

The Hudson Valley Care Network is a partnership of all people, and organizations dedicated to addressing the issues of HIV/AIDS in the seven counties of Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester. Network activities are funded by the New York State Department of Health AIDS Institute.

The mission of the Hudson Valley HIV Care Network is to promote a coordinated community response that results in improved access to care and supportive services for those infected with HIV/AIDS.

Failure to Adequately Fund HIV and Hepatitis C Prevention Programs Now Means Increased Treatment Costs in Ten Years

Contrary to public opinion, the HIV/AIDS epidemic has not gone away. According to studies published by Kaiser a large majority of Americans do not believe HIV/AIDS is a priority for health care funding.¹ For those working in the HIV field, the only explanation for this finding can be the effectiveness of the system of care and the adequate funding for prevention strategies. Often these services are provided by nonprofit entities which rely on grant funding to maintain these vital services.

In recent years, the picture of HIV disease has been complicated by the emergence of Hepatitis C within the HIV positive community. HIV and Hepatitis C co-infection has become an epidemic unto itself, but only recently has it received the medical community's attention. The Centers for Disease Control (CDC) and Health Resources and Services Administration (HRSA) are currently emphasizing the connection between Hepatitis C infection and HIV transmission in our communities, and both the CDC and HRSA are encouraging co-location of treatment services.²

HIV/Hepatitis C co-infection has become an epidemic unto itself and only recently has received the medical community's attention.

This paper intends to demonstrate the importance of cost-saving, life-saving, and quality-of-life benefits that can be gained from expanding HIV/Hepatitis C prevention programs, substance abuse services, syringe exchange (SEP) and syringe purchase (ESAP) programs in our region. By increasing support for these programs in the Hudson Valley, the return on investment (ROI) for our local health care system will be considerable.

This paper also will describe the need for HIV, Hepatitis C and substance abuse treatment and prevention services, the recent loss of funding to our existing services, and our endorsement of a Return on Investment (ROI) model to contain future health care costs. Lastly, the paper will outline recommendations for funding allocations that will maximize prevention and treatment options.

Background

For every American infected with HIV, there are 2 to 5 people infected with Hepatitis C, and approximately 300,000 who are co-infected with both HIV and Hepatitis C. Hepatitis C and HIV can both be transmitted through the sharing of drug injection equipment.

I've been infected with Hep C as long as I had AIDS, which would be 30 years. In the beginning when I found out I have liver damage and cirrhosis, I was fearful. All of a sudden, after going to several seminars, I was told that Hep C could be taken care of. There is a chance! I certainly wanted to take that chance despite all of the negative press. - HIV/HCV Coinfected Person from Dutchess County, Dec. 2009

For the seven counties of the Hudson Valley HIV Care Network's region, the New York State Department of Health (NYSDOH) AIDS Institute reports there are 6,185 people (excluding prisoners) living with HIV/AIDS³ Please see Table 1 for details. Using the above formula to estimate a conservative number of Hepatitis C cases yields an estimate of 18,600 chronic Hepatitis C cases in our region. According to New York State Department of Health surveillance sources, the total reported cases of chronic Hepatitis C in Hudson Valley region from year 2001 - 2008 is 15,718⁴ which is 85% of the estimated number of cases. Please see Table 2 and Appendix A. It is estimated that fewer than 30% of all Hepatitis C cases have been diagnosed or reported.

The NYSDOH AIDS Institute reported that at the end of 2007, the cumulative number of AIDS diagnoses in the Hudson Valley region is 9469 (excluding prisoners).⁵ The percentage of cumulative AIDS cases directly attributable to injection drug use (IDU) is 46.1% for the Mid Hudson and 40.9% for the Lower Hudson Ryan White Regions. The percentage of all new HIV diagnoses directly attributable to IDU is 28.7% in the Hudson Valley.⁶

The Human Immunodeficiency Virus (HIV) replicates 2 to 8 times faster in people co-infected with HIV and Hepatitis C. HCV is associated with an increased risk for mortality in HIV/Hepatitis C co-infected individuals.⁷ HIV treatment drugs often have serious effects on the liver (HAART-associated liver toxicity) in co-infected people. As a result, End-Stage Liver Disease (ESLD) has been identified as the leading cause of death for all people with HIV infection.^{8,9}

They said that they would know after three months of monitoring you whether the treatment is working or not. This is where funding becomes important. Blood work has to be done every two weeks and insurances don't always pay for continuous lab work. - HIV/HCV Coinfected Person in Dutchess County, Dec. 2009

Treatment for co-infected individuals involves long-term therapy with multiple drugs that typically produce unpleasant to severe side effects. Adherence to treatment regimens is critical for both HIV and Hepatitis C disease. Forty percent of adherent patients with Hepatitis C Genotype 1 and 80% of people with Genotypes 2 and 3 are able to clear the virus with Pegylated Interferon Combination Therapy (PICT). Close monitoring by liver disease specialists is therefore critical to effective treatment in co-infected individuals.

Funding loss for Hudson Valley HIV treatment programs

Throughout all seven counties in our region, funding for HIV/AIDS-specific services was hard-hit during the New York State budget crisis of 2008 -2009. Funding for crucial services, including primary medical care, case management, counseling and testing, mental health treatment, syringe exchange, and outreach was lost. Specifically damaging to HIV/AIDS treatment were the loss of programs addressing substance abuse prevention and education. These programs were eliminated as they were not viewed as priorities in the public health continuum of care. The rationale for the loss of funding for programs conducting HIV education for substance users was exceptionally difficult to understand, considering the fact that injection drug use is a primary vector for the spread of HIV and Hepatitis disease.¹⁰

This next section of this paper highlights HIV/AIDS-specific programs that lost funding in our seven-county region. The goal of this section is to underscore the range of program loss and to present show which regions were impacted by the loss. In reviewing these program cuts, it is important to keep in mind that they represent funding loss of just one component of this public health epidemic among HIV, Hepatitis C and substance abuse. However, the loss of these services does not happen in a vacuum. The loss occurs in a community, and these services are not readily duplicated by other programs in our areas.

Since many of these community-based organizations serve more than one county, the funding loss is listed below in several ways. The first listing is by service category and region and funding loss. The table below represents overall regional losses.

	Six Counties
HIV education in substance abuse centers	All seven counties
HIV Primary medical Care – Adults and adolescents	All seven counties
HIV Testing, counseling, prevention and out reach	All seven counties
ADAP enrollment –Insurance for HIV positive people (AIDS Drug Assistance Program)	All seven counties
HIV Mental health services	All seven counties
HIV Case management – (waiting for clarification)	All seven counties
Legal Services for HIV positive people	All seven counties
HIV Nutritional Services	All seven counties
Women’s s Services for HIV positive women	All seven counties

The loss of these programs in the seven counties means more than just the lack of HIV/AIDS supportive services. These program cuts occurred in conjunction with changes to other community health programs, such as the revision of Medicaid billing for hospitals and clinics, reductions in other OASAS funding, and the loss of funding to upstate regional community service providers (CSPs).¹¹

“A lot of programs will suffer if there are any more budget cuts. Medical case managers are very helpful. They try their best to resolve any issue you may have. I’m trying to eat healthy, get as much sleep as I can. Housing will be a big issue later on down the line. Obama extended it for another four years but what happens after those four years are gone? Homelessness will bring depression and other mental health issues. I’m trying to attend as many trainings as I can, to learn more and maybe do something for somebody else or pass on the information.” - HIV/HCV Coinfected Consumer in Westchester County, Dec 2009

Return on Investment (ROI) and Treatment costs

For the past 25 years, New York State has been a leader in staying on top of the HIV/AIDS epidemic by building and supporting a system of care that works. According to data released by the AIDS Institute, HIV transmission due to injection drug use was greatly diminished from 52% in 1990 to only 7% in 2006.¹² This reduction in transmission was due to the effective system of care forged by leaders in New York State. These leaders recognized that vital ancillary services such as substance abuse treatment programs and syringe exchange programs are needed to maintain healthy communities and reduce health care costs in the future.

In a 2007 study, research analysts reported the cost effectiveness of funding HIV prevention services. The economic model indicated that \$13.00 in treatment costs were saved for every \$1.00 spent on HIV prevention services. This result is in sharp contrast to tobacco prevention funding, which yields only \$2.00 in savings for every \$1.00 spent on prevention¹³ This Return on Investment Model was forged by Health Outcomes International and is supported by the New York State AIDS Advisory Council. The model takes into account current preventive measures and risk behaviors of various populations. However, the researchers acknowledge that the quality of the life dollars were deliberately not measured in order to underline that some important factors cannot be expressed in dollars.¹⁴

A study from the New England Medical Center and Tufts University School of Medicine concluded that used a computer cohort simulation of the natural history of HCV in the US population. They concluded that prior Centers for Disease Control and Prevention projections and suggest that HCV may lead to a substantial health and economic burden over the next 10 to 20 years. From the year 2010 through 2019, their model projected 165,900 deaths from chronic liver disease, 27,200 deaths from hepatocellular carcinoma, and \$10.7 billion in direct medical expenditures for HCV. During this period, HCV may lead to 720,700 years of decompensated cirrhosis and hepatocellular carcinoma and to the loss of 1.83 million years of life in those younger than 65 at a societal cost of \$21.3 and \$54.2 billion, respectively.¹⁵

“Chronic fatigue plays a big part from the Hepatitis C. I’m always tired. Every step you take is a big effort. Between the Hep C and the HIV medications, they overwhelm you with fatigue and depression. Treatment adherence counseling was extremely valuable to me. Transportation to these services is important especially for those who live in more rural areas; public transportation is very much needed.” - HIV/HCV Coinfected Person in Dutchess County, Dec. 2009

In a study conducted by Department of Infectious Diseases Catholic University of Rome, HIV+ patients who were co-infected with Hepatitis C had an increased risk of hospital admission and increased hospitalization rate that accounted for additional costs.¹⁶

Many HIV/Hepatitis C-coinfected patients are also poor and underserved, and most rely on public support to meet care and treatment needs. Given these facts, providers must ask whether we will soon be overwhelmed by the high costs of providing Hepatitis C care and treatment to HIV/HCV coinfected patients. The cost of providing care to a single co-infected patient is estimated to be \$240,300.¹⁷ The cost of a clean syringe is eight cents.

“In the harm reduction group, there were some other people that were also co-infected and had the same issues as I did. That seemed to help a little more because you’re always getting sick. You feel like you can relate to somebody else. Now there’s no more harm reduction group. It would be beneficial to everyone because the more you know, the more you can prevent yourself from getting sick and doing the things that you need to do. But they don’t have any of that in place so it’s kinda hard. You have to go and find your own information and resources.” - HIV/HCV Coinfected Consumer in Westchester County, Dec 2009

Recommendations to reduce health care costs of HIV/Hepatitis C Co infection

1. Increase injection drug users' access to sterile injection equipment to prevent the spread of HIV and Hepatitis C to injection drug users and their sex partners.
2. Expand and promote both ESAP and SEP programs in every city in all seven counties. Both the Lower and Mid-Hudson regions have been named on a list of NYSDOH as "hardest hit" regions who lack adequate syringe exchange services. Syringe access programs are the most effective, evidence-based intervention for people who inject drugs, with a predictable decrease of 50% to 75% in new HIV/Hepatitis C infections.¹⁸
3. Increase injection drug users' access to treatment and support in stopping the drug use which may involve sharing injection drug equipment. Expand funding for substance abuse treatment and relapse prevention programs.
4. Expand funding for training and support for service providers so that they may better integrate Hepatitis C into HIV/STI and substance abuse programs and services, as well as community health clinics.
5. Increase ADAP funding which provides critical resources for those living with HIV and Hepatitis C.
6. Expand Hepatitis C screening, testing, support groups, harm reduction counseling programs, and referral services.
7. Expand Hepatitis C and HIV/Hepatitis C Expand Ryan White CARE Act resources for people with HIV to include Hepatitis C treatment, Hepatitis C harm reduction counseling, Hepatitis C diagnostic tests, Hepatitis C prevention, Hepatitis C support groups and Hepatitis C treatment education.
8. Remove restrictive federal, state, and local policies that impede successful HIV and Hepatitis C prevention interventions with injection drug users. Promote local legislators' support for HR 6680, the Community AIDS and Hepatitis Prevention Act of 2009,
9. Follow California's example in requiring all private insurance companies to pay for HIV and Hepatitis C testing for individuals who choose to be tested.
10. Increase funding for linguistically and culturally competent programs to address the expansion of HIV/Hepatitis C services for people of color.

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1. Kaiser Family Foundation *2009 Survey of Americans on HIV/AIDS: Summary of Findings on the Domestic Epidemic* April 2009.
 2. <http://hab.hrsa.gov/publications/August2006/>. Accessed September 11 2009.
 3. *New York State HIV/AIDS Surveillance Report 2007*, p 59-65.
 4. New York State Department of Health 2008 Annual Chronic Hepatitis B and C Virus Surveillance Report
 5. *New York State HIV/AIDS Surveillance Report 2007*, p 59-65.
 6. *New York State HIV/AIDS Surveillance Report 2007*, p 64.
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 9. Sulkowski MS, Mast EE, Seeff LB, Thomas DL. "Hepatitis C virus as an opportunistic disease in persons infected with human immunodeficiency virus." *Clinical Infectious Diseases* 30:S77-84, 2000.
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 11. Malkin & Ross, "Health and Human Services Client Summary 2009/2010 Budget," April 1 2009.
 12. New York State Department of Health AIDS Institute. "The Past, Present and Future of the HIV/AIDS Epidemic." Presented on February 26 2009 at the RW HIV Care Network meeting in Fishkill, NY.
 13. Haire, B., "Measuring success and return on investment in HIV and other possibilities." The Consortium for Social and Policy Research on HIV, Hepatitis C and Related Diseases. Workshop 22. 29 November 2007.
 14. Haire, *ibid*.
 15. Wong JB, McQuillan GM, McHutchison JG, Poynard T. Department of Medicine, New England Medical Center, Tupper Research Institute and Tufts University School of Medicine, Boston, Mass., USA. PMID: 11029989, October 2000.
 16. Luca AD, Borgo CD, Baldini F, Gillini L, Murri R, Mosti S, Fantoni M, Cauda R *Department of Infectious Diseases Catholic University of Rome, Rome, Italy* "Hospitalization rate, risk and related cost according to HCV serostatus in HIV-infected patients during the HAART era," 2002 International Conference on AIDS. [abstract no. C10970] July 7-12, 2002.
 17. Campos, Nicole G., et. Al. "Cost-Effectiveness of Treatment for Chronic HCV in Patients Coinfected with HIV," *The American Journal of Medicine* 2007;120:272-279
 18. See Appendix B, "Science Supports Syringe Exchange"

TABLE 1:

For the seven counties of the Hudson Valley HIV Care Network's region, the New York State Department of Health AIDS Institute reported that at the end of 2007 there were 5,515 people living with HIV/AIDS or AIDS.

	AIDS Cases Total to Date	Living with HIV or AIDS
Lower Hudson	6,130	4,019
Mid Hudson	3,339	2,176
REGION TOTAL	9,469	6,185

TABLE 2: *Confirmed* cases of chronic Hepatitis C by County
Jan 2001-Dec 2008

Dutchess	2988 cases
Orange	2680 cases
Putnam	664 cases
Rockland	1430 cases
Sullivan	1010 cases
Ulster	2881 cases
Westchester	4065 cases

TABLE 3: *Estimated * (reported plus unreported) cases of chronic Hepatitis C by County in 2009

The CDC estimates that 1.6% of the U.S. population is Hep C positive. *Based on this estimate*, our counties would expect to have approximately the following number of identified Hep C cases:

Dutchess	4482 cases
Orange	5462 cases
Putnam	1532 cases
Rockland	4588 cases
Sullivan	1183 cases
Ulster	2844 cases
Westchester	14775 cases

APPENDIX A

Narrative Science-based literature on Syringe Exchange Programs (SEPs) 1996 – 2007

Background:

In 1988, the US Department of Health and Human Services (HHS) prohibited the use of federal money to be used for syringe exchange programs (SEPs) until the safety and effectiveness of these programs could be demonstrated (e.g.; decrease HIV transmission). Under the terms of Public Law 105-78, the Secretary of HHS was authorized to determine that syringe exchange reduced the spread of HIV and did not encourage the use of illegal drugs. In the Health Omnibus Program Extension Act of 1988, Public Law 100-607, the ban was to be revisited if the Surgeon General of the United States could determine that a “needle exchange program would be effective in reducing drug abuse and the risk ...[of AIDS].”

Ten years later, HHS Secretary Donna Shalala issued a statement that the use of SEPs decreased HIV transmission and did not promote substance abuse.¹ At this point, seven major reports funded by the government agreed that access to sterile syringes did not increase drug use. Additionally, research included the merit of syringe exchange as both a means to prevent blood-borne infections and to be utilized until substance abuse treatment is more available, and the active drug user, willing to enter treatment.²

On March 17, 2000 Surgeon General David Satcher concluded that SEPs as part of a “comprehensive strategy, are an effective public health intervention that reduces the transmission of HIV and does not encourage the use of illegal drugs.”³ Presently, the restriction on federal funding for syringe exchange has not been lifted. Research since 1996 has further demonstrated the safety and effectiveness of syringe exchange programs.

Safety and effectiveness of SEPs:

A more recent literature review addressing the federal government’s concerns if SEPs were safe and effective was deemed pertinent for future policy decisions surrounding federal spending and SEPs.

A. *SEPs reduce HIV transmission.*

Longitudinal study tested injection drug users (IDUs) for HIV and compared those who used SEPs and those who did not. Some SEPs in the United States have been in operation since the late-80’s and early-90’s. This allows research to evaluate data over a period of time, thus lending more information to gauge behavior change surrounding drug use and HIV transmission. Furthermore, the basis of evaluation is greater in accuracy by administering an HIV test, rather than using what an individual said their HIV status was (e.g.; “self-reporting”). Alongside domestic findings, the World Health Organization reported in 2004 an “overwhelming” conclusion drawn from several global studies that SEPs reduce the spread of HIV.

- B. *SEPs reduce risky behaviors and injection drug use.*
SEP participants are less prone to share, lend, borrow, or reuse a used syringe when they have access (or, reliable source) to obtain a new and sterile syringe. Federal agencies for national health, such as the CDC, SAMHSA, HRSA and NIDA, conclude the use of clean and sterile syringes to prevent the spread of HIV and other blood-borne infectious diseases.
- C. *SEPs do not promote substance abuse.*
IDUs who participate in syringe exchange do not have more positive urine test results, or inject more frequently, than IDUs who do not use SEPs.
- D. *SEPs increase enrollment in drug treatment.*
IDUs referred to treatment from SEPs are more likely to enter, stay, and remain in treatment. One study associated SEP participation with enrollment for methadone treatment among HIV-negative IDUs, another associated SEP use with entering a drug detoxification center, thus demonstrating an intervention for disease prevention also becoming a “bridge to drug treatment.” A third study found women were more prone to request methadone treatment, although men were more likely to enroll.

- 1 HHS Press Office (April 20, 1998). “Research shows needle exchange programs reduce HIV infections without increasing drug use.” Accessed July 7, 2007. Available at <http://www.hhs.gov/news/press/1998pres/980420a.html>.
- 2 National Commission on Acquired Immune Deficiency Syndrome. *The Twin Epidemics of Substance Use and HIV*, Washington, DC: National Commission on Acquired Immune Deficiency Syndrome; 1991. U.S. General Accounting Office. *Needle Exchange Programs: Research Suggests Promise as an AIDS Prevention Strategy*, Washington, DC: U.S. General Accounting Office; 1993. Lurie P, Reingold A. *The Public Health Impact of Needle Exchange Programs in the United States and Abroad (prepared for the Centers for Disease Control and prevention)*. Berkeley, CA: University of California, School of Public Health, and San Francisco, CA: University of California, Institute for Health Policy Studies; 1993. Drug Policy Foundation, comp. *The Clinton Administration’s Internal Reviews of Research on Needle Exchange Programs: Previously Unreleased Documents Plus Background Material*. Washington DC: Drug Policy Foundation; 1993. Office of Technology Assessment. *The Effectiveness of AIDS Prevention Efforts*. Washington, DC: Office of Technology Assessment; 1995. National Research Council and Institute of Medicine. *Proceedings, Workshop on Needle Exchange and Bleach Distribution Programs*. Washington, DC: National Academy Press; 1994.
- 3 Surgeon General of the United States David Satcher (March 17, 2000). “Evidence-based findings for the efficacy of syringe exchange programs.” Report, US Department of Health and Human Services.

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- 4 HHS Press Office (April 20, 1998). “Research shows needle exchange programs reduce HIV infections without increasing drug use.” Accessed July 7, 2007. Available at <http://www.hhs.gov/news/press/1998pres/980420a.html>.
- 5 National Commission on Acquired Immune Deficiency Syndrome. *The Twin Epidemics of Substance Use and HIV*, Washington, DC: National Commission on Acquired Immune Deficiency Syndrome; 1991. U.S. General Accounting Office. *Needle Exchange Programs: Research Suggests Promise as an AIDS Prevention Strategy*, Washington, DC: U.S. General Accounting Office; 1993. Lurie P, Reingold A. *The Public Health Impact of Needle Exchange Programs in the United States and Abroad (prepared for the Centers for Disease Control and prevention)*. Berkeley, CA: University of California, School of Public Health, and San Francisco, CA: University of California, Institute for Health Policy Studies; 1993. Drug Policy Foundation, comp. *The Clinton Administration’s Internal Reviews of Research on Needle Exchange Programs: Previously Unreleased Documents Plus Background Material*. Washington DC: Drug Policy Foundation; 1993. Office of Technology Assessment. *The Effectiveness of AIDS Prevention Efforts*. Washington, DC: Office of Technology Assessment; 1995. National Research Council and Institute of Medicine. *Proceedings, Workshop on Needle Exchange and Bleach Distribution Programs*. Washington, DC: National Academy Press; 1994.
- 6 Surgeon General of the United States David Satcher (March 17, 2000). “Evidence-based findings for the efficacy of syringe exchange programs.” Report, US Department of Health and Human Services.

**Science-based literature on Syringe Exchange Programs (SEPs)
1996 - 2007**

Study	Method/Results
Hou et al., Needle exchange and injection-related risk behaviors in Chicago: a longitudinal study. <i>JAIDS</i> . 2007;45(1):108-114	Chicago, IL; prospective cohort 901 IDUs: SEP users and non-users HIV tested annually for 3 years.
Hou et al., Cessation of injection drug use and change in injection frequency. <i>Addiction</i> . 2006;101:1606-1613	Chicago, IL; prospective cohort 901 IDUs: 1/6 IDUs stopped injection for >1 year.
Strathdee et al., Facilitating entry into drug treatment among injection drug users referred from a needle exchange program. <i>Drug Alc Depend</i> 2006;83:225-232	Baltimore, MD; randomized trial 245 SEP users provided referral or case management for treatment; 34% entered within 7 days.
Latkin et al., Needle exchange program utilization and entry into drug user treatment. <i>Subst Use Misuse</i> . 2006;41:1991-2001	Baltimore, MD; prospective cohort 440 IDUs interviewed; entering drug treatment was associated w. SEP use.
World Health Organization, Effectiveness of sterile needle and syringe programming in reducing HIV/AIDS among injecting drug users. Technical Paper. 2004	Evaluated reports from MEDLINE, U.S. Dept. of HHS, on-line bibliographies; used Bradford Hill criteria.
Fisher et al., Needle exchange and injection drug use frequency: A randomized clinical trial. <i>JAIDS</i> . 2003;33:199-205	Anchorage, AK; clinical trial 600 IDUs: SEP users + non-users had no % difference of positive urine results.
Ksobiech et al., A meta-analysis of needle sharing, lending and borrowing behaviors of needle exchange program attendees. <i>AIDS Educ Prev</i> . 2003;15(3):257-268	47 SEP studies examined SEP users consistently reduced risky syringe behaviors: needle sharing, lending, borrowing.
Kuo et al., Feasibility of referring drug users from a needle exchange program into an addiction treatment program. <i>J Subst Abuse Treat</i> . 2003;24:67-74	Baltimore, MD; comparative study 70% of referrals at SEP entered treatment, 84% retained >90 days; decrease in positive urine results.

Gibson et al., Two- to Sixfold decreased odds of HIV risk behavior associated with use of syringe exchange. <i>JAIDS</i> . 2002;31:237-242	San Jose, CA; prospective cohort SEP use had substantial protective effect from HIV risky behaviors.
Riley et al., Drug user treatment referrals and entry among participants of a needle exchange program. <i>Subst Use Misuse</i> . 2002;37(14):1869-1886	Baltimore, MD; comparative study 139 SEP users req. methadone tx; men 2x as likely to enter; having insurance, & not living with children associated w. enrollment.
Longshore et al., Needle exchange program attendance and injection risk in Providence, RI. <i>AIDS Educ Prev</i> . 2001;13(1):78-90	Providence, RI; prospective cohort 248 IDUs compared: non-frequent SEP users more likely to share needles than SEP users.
Monterroso et al., Prevention of HIV infection in street-recruited injection drug users. <i>JAIDS</i> . 2000;25:63-70	Baltimore, MD; New York (2 sites); Chicago, IL; San Jose, CA; LA, CA; state correction women's facility, CT; prospective cohort 2309 IDUs; Not sharing needles was significantly associated w. SEP use and protective among HIV-negative IDUs.
Hagan et al., Reduced injection frequency and increased entry and retention in drug treatment associated with needle-exchange participation in Seattle drug injectors. <i>J. Subst Abuse Treat</i> . 2000;19:247-252	Seattle, WA; prospective cohort 2208 IDUs: SEP users were more likely to: stop injecting, reduce injections, remain in treatment, and 5x more likely to enter treatment than non-users.
Shah et al., Correlates of enrollment in methadone maintenance treatment programs differ by HIV-serostatus. <i>AIDS</i> . 2000;14:2035-2043	Baltimore, MD; prospective cohort 1480 IDUs interviewed and HIV tested: SEP users associated w. enrollment in methadone treatment among HIV-negative IDUs.
Bluthenthal et al., The effect of syringe exchange use on high-risk injection drug users. <i>AIDS</i> . 2000;14:605-611	Oakland, CA; controlled cohort 60% SEP users quit sharing needles compared to non-users.
Strathdee et al., Needle-exchange attendance and health care utilization promote entry into detoxification. <i>J Urban Health</i> . 1999;74(4):448-460	Baltimore, MD; prospective cohort 490 IDUs: SEP users associated w. entering detoxification and a bridge to drug treatment.
Bluthenthal et al., Use of an illegal syringe exchange and injection related risk behaviors among street-recruited injection	Oakland, CA; observational study 684 IDUs interviewed >1x,

drug users in Oakland, CA 1992-1995. <i>JAIDS Hum Retro.</i> 1998;18(5):505-511	2830 interviews total: Substantial protective effect (>40%) associated w. SEP use.
Gleghorn et al., Feasibility of one-time use of sterile syringes: a study of active injection drug users in seven United States metropolitan areas. <i>JAIDS Hum Retro.</i> 1998;18 (Suppl 1):S30-36	Atlanta, GA; Baltimore, MD; Long Beach + LA, CA; Miami, FL; New Haven + Bridgeport, CT; Philadelphia, PA; observational IDUs w. SEP more likely to use reliable source for recent syringe.
Heimer et al., Syringe use and reuse: Effects of syringe exchange programs in four cities. <i>JAIDS Hum Retro.</i> 1998;18 (Suppl 1):S37-44	Baltimore, MD; Chicago, IL; New Haven, CT; San Francisco, CA; retrospective analysis of data Large sample of SEP users (and syringe tracking): reusing syringes decreased by 50%.
Hurley et al., Effectiveness of needle-exchange programmes for prevention of HIV infection. <i>Lancet.</i> 1997;349:1797-1800	81 cities worldwide: 53% in North America; ecological study HIV seropositivity increased 5.9% in cities w.out SEPs --decreased in cities w. SEPs 5.8 % annually.
Singer et al., Changing the environment of AIDS risk: Findings on syringe exchange and pharmacy sales of syringes in Hartford, CT. <i>Med Anthropol.</i> 1997;18:107-130	Hartford, CT; cross-sectional study 710 IDUs: pre & post comparison; Significant reduction of reusing syringes after introducing SEP & legal pharmacy sales.
Vlahov et al., Reductions in high-risk drug use behaviors among participants in the Baltimore needle exchange program. <i>JAIDS Hum Retro.</i> 1997;16 (5):400-406	Baltimore, MD; prospective cohort 221 IDUs interviewed: SEP users had lower levels of drug injections and HIV risky behaviors.
Des Jarlais et al., HIV incidence among injecting drug users in New York City syringe-exchange programmes. <i>Lancet.</i> 1996;348:987-991	New York City, NY; meta-analysis 601 IDUs: Data pooled from three studies; non-SEP users at greater increased risk of seroconversion than SEP users.

*According to the HIV Prevention Bulletin issued by the US Dept of Health & Human Services, CDC, HRSA, NIDA and SAMHSA; persons who inject drugs should use sterile syringes to prevent the transmission of HIV. jbm 10.9.07