currently impossible to eradicate. This approach considers the ineffectuality of eliminating intravenous drug use and instead aims to “reduce harm to the individual and to the community by allowing injection drug users to have access to sterile injection equipment if they will not or cannot cease injection drug use” (Ibid.). The circulation theory posits that the longer a dirty syringe circulates the streets, the greater threat it poses to the community as a whole (Ibid.). The theory raises the speculative consideration that if a drug user has access to a readily available needle exchange, the amount of time an injected syringe or needle is “circulating” in the community is reduced. According to the theory, as visits to NSP increase, the time infected needles are on the streets decreases, which therefore lessens the likelihood of using an infected needle – in turn reducing HIV rates in the IDU community (Kaplan et al. 1994, 1991). Thus, NSP are based on a lesser of two evils conception, considering the importance of reducing HIV infections over a greater (but likely impossible) desire to diminish drug use. Thus, NSPs propose “an approach that purportedly is more realistic than abstinence”, contending that intravenous drug use will continue (Salbu 1996, 107). NSPs instead focuses on “ways in which [risky] behaviors can be made safer, rather than ways in which they can be expunged” (Ibid.).

Public Backlash to NSPs

As support for NSP grew, a deep-rooted and prickly backlash cultivated in American policymakers and citizens, particularly from the conservative populations (Gent 2000, 141). As an epidemic, HIV is distinctive in the fact that prevention (besides securing blood and organ donations from HIV infections) relies on confronting and controlling individual choices, calling for a unique health agenda (Osborn 1989, 124). Thus, HIV creates a need “for individual avoidance of threat and for a coherent, focused, human societal response” (Ibid.). In other words,

unlike past plagues which requires “mandatory or coercive approaches”, HIV policy is difficult for “nowhere is educational intervention more awkward” than in areas of sexual behavior and illicit drug use” (Osborn 1989, 124). Dr. June E. Osborn, a public health policy advisor for the National Institutes of Health (NIH) and CDC explains the special difficulties of anti-HIV policy targeted at drug using communities:

Along with sexual mores, drug use is central to the AIDS epidemic, but as a political issue it is even more problematic. Whereas sexually transmitted diseases are at least acknowledged to be public health problems, illicit substance abuse and addiction have been approached as legal matters for which punitive responses are not only appropriate but also sufficient. The advent of AIDS actually coincided with an escalation in severity of the drug epidemic, which was countered with a strident “war on drugs” but a contradictory lack of treatment facilities. (1989, 133)

For many Americans, drug use is viewed as a crime, and accordingly any collateral damage obtained from drug use is considered an individual responsibility. Mostly in the conservative community, the introduction of NSPs challenges the moral status quo and “beliefs about the social world and about the ways in which people *should* conduct their lives” (Gent 2000, 131). For many anti-NSP activists, NSPs “undermine authority and American society’s ‘War on Drugs’”, a major agenda issue for many politicians in the 1980s and 1990s (Id., 128). Opponents often believe NSPs condone intravenous drug use by providing free and easy access to injection equipment, and “send out the wrong message that injecting drugs is okay” (Ibid.). Many opponents align with powerful communities that have the ability to incite mass hostility - from prosecutors, law enforcement officials and politicians. For example, Gen. Barry R. McCaffrey, the White House director of drug Policy in 1999, openly opposed the program “as a matter of principle”, maintaining that “drugs are illegal...and government sends the wrong message to children by providing addicts with the means to break the law” (Kocieniewski 1999).

Arguments against NSPs are charged with interpretations “largely driven by values and morals, instead of logic” (Bowen 2012, 123). In other words, opponents view NSP policy as a problem of morality, and thus employ “value-based arguments” against NSPs (Id.,121). NSPs touch on two extremely confrontational and touchy issues in America: (1) illegal drug use and (2) HIV infection resulting from drug use. For opponents of NSPs, NSP policy directly confronts their unrelenting beliefs about the role the American government should play in the anti-drug war –as a strict punisher of and unforgiving crusader against all drug use. To opponents, as drug abuse is a crime, any government aid to support or help drug abusers threatens the deep-seeded anti-drug values implemented into the legal and moral codes of this country (Id., 133).

As a result, “rigorous research and scientific evidence [is] deemphasized”, veiled behind arguments driven by personal values (Id.,128). Opponents focus less on the realities of intravenous drug use (a currently unstoppable social issue that is the source of the most rapid expansion of HIV), and instead concentrate on the perceived moral implications of government treatment for an undesirable population through NSPs. In particular, policymakers focus on the “innocent youth”, highlighting the message that government endorsed NSPs may send a message to the nation’s children that drug abuse is a acceptable way of life (Id., 130) Elizabeth Pisani, an AIDS epidemiologist explains the conundrum expelled through anti-NSP policymakers:

HIV prevention is relatively cheap. For the price of a condom or a sterile needle today, you can save yourself several thousand dollars in health systems costs caring for an AIDS patient ten years from now...[but] the money argument often isn’t enough to make politicians do nice things for junkies. How about the babies argument then? Politicians are always happy to do nice things for innocent women and babies. (2008, 27)

In other words, despite international acceptance and research that suggests that NSP policy reduces HIV rates in the IDU community (to be discussed later), NSP policy has nonetheless faced great difficulty gaining governmental support (Bowen 2012, 122; Kaplan

2004, 1991-1994; Des Jarlais et al. 2009, 445-451; Hurley and Jolley 1997, 1797-1801). Since their introduction, governmental backlash has led to attempts to defeat NSP policy, some of which successful. Most noticeably, the United States Federal Government passed the 1988 Health Omnibus Programs Extension, which included provisions that prohibit federal funding for NSPs (Bowen 2012, 128). While the ban was briefly lifted in 2009, it was reinstated in 2011 (Ibid.). On a state-level, NSPs struggle to gain legal status - for example, NSPs did not gain legal status in New Jersey until 2006 (Ibid.). At a local level, many business people, policymakers, law enforcement workers, and religious members (typically from the conservative community) actively work to halt legislation for and prevent operation of the programs (Id., 130).

The Current Policy – NSPs Today

Despite the intense public backlash against NSP, IDUs became responsible for the fastest spread of HIV infection in the late 1980s and early 1990s. As the HIV epidemic continued through the 1980s, IDUs were responsible for almost one-third of all new HIV cases (Gent 2000, 125). With these growing statistics, in the late 1980s, “policy officials, academics and experts across the nation touted the success of NSP” for potentially reducing HIV transmission, placing the development of NSPs on state government agendas (Id., 126). As the argument for NSPs strengthened and research into their effectiveness was popularized, clinics began sprouting up in every major city in the United States (Delgado 2004, 171). While the United States federal government has failed to adopt clean needle and syringe exchange policy in the national anti-HIV agenda, there are currently 203 NSPs operating in 186 cities in 34 states (American 2012).

While NSPs vary across the states, the main goal is to “provide a range of related prevention and care services that are vital to helping IDUs reduce their risks of acquiring and transmitting blood-borne viruses” such as HIV (CDC 2005, 1). Although there are many

variations in terms of materials and services provided, NSPs typically “exchange used syringes for unused syringes”, provide bleach bottles to purify contaminated injection equipment, as well as offer cotton swabs and skin ointment to treat open injection areas (Delgado 2004, 171). Many NSPs also provide condoms to prevent sexual transmission and educational handouts to increase knowledge and awareness of the virus (Ibid.) Overall, most NSPs combine “risk reduction through needle exchange with a program goal of offering counseling and referral of participants to drug treatment programs” (Id., 171).

Currently, most NSPs operate under the orders of local health department officials “charged with public safety” (Ibid.). Most states that implement NSPs thus view HIV infection in the IDU community as a public health treat. Typically, health department officials are responsible for ordering policy to protect the public against infectious diseases. In the case of HIV and IDUs, orders for the protection of public health are usually installed under emergency health decrees, citing massive spikes of HIV rates in the IDU community (Ibid.). Issuing an emergency health decree order under a state public health code requires the following steps: (1) declaring a health emergency; (2) describing the spread of HIV through drug use (3) providing evidence of the effectiveness of NSPs as preventative policy; and (4) periodically redeclaring an HIV emergency to continue program operations (Ibid.). Officials typically “emphasize the protective nature of the exchange program for the public at large” on a provisional emergency basis, although most programs continue to operate long after the “emergency decree” (Ibid.).

State-level rules and regulations determine the infrastructure and local directions of NSPs, but specifics may differ slightly by state. In many NSPs, participants must be 18 years or older with legal identification. However, it has been noted that age limits and identification requirements are absent or loosely enforced and included only to symbolically address “the fear

that a program might encourage young people to start injecting illicit drugs”, and discomfort with providing government services for non-U.S. citizens (Stryker and Smith 1993, 29). To avoid rejecting an IDU for failing to meet participation requirements, the NSPs record of age and citizenship status depends entirely on answers to self-reported questionnaires (Ibid.) The loose enforcement of eligibility rules is likely due to the desire to portray NSPs as safe environments operated through friendly and mentor-like relationships between IDUs and staff (Ibid.).

Across the country, all states have regulations to ensure some form of NSP participant confidentiality. To ensure patient and staff safety, staff members are trained according to state regulations regarding blood-borne pathogens and emergency services such as CPR. NSP sites must be registered with and approved by the state in which they are operating, and must maintain a regular working schedule. Majority of states prohibit NSP sites near churches, schools, playgrounds or daycares. Each state with a legally operating NSP requires that it provide HIV testing, counseling for reducing risk-behaviors, referral services, and links to drug treatment facilities (Delgado 2004, 172).

As discussed, the passage of a federal ban prohibits the direct use of federal funds for operating, implementing and opening NSPs (Khan 2012). Thus, NSPs receive funding from “local government, foundation grants, private donation, and activist or community organizations” (Delgado 2004, 175). Typically, most funding comes from foundation grants and private persons (through fund-raisers) (Ibid.).

NSPs - Policy Evaluation

Methods of Evaluating NSPs

In light of the fact that federal bans prohibit the use of federal funding for NSPs, evaluation of program effectiveness is crucial for justifying costs to state and local level

stakeholders and sponsors that often have personal interests in the programs (Delgado 2004, 175). Since the adoption of various NSPs across the United States, their effectiveness is intensely discussed and studied within the scholarly, political and medical community (Amundsen 2006, 911). Evaluation of NSPs “is a difficult but necessary task”, “essential for politicians and granting agencies who need a sound basis for decisions” to fund, grant appropriations and continue operations of NSPs (Delgado 2004, 171-173). In evaluating NSPs and reduction of HIV rates, certain factors must be taken in to account including the geographic scope of the program and goals of the program (Id., 173). Politics of the evaluator must also be taken in to account, considering the various stakeholder interests in NSPs that may influence the evaluation or disproportionately represent data in their favor (Ibid.).

In terms of NSPs, Mateo and Kirchoff (1999) distinguished two types of program evaluations: formative or summative. Formative evaluations “assess, report and monitor the implementation and progress of the program” requiring a well-defined purpose, goal and quantifiable variables of the program. Formative evaluations are most useful for examining specific program operations such as staff training (Ibid.). Summative evaluations, on the other hand, “assess the effectiveness of the program after the desired change has been implemented” (Ibid.). Specifically, summative evaluations determine whether or not program goals were accomplished and upheld while considering unintended consequences of the program (Ibid.).

While a longitudinal experimental evaluation that follows many IDUs from the beginning of their drug use compared with IDUs who did not participate in the NSP would likely be the most effective method in determining the effect of NSPs on HIV rates, they are “expensive and difficult to design” and “may not provide insight in to the real world where a program operates” (Delgado 2004, 173-174). Furthermore, a longitudinal study examining NSPs effects on HIV

rates face ethical dilemmas in the following areas due to their extended and in-depth nature: (1) obtaining informed consent from participants without producing participation bias; (2) balancing the need to protect patient confidentiality while disclosing information necessary for the study; (3) addressing issues regarding relationship boundaries between participants and staff resulting from study operations; (4) compensating participants despite their illegal drug use status; and (5) controlling the integrity of the data from participants and research staff (Scott and White 2004, 91). Mostly, the unethical nature of longitudinal studies primarily centers on difficulties in obtaining unbiased and reliable information from participants and staff knowingly engaging in or with illegal and life-threatening drug use (Ibid.)

Despite expense and ethical concerns, it would also be impossible to protect the participants from societal, cultural and economic influences that could alter results (Delgado 2004, 174). For example, such an experiment could not protect individuals from engaging in other HIV-risk behaviors such as unprotected sex, or control “mortality and migration” which could explain a decrease in HIV infection rates in an area (Ibid.). Furthermore, such an experiment could not account for changes in the drug culture and market which could decrease access IDUs have to drugs, leading to an inaccurate correlation between NSPs and reduced HIV rates in IDUs (Ibid.). While the United States Institute of Medicine and other noteworthy government organizations “concur with the conclusion...that the pattern of evidence is sufficiently strong to support scientifically clear conclusions regarding the utility of syringe exchange programs”, there is a consensus acknowledging the “methodological issues and constraints” including unreliable “self-reported measures and difficulty in establishing proper control groups” that are “notoriously difficult to employ in field settings” (Satcher 2000, 2; Salbu 1996, 132). Thus, “changes in transmission rates are not easily attributable to the adoption of a

needle program” (Salbu 1996, 132). While “investigators have developed studies using various creative methodologies in an effort to overcome these impediments”, these constraints are often difficult to control statistically (Ibid.).

Nonetheless, for the purposes of this paper, reviews of three widely cited and generally accepted summative evaluations are discussed. For this paper, summative evaluations are most valuable because they focus on whether or not a program reached its goal. More specifically, the summative evaluations included in this paper are most beneficial because they focus on whether or not NSPs achieved their goal of reducing HIV rates in the IDU community.

New York City NSPs – a study by Don C. Des Jarlais, PhD et al.

Don C. Des Jarlais, PhD et al. (researchers from the Beth Israel Medical Center and National Development and Research Institutes in New York City) sought to examine HIV rates among the IDU community in New York City, comparing intravenous drug using NSP participants with intravenous drug using nonparticipants. While a major goal of the study was to determine racial disparities in HIV rates between NSP participants and nonparticipants, the study shows significant decrease in HIV rates in NSP participants regardless of race.

The researchers acknowledge that while rates of HIV infection are ethnically disproportionate towards minorities, needle sharing between IDUs increases HIV infection risks regardless of race (Des Jarlais, et al. 2009, 445). The structure of this study is particularly valuable for determining the effect of NSPs on HIV rates in the IDU community because it compares NSP participants with nonparticipants in the same geographical area over time (pre and post-NSP implementation). Furthermore, as New York City is home to the largest population of HIV infected IDUs, the association between the implementation of NSPs and reduced HIV rates is significant (Id., 448).

Methods.

The researchers compiled data on IDUs participating in the Beth Israel Medical Center Drug Detoxification Program in New York City, which serves individuals on a voluntary basis in all of the cities neighborhoods (Id., 445). After examining each patient's intake forms, individuals that entered the program in the previous three days of the study were asked to participate. Among the individuals asked to participate, over 95% agreed.

Interviews were conducted covering race, drug use history, sexual risk activities and the use of HIV prevention services (Id., 446). After each interview, blood samples were collected and tested for HIV seroprevalance at the New York City Department of Health. Test results were confirmed with enzyme-linked immunosorbent assay testing (ELISA) and Western blot confirmation.⁴

To determine the role NSPs specifically play in reducing HIV rates, the researchers analyzed interview data from individuals that began injecting after the rapid expansion of NSPs in New York City (between 1995 to 2008) with individuals that began injecting prior to the expansion of NSPs in New York City (1990 to 1994). The researchers noted that participants that began injecting post-1995 “would have spend their injecting careers in an environment with relatively good and legal access to sterile syringes” while individuals that began injecting prior to 1995 were restricted in terms of sterile needle access as “state law [during these years] prohibited the sale of needles and syringes without a prescription” (Id., 446). Individuals that began injecting between 1990-1994 were referred to as pre-exchange IDUs, while individuals that began injecting after 1995 were labeled post-exchange IDUs. The researchers note that while underground exchanges existed prior to 1995, they only provided coverage for a geographical

⁴ Western blot confirmation is a more precise test used to confirm HIV positive results by detecting the presence of HIV antibodies (Mosby 2009)

area that would have served less than 5% of participants in the study (Id., 446). Based on this data, the researchers posit that these dates “adequately capture the dramatic change in the risk environment that occurred as a result of the large-scale expansion of syringe exchange programs in New York City” (Ibid.).

Results.

Among all races examined in this study (whites, African Americans and Hispanics) the researchers found significant decreases in HIV rates among post-exchange IDUs: for Whites, HIV prevalence dropped 24% in post-exchange IDUs, 42% among post-exchange African Americans IDUs, and 48% among post-exchange Hispanic IDUs . Through the interview process, the researchers found that receptive sharing of used needles and syringes decreased in post-exchange IDUs compared with pre-exchange IDUs, regardless of race (Table 1).

According to the researchers, this study is the “first to examine whether community level implementation of syringe exchange is temporally associated with changes in racial/ethnic disparities among IDUs” (Id., 448). The researchers found that among the participants that began injecting after the adoption of New York City NSPs, HIV prevalence rates were significantly lower (Table 2). From this information, the researchers determined that post-exchange IDUs had legal and easy access to sterile injection equipment, while pre-exchange IDUs “spent their injecting careers in an environment with highly restricted access to sterile injection equipment”, thus increasing propensity towards HIV infection (Ibid.).

The researchers acknowledge limitations to this study, including the fact that the interviews could only account for other risk behaviors that may have caused HIV infections in seropositive individuals through self-reported data. However, based on the interviews and responses to questions about other risk behaviors, the researchers determine that the large

decreases in HIV rates after the implementation of syringe exchange programs is “of epidemiological importance” and thus “implementation of large-scale syringe exchange programs were associated with dramatically lower HIV infection in all major racial/ethnic groups of IDUs in New York City” (Ibid.). Overall, the researchers estimated a 70% reduction in HIV incidence among post-exchange IDUs (Vlahov and Junge 1998, 448).

New Haven NSP– study by Yale Medicine & New Haven Dept. of Health

The first federally funded study of a NSP was conducted on the New Haven NSP (Id., 76). In November 1990, the city of New Haven, Connecticut adopted a legal NSP with the goal of reducing HIV rates in the IDU community. Edward Kaplan et al., researchers for the Yale School of Management and the Department of Internal Medicine and the Yale School of Medicine in cooperation with the New Haven Department of Health, developed a syringe testing and tracking system to determine the presence of HIV in returned syringes and needles (Kaplan et al. 1994, 1991). Kaplan et al. relied on the circulation theory to assume that as NSPs operate “needles have a lower probability of becoming infected...[and] those sharing needles have a lower risk of infection”, allowing researchers to estimate reductions in HIV transmissions among participants based on the number of returned non-infected needles (Ibid.).

This study is particularly valuable in determining the effectiveness of NSP in reducing HIV in the IDU community because it does not rely on self-reported data from the New Haven NSP, but instead mathematical and statistical modeling through the syringe tracking and testing system (Vlahov and Junge 1998, 76). Thus, this study eliminates participant and staff bias and potential false self-reporting by relying entirely on quantitative analysis. Furthermore, the study attempted to determine the effect of client shifts on the New Haven NSP in reducing HIV infection. If found accurate, the client shift hypothesis (which refers to the change in participants

“from a group with high risk of HIV infection to a group with lower risk”) would suggest that the “operation of needle exchange in itself may not reduce HIV transmission risks” (Kaplan et al. 1994, 1992). As one of the “major criticisms of needle exchange programs”, examining the role of client shifts in NSPs is particularly valuable in determining the true role NSPs play in reducing HIV rates (Ibid.).

Methods.

The researchers studied a population of participants and their syringes that visited the New Haven NSP three or more times between November 1990 and June 1992 through a syringe-tracking system, which detailed the client’s locations of syringes, as well as the obtainment/return dates of the syringes. On a month-by-month basis, 2,813 syringes distributed by and returned to the New Haven program were randomly selected and tested with a nonionic detergent solution to control contamination that could produce false positives. To ensure accurate representation of the population, the syringes were tested in a two-stage process: the first stage, all syringes returned from the first two batches (first two months) were selected, while two syringes were selected from the future batches (other months). By selecting all syringes from the first batch, sampling from individuals who less frequently return the syringes is increased to accurately represent the total participant population (Ibid.). After the selection of the needles, testing was conducted by applying a polymerase chain reaction, which “permits detection of a single copy of HIV-1 proviral DNA” (Ibid.). The researchers then determined HIV positivity through a gel electrophoresis and Southern blotting method with an HIV-1 specific probe.⁵ By including a series of negative controls, false-positive results were avoided. Testing results were confirmed through a second stage test, called an anti-body based HIV detection essay.

⁵ Southern blotting is a molecular biological method used to determine the presence and absence of the nucleotide sequence in DNA that suggests HIV seropositivity (McGraw-Hill 2012)

To examine whether a client shift occurred from a high risk population to a low risk population, nine self-reported variables were examined (selected because they show increased likelihood of HIV infection in the IDU community): client sex, age at enrollment, duration of drug use, daily frequency of infection, time spent in shooting galleries, time injecting with shared equipment, cleaning time of equipment, cocaine use, and race.

Results.

Of the needles returned in the first batch, 67.5% suggested HIV seropositivity. After three months, HIV seropositivity in returned needles declined to 62%. Within 5 months of the study, HIV seropositivity in returned needles was reduced to 45%. Thereafter, HIV seropositivity in returned needles continuously declined, with rates below 40% by the end of the study (Figure 1). By the end of the study, of the 2,813 needles returned to the program, 1,163 (41.4%) suggested HIV seropositivity, compared with initial tests exceeding 60% seropositivity.

The results of the client shift tests revealed that all variables remained constant except race, as the number of White participants increased over time. As race was the only factor that shifted during the study, researchers found that client shift from a high risk to a low risk group did not account for the decreased rates of HIV seropositivity, as comparisons of HIV prevalence in needles used by whites compared with non-Whites were not significantly different (Ibid.). Based on the results, the researchers found that “needle exchange, and not client shift, is responsible for the decline in HIV prevalence in needles returned to the New Haven needle exchange program” (Id., 1993).

The results of the study relied on application of the circulation theory, arguing that the large decrease in the number of HIV infected needles allows researchers to estimate a decrease in HIV rates among IDUs because less HIV infected needles are circulating the streets (Ibid.). In

other words, the researchers posit that the decrease in infected needles also reflects a decrease in HIV rates among the IDU community as opportunity for transmission declines from an infected needle. Important to note, therefore, is that this study does not account for HIV infection from other risky behaviors such as unprotected sex. Despite this, the study clearly demonstrates that HIV seroprevalance of returned needles decreased. The researchers conclude that the reduced the number of HIV infected needles circulating the streets as a result of NSP operation reflects a reduced potential of HIV infection from needle sharing (Ibid.).

NSPs Worldwide— study by Australian Dept. of Health and Medicine

Susan F. Hurley and Damien J. Jolley of the Department of Public Health and Community Medicine at the University of Melbourne in Australia conducted a study comparing HIV rates among IDUs in cities worldwide with and without access to legal NSPs. The researchers noted that while NSPs are universally accepted worldwide as a strategy for combating HIV in the IDU community, strong opposition exists in the United States (Hurley and Jolley 1997, 1797).

To address this opposition, the researchers conducted this study with the goal of examining the effectiveness of NSPs “with an approach that overcame some of the methodological limitations of previous studies” including reliance on potentially bias self-reported risk behaviors (Ibid.). The researchers employed an ecological study design to examine HIV seroprevalance in cities with and without NSPs, thus avoiding inadequate or skewed data. This study is unique in its design as it compares HIV seroprevalance in cities with and without NSPs as opposed to HIV seroprevalance in a single city alone (Ibid.).

Methods.

The researchers examined HIV and IDU rates compared with NSP data in cities with and without NSPs between the years of 1988 to 1993 (selected because these years represent an increase in NSPs worldwide). Cities were included in the study only if HIV rates were measured specifically in the IDU community for more than two years during this time period, and basic information about the NSP (or lack thereof to eliminate) was available. For each city, the number of IDUs and percentages of HIV positive IDUs compared with city population size and access to NSPs was recorded. The data was collected through each cities public health agency, and through the CDC for United States cities included in the study.

Of the 3500 cities examined, 81 cities satisfied the inclusion criteria for the study. Of the cities selected, 54% were in the United States, 32% in Europe and 12.4% in Asian countries. The percentages of HIV infections in IDUs were compared with states with and without NSPs to account for differing population sizes (Ibid.).

Results

Overall, the researchers found that cities with NSPs had a yearly decrease of HIV seroprevalance rates in their IDU population, while cities without NSPs showed increased HIV seroprevalance rates in their IDU population (Figure 2; Figure 3). Specifically, the data suggested a 5.9% increase in HIV rates in their IDU population per year in 52 cities without access to NSPs, and a 5.8% decrease in HIV rates in their IDU population per year in 29 cities with access to NSPs.

The authors offered several theoretical explanations for this data. They suggest that NSPs have the potential to decrease HIV rates among IDUs because they (1) lower needle-sharing rates ; and (2) decrease the number of needles available for reuse that are infected with HIV. This

explanation correlates with the circulation theory, again positing that NSPs lower the number and amount of time infected needles circulate the IDU community, thus reducing opportunities for infection (Kaplan et al. 1994, 1993).

Recommendations and Conclusions

Unfortunately, although these studies are scholarly reviewed and conducted by esteemed members of the research community, there is great “reluctance of NSP critics to accept this evidence” likely due to the “controversial nature of the programs” and deep-rooted disdain for policy directed at the IDU community (Wodak and Cooney 2006, 779; Delgado 2004, 176). One of the major issues NSPs face in this country is a lack of support, inhibiting their operation, implementation and funding needs. However, based on the previous three studies, expanding NSPs is the most significant improvement that can be made to continue to reduce HIV rates in the IDU community. The most efficient way to expand these programs is to increase public and governmental support by (1) shifting research efforts to account for and better acknowledge variables; and (2) minimizing the focus on the moral concerns of NSP policy by redefining the role of NSPs as vital programs that are cost-effective and target a *public health crisis* affecting all American citizens.

Shifting Research Efforts

Critics are quick to point out research difficulties of studying NSP by discrediting the methods, which consequently detracts funding for future research (Delgado 2004, 176). NSPs continuously face political opposition and public backlash, evidenced in the fact that the federal government has upheld the over 20-year-old ban on national funding for NSPs. By shifting NSP research methods to account for variables that could also influence decreased HIV rates in the IDU community, advocates can assemble support for NSPs backed with more convincing

evidence (Delgado 2004, 175). Due to the fact that NSPs often rely on local level and personal funding, the future of NSPs hinges upon expanding and improving research and reducing stigma surrounding NSPs. Therefore, the most effective approach to expanding the spread and enhancing the operation of NSPs is improving research surrounding the programs.

The previously discussed scholarly studies represent some of the major sources of evidence for the effectiveness of NSPs (Amundsen 2006, 911). However, the structure of each of the studies creates several research difficulties, which could undermine claims and provide critics with ammunition against their reliability. In particular, critics of NSPs evaluations note that the nature of these studies produces “randomization, bias and control” issues, therefore making the studies unreliable (Delgado 2004, 177).

At this time, one of the major difficulties with evaluating anti-HIV public policy is that there is no entirely reliable mechanism to determine the source of HIV infection. HIV infection has many transmission routes, and for individuals that are members of several high-risk populations, it is difficult to determine the exact source of infection. As discussed, an experimental study of IDUs drug activity would be most effective if conducted ethically and economically while controlling all other routes of HIV transmission (such as unsafe sex practices and avoidance of contaminated blood). However, such an experiment is impossible on a moral, financial and structural level (Id., 173-174). In places where NSPs are accepted, randomization of test subjects in such an experiment while eliminating potential infection from outside influences is practically impossible (Wodak and Cooney 2006, 780). At this time, no attempt has been made to conduct a randomized control trial of NSPs due to such feasibility issues (Ibid.).

Scholars evaluating NSPs take these ethical, feasibility and economic issues in to consideration when designing studies. They are then often forced to work with self-reported data

from the NSP clinics or individual drug users themselves, introducing potential bias. Due to the nature of drug use, it becomes virtually impossible to determine “perfect dissemination” of HIV infection due to the altered rational capacity of many drug users - making it difficult to account for all risky behaviors that could have led to HIV infection (Salbu 1996, 106). Furthermore, the IDU population is marginalized, likely incapacitated and often unwilling to disclose their information for fear of criminal action (Ibid.). Therefore, data collected on this population is often (and albeit), easily subject to criticisms of reliability (Ibid.). Researchers studying NSP policy may also examine quantitative data regarding HIV rates in the IDU community and NSP participation vs. non-participation. However, this research structure also faces difficulties: again, it is impossible to determine and control outside influences on HIV transmission such as unsafe sex, interaction with contaminated blood, and mother-to-child transmission.

Despite these inherent flaws in studying NSP policy, the previous three studies all show a strong *association* with the implementation of NSPs and reduction in HIV rates, though not entirely perfect. The study by Don C. Des Jarlais, PhD et al. suggests that over time in a limited geographic area (New York City), HIV rates declined in the IDU community with the introduction of NSPs. Kaplan et al. further demonstrated that in New Haven, Connecticut, the number of HIV infected needles decreased significantly in correlation with NSP operation, allowing researchers to predict reduced rates of HIV among the IDU community. Finally, Hurley and Jolley (1997) show that worldwide, cities with NSPs have lower HIV percentage rates in the IDU community compared with cities without NSPs. Furthermore, cities with NSPs showed decreases in HIV percentage rates in its IDU community each year, while cities without NSPs had increased percentage rates of HIV in its IDU community each year.

While the current studies do not perfectly account for all risk behaviors that lead to HIV infection, any criticisms against these studies “cannot be interpreted in favour of a lack of effect of NSPs” as they do in fact provide strong quantitative evidence for the effectiveness of NSPs (Amundsen 2006, 911; Wodak and Cooney 2006, 779; Delgado 2004 171-178). Furthermore, the pool of international literature surrounding NSPs reveals a strong association of NSPs and reduced HIV rates in the IDU community (Wodak and Cooney 2006; 777). But in terms of improving NSP research and eliminating criticism, what must be further examined is what exact mechanisms provided through NSPs reduce HIV seroprevalance in the IDU community – for example, is it in fact the clean needles or HIV counseling offered at the NSPs that reduces HIV infection? What role does access to HIV testing at NSPs play in HIV risk reduction in the IDU community? Does the fact that most NSPs offer condoms and other safe-sex methods and counseling play a role in reduced HIV rates in IDUs? While it is not clear if one unique feature of NSPs (such as sterile needles) is contributing to reduced HIV rates in the IDU community, the evidence fully shows an association between NSPs and reduced HIV rates in the IDU community.

To enhance effectiveness of NSPs overall and diminish criticisms of NSP research, the “problem of identification of the working mechanism(s) in NSPs...should be acknowledged more fully” to determine exactly how the programs affect HIV infection rates (Amundsen 2006, 911). A valuable study could compare the specific mechanisms of NSPs that can be statistically accounted for (such as sterile needles, bleach access, HIV counseling, HIV testing, condom distribution, etc), as variables to determine which areas of NSPs play a role in reducing HIV rates in the IDU community. For example, a study could compare the rates of HIV in NSPs that

provide condoms with NSPs that do not provide condoms to demonstrate a correlation (if any) between these specific NSP services and HIV rates.

It is noted that the attacks on the effectiveness of NSP research from critics is likely seeded in a “zero tolerance approach to drugs” and moral discomfort with the nature of the programs (Wodak and Cooney 2006, 780). However, these claims can be addressed by improving research to rally support behind NSPs. Approaching NSP research in a more extensive manner is vital for lawmakers, funding sources and politicians to examine the effects of NSPs without “political rhetoric, hyperbole, and overwrought predictions” (Salbu 1996, 131). A major argument against NSPs is that research is overgeneralized and faces “limitations of external validity” – thus, a methodological approach examining each mechanism of NSPs as variables would most effectively provide the necessary data to convince policymakers of the effectiveness of NSPs (Salbu 1996, 132). With more convincing evidence, decision makers may be more inclined to provide funding for NSPs. With funding increased, more NSPs can open across the country and already operating NSPs will be able to provide increased and more effective services (Delgado 2004, 173).

Redefining NSPs

As stated, one of the major issues with NSPs is the public and governmental backlash against the programs, making expansion difficult. Although the studies included in this paper strongly suggest that NSPs reduce HIV infection rates among the IDU community, for many policymakers effectiveness alone does not trump the objections to NSPs on moral grounds. Opponents of NSPs on moral grounds often argue that NSPs promote corrupt behavior, “undermine authority” and “send out the wrong message” of government condoned drug use (Gent 2000, 128).

Political climate and religious traditionalism has shown to play a role in whether a city will adopt and support an NSP (Id., 146). However, political and religious conservatives opposing NSPs often focus on the moral or ideological considerations as opposed to the necessities of the programs in a cost-effective and public health light (Ibid.). Thus, to increase the operation of NSPs across the country in conservative areas, the call for expanded NSP policy must be framed to focus on the cost-saving effects and public health need for the programs.

Currently, there are dozens of studies examining the cost-effectiveness of NSPs. For example, a study by Gold et al. examined the costs of operating an NSP compared with the lifetime healthcare costs for treating an HIV seropositive individual in Canada. The researchers determined that one NSP in Canada would prevent 24 cases of HIV transmission out of 275 participants, providing a health care cost savings of over \$1,200,000 (converted to American dollars) (1997). Another study conducted by Jacobs et al. found that every averted case of HIV transmission was worth \$9,500 per case per year (1999). Finally, research has shown that on average, the lifetime treatment of an HIV seropositive individual is close to \$260,000, while the lifetime cost per IDU participating in a NSP is only \$12,000 (Gent 2000, 128).

Among many other studies, there is overwhelming evidence to suggest the cost-effectiveness of NSPs, producing a viable advocating outlet for rallying support for the programs. If advocates of NSPs could prompt policymakers to focus on the cost-effectiveness, it would likely detract their attention from the moral concerns surrounding NSP and focus it on the economic necessities of these programs. According to economist Cass R. Sunstein from the Environmental Law Institute, for many policymakers, cost-benefit analysis is the most important tool for making policy decisions, as it “helps to clarify what’s at stake” in the muddy pool of policy considerations (Sunstein 2004, 49). Furthermore, he argues that there is “nothing immoral

about assigning dollar values to statistical risks” and cost-benefit analysis is most effective for making decisions because it is a pragmatic way of dealing with public policy issues, especially provocative proposals like NSP (2004, 50).

Furthermore, a redefinition of the problem of HIV transmission in the IDU community is necessary. Currently, many policymakers view HIV in the IDU community as an issue threatening only the IDU community, which many view as population undeserving of public health care attention. However, the reality is that IDUs are the main transmitter of all HIV infections. This is due to the fact IDUs can transmit HIV infection not only through sharing contaminated needles (targeting other IDUs), but also to non-IDUs through unprotected sex, mother-to-child transmission from an intravenous drug using mother or father, or non-IDU accidental contact with an infected needle (Strathdee 2004, 374).

The multiple transmission routes from an IDU to other individuals, particularly non-IDUs, makes it very easy for policymaker and the public to place blame on the IDU community for spreading HIV (Nelkin 1991, 299). However, it is vital that policymakers disregard the culpability of the IDU community and focus on the universally detrimental health aspect of HIV in the IDU community: it is *public* health issue that affects *all* American citizens – on a public health as well as a cost level. Too often do policymakers, (and even advocates for NSPs), focus on the moral implications of providing anti-HIV assistance for the IDU community. However, advocates for NSPs must emphasize the reality of HIV in the IDU community; that is, NSPs are currently the only effective response in reducing HIV rates in a hard-to-reach population. Advocates must shift focus away from the moral implications of NSPs and instead focus on the pragmatic considerations of the programs: they reduce HIV in the IDU community, which

reduces health care costs and protects the health of all American citizens – IDUs and “innocents” alike.

Concluding Remarks

According to the Interagency Coalition on Aids and Development, HIV in IDUs “pose a significant challenge to sustainable human development in several regions”, making it “difficult for individuals and communities to reduce poverty and improve living standards” (Interagency 2001, 1). HIV is a public threat, with multiple transmission routes that are impossible to eliminate entirely (Salbu 1996, 105). While certain dangerous choices increase exposure risks to HIV, it is a virus that does not discriminate. What is understood is that particular behaviors make specific populations more susceptible to HIV infection. Unfortunately these populations, particularly the IDU community, are often difficult to control, alter and study, and ultimately negatively affect the public health and economic situation of this country as a whole.

Policymakers have taken this consideration in to account and developed programs to attempt to modify behaviors to reduce the risk of infection. NSPs are an example of an attempt to modify behavior in a considerably unstable population that is publicly and socially marginalized. While NSPs are criticized as morally corrupt programs that aid an undeserving, immoral and worthless population, they are at the very least realistic about the reality of HIV and the IDU community – injection drug use will not cease. Therefore, NSPs represent one of the most effective measures focusing on slowing the spread of HIV by making risky IDU behaviors safer (Id., 107). In terms of slowing the spread of HIV, the evidence repeatedly suggests a correlation between NSPs and reduced HIV rates in the IDU community.

Like the reality of intravenous drug use, the elimination of HIV entirely is unlikely (Ibid). Though research shows that NSPs slow the spread of HIV in the IDU community, they are

policies that must be further researched to gain public support. While they may not prevent HIV infection in every American citizen, they have undoubtedly saved lives and reduced the rates of HIV in a high-risk and hard to reach community, resulting in significant cost-savings and more stable public health. The most important measure necessary to improve these programs is expanding the number available and eliminating the surrounding stigma – and to do so, greater support is necessary. As policymakers build “public policy on rational discourse rather than political expediency”, research on NSPs and a redefinition of NSPs in a public health and cost-effective light must be employed to enhance the effectiveness and expand the use of NSPs in the United States (Salbu 1996, 105).

Appendix

Table 1. HIV Prevalence Among Injection Drug Users (IDUs) Before (Pre-Exchange) and After (Post-Exchange) Implementation of Large-Scale Syringe Exchange Programs: New York City, 1990-2008

	HIV Prevalence Among Pre-Exchange IDUs, No./Total (%)	HIV Prevalence Among Post-Exchange IDUs, No./Total (%)	Prevalence Difference, % (as % of Pre-Exchange Prevalence) ^a	Post-Exchange vs Pre-Exchange IDUs, OR (95% CI)	Post-Exchange vs Pre-Exchange IDUs, AOR (95% CI) ^b
Total	595/1203 (49)	64/1109 (6)	43 (88)	0.06 (0.05, 0.08)	0.08 (0.06, 0.10)
Whites	62/226 (27)	9/333 (3)	24 (89)	0.07 (0.04, 0.15)	0.09 (0.35, 0.15)
Male MSM IDUs	4/15 (27)	1/10 (10)	17 (63)	0.31 (0.03, 3.24)	0.51 (0.04, 6.48)
Female IDUs	17/48 (35)	7/103 (7)	28 (81)	0.13 (0.05, 0.35)	0.14 (0.05, 0.37)
Non-MSM male IDUs	41/163 (25)	1/220 (0.5)	25 (98)	0.01 (0.002, 0.10)	0.02 (0.002, 0.11)
African Americans	225/396 (57)	20/137 (15)	42 (74)	0.13 (0.08, 0.22)	0.12 (0.07, 0.21)
MSM IDUs	17/27 (63)	6/15 (40)	23 (37)	0.39 (0.11, 1.43)	0.37 (0.10, 1.42)
Female IDUs	39/69 (57)	7/42 (17)	40 (70)	0.15 (0.06, 0.39)	0.15 (0.06, 0.40)
Non-MSM male IDUs	169/300 (56)	7/80 (9)	47 (84)	0.07 (0.03, 0.17)	0.08 (0.03, 0.17)
Hispanic	308/581 (53)	35/639 (5)	48 (91)	0.05 (0.04, 0.08)	0.05 (0.04, 0.08)
MSM IDUs	23/32 (72)	3/30 (10)	62 (86)	0.04 (0.01, 0.18)	0.05 (0.01, 0.20)
Female IDUs	54/104 (52)	11/125 (9)	43 (83)	0.09 (0.04, 0.18)	0.08 (0.04, 0.18)
Non-MSM male IDUs	231/445 (52)	21/484 (4)	48 (92)	0.04 (0.03, 0.07)	0.05 (0.03, 0.08)

Note. MSM=men who have sex with men; OR=odds ratio; AOR=adjusted odds ratio; CI=confidence interval.

^aThe first number represents the absolute percentage difference in HIV prevalence between post-exchange IDUs and pre-exchange IDUs. The second number expresses that difference as a percentage of HIV prevalence among pre-exchange IDUs.

^bAdjusted for gender, MSM behavior (i.e., whether or not male participants had sex with other men), and age within race/ethnic groups and for age within gender and MSM behavior subgroups.

Source: Des Jarlais, Don, et al. 2009, 447.

Table 2. HIV Prevalence Among Injection Drug Users (IDUs) Before (Pre-Exchange) and After (Post-Exchange) Implementation of Large-Scale Syringe Exchange Programs, by Subgroup: New York City, 1990-2008

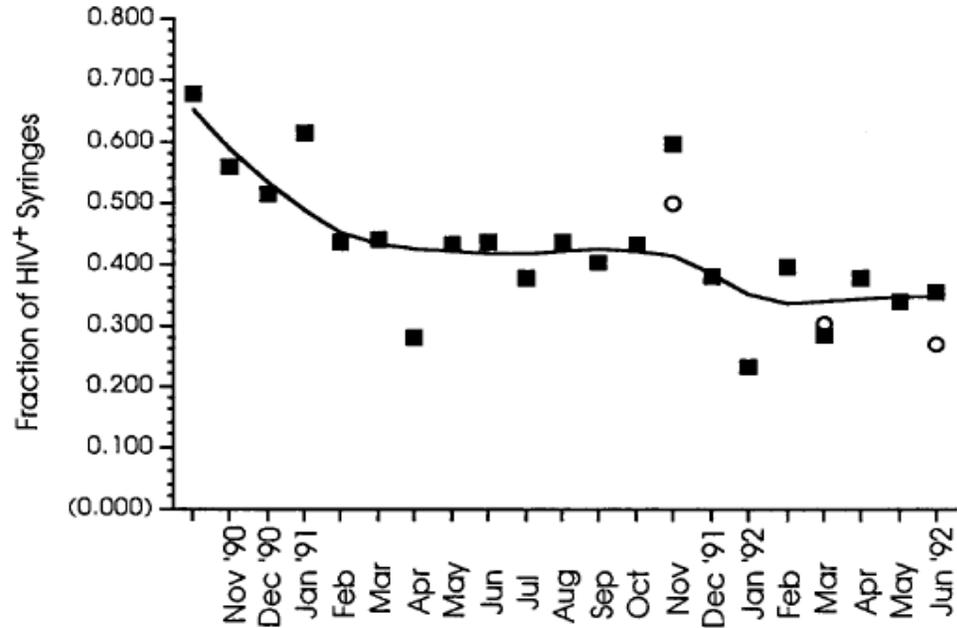
	HIV Prevalence Among Pre-Exchange IDUs, No./Total (%)	Pre-Exchange IDUs, ^a OR (95% CI)	Pre-Exchange IDUs, ^b AOR (95% CI)	HIV Prevalence Among Post-Exchange IDUs, No./Total (%)	Post-Exchange IDUs, ^a OR (95% CI)	Post-Exchange IDUs, ^b AOR (95% CI)
Total sample	595/1203 (49)			64/1109 (6)		
African American	225/396 (57)	3.48 (2.44, 4.96)	3.46 (2.41, 4.96)	20/137 (15)	6.15 (2.72, 13.90)	4.02 (1.67, 9.69)
Hispanics	308/581 (53)	2.98 (2.14, 4.17)	1.76 (1.49, 2.09)	35/639 (5)	2.09 (0.99, 4.39)	1.49 (1.02, 2.17)
Whites (Ref)	62/226 (27)	1.00	1.00	9/333 (3)	1.00	1.00
MSM IDUs						
African American	17/27 (63)	4.68 (1.17, 18.69)	4.78 (1.18, 19.35)	6/15 (40)	6.00 (0.60, 60.44)	6.91 (0.61, 78.01)
Hispanic	23/32 (72)	2.65 (1.33, 5.28)	2.87 (1.36, 6.05)	3/30 (10)	1.00 (0.30, 3.30)	n/a
White (Ref)	4/15 (27)	1.00	1.00	1/10 (10)	1.00	1.00
Female IDUs						
African American	39/69 (57)	2.37 (1.11, 5.07)	2.70 (1.23, 5.96)	7/42 (17)	2.74 (0.90, 8.38)	1.32 (0.36, 4.87)
Hispanic	54/104 (52)	1.40 (0.99, 2.00)	1.42 (0.99, 2.02)	11/125 (9)	1.15 (0.70, 1.88)	1.10 (0.66, 1.82)
White (Ref)	17/48 (35)	1.00	1.00	7/103 (7)	1.00	1.00
Non-MSM male IDUs						
African American	169/300 (56)	3.84 (2.52, 5.85)	3.63 (2.36, 5.59)	7/80 (9)	21.00 (2.54, 173.55)	14.27 (1.55, 131.60)
Hispanic	231/445 (52)	1.79 (1.47, 2.19)	1.80 (1.47, 2.20)	21/484 (4)	3.15 (1.15, 8.62)	3.16 (1.16, 8.65)
White (Ref)	41/163 (25)	1.00	1.00	1/220 (1)	1.00	1.00

Note. MSM=men who have sex with men; OR=odds ratio; AOR=adjusted odds ratio; CI=confidence interval.

^aORs are for HIV prevalence for each racial/ethnic group relative to the corresponding White group.

^bAORs are adjusted for age.

Source: Des Jarlais, Don, et al. 2009, 447



Note. Syringes were tested for the presence of HIV-1 proviral DNA by PCR (■) or for the presence of antibodies to HIV-1 by EIA (○). At the start of the program, 160 of the first 650 returned syringes were tested by PCR; the 67.5% that were positive appear as the first point on the graph. In November 1990, the first half-month of program operations, 52 syringes distributed by and returned to the program were tested per month by PCR. Thereafter, at least 90 syringes distributed by and returned to the program were tested per month by PCR. The curve is a smoothing of the HIV prevalence data with the 4253H, twice algorithm.¹⁷ The reliability of the PCR data was supported by EIA testing of at least 135 syringes distributed by and returned to the program in each of 3 months (November 1991, March 1992, and June 1992), which produced data entirely consistent with that found by using PCR. PCR = polymerase chain reaction; EIA = enzyme immunoassay.

Figure 1. Testing Syringes for Use By Drug Injectors Infected with HIV, 1990-1992

Source: Kaplan et al. 1994, 1991.

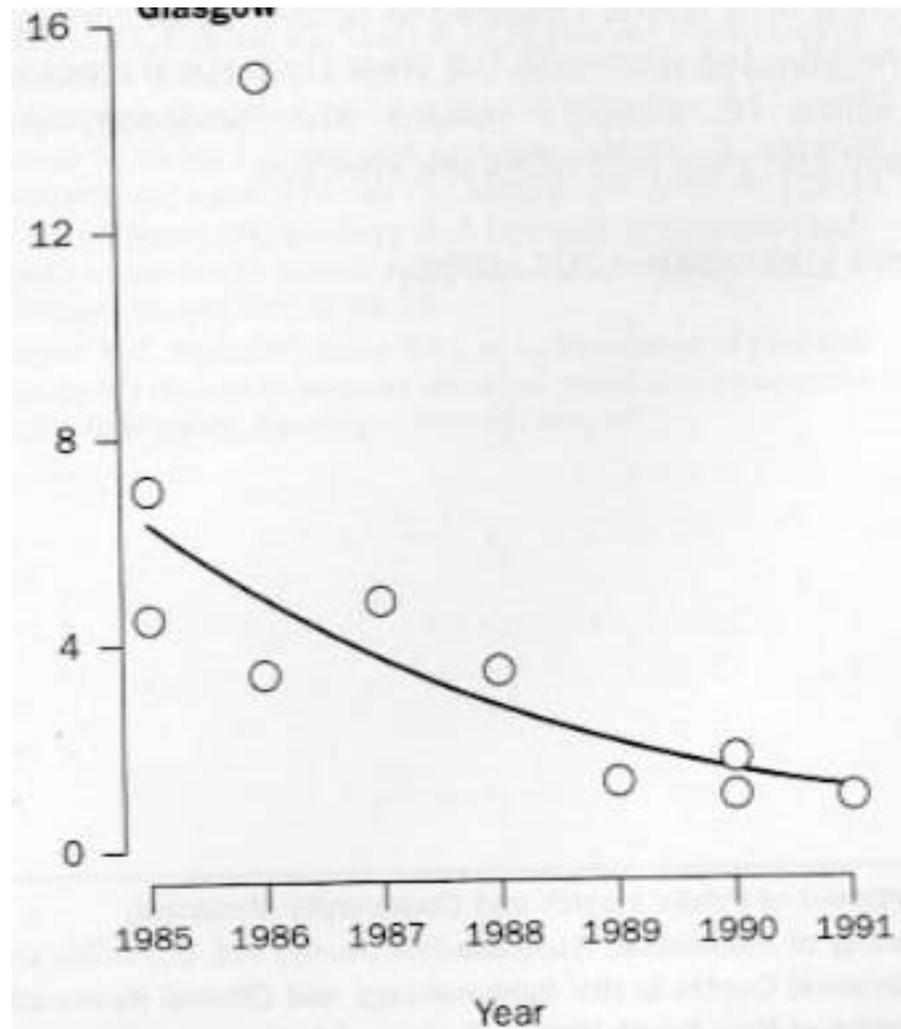


Figure 2: HIV seroprevalance in injecting users per year of survey for cities with operating NSPs, 1985-1991

Source: Hurley, Susan F., and Damien J. Jolley. 1997, 1993.

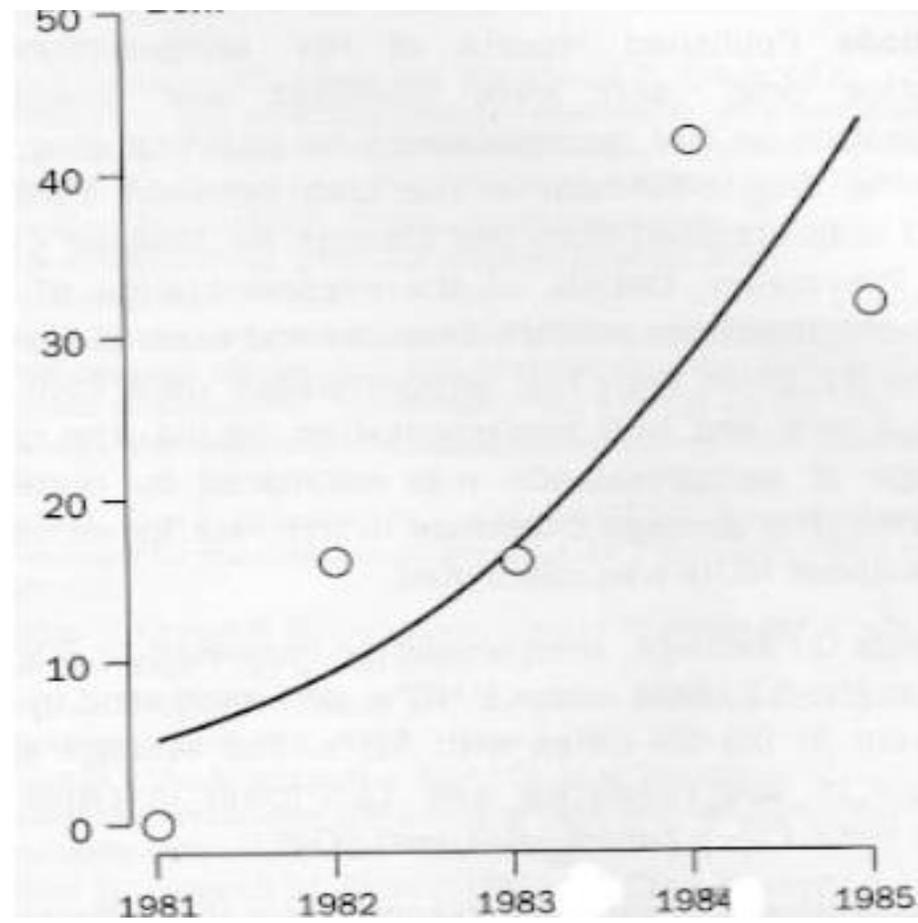


Figure 3: HIV seroprevalance in injecting users per year of survey for cities without operating NSPs, 1981-1985

Source: Hurley, Susan F., and Damien J. Jolley. 1997, 1993

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