



Needle Exchange Program Analysis

Research Analysis Prepared for the Health District of Northern Larimer County Board of Directors

Regarding the Northern Colorado AIDS Project Needle Exchange
Program Proposal for the Larimer County Board of Health

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About this Analysis

This analysis was prepared by Health District of Northern Larimer County staff to assist the Health District Board of Directors in determining whether to take an official stand on this health-related issue. Analyses are based on issues at the time of their consideration by the Board and are accurate to the best of staff knowledge. To see whether the Health District Board of Directors took a position on this or other policy issues, please visit www.healthdistrict.org/policy.

About the Health District

The Health District is a special district of the northern two-thirds of Larimer County, Colorado, supported by local property tax dollars and governed by a publicly elected five-member board. The Health District provides medical, mental health, dental, preventive and health planning services to the communities it serves.

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Executive Summary

Timeline

- May 2010 – SB10-189 signed into law, authorizing County Boards of Health to authorize needle exchange programs within county.
- July, 2011 – Northern Colorado AIDS Project first presents proposal to Larimer Board of Health (BOH)
- April 11, 2012 – Community Input/Education meeting at BOH. NCAP and BOH took in community input and surveys. Public requested more public hearing, with oral testimony.
- May 15, 2012 – Public hearing date for Larimer County Board of Health

Background – Needle Exchange Programs (NEPs—also called syringe exchange programs) are programs designed to reduce incidence of infection with HIV/AIDS and other Blood-Borne Viruses (BBVs) in Injection Drug Users (IDUs) by reducing the reuse and sharing of needles through the supply of clean syringes and needles to IDUs. Programs differ in their design and services offered. Some offer treatment referrals, disease testing, and provide other materials and equipment.

NEPs were illegal in Colorado until 2010, as the distribution of needles to IDUs violated drug paraphernalia distribution laws. In 2010, SB10-189 was passed, exempting volunteers and staff from those drug paraphernalia laws if the needles were provided as part of a board of health authorized needle exchange program, which also provides referrals to drug treatment program, encourages and facilitates use of primary and mental health care, and follows safety protocols for the safe disposal of used syringes. The county or board of health must provide opportunities for community members, law enforcement, and other stakeholders to make comments and express concerns before the approval or disapproval of the program, which is entirely at the discretion of the board of health.

Proposal – The Northern Colorado AIDS Project (NCAP) is proposing to operate a needle exchange program in Fort Collins, where it will provide clean syringes for IDUs, disposal of used syringes, referrals to drug treatment, HIV/AIDS and HCV testing, and other services for IDUs. Currently, NCAP provides all of the above services, except clean syringes, to more than 200 IDUs and wishes to expand its offerings to include providing clean syringes.

The NCAP proposal will cost approximately \$35,000 per year to serve approximately 200-300 IDUs. Funding for two years has been committed by private foundations. Though it will not be funded or operated by the Larimer County Board of Health or Health Department, NCAP will report quarterly to the Board of Health, which will annually review the NEP and will have the option to renew the NEP.

Discussion – Needle exchange programs have operated since the 1980s in the United States and there are 184 known NEPs operating in 36 states, DC, and Puerto Rico. In Colorado, the Boulder County Health Department began operating a needle exchange in 1989, made legal in 2010. That program is of comparable size to the proposed NCAP program in Larimer County: around 200 individuals. In 2011, the Boulder “Works” program distributed approximately 83,500 needles and had nearly 81,000 syringes returned.

There have been numerous studies on the effects of NEPs utilizing a variety of scientific study designs. Researchers have studied NEP effectiveness in reducing transmission of HIV/AIDS and hepatitis C virus

(HCV), NEP users utilizing offered treatment, NEP effects on discarded syringes and needles in neighborhoods, NEP effects on IDU high-risk behaviors, and cost effectiveness of these programs. There have been perhaps thousands of individual studies in this area, so a complete review of all studies would be overly burdensome. It is possible to select individual studies to support any number of opinions; therefore, it is most helpful for sound policy making to refer to unbiased expert reviews based on a weight of evidence approach. In general, such expert review panels are assembled to represent the full spectrum of scientific positions and the process is based on carefully agreed upon standards to weigh the evidence.

Though individual studies vary in their conclusions, the majority of NEP research indicates that there is at least some evidence (of varying strength) that NEPs reduce HIV transmission among IDUs. With regard to transmission of HCV, the evidence is less clear, with a recent review indicating that there was “insufficient evidence to say whether the programs are effective or not.” Further, research indicates that there is strong evidence that NEPs help reduce “injection risk behaviors,” including sharing and the reuse of needles among IDUs. These findings universally highlight study design limitations that hinder more definitive answers, but most research comes to similar conclusions. Additionally, there is an almost universal finding of no evidence for negative consequences of these NEPs, such as increased crime, increased needles in public areas, or increased drug use in a community.

Limitations and Conclusions – This paper on the effectiveness and the consequences of NEPs was done in a limited time, utilizing publicly available sources. Strong efforts were made to find research and information supporting all arguments, in favor and against, utilizing reliable sources. Further, efforts were made to avoid any sources that appear to be solely advocating for or against the implementation of NEPs. In cases where information was found in advocating sources, efforts were made to find academic or government-backed independent sources for the information. Some descriptions and explanations of existing program operations and current plans were information gathered in-person or through online conversations.

There are arguments in favor of and in opposition to NEPs that are not conducive to scientific study. These arguments include that NEPs send an improper message about the legality or morality of drug use, and discussions of the personal motivations of IDUs and their likelihood to return syringes or use available clean needles. We have tried to avoid lengthy discussion of such issues that are subject to even greater uncertainty and personal viewpoints.

Available research tends to indicate that there is some evidence that NEPs are effective in reducing disease transmission, strong evidence that NEPs are effective in reducing risk behavior in IDUs, and some evidence that NEPs promote substance abuse treatment entry by IDUs. Scientific research could not be found showing that NEPs increase drug use, increase crime, or increase the number of used needles found in parks or public areas. Though research varies greatly on the strength of the connection between NEPs and the studied results, almost all reviews and studies conclude that there is at least some positive benefit and almost no measurable negative consequences.

Updates since Report Publication on May 7, 2012

May 16, 2012 – Fixed typos, Pages 21 and 23. Added Citation for number of acute cases reported compared to estimated number of new infections, Page 12. Added March 7 event on Timeline, Page 6.

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1 – Background

1.1 – Introduction

The Northern Colorado AIDS Project is proposing to operate a needle exchange program, which requires approval by the Larimer County Board of Health. The Board of Directors of the Health District of Northern Larimer County is different from the Larimer County Board of Health and has no authority over this issue. However, the Health District Board sometimes takes positions on policy proposals that are likely to impact the health of the people residing in the district. This analysis has been prepared by Health District staff to assist the Health District Board of Directors in assessing the merits and weaknesses of the needle exchange proposal.

In this analysis, we attempt to summarize the existing scientific literature regarding needle exchange programs. Where studies have specific limitations or weaknesses, we have attempted to discuss the limitations presented. Further, with arguments that are not conducive to scientific study, we have attempted to describe the argument for the readers' information. We have sought to make this analysis as viewpoint neutral as is possible; where appropriate, however, we have made statements that weigh the available research.

Efforts were made to avoid any sources that appear to be solely advocating for or against the implementation of NEPs. In cases where information was found in advocating sources, efforts were made to find academic or government-backed independent sources for the information. Some descriptions and explanations of existing program operations and current plans were information gathered in-person or through online conversations.

Strong efforts have been made to find research or other information supporting all arguments, in favor and against, utilizing reliable sources. We reviewed many articles, studies, and reviews not discussed here, ensuring that the material covered was covered in some way in this paper. With thousands of studies of needle distribution programs, a complete review of all research and all studies was not possible.

It is possible to select individual studies on needle exchange programs to support any number of different positions. For this reason, we have found it best to refer to expert reviews of a multitude of studies based on a weight of evidence approach instead of relying on individual studies. In general, such expert review panels are assembled to represent the full spectrum of scientific positions and the process is based on carefully agreed upon standards to weigh the evidence. In some cases, however, individual studies have been selected, based on their frequency that the individual study cited or when individuals studies best highlight a specific issue discussed here but not discussed in depth in broader reviews.

1.1.1 – Abbreviations and Definitions Frequently Used in this Analysis

<i>BOH:</i>	Board of Health
<i>BBV:</i>	Blood-Borne Virus
<i>IDU:</i>	Injection Drug User
<i>IRB:</i>	Injection Risk Behavior
<i>NCAP:</i>	Northern Colorado AIDS Project

NEP (or SEP): Needle Exchange Program (Also referred to as a Syringe Exchange Program) In this paper, the term “needle exchange program” or NEP will refer to all programs that distribute and receive needles, even those not requiring a one-for-one exchange.

WHO: World Health Organization

1.1.2 – Current Status

May, 2012 – The Board of Health has been presented with information on the proposed needle exchange and will hold a public forum on May 15, 2012, where members of the public will be able to make oral presentations about the NCAP proposal. The Larimer County Board of Health is expected to vote on the proposed needle exchange program at its June meeting or possibly its July meeting.

1.2 – Timeline

- May 2010 – SB10-189 signed into law, authorizing County Boards of Health to authorize needle exchange programs within county.
- July 13, 2011 – NCAP presented proposal and draft rules to Larimer BOH and County Commissioners
- January 19, 2012 – BOH moved forward with getting community feedback and received research compiled by Commissioner Steve Johnson
- February 16 and 29, 2012 – NCAP met with Larimer DA, Police Chief, and other stakeholders in Law Enforcement
- March 7, 2012 – NCAP and Board of Health meeting at Larimer County Department of Health and Environment with community stakeholders.
- April 11, 2012 – Community Input/Education meeting at BOH. NCAP and BOH took in community input and surveys. Public requested more public hearing, with oral testimony.
- May 10, 2012 – BOH regular May meeting, originally intended for discussion and vote on NCAP proposal
- **May 15, 2012** – Public speaking forum for BOH to hear testimony from public on NCAP proposal
- June 21, 2012 – BOH regular June meeting. BOH will discuss and may vote on NCAP proposal.
- July 19, 2012 – BOH regular July meeting. BOH will discuss and may vote on NCAP proposal.
- If BOH approves on X date:
 - X + 1 Month – NCAP reviews draft rules with BOH
 - X + 1.5 months – Finalize Rules
 - X + 2 months – Begin NEP operations
 - X + 4 months – Initial review and reporting to BOH

1.3 – Needle Exchange in the United States

A brief background of U.S. needle exchange programs, from the CDC:¹

The first organized [NEPs] in the U.S. were established in the late 1980s in Tacoma, Washington; Portland, Oregon; San Francisco; and New York City. By 2002, there were 184 programs in more

¹ CDC Website. Syringe Exchange Programs. December 2005. Accessed 20 April, 2012 at http://www.cdc.gov/idu/facts/aed_idu_syr.pdf

than 36 states, Indian Lands and Puerto Rico.² These programs exchanged more than 24 million syringes.

In addition to exchanging syringes, many [NEPs] 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 as well as maintain and improve their overall health.

1.4 – Colorado laws on syringe purchases and drug paraphernalia

§§ 18-18-425 to 18-18-430.5, C.R.S. , defines drug paraphernalia and the related offenses.

1.4.1 – Definition – (As relevant to injection drug use) Drug paraphernalia is defined as any equipment or product used or intended to be used in injecting a controlled substance.³

1.4.2 – Possession – Knowingly possessing drug paraphernalia is a class 2 petty offense.⁴

1.4.3 – Distribution – Any person (or business) that sells or distributes drug paraphernalia commits a class 2 misdemeanor if that person knew, or should have known, that the item would be used as drug paraphernalia.⁵

Colorado does not require that purchasers of syringes in pharmacies have a prescription,⁶ though some pharmacies, as internal policy, require prescriptions. If a pharmacist were to sell syringes knowing that the purchaser intended to use those syringes for injecting controlled substances illegally, that seller could potentially be charged with distribution of drug paraphernalia.

A 2004 study of the availability of syringes in different states without a prescription listed Colorado as having the highest availability of the 4 studied states, with a 75% successful purchase rate out of 400 attempts. The study showed that there was difference between urban (58%) and rural (90%) purchase sites in Colorado, but that availability in Colorado was comparably high. The study concluded that pharmacy acquisition of syringes was generally not difficult, but often pharmacies and pharmacists will erect barriers for IDUs to acquire sterile syringes.

1.4.4 – Exemption for Needle Exchanges – Beginning in 2010, staff and volunteers of approved NEPs are exempted from drug paraphernalia offenses described above. The requirements for approval of an NEP are discussed below, under “SB10-189.”

1.4.5 – SB10-189 – Concerning Authorization for Government Agencies to Approve Clean Syringe Exchange Programs to Reduce the Spread of Blood-Borne Disease

² CDC. Syringe Exchange Programs --- United States, 2008. November 19, 2010 / 59(45);1488-1491. Accessed April 23, 2012 at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5945a4.htm>

³ § 18-18-426(1) C.R.S.

⁴ § 18-18-428 C.R.S.

⁵ § 18-18-429 C.R.S.

⁶ Wilson M. Compton, et al., A multistate trial of pharmacy syringe purchase. Journal of Urban Health. Volume 81, Number 4 (2004). Accessed April 30, 2012 at <http://cmbi.bjmu.edu.cn/news/report/2004/Urban/view/1.pdf>

Signed into law May 26, 2010.

- Passed 24-10 in the Colorado Senate on April 20, 2010, with Sen. Bacon (cosponsor) voting Y and Sen. Lundberg voting N.
- Passed 57-6 in the Colorado House on May 6, 2010, with Reps. DelGrosso, Fischer (cosponsor), Kefalas (cosponsor), Nikkel, and Vaad voting Y.

SB10-189 authorizes, but does not require, County and District Boards of Health to approve an NEP operated by a public health agency or by a nonprofit organization. Before approval of an NEP, the board of health must consult with interested stakeholders and community members on several specific issues: the scope of the problem being addressed, law enforcement concerns, and the operational parameters of the proposed NEP. If the board approves the NEP, the program will be reviewed and up for renewal annually. Additionally, the board of health must annually report to the Colorado Department of Public Health and Environment concerning the program results. Finally, as noted above, the law exempts staff and volunteers of approved NEPs from drug paraphernalia laws, allowing them to possess and distribute syringes without fear of prosecution.

Under Colorado law, a county Board of Health is established by state statute and has specific powers authorized by state statute.⁷ As such, in regard to specific health issues within the county's geographic boundaries, the Board of Health is the "governing body" and its decisions over its delegated powers cannot be overridden or vetoed by the Board of County Commissioners.⁸ Per C.R.S. §§ 25-1-508(5)(I) and 25-1-520, approving or disapproving an NEP is a statutory power of the county Board of Health and not subject to a vote by a Board of County Commissioners.

1.5 – Colorado Needle Exchange Programs

1.5.1 – Boulder County "The Works" Program⁹

Begun in 1989, the Boulder County Works NEP made Boulder the third city in the United States to offer a NEP. For 22 years, the Works operated without state legal authorization within the County Health Department, through agreements with the Boulder District Attorney's office, the County, and local law enforcement. In 2011, the program officially received approval of the Boulder County Board of Health and became the first legal NEP in Colorado.¹⁰

⁷ § 25-1-508 C.R.S.

⁸ County board of health, not the board of county commissioners, is the "governing body" of a county health department for purposes of notice under the Colorado Governmental Immunity Act. *Jefferson County Health Svcs. Ass'n v. Feeney*, 974 P.2d 1001 (Colo. 1998). (Citation in Annotated Colorado Revised Statutes, Accessed April 20, 2012 at <http://www.michie.com/colorado/lpExt.dll?f=templates&eMail=Y&fn=main-h.htm&cp=cocode/1/43a4d/43a92/43a94/43d5a/43dc7/43df9>

"Accordingly, the statutes that govern the operation of the public health system in Colorado dictate that a part 5 health department is a legal entity, separate and distinct from the board of county commissioners." *Jefferson County Health Svcs. Ass'n v. Feeney*, 974 P.2d 1001 (Colo. 1998). Accessed April 20, 2012 at <http://caselaw.findlaw.com/co-supreme-court/1289025.html>

⁹ Boulder County. Syringe Exchange, "The Works". Accessed April 20, 2012 at <http://www.bouldercounty.org/family/disease/pages/syringeexchange.aspx>

¹⁰ Boulder Daily Camera. Boulder County approves state's first syringe exchange program. May 10, 2011. Accessed April 20, 2012 at: http://www.dailycamera.com/boulder-county-news/ci_18036008

In 2011, the Boulder NEP operated at three fixed locations (Boulder Health, Longmont, and the Boulder Addiction and Recovery Center) and through a mobile outreach service. That year, the program saw around 200 unique individuals in around 1300 unique encounters and distributed 83,550 syringes and received 80,890, a 96.8% return rate (the mobile program received 360 more syringes than it distributed).

In 2010, the Works distributed and received around 60,000 syringes. The large growth from 2010 to 2011 is partially due to a 19% increase in new clients aged 18-29, many of whom are attending college, according to Works staff. Many of these new injection drug users credit addiction to prescription opiate pills for their introduction to injecting opiate medication and then heroin, which is significantly less expensive.¹¹

1.5.2 – Denver Needle Exchange Programs

Underground Syringe Exchange Denver (USED) began operating a NEP in Denver in 2008, without legal authorization.¹² In 2011, the Denver City Council changed its ordinances to allow legal exchanges and the Colorado AIDS Project became the first legal NEP in Denver. Following that, the Harm Reduction Action Center became the second legal NEP in Denver in February, 2012.¹³

1.6 – Epidemiology of Injection Drug Users

Bloodborne pathogens are infectious microorganisms that can infect and cause disease in people who are exposed to blood or body fluids containing them. The most common bloodborne pathogens are the three viruses, HIV, Hepatitis B (HBV) and hepatitis C (HCV). IDUs are at high risk for infection with these viral blood-borne pathogens. IDUs are at high risk for infection by viral blood-borne pathogens.

A vaccine is available to prevent hepatitis B and universal vaccination with hepatitis B vaccine among infants, children and high-risk adults including IDUs, has been the primary focus of hepatitis B prevention since the 1980s. There are no vaccines for either hepatitis C or HIV making prevention of transmission by other means essential for these bloodborne viruses. Health officials have tried many methods to decrease the prevalence of HCV and HIV in injection drug users because of their higher likelihood to have these BBVs, the ease with which the BBVs are shared among IDUs, and the other routes for virus transmission to non drug using populations.

Westword Blog. Needle exchange: Boulder County approves first legal dirty-for-clean needle swap in the state. May 11, 2011. Accessed April 20, 2012 at

http://blogs.westword.com/latestword/2011/05/needle_exchange_boulder_county.php

The Denver Channel. After 22 Years, Boulder County Needle Exchange Program Now Legal. May 10, 2011. Accessed April 20, 2012 at <http://www.thedenverchannel.com/news/27841300/>

¹¹ Email April 20, 2012 from Carol Helwig, Boulder County Health Department HIV/STI Outreach Program Coordinator

¹² Westword, Why Doesn't Colorado Get the Point of Needle Exchange Programs?. April 9, 2009. Accessed April 27, 2012 at <http://www.westword.com/2009-04-09/news/why-doesn-t-colorado-get-the-point-of-needle-exchange-programs/>

¹³ Westword. Harm Reduction Action Center opens syringe exchange on Santa Fe Drive. February 23, 2012.

Accessed April 27, 2012 at

http://blogs.westword.com/latestword/2012/02/harm_reduction_action_center_syringe_exchange_opens.php

The primary mode of BBV transmission in IDUs is through the direct sharing of needles and syringes. During the injection process, IDUs typically “register” the needle, by drawing a small amount of blood into the syringe to confirm that the needle is in a vein. This can introduce a blood-borne virus into the syringe and which can then be transmitted to another person using the needle. Contaminated blood can also be transmitted via other injection equipment, but shared needles are the most common route of transmission. Despite high knowledge of risk, needle/syringe sharing is common among IDUs who fear arrest or incarceration for violation of drug paraphernalia laws when they acquire clean needles or attempt to dispose of used needles.¹⁴

The City of Denver is among 26 metropolitan statistical areas participating in the National HIV Behavioral Surveillance System. In 2009, IDUs who had injected in the past 12 months were recruited to participate in the study¹⁵ The mean age of participants was 43 and more than half were uninsured, living in poverty and had been homeless in the past 12 months. Forty percent had participated in sharing needles at least once in the past year and 15% had received needles from a needle exchange program. The rate of HIV infection was 4.7% and 30% were unaware of their infection.

The prevalence of blood borne pathogen exposure in the IDU population depends on region within the United States. While HBV and HCV rates tend to be high among IDUs in most areas of the country, HIV rates tend to be higher in the Northeast than the West and Midwest. The seroprevalence of HIV, Hepatitis B (anti-HBc) and hepatitis C (anti-HCV) in injection drug users admitted to drug treatment programs was compared between 6 U.S. cities in 2002 (Newark, Detroit, Baltimore, Denver, SF and Seattle).¹⁶ In Denver the rates were 3%, 76% and 92% respectively. HBV and HCV rates were comparable among all 6 cities, but in Newark and Baltimore HIV rates in IDUs were nearly ten times higher than in Denver. Seroprevalence of these conditions in the general U.S. population are around 0.4%, 4.7% and 1.8% respectively.¹⁷

Recently, evidence has begun to emerge regarding the use of injected drugs among adolescents and young adults who may be migrating from prescription opiate drug abuse to heroin¹⁸ and the attendant rise in cases of HIV and hepatitis C in these individuals.¹⁹

Because the majority of persons infected with HIV or HCV are asymptomatic, IDUs with these infections pose a significant risk for transmission to other IDUs and also to the broader population. Studies have found that IDUs account for a substantial portion of cases of HIV, HBV and HCV, either directly or indirectly through sexual or perinatal transmission. In the US in 2002, the CDC estimated that 36% of AIDS cases to date were accounted for by illegal injected drug use. The majority of infections of hepatitis C are accounted for by non-medical injection drug use.

HIV

¹⁴ David Vlahov and Benjamin Junge. The Role of Needle Exchange Programs in HIV Prevention. Public Health Reports. Vol. 113, Supplement 1. June 1998.

¹⁵ <http://www.cdphe.state.co.us/dc/hivandstd/stats/HIV.AIDS.Epi.Profile.2009.pdf>, p. 35-39.

¹⁶ Am J Public Health. 2002 March; 92(3): 385–387

¹⁷ <http://www.cdc.gov>

¹⁸ Lankenau SE, et.al. Initiation into prescription opioid misuse amongst young injection drug users Int J Drug Policy. 2012 Jan;23(1):37-44.

¹⁹ Edlin BR, Nature, 2011;474 (7350), pp. S18-9;Also, Centers for Disease Control and Prevention. MMWR Morb. Mortal. Wkly Rep. 60, 537–541 (2011).

HIV is the human immunodeficiency virus. This virus destroys specific blood cells crucial to the immune system. Within a few weeks of infection, some people develop brief flu-like symptoms but many have no symptoms at all until years later, when they develop AIDS, the late stage of HIV infection when the weakened immune system has difficulty fighting certain infections and cancers.

There has been an increase in people living with HIV/AIDS since the introduction of highly active retroviral therapy (HAART) in 1996. The Colorado Department of Health and Environment recently reported that there were 264 persons per 100,000 population living with HIV infection and 112 persons per 100,000 population living with AIDS in the state in 2009.²⁰ This is lower than the national prevalence rates in 2009 (334 and 191 persons per 100,000 populations, respectively). Through the third quarter of 2010, there were an estimated 107 people living with HIV and 95 people living with AIDS in Larimer County. These estimates do not take into account those who have not been diagnosed. The CDC estimates that 20% of persons infected with HIV do not know they are infected.²¹

In 2010 the estimated rate of new diagnoses of HIV infection in Colorado was 9.4 per 100,000 population; nationally the rate was 16.1 per 100,000.²² Incidence of HIV decreased in Colorado from levels reported in 2005. Ninety-two percent of newly diagnosed HIV/AIDS cases in Colorado were reported in urban counties.

HIV/AIDS can be shared through sexual contact, through perinatal transmission (during the birth process or during breast feeding), as well as through shared intravenous drug paraphernalia by IDU. Among people living with HIV infection in Colorado in 2009, IDU or IDU in men who have sex with men accounts for 18% of diagnoses. Rates of new infections attributable to IDU have decreased over time. In 2010 nationally, the proportion injected drug use was cited in 12% of newly reported HIV infections. In Colorado in 2009, the proportion was just 4%. Nationwide, since the peak of the HIV epidemic among IDUs in the late 1980s, HIV incidence among IDUs has decreased by nearly 80%²³, attributed at least in part to harm reduction measures such as NEPs and substance abuse treatment²⁴, but remains significantly higher than in non-IDU populations.

The prognosis in patients with untreated HIV infection is poor, with an overall mortality rate of more than 90%. The average time from infection to death is 8-10 years, although individual variability ranges from less than 1 year to long-term nonprogression. The appropriate use of combination antiretroviral medication and prophylaxis for opportunistic infections dramatically improves survival (although it is not yet equivalent to that in uninfected individuals) and greatly decreases the risk of secondary infections.²⁵ The risk of AIDS-associated lymphoma is not altered by antiviral therapy.

²⁰ <http://www.cdphe.state.co.us/dc/hivandstd/stats/HIV.AIDS.Epi.Profile.2009.pdf>

²¹ MMWR Morb. Mortal. Wkly Rep. 60, 689–727 (2011).

²²

http://www.cdc.gov/hiv/surveillance/resources/reports/2010report/pdf/2010_HIV_Surveillance_Report_vol_22.pdf#Page=5

²³ Hall HI, Song R, Rhodes P, et al; HIV Incidence Surveillance Group. Estimation of HIV incidence in the United States. *JAMA* 2008;300:520–9.

²⁴ *J Infect Dis.* (2011) 203 (5): 587-594.

²⁵ <http://emedicine.medscape.com/article/211316-overview>

Even with anti-retroviral treatment, over the long term HIV-infected patients may experience dementia, osteoporosis, neuropathy and cardiovascular disease. It is not always clear whether these conditions result from the infection, related complications, or are side effects of treatment.

Hepatitis C

Hepatitis C virus is the most common bloodborne pathogen in the U.S. About five times as many people are infected with HCV as with HIV. HCV infection sometimes results in an acute illness but most often causes minor or no noticeable symptoms initially, however, a large percentage of persons infected with HCV (75-85%) develop chronic infection. Over the course of years, chronic HCV can lead to serious permanent liver damage (cirrhosis), liver cancer, and death. HCV has now surpassed HIV/AIDS as a cause of death in the U.S. and 75% of deaths are between the age of 45 and 64.

Most new cases of HCV today are the result of sharing contaminated injection equipment among IDUs.²⁶ Getting a transfusion or an organ transplant used to be major risk factors for becoming infected with hepatitis C. But since 1992, all blood and blood products in the U.S. have been screened for the virus. Injected drug use is much more likely to result in exposure to HCV than to HIV, and each exposure is more likely to result in transmission. Hepatitis C virus (HCV) is nearly 10 times more transmissible by needlestick than HIV.²⁷ Prevalence estimates of HCV infection among IDUs have been reported to exceed 50% in most IDU populations, ranging as high as 95%.²⁸

In Larimer County, there were 123 newly reported cases of Hepatitis C in 2010. The CDC estimates that there are about 20 new infections for each new acute case reported.²⁹ Because a majority of acute and chronic HCV infections are asymptomatic and occur in injection drug users who rarely seek medical attention, and because 75-85% of acute cases of HCV infection become chronic life-long infections, these statistics greatly under represent the number of individuals living with the Hepatitis C virus in Larimer County. In the U.S. according to the CDC, at least 1.3% (1,300/100,000 population) of the noninstitutionalized population is living with chronic HCV infection.³⁰

Lifetime costs for Hepatitis C infection has been estimated to be about \$100,000 for persons who do not receive a liver transplant. Hepatitis C is now the most common disease leading to liver transplants, and for these, the costs exceed \$280,000.³¹ Treatments for Hepatitis C have been evolving at a rapid pace over the past several years. Cure rates of nearly 70% are now possible with triple drug therapy, although adverse effects are considerable.³²

²⁶ <http://www.cdc.gov/hepatitis/Statistics/2009Surveillance/Commentary.htm>

²⁷ Sulkowski MS, Ray SC, Thomas DL. Needlestick transmission of hepatitis C. *JAMA* 2002; 287:2406–13

²⁸ Aceijas C, Rhodes T. Global estimates of prevalence of HCV infection among injecting drug users. *Int J Drug Policy* 2007; 18:352–8.

²⁹ See: <http://www.cdc.gov/hepatitis/Statistics/2009Surveillance/Commentary.htm> “for each new reported HCV symptomatic infection, approximately 20.0 new HCV infections (of which 3.3 and 16.7 cases were symptomatic and asymptomatic, respectively) are estimated to occur in the general population.”

³⁰ <http://www.cdc.gov/hepatitis/Resources/Professionals/PDFs/ABCTable.pdf>

³¹ <http://www.epidemic.org/theFacts/theEpidemic/USHealthCareCosts/> accessed on 5/2/2012.

³² Alter HJ, Liang TJ. Hepatitis C: The End of the Beginning and Possibly the Beginning of the End. *AIM* 2012;156(4):317-318.

1.7 – Alternative Strategies to Decreasing Rates of BBV Infection in Injection Drug Users

Bleach Kit and Sterile Equipment Distribution – Many programs designed for injection drug user outreach offer IDUs bleach kits to help reduce the risk of BBV transmissions through reusing and sharing needles. These kits frequently include bleach, bleaching instructions, cookers (metal containers for heating and mixing drug solutions), sterile water (used for mixing solutions), sterile filters (used to prevent syringes from pulling in materials that might block needles and other impurities), and alcohol swabs (for disinfecting the skin around injection sites, an important injections safety practice).

Bleaching has been shown to be effective in sterilizing HIV and HCV in needles and syringes if done properly. However, the bleaching process can be lengthy and is frequently not performed correctly by IDUs prior to injection. Noting studies that show a low effectiveness for bleach distribution programs, the U.S. Institutes of Medicine Panel on Needle Exchange and Bleach Distribution Programs, in 1995, noted that “Bleach use is clearly an intervention to be used when injection drug users have no safer alternative.”³³ Studies reviewed by that panel found no significant protective effect for IDUs using bleach for disinfection of needles and syringes.

In addition to bleach, IDUs are frequently provided with other injection materials to reduce the likelihood of HIV or HCV transmission. If needles are reused, contaminated blood can be transmitted from the needle to the cooker, water, or filters. The goal of providing these materials is to minimize the number of surfaces where viruses can survive and be shared between IDUs.

The provision of bleach kits and other sterile injection equipment can help reduce the risk of transmitting HIV and HCV, but are generally ineffective alone. Studies have shown that bleach can sterilize syringes and needles, but only when utilized properly. Because many IDUs do not properly use the bleach, this is an ineffective primary strategy to reduce BBV transmission in IDU populations, but bleach use is considered better than when IDUs have no alternative. Safer injection materials will similarly reduce the chances of transmitting BBVs, but should be provided as part of a larger sterile needle strategy to be effective.

Pharmacy Access – Some argue for more liberalized needle access in communities by ensuring IDUs have access to syringes for sale at pharmacies. In Colorado, as noted above, the purchase of needles and syringes does not require a prescription, meaning any person can purchase them from a pharmacy. A 2004 study found that access to needles in Colorado was high compared to other state, but did show some variance in availability between urban (lower availability) and rural areas (higher availability).³⁴ The study found that access for purchasers was controlled largely by the willingness of individual pharmacists, regardless of the pharmacy being a larger chain or independent store. Many pharmacists stood as barriers to access, which may prevent IDUs from obtaining clean needles. The researchers in that study also noted the limitations of pharmacy access, where IDUs did not receive education, testing, referrals to treatment, or other potentially helpful support.

³³ National Research Council. Preventing HIV Transmission: The Role of Sterile Needles and Bleach. Washington, DC: The National Academies Press, 1995.

³⁴ Wilson M. Compton, et al., A multistate trial of pharmacy syringe purchase. *Journal of Urban Health*. Volume 81, Number 4 (2004). Accessed April 30, 2012 at <http://cmbi.bjmu.edu.cn/news/report/2004/Urban/view/1.pdf>

In a review of syringe access program effectiveness by the World Health Organization, it was reported that in many countries with easy pharmacy access to needles, studies showed these programs to be effective in reducing risk behaviors and HIV seroprevalence.³⁵ That review also discusses a study in Vancouver that indicated that efforts to increase access to sterile needles, such as pharmacy access, were necessary but not sufficient to reduce HIV transmission. That study noted the importance of “appropriate community-wide interventions such as addictions treatment, detoxification and counseling services” in addition to sterile needle access.

Vending Machines – Some areas have introduced syringe vending machines to provide access to sterile syringes. Some vending machines require the deposit of used syringe as payment for a sterile syringe. Others simply sell syringes for cash and do not collect used syringes.

2 – Northern Colorado AIDS Project (NCAP) NEP Proposal

NCAP was established in 1986 to serve the needs of a growing population of people living with HIV/AIDS in Northern Colorado. Currently, NCAP estimates that the total population of HIV/AIDS infected individuals in Northern Colorado is around 500 individuals. Additionally, NCAP estimates that around 3,000 people are currently living with Hepatitis C (HCV) in Larimer County alone. Since the 1990s, NCAP has actively worked to test individuals who are at risk of HIV through high-risk activities, including injecting drugs. In 2006, NCAP expanded its testing services for this population to include HCV testing.³⁶ Between 2007 and 2011, NCAP testing found 26 people with HIV out of 3,067 HIV tests performed and 71 people with HCV out of 567 HCV tests performed.³⁷

For IDUs, a high-risk population in the area, NCAP operates a risk reduction program, which offers individual-level counseling, harm reduction supplies (safer injection kits, safer sex materials, educational materials, sharps containers, toiletries, and food), referrals to treatment and recovery programs, and free testing for HIV and HCV. NCAP also operates a used needle disposal program, the only public disposal site in Fort Collins, which collected more than 6,000 used needles last year. In 2011, NCAP served 239 unique IDUs and has had 6 successfully enter and complete substance abuse treatment programs.

NCAP is proposing to add a needle exchange program to its existing services for IDUs. To offer this service to its existing clients (slightly more than 200), NCAP estimates the NEP would cost approximately \$35,000 per year. NCAP has received funding for the program for two years from AIDS United and another private AIDS foundation. NCAP believes funding beyond 2 years will be attainable from private sources. Staff and volunteers with NCAP will undergo regular training on safety protocols and harm reduction services to serve the clients of the program.³⁸

³⁵ ³⁵ World Health Organization. Effectiveness Of Sterile Needle And Syringe Programming In Reducing Hiv/Aids Among Injecting Drug Users. Evidence For Action Technical Papers. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

³⁶ Northern Colorado AIDS Project Background Sheet, April 2012.

³⁷ Northern Colorado AIDS Project. HIV and Hepatitis C Testing Statistics 2007-2011.

³⁸ Northern Colorado AIDS Project. Proposed Recommendations for Governing Syringe Exchange Programs and Treatment Referral Programs in Larimer County. April 2012.

3 – Approach to Review of the Evidence

A comprehensive systematic review of the potential effects of NEPs, both positive and negative, is a time consuming and demanding process. All studies relating to a particular endpoint have to be evaluated for their quality and reproducibility, then interpreted as a body of evidence to validate the consistency of a proposed effect.

Given the large number of studies regarding the effects of needle exchange programs, it is not surprising that there is inconsistency and even conflict between results of individual studies. It is possible to select individual studies to support any number of opinions, ranging from beneficial to health on one hand, to an increase in risk on the other. For this reason, it is most helpful for sound policy making to refer to unbiased expert reviews based on a weight of evidence approach than reliance on individual studies. In general, such expert review panels are assembled to represent the full spectrum of scientific positions and the process is based on carefully agreed upon standards to weigh the evidence.

We are aware of two expert panel reviews that have published the results of their systematic reviews of the scientific evidence regarding needle exchange in the past decade: The World Health Organization (2004) and the Institute of Medicine of the National Academies of Science (2007). In addition, a “review of reviews” was commissioned by Health Protection Scotland and published in 2010. This “review of reviews” by Palmateer, et. al. systematically evaluated 18 published reviews of primary studies of needle exchange programs and alternative approaches to dissemination of sterile needles from the past decade and identified five reviews that met their established quality criteria, including both the WHO and IOM reviews. Below, we focus on the findings of the WHO and the Palmateer review (The IOM review came to similar conclusions, but was focused on countries in Eastern Europe and parts of Asia where IDUs are the main driver of the HIV epidemic). We also describe some primary studies, particularly several that have been identified as demonstrating that NEPs are not effective and several that are focused on particular areas of less interest to the larger reviews.

4 – Arguments For Needle Exchange Programs

4.1 – Reduce Transmission of Blood-Borne Viruses, Including HIV/AIDS and HCV

Decreasing the risk of transmission of blood-borne viruses (BBVs), specifically HIV/AIDS and Hepatitis C (HCV), is the primary goal of programs designed to provide injecting drug users (IDUs) with clean needles. Though ending use of injection drugs is the best solution for reducing risk, IDUs may refuse to do so or be unable to do so. Government bodies and institutions, including the U. S. Public Health Service, the Institute of Medicine of the National Academy of Sciences, and the U. S. Prevention Services Task Force, recommend “consistent, one-time-only use of sterile syringes as a central strategy in the effort to reduce the transmission of HIV and other blood-borne pathogens” among IDUs.³⁹ NEPs operate to promote IDU adherence to this recommended one-time use of needles and syringes.

Over the more than 25 years that NEPs have operated worldwide, there have been many primary studies of program outcomes at the individual and cohort level, larger ecological studies of populations at risk, and statistical models to study the effectiveness of these programs in reducing BBV infection

³⁹ A Comprehensive Approach: Preventing Blood-Borne Infections Among Injection Drug Users. National Center for HIV, STD, and TB Prevention. Accessed on April 20, 2012 at <http://www.cdc.gov/idu/pubs/ca/3.7.htm>

rates. Studies vary in their specifics, but the majority indicate that needle exchange programs are effective in reducing transmission rates of BBVs, including HIV and (to a lesser extent) HCV.

As mentioned previously, it is most helpful for sound policy making to refer to unbiased expert reviews based on a weight of evidence approach as opposed to reliance on individual studies. Frequently, expert panels are assembled to represent a range of scientific positions and the process is based on agreed upon standards to weigh the evidence. Conclusions of two recent panels, one assembled by the World Health Organization and another more recently by Health Scotland, are summarized below.

In 2004, the World Health Organization (WHO) conducted an extensive review of the effectiveness of sterile needle and syringe programs in reducing HIV/AIDS among IDUs. This review looked at a number of other reviews as well as primary studies and evaluated NEPs and other interventions using the Bradford Hill criteria for inferring causality. This technique says that if certain criteria are met “in a number of observational studies evaluating an association, then there is an increased probability that a statistical association is causal.” This review found that of 11 studies evaluating HIV infection rates and the protective effect of NEP use, 6 were positive, 3 were negative, and 2 showed no effect. The WHO report noted, “Overall, these studies provide strong evidence to reject the null hypothesis that attendance at NSP does not confer protection against HIV.”⁴⁰

A 2010 study in the journal *Addiction* by Norah Palmeeter of Health Scotland and a team of researchers is perhaps the most recent publication looking at the effectiveness of clean needle programs in preventing the spread of BBVs in injection drug users. This “review of reviews” evaluated more than 1000 articles for certain criteria, systematically narrowing that list to just 43. This smaller number of articles was further narrowed by excluding those looking at older research, those not looking at the desired NEP criteria, and those researching only special populations (such as prison populations). In the end, the researchers analyzed primary studies in 3 core reviews and 2 supplementary reviews.

Examining the conclusions of the reviews as well as the findings of the primary studies included in these reviews, the researchers found insufficient evidence to conclude that needle programs were effective in preventing HCV transmissions and, based on more robust research, tentative evidence for needle program effectiveness in preventing HIV transmission.⁴¹ Regarding NEP effect on HCV transmission, the review looked at a total of 14 studies and found there to be insufficient evidence to either support or discount NEP effectiveness: seven weaker studies gave positive findings, two stronger studies gave negative findings and five were inconclusive. Regarding HIV transmission, the review found consistent evidence across multiple studies to support a positive association, leading the researchers to conclude there is at least tentative evidence that NEPs are effective in reducing HIV transmission in IDUs.

The researchers were quick to point out that their findings in this review of reviews may be attributable to the limitations in the primary studies. Studies of NEP effectiveness almost universally point to their study design weaknesses, specifically that they are almost all based on observational studies where

⁴⁰ World Health Organization. Effectiveness Of Sterile Needle And Syringe Programming In Reducing HIV/AIDS Among Injecting Drug Users. Evidence For Action Technical Papers. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

⁴¹ Palmeeter et al. Evidence for the Effectiveness of Sterile Injecting Equipment Provision in Preventing Hepatitis C and Human Immunodeficiency Virus Transmission Among Injecting Drug Users: A Review of Reviews. *Addiction*, 105, 853. 2010.

exposure to the clean needle program is not randomized.⁴² These studies are generally at risk of selection bias (program users with specific risk levels are more likely to utilize specifically designed programs) and confounding (where factors other than needle programs are likely to have a large impact but are impossible to control for in a scientific study). Broader ecological studies that frequently show a positive relationship between needle programs and transmission rates also suffer from significant confounding issues: “such studies may in fact be measuring the impact of several interventions and/or other factors.”⁴³

Further, the Palmateer study notes that the primary studies all failed to measure the coverage and intensity of the needle programs under review: many studies had strict limits on the numbers of needles distributed and potentially did not provide adequate numbers to make a significant difference for IDU needs. Finally, the study emphasized the ethical concerns and the difficulty in design execution for creating a more reliable primary study.

In an interview with Reuters regarding the 2010 review, Palmateer said, “The findings of this review should not be used as a justification to close NSPs (needle and syringe programs) or hinder their introduction. Insufficient or weak evidence of an effect is not evidence of no effect, it is more a reflection of the studies and evidence available.” Discussing the issue of coverage and intensity of distribution varying in different communities, she said, “The main public health implications of the findings are that a higher level of coverage of interventions, including (needle and syringe programs), is likely required to reduce blood-borne virus transmission.”

One primary study of the connection between NEPs and HIV transmission among IDUs that is frequently cited by opponents as evidence of NEP failure is a 1997 study of a Montreal NEP, which showed a positive association between NEP attendance and risk of HIV infection in IDUs.⁴⁴ The report notes that the Montreal NEP had three major factors that contributed to this result: 1) IDUs attending the NEP had a higher baseline rate of HIV infection than non-attendees, 2) the NEP attracted an IDU population that had a high profile of high risk behaviors, and 3) the number of needles distributed by the NEPs in Montreal may have been less than the number needed.

The Montreal study is sometimes used argue that NEPs are not effective at preventing transmission of blood-borne viruses and may make the problem worse.⁴⁵ Julie Bruneau, the lead author of the Montreal study, responded to those citing their research in a letter in the New York Times, explained that many public officials had misinterpreted the study. They emphasized that their research showed that the highest risk IDUs used NEPs and that the NEPs were not tailored to fit the needs of the communities they served, specifically by limiting the number of needles provided. Additionally, the authors emphasized a more comprehensive program that, with needle exchanges, combined health care, drug treatment, social support, and counseling. When public health officials in Montreal learned of the

⁴² For more discussion of research limitations, see Section 6, “Limitations and What Do We Not Know?”

⁴³ Palmeeter et al. Evidence for the Effectiveness of Sterile Injecting Equipment Provision in Preventing Hepatitis C and Human Immunodeficiency Virus Transmission Among Injecting Drug Users: A Review of Reviews. *Addiction*, 105, 854. 2010.

⁴⁴ Julie Bruneau, et al. High Rates of HIV Infection Among Injection Drug Users Participating in Needle Exchange Programs in Montreal: Results of a Cohort Study. *American Journal of Epidemiology*. Vol. 146, no. 12, p. 994. 1997. Accessed April 23, 2012 at <http://aje.oxfordjournals.org/content/146/12/994.full.pdf>

⁴⁵ Congressional Record, V. 144, Pt. 5, p. 7146, April 29, 1998. Accessed April 24, 2012 at <http://books.google.com/books?id=956nQAD4DZAC&pg=PA7146&ots=K778MctOX0>

study's findings before it was published, the limitations on the number of needles distributed were lifted in Montreal, in hope that broader coverage and more available needles would improve the situation.

In 2011, Bruneau and her team published a follow up report, looking at incidence of HIV and risk behavior in Montreal IDUs over a 16-year period (1992-2008).⁴⁶ There is some evidence that the reaction of Montreal health officials in liberalizing access to sterile needle for IDUs was successful following the publication of the above study. This study found that the HIV incidence among IDUs in Montreal significantly declined between 1992 and 2000. The study found that the main drivers of the HIV epidemic among IDUs was IV cocaine use, unsafe injection practices (sharing), and unstable housing.

Additionally, this follow up research in Montreal highlighted a factor that may not previously have been evaluated in looking at NEP effectiveness: almost all studies look at NEP attendance in dichotomous terms (e.g. there were two options: NEP use v. non-use), whereas a wider range of responses may be appropriate (i.e. 1) Always use sterile needles from NEP, 2) sometimes use needles from NEP, or 3) don't use NEP). The new Bruneau study looks at NEP attendance in the previous 6 months as compared to those IDUs who report that they received 100 percent of their needles from safe sources. The researchers posited that many who report NEP attendance also received some needles from unsafe sources. The research found that those who attended an NEP for some needles were at a higher risk of HIV infection, while those who always acquired syringes from safe sources that included NEPs were at a reduced risk of HIV (among participants recruited after 2004). This indicates that some IDUs reporting NEP attendance still acquire many needles from unsafe sources, including from "street sources" or from sharing used needles.

Many studies have been conducted to evaluate whether NEPs are effective in reducing HIV and HCV transmission among IDUs. Almost all of these studies suggest that there is at least some evidence for a protective effect of NEPs on HIV transmissions, but there is insufficient evidence to support or discount the notion that NEPs impact HCV transmission. Authors of studies that have shown higher rates of HIV transmission among NEP-participating IDUs have been quick to point to confounding effects in their research. In at least one follow up study have found some evidence that increased needle access occurred at the same time as a population-wide transmission reduction and found a new confounding variable (percent of needles from non-safe versus safe sources, including NEPs). On balance, the large amount of research seems to support the idea that NEPs can reduce BBV transmission in IDUs, but there may be many confounding variables that require program operations to be narrowly tailored to the needs of each different community.

4.2 – Reduce Injection Risk Behavior in Injection Drug Users

The primary means by which needle exchange programs are said to reduce the transmission of HIV is by reducing injection drug users' high risk behaviors, such as the borrowing, lending, or reuse of needles, syringes, and other drug preparation equipment.⁴⁷ Researchers looking into the impact of NEPs on reducing these behaviors have repeatedly found strong evidence that NEPs are successful in this regard.

⁴⁶ Bruneau, Julie, et al. Trends in Human Immunodeficiency Virus Incidence and Risk Behavior Among Injection Drug Users in Montreal, Canada: A 16-Year Longitudinal Study. *American Journal of Epidemiology*. Accessed April 27, 2012 at <http://aje.oxfordjournals.org/content/early/2011/03/01/aje.kwq479.full.pdf+html>

⁴⁷ Palmeeter et al. Evidence for the Effectiveness of Sterile Injecting Equipment Provision in Preventing Hepatitis C and Human Immunodeficiency Virus Transmission Among Injecting Drug Users: A Review of Reviews. *Addiction*, 105, 844-859. 2010.

Public health institutions, both government and private, have noted the importance of new and sterile equipment for injection drug users.⁴⁸ A 1997 health bulletin issued by the Centers for Disease Control (CDC), the National Institute on Drug Abuse (NIDA), the Substance Abuse and Mental Health Services Administration (SAMSA), and the U.S. Public Health Service emphasized the importance of one-time use of sterile equipment, including needles, syringes, water, and “cookers” to reduce the risk of transmission of HIV and other infectious diseases.⁴⁹

In addition to providing IDUs with sterile needles, NEPs often seek to provide IDUs with information on safer injection practices, as recommended by the above-mentioned bulletin. Many NEPs offer educational materials on safety and provide other sterile materials, such as cookers, sterile water, filter swabs, and alcohol swabs. These non-needle injection items, if reused, pose a substantial risk of contamination. With its proposed NEP program, NCAP will continue to distribute to its clients these other pieces of injection equipment, which it already distributes.

Many studies have been done to evaluate whether NEPs are effective in getting IDUs to reduce the reuse and sharing of equipment. Almost all have shown that NEPs have a positive effect on reducing this high risk behavior. The 2010 Palmateer review of NEP studies specifically looked for evidence that NEP’s had an effect on injection drug behavior. This review found that Injection Risk Behavior (IRB) has been studied more frequently than biological outcomes. The review found that there was “consistent evidence across multiple robust studies ... to support the effectiveness of [NEP] in reducing self-reported IRB.” Palmateer’s team found this to contrast with weaker (or no) evidence that non-NEP methods of providing IDUs with sterile syringes was effective in reducing risk behavior. The review noted the limitations with the self-reporting of risk behavior, where IDUs may understate their risk behaviors. However, a large number of studies reviewed, as discussed below, supported the conclusion that NEPs are effective in reducing the sharing and reuse of injection equipment.

A review of the evidence of the effectiveness of NEPs by the World Health Organization also found a positive association between NEPs and a reduction in injection risk behaviors.⁵⁰ In a large majority of studies evaluated in the WHO report, NEP attendance had a positive association with risk behavior reduction. The WHO report stated that its findings “strongly support the effectiveness of [NEP]s as interventions that reduce risk behaviour such as syringe sharing among IDUs and HIV infection. The number of studies showing protective effects far outweighs those with ambiguous or negative effects.”

In a study discussed more thoroughly below,⁵¹ researchers evaluated the impact on injection risk behaviors of the closing of a NEP in Connecticut.⁵² In interview responses before and after closure of a

⁴⁸ CDC Website. Syringe Exchange Programs. December 2005. Accessed 20 April, 2012 at http://www.cdc.gov/idu/facts/aed_idu_syr.pdf

⁴⁹ HIV Prevention Bulletin: Medical Advice for Persons who Inject Illicit Drugs. May 9, 1997. Accessed April 27, 2012 at http://www.cdc.gov/idu/pubs/hiv_prev.htm

⁵⁰ World Health Organization. Effectiveness of Sterile Needle And Syringe Programming In Reducing Hiv/Aids Among Injecting Drug Users. Evidence for Action Technical Papers. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

⁵¹ See “Promote Safe Disposal of Used Injection Equipment” below for a discussion of this study, including background and further results.

⁵² Robert. S. Broadhead. The Impact of a Needle Exchange’s Closing. Public Health Reports. Vol. 114. Sept./Oct. 1999. Accessed on April 26, 2012 at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1308516/pdf/pubhealthrep00025-0053.pdf>

city's only NEP, IDUs reported a 118% increase in the number of times syringes were reused (on average 3.5 times pre-closure and 7.7 times post-closure). Further, researchers found that the 16% of respondents who reported sharing needles when the NEP was open increased to 34% reporting needle sharing post-closure. Finally, prior to the NEP's closure, 14% of respondents reported receiving needles from "unreliable sources," including friends, diabetics, or street sources. Reports of obtaining needles from "unreliable sources" post-closure increased to 51% of respondents, who also reported a dramatic (4% to 38%) increase in needles obtained from a "street source." This study indicated that the closing of an NEP resulted in a significant increase in risk behavior among IDUs, corroborating research that suggests NEPs have a positive effect on risk behavior reduction in IDUs.

An overwhelming majority of studies show a positive association between NEP attendance by IDUs and a reduction in injection risk behavior, such as needle and equipment sharing and reuse. The number of studies showing a positive association far outweighs the few showing a negative association. These studies are limited in that they rely largely on self-reports of behavior, which may overstate positive behavior. However, research on the effect of an NEP's closing showed an increase in negative behavior, which study participants would be more likely to understate. Overall, the research tends to support NEPs as having a positive effect on the behavior of their participants.

4.3 – Provide Treatment and Other Preventive Services to Injection Drug Users

In addition to providing IDUs with access to clean needles and other materials, many NEPs, including the proposed NEP at NCAP, include other services such as mental health treatment, substance abuse treatment (direct or referrals), disease testing, and provision of other materials that include condoms, safer injection equipment, food, and toiletries.

4.3.1 – Referrals to Substance Abuse Treatment

Many NEPs offer participating IDUs referrals to substance abuse treatment options available in their community or might offer treatment options in-house. Ceasing the use of injection drugs is the most effective way to prevent transmission of HIV or HCV, so if NEPs are able to move IDUs into treatment, risks can be reduced even more than with clean needles. Many NEPs do not push clients into treatment but instead offer referrals to IDUs who express interest in quitting; this leads some to question their effectiveness in moving IDUs into treatment. However, several studies and reviews indicate that NEPs can be effective in helping IDUs receive substance abuse treatment.

The 2004 WHO analytical review of NEPs' effectiveness noted drug treatment uptake as an "unanticipated benefit" of NEPs:⁵³

At the New Haven and Seattle exchanges, increased enrolment in drug treatment was reported as well as higher treatment retention rates compared with nonusers of [NEP]s. ... In San Francisco, Bluthenthal found that [NEP] clients' attitudes and motivation to change their drug-using patterns was positive, and concluded that [NEP] is a possible link to drug treatment.

⁵³ World Health Organization. Effectiveness of Sterile Needle And Syringe Programming In Reducing Hiv/Aids Among Injecting Drug Users. Evidence for Action Technical Papers. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

Gibson found [NEP] use to be associated with substantially reduced injecting or cessation of injecting compared to IDUs who had never attended an [NEP].

A 2006 study by researchers at the Johns Hopkins Bloomberg School of Public Health looked at the connection between NEP users in Baltimore, Maryland and substance treatment entry.⁵⁴ The researchers hypothesized that IDUs who attended NEPs would be more likely to enter treatment than those not using NEPs. The study collected data on 440 IDUs who were not in treatment during two interviews 15 months apart. The researchers concluded that injectors who utilized an NEP in the 6 months prior to the second interview were significantly more likely to enter into a drug treatment program. The researchers also indicated that some IDUs may initially visit an NEP only to exchange needles, but over time may begin to build relationships with NEP staff and explore treatment options. The study's conclusions are supported by the long-term treatment statistics at the Baltimore NEP: Over the course of 12 years, the Baltimore NEP served more than 14,000 IDUs and referred approximately 2,300 NEP users to treatment programs.

Most, but not all, NEPs offer IDUs referrals to substance abuse treatment. As reviews and primary studies often show, these referrals can be an effective means of getting IDUs into treatment. If those users succeed in stopping drug use, their likelihood of contracting HIV or HCV will reduce greatly.

4.3.2 – Other Services Commonly Offered in Needle Exchange Programs

As mentioned previously, many NEPs offer their clients a variety of services other than the provision of clean needles and referrals to drug treatment services. These other services can have an important impact on the health of IDUs and can have implications for the health of the community. Regarding the proposed Northern Colorado AIDS Project NEP, many of these services are already provided at the NCAP offices for IDUs and will continue to be offered with the NEP.

Free Testing for HIV/AIDS and Hepatitis C – Many NEPs offer IDUs rapid testing for these important diseases. Studies show that many HIV-positive individuals who know their status will reduce high risk behavior. Further, early and frequent testing can help IDUs receive needed health care if they are found positive. As discussed previously (See Epidemiology of Injection Drug Users), 80% of Hepatitis C cases are asymptomatic and in early stages, HIV is also asymptomatic. Both can easily go undetected without regular testing, which is unavailable to many IDUs who do not have access to health care.

Provision of Condoms and Other Materials for Safe Sex – Some studies of HIV transmission rates among IDUs discuss that IDUs are likely to participate in other high-risk behaviors, including unsafe sex with high risk partners. Many NEPs provide free condoms, other materials, and educational materials to their IDU clients to help reduce the risk of transmitting sexually transmitted diseases to other IDUs or to the non-IDU public.

Provision of Safer Injection Materials – In addition to the transmission of BBVs through used needles, IDUs are at risk of virus transmission through the sharing of “cookers,” water, filters, and other materials that are used in the injection of drugs.⁵⁵ Contaminated blood can survive on these items and easily transmit disease to other users. Many NEPs provide their clients with injection kits that include cookers,

⁵⁴ Carl A. Latkin et al. Needle Exchange Program Utilization and Entry into Drug User Treatment: Is There a Long-Term Connection in Baltimore, Maryland?. *Substance Use and Misuse*, 41:1991-2001. 2006.

⁵⁵ See Section 1.8, above, for more information on these materials

sterile water, filters, arm wraps, and alcohol swabs. When used effectively with sterile needles, these provided materials can significantly reduce the risks of BBV transmission.

4.4 – Promote Safe Disposal of Used Injection Equipment

For a discussion of the strengths and weaknesses of arguments relating to the disposal of needles in public and the return of needles to NEPs for disposal, see “Increase the Number of Used Needles in the Community” below.

4.5 – Cost-Effective Preventive Health Measure

NEPs are relatively low-cost and proponents frequently argue that they are a highly cost-effective means of preventing the spread of infectious blood-borne diseases, such as HIV. Lifetime and annual treatment costs for new HIV/AIDS and Hepatitis C infections are very high (lifetime treatment cost for HIV is estimated to exceed \$350,000). By contrast, NEPs are relatively low cost to operate (NCAP’s proposal for Larimer County will be \$35,000 per year). Studies of the cost effectiveness of NEPs repeatedly demonstrate large cost savings for each infection averted.

The World Health Organization, in its 2004 review of literature on NEPs, extensively reviewed studies looking at the cost-effectiveness of NEP programs worldwide, with all studies cited demonstrating substantial cost savings. An economic model applied to four hypothetical US cities with differing HIV incidence rates estimated cost savings of \$12,000 per HIV infection averted to \$99,000 per HIV infection averted, due to the high costs of treatment. A study of seven New York needle exchange programs in 1996 estimated a cost-effectiveness ratio of \$20,947 per HIV infection averted.⁵⁶ A more recent economic evaluation of a New York needle exchange program estimated that 4-7 HIV infections were averted per 1000 clients at a cost of \$72,000 to \$125,000 per infection averted.⁵⁷ Even at this much higher estimated cost per infection averted, this NEP was found to be cost-saving from a societal perspective, given the averted costs for HIV treatment. The Centers on Disease Control (CDC) reports that the lifetime treatment cost of a person infected with HIV is \$367,134 (in 2009 dollars).⁵⁸

The Northern Colorado AIDS Project estimates that its proposed NEP will cost \$35,000 per year and has committed funding from private foundations for the first two years of operations.⁵⁹ If the NCAP program operated at its estimated cost for ten years, it would cost less than the lifetime cost of HIV treatment for one individual. To be cost neutral to society at its estimated annual budget, the NCAP NEP would have to prevent one individual from contracting HIV over ten years.

⁵⁶ World Health Organization. Effectiveness Of Sterile Needle And Syringe Programming In Reducing Hiv/Aids Among Injecting Drug Users. Evidence For Action Technical Papers. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

⁵⁷ Belani HK, Muennig PA. Cost-effectiveness of needle and syringe exchange for the prevention of HIV in New York City. *J of HIV/AIDS & Soc Servs* 2008; 7(3): 229-240.

⁵⁸ Schackman BR, Gebo KA, Walensky RP, et al. The lifetime cost of current human immuno-deficiency virus care in the United States. *Medical Care* 2006; 44: 990-997. Cited By CDC, HIV Cost-Effectiveness. Access April 23, 2012 at <http://www.cdc.gov/hiv/topics/preventionprograms/ce/>

⁵⁹ Northern Colorado AIDS Project. Proposed Recommendations for Governing Syringe Exchange Programs and Treatment Referral Programs in Larimer County. April 2012

Of note is the fact that the NCAP funding is from a private foundation, whereas treatment expenses for those with HIV/AIDS are largely paid by public sources. In Fiscal Year 2012, the federal government paid more than \$15 billion on HIV treatment and care because many of those with HIV are from lower income backgrounds and largely do not have private insurance.⁶⁰

Research estimates show that needle exchange programs are a cost-effective means of preventing the transmission of HIV. Although NEP cost-effectiveness estimates cannot be generalized easily because the effectiveness of a programs is determined by rates of infection and risk behaviors that may vary greatly between communities, the relatively low cost of NEP operations compared to the extremely high treatment costs of new infections means presumptions of cost-savings to society as a whole appear to be justified in many circumstances.

4.6 – Early Intervention for New Injection Drug Users and Younger Users

Injection drug use is frequently associated with the injection of heroin, many users of which are older and longer-term drug users. Though there are reports of heroin use increasing in younger users, heroin is not the only substance IDUs use. Methamphetamine and other amphetamines, cocaine, and many prescription opiates are frequently injected.⁶¹ In Colorado and nationally there are many reports of younger users moving from prescription opiates to heroin use as well as younger users using amphetamines. Proponents of NEPs hope that NEPs will offer a way to get to these new and younger users of injection drugs early and be able to intervene to prevent lasting harm.

Between 2002 and 2006, Larimer County saw an average of 5 fatal overdoses by prescription opiates.⁶² From 2007 to 2011, the average number of opiate deaths each year was 27. So far in 2012, Larimer County has experienced two heroin overdoses, following several heroin-related deaths late in 2011.⁶³

Carol Helwig of the Boulder NEP expressed significant concern about a related trend in discussing her office seeing an increase of 20,000 syringes distributed between 2010 and 2011:

The increase we've seen over the past year was mainly from an influx of younger clients. The age group 18-29 increased by 19% from 2010 to 2011 with 21 new clients. Many of them are attending college, and many have relayed to use that they were initially addicted to opiate pills and then moved on to injecting heroin or opiate pills.⁶⁴

Ms. Helwig explained that recent efforts to curb prescription opiate abuse have resulted in pills costing nearly \$100 in some areas. For such a high price, many users begin crushing and injecting the pills to feel more of the effects. The price of heroin, however, has been dropping significantly and can be as low as

⁶⁰ Kaiser Family Foundation. HIV/AIDS Policy Factsheet. February 2012. Accessed April 27, 2012 at <http://www.kff.org/hivaids/upload/7029-08.pdf>

⁶¹ See NCAP survey of users, "Type of drugs injected and needle sharing behavior for ILI clients who reported injection drug use within recall period."

⁶² Larimer County Coroner Annual Report 2011. Access April 23, 2012 at http://www.co.larimer.co.us/coroner/2011_annual_report.pdf

⁶³ 9 News. Fort Collins police investigating 3 deaths this week as heroin overdoses. <http://www.9news.com/rss/story.aspx?storyid=233330>

⁶⁴ Email from Carol Helwig, April 20, 2012.

\$5 per hit in Northern Colorado. Many prescription opiate users are opting for the less-expensive high and becoming more frequent injection drug users.

This trend is being seen across the country, not only in Northern Colorado:

A 2011 study in the American Journal of Pharmacology and Toxicology found correlations that suggest that oxycodone could be a gateway drug for heroin, often because buying heroin is cheaper than prescription pills.

Prescription opiate addicts can also be lured to heroin because it's easier than scamming doctors or buying prescription opiates on the black market.⁶⁵

To work to fight the introduction of new users to injection drugs, the Harm Reduction Action Center in Denver has begun a program called “Break the Cycle”:

“Break the Cycle” was designed with the overall goal of preventing HIV and HCV transmission by training current IDUs to be aware of the effects they may have on non-injecting drug users (NIDUs), including directly initiating others into injecting behaviors, or influencing NIDUs to begin injecting by modeling or discussing injection behaviors in their presence. Implementing interventions that prevent initiation of injection drug use was demonstrated to reduce the risk of HIV/HCV among drug users. The intervention prevents NIDUs from transitioning into injecting by training current injectors to focus upon four primary areas:

- Their modeling behavior in front of NIDUs.
- Their discussion of injection and its benefits with people who are at risk of transitioning into injecting behavior.
- Building resistance to giving someone their first “hit.”
- Acquiring the tools necessary for managing requests to give someone their first hit.⁶⁶

With reports of new and younger users moving to heroin and other injection drugs, NEPs may serve as a location for early intervention efforts. Boulder County’s uptake of a “Break the Cycle” program to try to prevent new IDU recruitment may prove to be a helpful intervention in preventing increases in IDUs. As an additional location for intervention efforts and client counseling, NEPs may help to avert longer-term uptake of injection drug use by newer users. At a minimum, NEPs may help recent IDUs to learn to avoid high risk behaviors earlier in their injection using careers.

4.7 – Effect on Law Enforcement

See Section 5.5, below, for law enforcement positions against the implementation of NEPs

An additional argument made by proponents of NEPs is that these programs often reduce the incidence of needle-stick injuries by law enforcement during drug related arrests. A 1995 evaluation of new needle access programs in Connecticut showed that needle-stick injury rates among Hartford police officers were lower after the new laws (six injuries in 1,007 drug-related arrests for 6-month period before new

⁶⁵ Minnesota Public Radio. Minnesota heroin addicts hooked via prescription opiates. February 28, 2012. Accessed April 23, 2012 at <http://minnesota.publicradio.org/display/web/2012/02/28/prescription-opiates-a-gateway-to-heroin-especially-in-minnesota/>

⁶⁶ Email from Carol Helwig, April 20, 2012.

laws vs. two in 1,032 arrests for 6-month period after new laws).⁶⁷ This statistic is often cited, but cannot be fully correlated with NEPs specifically, since the major change in syringe access was a “partial repeal of needle prescription and drug paraphernalia laws in Connecticut,” not only the opening of a new NEP.

Many prominent law enforcement officials have cited NEPs as benefitting law enforcement safety, but many have also expressed strong concern for the effect on police work. Specifically, many are concerned about the effect on law enforcement’s ability to arrest and prosecute IDUs carrying drug materials and paraphernalia.

A statement from Stan Garnett, Boulder County District Attorney:⁶⁸

"Boulder County Public Health has had an exemplary needle exchange program in place since 1989. I am proud to enthusiastically endorse this program which has the universal support of law enforcement in Boulder County. Programs like the Works do not increase crime or drug use in the communities they serve. Not only has the program helped many drug users reduce the harm associated with their addiction including linkages to treatment for their substance use, but it has helped protect the community by reducing dangerous debris in our public spaces and by protecting law enforcement officers from being exposed to dangerous needles when responding to emergencies."

5 – Arguments Against Needle Exchange Programs

5.1 – Increase Injection Drug Use in the Community

One of the primary arguments against needle exchange programs is that they send an inappropriate message that drug use is acceptable and could result in an increase in drug use in a community where the NEP operates. However, in repeated studies of NEPs, researchers have produced strong evidence that NEPs do not increase drug use in communities and that NEPs do not increase drug use among individual IDUs receiving sterile needles.

In 1993, the U.S. General Accounting Office compiled a study of research on NEPs and their promise as an HIV/AIDs prevention strategy. That report reviewed studies looking at whether NEPs increase drug use. Of the five studies identified by the GAO as “strong evidence,” four “presented strong findings that drug use did not increase and one reported that drug injection users injected less often once they began participating in a program.”⁶⁹

Since that GAO report, scientific studies have repeatedly confirmed the conclusion that needle exchanges do not increase drug use in participants or in the community. In a randomized clinical trial of IDUs, researchers in 2003 found no correlation between increased drug use in NEP participants and non-

⁶⁷ I do not have access to this full study.

Groseclose SL, et al. Impact of increased legal access to needles and syringes on practices of injecting-drug users and police officers--Connecticut, 1992-1993. *J Acquir Immune Defic Syndr Hum Retrovirol.* 1995 Sep 1;10(1):71-2. Abstract accessed on April 23, 2012 at <http://www.ncbi.nlm.nih.gov/pubmed/7648290>

⁶⁸ Email from Jeff Basinger, NCAP Executive Director

⁶⁹ GAO. Needle Exchange Programs: Research Suggests Promise as an AIDS Prevention Strategy. March 1993. Accessed April 24, 2012 at <http://www.gao.gov/assets/220/217594.pdf>

participants.⁷⁰ No studies could be found with evidence supporting the claim that NEPs lead to increased drug use.

In looking at the effects of the closure of an NEP in Connecticut, researchers counted discarded “dope bags” in outdoor areas popular with IDUs.⁷¹ The number of dope bags found was thought to be representative of the amount of drugs being used in the area. The researchers found no significant difference in the number of bags found before or after the community’s NEP closed, indicating that “the robustness of outdoor drug activities in Windham was not reduced following the closure of the exchange.”

The World Health Organization review of NEP effectiveness notes, “Studies have searched for and found no convincing evidence of the following unintended complications associated with NSPs: greater injection frequency, increased illicit drug use,” or other negative consequences, fulfilling its criteria of “absence of negative consequences.”⁷²

The issue of “sending the wrong message,” however, is almost impossible to quantify or measure scientifically. No surveys have been found looking at community perceptions of the acceptability of injection drug use before and after the creation of an NEP. Such information might conceivably help understand the messaging aspect, but would not be conclusive and would most likely not be able to show any causal relationship.

Researchers looking for a connection between drug use and needle exchange programs have repeatedly been unable to find any evidence supporting the claim that NEPs increase drug use in NEP-attending IDUs or in the community as a whole. Concerns about “sending the wrong message” are more difficult to study, but whatever it is, the message being sent by NEPs appears to have no impact on the amount of drug use in a community.

5.2 – Encourage the Creation of Drug Networks and Serves as Gathering Point for Drug Community

Many argue that a needle exchange program will serve as a gathering point for injection drug users, where they can make more drug contacts and potentially create a geographic area in the community where injection drug use will be commonplace (public shooting galleries). Several studies of the effects of NEPs discuss potential network formation, though few studies are specifically designed to study this factor. Those few that specifically look at drug network formation at NEPs have found no positive association.

⁷⁰ Fisher, Dennis. Needle Exchange and Drug Use Frequency: A Randomized Clinical Trial. *Journal of Acquired Immune Deficiency Syndromes*: Vol. 33 - Issue 2 - pp 199-205. 2003. Accessed April 24, 2012 at http://journals.lww.com/jaids/fulltext/2003/06010/needle_exchange_and_injection_drug_use_frequency_.14.aspx

⁷¹ Robert. S. Broadhead. The Impact of a Needle Exchange’s Closing. *Public Health Reports*. Vol. 114. Sept./Oct. 1999. Accessed on April 26, 2012 at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1308516/pdf/pubhealthrep00025-0053.pdf>

⁷² World Health Organization. Effectiveness Of Sterile Needle And Syringe Programming In Reducing Hiv/Aids Among Injecting Drug Users. *Evidence For Action Technical Papers*. 2004. Accessed April 27, 2012 at <http://www.unodc.org/documents/hiv-aids/EFA%20effectiveness%20sterile%20needle.pdf>

In a long-term study of association between a Montreal NEP and HIV transmission that found a positive connection (discussed in more detail above), researchers mentioned social network creation as a possible confounding factor in their results.⁷³ “NEP implementation, through new socialization among IDUs, also may have facilitated formation of new sharing networks, with the programs becoming gathering places for isolated IDUs.” However, that study was not designed to study network formation, so no data was gathered.

In a later study of Vancouver IDUs looking for a reason for previous Canadian studies’ findings, researchers asked IDUs in NEPs what they got from NEPs.⁷⁴ “A total of only five (0.7%) reported meeting new people or friends at the needle exchange.” Additionally, the researchers asked 36 IDUs who reported having new drug sharing partners where they had met the new partners and only one responded that a new partner was met at the NEP. Though this survey is a very small sample, it is one of a small number of studies to specifically address the issue.

In a study developed to address the issue with a larger sample size, researchers in Baltimore looked into network formation and characteristics of more than 400 IDUs newly attending NEPs.⁷⁵ Of their sample size, less than eight percent reported having met at least one person at the NEP since enrollment. This study set out to identify potential unintended and negative consequences of NEPs and found that their data did not support the hypothesis that NEPs might encourage drug user network formation.

News reports and anecdotal descriptions of NEPs and their effects frequently discuss gatherings of IDUs in areas surrounding NEPs and increases in “shooting galleries” around NEPs.

From the New Jersey Family Policy Council:⁷⁶

In Downtown Eastside (Vancouver BC), police estimate there are 7,500 to 8,000 addicts, and users shoot up on the streets because the injection site has waits of up to 45 minutes. More police had to be assigned to the area to try and minimize the number of users who were shooting up outside the NEP area.

In Cairns Australia, City Place has been revealed as Cairn’s biggest drug shooting gallery with 1000 syringes discarded since January in toilets and streets surrounding the inner city mall.

Dale Deslauriers, the owner of Save on Meats on West Hastings (Downtown Eastside, Vancouver BC), said business is down “at least 20 percent” because customers are afraid of drug users and dealers.

⁷³ Julie Bruneau, et al. High Rates of HIV Infection Among Injection Drug Users Participating in Needle Exchange Programs in Montreal: Results of a Cohort Study. *American Journal of Epidemiology*. Vol. 146, no. 12, p. 994. 1997. Accessed April 24, 2012 at <http://aje.oxfordjournals.org/content/146/12/994.full.pdf>

⁷⁴ Schechter, Martin. Do Needle Exchange Programmes Increase the Spread of HIV among Injection Drug Users?: An Investigation of the Vancouver Outbreak. *AIDS*, Vol. 13, No. 6. 1999. Accessed April 24, 2012 at <http://www.columbia.edu/itc/hs/pubhealth/rosner/p8773/readings/schechter.pdf>

⁷⁵ Junge, Benjamin. Syringe Exchange not associated with social network formation: results from Baltimore. *AIDS*, Vol. 14, No. 4, 2000. Accessed April 24, 2012 at <http://www2.newpaltz.edu/~jungeb/Downloadables/Junge%20et%20al,%202000,%20Syringe%20Exchange%20Not%20Associated.pdf>

⁷⁶ New Jersey Family Policy Council. Making the Case for Opposing Needle Exchange. Accessed February 24, 2012 at <http://www.njfpc.org/making-the-case-for-opposing-needle-exchange>

While these accounts may or may not be fact based (they are from a strongly advocating source and no independent confirmation could be found), no research has been found offering credibility to these descriptions of “shooting galleries” surrounding NEPs being caused or affected by the introduction of NEPs. Contradicting evidence can be inferred from studies of publicly discarded needles near to NEPs, discussed previously. Researchers in Baltimore found no increase in the number of needles discarded in public places near NEP locations, which would suggest that these areas were not being used for widespread public drug use.

Research does not support the argument that NEPs result in significant drug network creation among participating IDUs, though the number of studies on the topic has been small. Descriptions of widespread public drug use surrounding NEPs cannot be verified and none of the extensive research on NEPs offers evidence that NEPs become focal points for community drug use.

5.3 – Increase the Number of Used Needles in the Community

Concerns about an increasing number of improperly disposed of needles are a primary argument by opponents of needle exchange programs, who are particularly worried about used needles ending up in parks, playgrounds, and other public places. Proponents counter that NEPs actually serve to increase the number of properly disposed of needles and decrease the number of used needles discarded in public places. Researchers looking to address these opposing views on used needle disposal have focused on two main areas of study: publicly discarded needles and return rates for needles distributed by NEPs.

Multiple studies on the number of needles discarded in public places have shown no connection between the numbers of publicly discarded needles and the existence of an NEP in a community. Research into the rates of return for needles distributed through NEPs have shown that a consistently high percent (90 percent on average) of needles distributed by NEPs are returned to the NEP for safe disposal.

5.3.1 – Used Needles Discarded In Public Places

Many opponents of NEPs express concern about the potential for the large number of distributed needles to not be disposed of properly. Further, many people hear or read about needles discarded in playgrounds, parks, or other public places where children may find the needles and be injured or infected. Articles can easily be found of used needles littering streets and public facilities and there have been cases where children have been pricked by discarded needles in public areas. Research on the topic has been unable to find any correlation between the number of publicly discarded needles and the existence of NEPs.

To address these concerns, researchers have tried to directly study the effects of opening an NEP on the number of used needles discarded in public places. A 1997 study by Doherty *et al.* sought to assess whether the opening of an NEP would lead to a change in the number of discarded needles in streets. The researchers identified intersections in Baltimore, Maryland that were demographically similar surrounding two new NEP sites. In weeks before and after the opening of area NEPs, the researchers manually sampled the streets, sidewalks, and alleys near those intersections to locate discarded syringes, vials, and beverage bottles (the bottles served as a proxy for the general amount of discarded trash in the areas).

Overall, Doherty and her team found no statistically significant increase in the number of discarded needles following the opening of NEPs in the area. Further, the research found no geographic shift in the location of discarded needles, meaning they did not see an increase in needles in the areas immediately surrounding the NEPs or a decrease in needles in city blocks further away, which might be expected if publicly discarded needles were caused by the NEP. On the study's final survey, researchers located 52 discarded syringes, while by that date the newly opened NEPs had distributed 25,713 syringes and had 25,002 returned. Though researchers could not know how every unreturned needle was disposed, they emphasized that "only a small fraction of NEP needles distributed were disposed in the street."⁷⁷

In a 2000 follow-up study to the earlier work in Baltimore, Doherty and her researchers documented the number of needles and trash found at the same locations near to and far from the opened NEPs over a two year period.⁷⁸ During the two-year period when researchers were surveying for discarded needles, the NEPs in Baltimore distributed approximately 620,000 needles but the researchers could find no increase in the number of needles in public places. Counts at one year and two years after the opening of the NEP showed reductions in the numbers of needles found, but researchers could not determine if this was part of a trend. Supporting the earlier shorter-term conclusions, the 2000 study concluded that the opening of an NEP was not associated with an increase in quantity or distribution of discarded needles in public locations over a two-year period.

After a child in Windham, Connecticut was pricked by a used needle found in her yard, public outcry forced the closing of the Windham needle exchange, which had operated for more than seven years.⁷⁹ Many members of the public blamed the NEP for the high number of publicly discarded needles, the high drug use and HIV incidence in the town of 22,000, and even for the town's economic decline. With the announcement of the NEP's imminent closing, researchers performed interviews and surveys of discarded injection equipment before and after the closing date.

The Windham researchers sought to evaluate the effect of the exchange's closure effect on, among other behaviors previously discussed,⁸⁰ discarded drug paraphernalia in popular drug-using areas of the town. During some of the studied months, more publicly discarded needles were found in the months after the closure of the NEP. In the corresponding months before and after the closure of the NEP, overall there was no increase or decrease in the number of publicly discarded needles found by researchers. The researchers noted that the NEP's closure "deprived drug injectors of not only a reliable and economical way of obtaining new syringes, but also a convenient means of proper disposal." Though there were some seasonal variations, the surveys found that the closure of the NEP did not reduce the number of publicly discarded syringes.

⁷⁷ Meg C. Doherty. Discarded Needles Do Not Increase Soon After the Opening of a Needle Exchange Program. *American Journal of Epidemiology*. Vol. 145, No. 8. 1997. Accessed on April 23, 2012 at <http://aje.oxfordjournals.org/content/145/8/730.full.pdf>

⁷⁸ Meg C. Doherty et al. The Effect of a Needle Exchange Program on Numbers of Discarded Needles: A 2-Year Follow-Up. *American Journal of Public Health*. Vol. 90, No. 6. June 2000. Accessed on April 26, 2012 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446248/pdf/10846512.pdf>

⁷⁹ Robert. S. Broadhead. The Impact of a Needle Exchange's Closing. *Public Health Reports*. Vol. 114. Sept./Oct. 1999. Accessed on April 26, 2012 at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1308516/pdf/pubhealthrep00025-0053.pdf>

⁸⁰ See *Reduce Injection Risk Behavior in Injection Drug Users* section, above.

Though many argue that needle exchange programs will increase the number of publicly discarded needles in communities, research on NEPs has failed to support this argument. Public surveys of public areas near and far from NEPs show no effect of publicly discarded needles after the opening of the NEPs. This result was corroborated with surveys of needles in public over a two year period, supporting the notion that long-term the NEP did not impact public disposal behaviors. Further, these studies are supported by a study into the effect on publicly discarded needles of the closing of a community's only NEP, which showed no effect on the number of needles in public places even after the number of available clean needles was significantly curtailed. Contrary to highly publicized incidents of needles in public areas, research does not support the argument that the opening of an NEP will increase the number of used needles in public places.

5.3.2 – Needle Return Rates and Net Effects on Number of Needles in Community

Opponents of NEPs often point to the large numbers of needles distributed by NEPs and argue that even a relatively small percent of unreturned needles will equate to a large number of used and potentially contaminated needles that are not disposed of properly. Proponents counter that IDUs use a large number of needles without the existence of a NEP, but those needles are never disposed of properly, so the number of unreturned needles at an NEP would be a net reduction in the number of used needles in the community. With fewer used and potentially contaminated needles in circulation in a community, they argue that this will help protect the public from accidental needle sticks and will reduce the likelihood that IDUs will reuse needles.

The few studies that have evaluated the rates of return for needles distributed through NEPs have shown that a consistently high percent (90 percent on average) of needles distributed by NEPs globally are returned to the NEP for proper disposal. However, with each side seeing the same evidence – needles distributed by NEPs compared to needles returned – different conclusions are often reached. One commentator has noted, “debate over the effect of NEPs on the number of discarded syringes is unique among ... questions surrounding NEPs in that both opponents and advocates have claimed that the evidence favors their point of view.”⁸¹

Perhaps the most thorough review of NEP return rates was a 2004 study in the Harm Reduction Journal by Kate Ksobiech, which searched academic articles and studies for those few that reported information on the number of needles distributed and the number of needles returned at particular NEPs.⁸² The research located 26 studies of NEP operations and effectiveness that provided return rate information over varying periods of time. Overall, in the 26 studies evaluated, Ksobiech saw a return rate of 90 percent: 11,971,584 syringes distributed and 10,783,270 syringes returned. Specifically looking at studies in the United States (eight studies), the study also saw a return rate of 90 percent: 315,942 distributed and 282,897 returned.

Colorado experiences with return rates of distributed needles are similar but generally higher than those found in academic research. In 2011, the Boulder County Works NEP operated at three fixed locations

⁸¹ School of Public Health, University of California, Berkeley. The Public Health Impact of Needle Exchange Programs in the United States and Abroad: Summary, Conclusions and Recommendations. 1993. Accessed April 23, 2012 at <http://home.mchsi.com/~apclc/8fedstudies6.pdf>

⁸² Kate Ksobiech. Return Rates for Needle Exchange Programs: A Common Criticism Answered. Harm Reduction Journal 2004, 1:2. 19 April 2004. Accessed April 23, 2012 at <http://www.biomedcentral.com/content/pdf/1477-7517-1-2.pdf>

and through a mobile outreach service. That year, the program distributed 83,550 syringes and received 80,890 (the mobile program received 360 more syringes than it distributed), an overall 96.8 percent return rate. In 2010, the Works distributed and received around 60,000 syringes and saw a similar return rate, according to the program coordinator.⁸³

Both supporting and opposing arguments can be based on strong assumptions regarding the number of needles used by IDUs in communities without NEPs. Opponents often assume that the number of needles in a community before a NEP opens is less than the expected number of needles distributed by a NEP but not returned for proper disposal. Proponents tend to assume that there are more needles in a community before a NEP than the expected number of needles distributed but not returned to a NEP for disposal. Opponents generally assume the number of improperly disposed of needles will increase, while proponents generally assume the number will decrease.⁸⁴

Needles in Colorado are not generally difficult to attain without the existence of a NEP. A 2004 study of the availability of syringes in different states without a prescription listed Colorado as having the highest availability of the 4 studied states, with a 75% successful purchase rate out of 400 attempts.⁸⁵ The study showed that there was some variance between urban (58%) and rural (90%) purchase sites in Colorado, but that availability in Colorado was generally very high. Since that study, no new pharmacy-purchase restrictions have been added in Colorado, so availability of syringes is generally high.

Compared to areas where needles and syringes are tightly controlled, Colorado IDUs have little incentive to reuse or to limit the use of syringes. Availability is high and costs are generally low, so IDUs may already minimize the reuse of syringes, resulting in a large number of used and potentially contaminated needles in the community.

In Larimer County, disposal options for used needles are few. Northern Colorado AIDS Project reports that in 2011, the 239 IDUs using its services disposed of 6,011 used needles at the NCAP facility, the only non-medical bio-waste disposal site in Larimer County.⁸⁶ When asked why more syringes were not brought to NCAP, its clients mentioned fears of assuming legal risk for transporting syringes. "To go out of my way to put a needle in my pocket and throw it away, I am risking going to jail. I am risking a lot of nonsense for nothing."⁸⁷ IDUs reported to NCAP that they often broke tips off of syringes and threw away the syringes or sometimes returned used needles to pharmacies in sharps containers.

Research shows that the opening of an NEP does not increase the number of needles discarded carelessly in public places such as parks or sidewalks. Research also shows that the average NEP has 90 percent of the needles it distributes returned to the NEP for safe disposal. Experience in Colorado might support an argument for an even higher return rate (of close to 85,000 distributed needles, 97% returned). The exact number of needles that would be unreturned if the NCAP NEP were approved is

⁸³ Email April 20, 2012 from Carol Helwig, Boulder County Health Department HIV/STI Outreach Program Coordinator

⁸⁴ Perhaps the differences in these assumptions lie in differing knowledge about the number of times an IDU will reuse needles and thus how many needles an IDU uses in a year without free access to needles. This is difficult to assess, as the number of times a needle is reused is the very behavior that NEPs intend to change.

⁸⁵ Wilson M. Compton, et al., A multistate trial of pharmacy syringe purchase. *Journal of Urban Health*. Volume 81, Number 4 (2004). Accessed April 30, 2012 at <http://cmbi.bjmu.edu.cn/news/report/2004/Urban/view/1.pdf>

⁸⁶ Northern Colorado AIDS Project Fact Sheet (One Page, two-sided)

⁸⁷ Harm Reduction Coalition. Northern Colorado AIDS Project Focus Group Report. April 6, 2012.

impossible to know. Also, it is also impossible to know the exact number of needles local IDUs currently use and do not dispose of properly.

5.4 – Increase Crime in Community

The potential for increases in crime due to the operation of NEPs is frequently cited in opposition to the programs. One participant at a board of health meeting on the proposed NCAP NEP stated, “It doesn't protect the kids; it doesn't protect citizens whose houses are being burglarized.”⁸⁸ However, studies on the effects of NEPs universally fail to show any correlation between crime increases and the introduction of an NEP into a community. Research tends to repeatedly show a lack of negative consequences, including crime increases, from NEP operations. The 2010 Palmateer review of literature noted that though its conclusions showed evidence was not overwhelming for the effectiveness of NEPs on HIV transmission, in its review there was no evidence of negative consequences, including increase in crimes.

Examining arrest statistics in Baltimore City, Maryland in the 6 months before and after the opening of two NEPs, researchers were unable to find any significant association between NEPs and crime rates.⁸⁹ Researchers designated areas within 0.5 mile of an NEP to be program areas and compared the arrest rates in those program areas with all areas in city limits not within 0.5 mile of an NEP. The researchers studied the average arrest rate for specific crime categories in the 6 months before and the 6 months following the opening of the NEP. In both area types, arrest rates rose, but not statistically more or less in either area. With drug-related arrest rates of approximately 2,500 per month over the studies period, the researchers were unable to find any statistically significant connection between crime rates near NEPs. The researchers concluded, “Needle exchange programs do not appear to be associated with increases in crime rates.”

Attempting to find statistics that might more closely match the demographics of Larimer County, one could look at the crime rates in Boulder, Colorado where a needle exchange program has operated for more than 22 years. In 2011, Boulder saw 2,840 UCR Crimes,⁹⁰ giving the city a crime rate of 289 per 10,000 residents.⁹¹ In the same year, Fort Collins saw 4,575 UCR Crimes and a crime rate of 318 per 10,000 residents.⁹² This indicates that after 22 years of NEP operation, Boulder experiences a lower crime rate than Fort Collins.

⁸⁸ Coloradoan. Syringe access plan stirs debate at Larimer health board meeting. April 12, 2012. Accessed April 27, 2012 at <http://www.coloradoan.com/article/20120412/NEWS01/204120313/Syringe-access-plan-stirs-debate-Larimer-health-board-meeting>

⁸⁹ Melissa Marx, et al. Trends in Crime and the Introduction of a Needle Exchange Program. American Journal of Public Health. Vol. 90, No. 12. Dec. 2000. Accessed April 23, 2012 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446444/pdf/11111271.pdf>

⁹⁰ The FBI Uniform Crime Reports (UCR) tracks reported crimes from around the nation. Individual police departments report certain indexed crimes as part of the UCR: Willful Homicide, Forcible Rape, Robbery, Aggravated Assault, Burglary, Larceny (Theft), Motor Vehicle Theft, and Arson. These specific crimes are thought to be the most serious by nature and by volume. FBI. UCR General FAQs. Accessed May 1, 2012 at http://www.fbi.gov/about-us/cjis/ucr/frequently-asked-questions/ucr_faqs

⁹¹ Crime Statistics, City of Boulder. http://joomla.ci.boulder.co.us/index.php?option=com_content&task=view&id=3737&Itemid=1386

⁹² Crime Statistics, City of Fort Collins. <http://www.fcgov.com/police/crime-stats.php>

Studies of NEP operations and effects repeatedly show an almost complete absence of negative consequences, including changes in crimes. Specific research on the effect of an NEP's opening on crime statistics also have showed no association between the two. No research can be found supporting the argument that the opening of a NEP will increase crime.

5.6 – Effect on Law Enforcement

Members of the law enforcement community, as mentioned previously, are divided on the appropriateness of needle exchange programs, with some arguing they increase safety and others arguing that they reduce community safety. The arguments made by law enforcement against needle exchange programs almost universally fall within the arguments listed in this paper, including increasing crime, increasing drug use, increasing the number of discarded needles, and that the programs send the wrong message about drug use.

Though these arguments are duplicated in other sections of this paper, we include them here because of the unique perspectives and relationship that the law enforcement community has with public safety and the target population.

Specifically related to the NCAP proposal in Larimer County, two prominent law enforcement officials submitted a “soapbox” to the Fort Collins Coloradoan on April 28, 2012.⁹³ District Attorney Larry Abrahamson and Larimer Sheriff Justin Smith wrote, in relevant part:

Closer to home, we are concerned about a proposal being considered by our local health board to sanction the distribution of needles to IV drug addicts. We share the goal of a healthier community in Larimer County, but we don't believe that this enabling act of distributing needles for the intended purpose of injecting lethal drugs is the right thing for Larimer County.

We continue to support all efforts to counsel addicts to encourage them to stop abusing illegal drugs, but enabling behaviors, whether it comes through friends and families or through well-intended government-sponsored programs, has the potential of increasing the dangerous practice of intravenous drug use.

Statistics from our county Coroner's Office reveal a disturbing trend in the dangers of illegal IV drug use. Between 2010 and 2011, the number of heroin overdose deaths in Larimer County doubled. For 2012, if the year-to-date trend continues, it looks like we will double those overdose deaths yet again.

We believe when balancing the health risk of HIV and hepatitis with the health risk of overdose, the consequence of destroyed families and all drug associated criminal activity, the thought of sanctioning drug needle distribution in Larimer County is a bad idea, a step in the wrong direction.

Additionally, the International Association of Chiefs of Police issued the following policy statement regarding NEPs:

⁹³ Coloradoan. Incentives Undermine Advances. Accessed May 2, 2012 at <http://www.coloradoan.com/apps/pbcs.dll/article?AID=2012204280311>

The IACP strongly opposes needle exchange programs for intravenous drug users. These programs only serve to facilitate the abuse of certain narcotics and dangerous drugs and exacerbate an already alarming drug abuse problem. The IACP believes that these types of programs convey an implicit acceptance of drug use. The implementation of a needle exchange program at any level of government would send a contradictory and harmful message to all citizens, especially children, about the sincerity and necessity of the government's anti-drug policies. The IACP strongly believes that governments should not place itself in the position of enabling IV drug users to inject their bodies with illegal and dangerous narcotics.⁹⁴

5.7 – Additional Arguments Against

The below are arguments found on the Internet and other sources that oppose needle exchanges. These are provided here for completeness, but are not discussed in great detail due to the anecdotal nature of the arguments or the argument being a value-based judgment that cannot be studied.

- NEP proponents assume that IDUs make rational and logical decisions about which needle they will use. They will continue to share and reuse needles.
- Most IDUs who die will die of an overdose, not infection. NEPs provide IDUs with a false sense of safety and protection.
- IDUs know the risks of drug use, one of which is the possibility of transmitting a BBV in a used syringe. Some say this is an issue of personal responsibility.
- NEPs are better suited to urban areas with high incidence of HCV, HIV, and where injection drug use is more common.
- With a NEP, Fort Collins will be a magnet for drug users from around the area.

6 – Positions on Needle Exchange Programs by Other Organizations

American College of Preventive Medicine – 2000⁹⁵

Needle-exchange programs should be implemented and expanded in areas with high rates of intravenous drug abuse. Although data are still preliminary, they support a public health intervention that is inexpensive (especially in comparison with the societal costs of treating those with HIV) and likely to reduce the transmission of fatal bloodborne infection among drug users, their sexual partners, and their children. These programs should include education and counseling, referral for drug and medical treatment, HIV and hepatitis testing, and condom distribution.

Rationale Statement – The primary purpose of needle-exchange programs is to reduce the spread of infectious disease (including hepatitis and HIV) among IVDUs, their sexual partners, and the public at large. Although individual studies have methodologic limitations, overall many

⁹⁴ IACP. Legislative agenda for the 107th congress. Accessed May 1, 2012 at <http://www.aele.org/iacp107cong.pdf>

⁹⁵ Ferrini, Rebecca. American College of Preventive Medicine Public Policy on Needle Exchange Programs to Reduce Drug-Associated Morbidity and Mortality. Am. J. Prev. Med. 2000;18(2). 2000. Accessed April 24, 2012 at http://www.acpm.org/resource/resmgr/policy-files/polstmt_drugmorbidity.pdf

studies conducted in the United States and abroad report a reduction in risk behaviors, possible reduced transmission of HIV and hepatitis B and C, and increased referral to drug treatment resulting from needle-exchange programs. In addition, no significant harm, such as increasing drug use initiation, crime in surrounding sites, increased needles on the street, or increased use of drugs among users, have been noted in limited studies. The public health benefits to those (and their partners) who do use these services are great, despite that these programs serve only a fraction of IVDUs, attrition is high, program recipients infrequently adopt safer sexual practices, and these programs fail to reach the newest or most sporadic users. These sites, secondarily, may be an entrance point for those dependent on drugs to seek rehabilitative therapies, or sites may provide other preventive treatments such as disease screening or hepatitis B immunization.

Other Organizations Positions in 2000 cited by the American College of Preventive Medicine – The American Medical Association, American Society of Addiction Medicine, the American Public Health Association, the Centers for Disease Control and Prevention, the American Bar Association, the United States Conference of Mayors, the National Academy of Sciences, the National Research Council, the National Commission on AIDS, the National Institute of Health Consensus Statement, and the American Academy of Pediatrics officially endorse establishment of needle-exchange programs. The American Medical Association, National Research Council, National Institute of Health Consensus Statement, and the Institute of Medicine, among others, support repeal of the federal ban on the funding of these programs. The International Drug Strategy Institute does not favor needle-exchange programs.

Organizations cited as endorsing needle exchange programs in the US by Representative Henry Waxman in letter to the Office of National Drug Control Policy⁹⁶ – American Academy of Family Physicians, the American Academy of Pediatrics: the American Academy of Physician Assistants, the American College of Preventive Medicine, the American Medical Association, the American Nurses Association, the American Psychological Association, the Association of Nurses in AIDS Care, and the Infectious Diseases Society of America.

Organizations Opposed:

- Family Research Council
- New Jersey Family Policy Council
- International Association of Chiefs of Police (position discussed above)

7 – Limitations and What Do We Not Know?

Where appropriate, we have indicated the limitations of specific studies and research. As a general rule, research into public health interventions run into legal, ethical, and logistical challenges that limit the ability of the researchers to control for biases and confounding. Major impediments include the selection of a control group, the accurate measurement of needle sharing and injection frequency, and the wide variation in conditions such as the prevalence of HIV or hepatitis C and the implementation of the specific program. However, even with these methodological issues, a strong preponderance of evidence among a large number of studies can support confident scientific judgments.

⁹⁶ Letter accessed May 1, 2012 at <http://www.biomedcentral.com/content/supplementary/1477-7517-7-1-S1.pdf>

Further, there is a great deal of community-specific information that would greatly aid in decision making. Unfortunately, we could not locate some of this information in our time frame and other information is simply unknowable. Such unknown information includes Larimer County's actual number of injection drug users, annual trends in injection drug use, the number of needles those IDUs use daily and annually, more accurate HIV/AIDS and HCV prevalence and incidence in IDUs in Larimer County.

Finally, we have limited this paper to those arguments for and against that are feasible to study scientifically. Specifically, we have attempted to not discuss moral and ethical arguments for or against. We believe these arguments are important to the overall dialogue about the merits of NEPs in a community but they are prone to even greater uncertainty and differences of opinion.

8 – Conclusions

This research on the effectiveness and the consequences of NEPs was done in a limited time, utilizing publicly available sources. Strong efforts were made to find research and information supporting all arguments, in favor and against, utilizing reliable sources. Efforts were made to avoid sources that appear to be advocating for or against the implementation of NEPs, but this was not always possible. In cases where information was found in sources obviously supporting or opposing NEPs, all efforts were made to find academic or government-backed independent sources for the information.

Though individual studies vary greatly, most evidence from NEP research indicates that there is at least some evidence (of varying strength) that NEPs reduce HIV transmission among IDUs. With regard to transmission of HCV, the evidence is less clear, with a recent review of reviews (Palmateer) indicating that there was "insufficient evidence to say whether the programs are effective or not." Further, research indicates that there is strong evidence that NEPs help reduce "injecting risk behaviors," including sharing needles and the reuse of used syringes, among IDUs. These findings universally highlight study design limitations that hinder more definitive answers. There is an almost universal finding of no evidence for negative consequences of these NEPs, although the evidence here is also limited.