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THE SIGNIFICANCE OF HARM REDUCTION AS A SOCIAL AND HEALTH CARE INTERVENTION FOR INJECTING DRUG USERS: AN EXPLORATORY STUDY OF A NEEDLE EXCHANGE PROGRAM IN FRESNO, CALIFORNIA

Kris Clarke, PhD¹, Debra Harris, PhD¹, John A. Zweifler, MD, MPH², Marc Lasher, DO², Roger B. Mortimer, MD², and Susan Hughes, MS²

¹ Department of Social Work, California State University, Fresno, Fresno, CA.

² Department of Family & Community Medicine, University of California, San Francisco, Fresno Medical Education Program, Fresno, CA.

INTRODUCTION

Infectious disease remains a significant social and health concern in the United States. More than 1.2 million people are currently living with the human immunodeficiency virus (HIV), (CDC a, 2015) and between 2.7 – 3.9 million people infected with Hepatitis C (HCV) (CDC b, 2015). The cost of infectious disease can be counted in the strain on healthcare resources, economic losses due to reduced productivity, and the support needed for people living with chronic disease (Fonkwo, 2008). The social stigma associated with infectious disease can create barriers between the sick and the rest of society, which can undermine efforts to promote disease prevention and enhance wellness (Williams et al., 2011).

Preventing more people from contracting HIV/AIDS or HCV, requires a complex understanding of the interconnection between the biomedical and social dimensions of infectious disease (Kippax & Stephenson, 2012). Injection drug use is a well-known route of transmission for blood borne diseases. Opiate addiction in the US has skyrocketed in recent years with an estimated 2.1 million Americans living with substance misuse disorders related to opiate pain reliever abuse and 669,000 people reporting using heroin in 2012 (SAMSHA, 2013). In 2010, the prescription opioid Oxycontin became more difficult to obtain and was reformulated to prevent abuse, thus causing many users to turn to heroin (Cicero et al., 2012). The number of people using heroin for the first time in 2012 is nearly double than that of 2006 (NIDA, 2014). Addiction and drug misuse has been directly linked with the risk of contracting infectious disease (Wood et al., 2008). Heroin can be sniffed or smoked, but is often injected. The exponential rise in opiate addiction means that an increasing amount of people are at risk for contracting HIV/AIDS and HCV. Preventing more cases of HIV/AIDS and HCV will require dealing with the social determinants of health (Stein & Zeglin, 2015). Hence, closer collaboration between social work, healthcare and community stakeholders is key to reducing rates of HIV/AIDS and HCV.

Although data on the efficacy of needle exchange programs (NEPs) is limited, several studies have examined the impact of NEPs on the sharing and re-use of syringes. Research

indicates that injection drug users (IDUs) who utilize NEPs are less likely to re-use syringes, but are still willing to engage in needle sharing (Bluthenthal et al., 2004). IDUs who visit NEPs with consistent, trusted outreach and connection to staff are less likely to share and re-use needles (Heinzerling et al., 2007; MacNeil & Pauly, 2011). Increased access to syringes was associated with less borrowing and declining HIV incidence (Kerr et al., 2010). Needle exchange programs can thus provide a venue to reach a unique population at high risk of infection from infectious disease, addiction, mental health issues, poverty, and homelessness (Pollack et al., 2002).

Social work interventions in substance misuse generally require clients to be abstinent to receive treatment and services (Fitzgerald, 2010). Needle exchange programs are based on a harm reduction approach that seeks to minimize the risk of infection and damage to the user and community by non-judgmentally meeting injecting drug users where they are at and providing them with the tools to keep themselves and their communities safe.

This article presents an exploratory small-scale quantitative study conducted by a team of physicians and social work professors. The research population was a group of IDUs at a needle exchange program in Fresno, California, an impoverished region which has one of the highest rates of injection drug use in the country (Friedman et al., 2004). The study examines how IDUs report the impact of the NEP on lowering their risk of infection and enhancing their safety. To develop a context in which to understand the study, the article proceeds by presenting an overview of changing attitudes towards addiction and harm reduction. It then surveys the literature on needle exchange as a social and health intervention, noting that discussions of NEPs are often absent in the field of social work. It moves on to describe the circumstances of the Fresno NEP before presenting the findings of the study. The article concludes by discussing the implications of needle exchange programs to social work practice.

DRUG POLICY, ADDICTION TREATMENT, AND HARM REDUCTION

Injecting drug users are highly marginalized in society. Despite the fact that addiction is defined as an illness, health-related stigma remains a significant barrier to the treatment and support for people living with mental illness and substance misuse disorders (Livingstone et al., 2012). Drug control legislation has long been a contested terrain of physicians, pharmacists, law enforcement, psychologists, politicians, and patients all seeking to define who should control drugs and who should have access. The criminalization of drug distribution and use in the United States started with the Harrison Act of 1914. This milestone legislation introduced a system of control and surveillance that was based upon perceptions of drug users as deviant individuals and was tinged by racial and socioeconomic biases. The legislation subjected drug users to punitive and psychosocial interventions (Ghatak, 2010). The 1970 Controlled Substances Act (CSA) consolidated the diversity of rules and defined the gatekeepers to regulatory decisions (Spillane & McAllister, 2003) culminating in the “drug war” and mandatory sentencing laws of the 1990s. The dramatic rise in the mass incarceration of people based largely on drug charges disrupted communities, separated families, and stigmatized individuals. Harsh drug laws and policies

therefore became a tool of isolating, excluding, and containing certain populations rather than seeking to treat or help people with substance misuse issues (Lynch 2012, 176).

From earliest recorded history, human beings have used psychotropic substances for many reasons, including the spiritual achievement of altered states of consciousness for ceremonies or to alleviate hunger and fatigue. Human beings would not survive long in a harsh environment if they were intoxicated. 'Addiction' in reference to drug misuse, thus, appears to be a rather recent phenomenon. It emerged with the rise of modern colonial empires that developed a global trade in substances, such as opium and coca, which could be refined into concentrated forms that produced the compulsive need for continuous consumption (Singer, 2012). The evolution of the human brain towards more complex emotional development meant that alcohol or drugs began to be used as a coping mechanism to compensate for feelings of dysfunction or depression, especially in a rapidly changing world in which communities were disrupted in the name of progress (Durrant, 2009). Currently, the roots of addiction are seen as a complex intertwining of biological, psychological, and social factors (Saah, 2005).

In the 19th century, alcoholism treatment was largely divided between temperance movements, which reflected a strong community-based self-help model of abstinence, or through confinement in inebriate asylums, which utilized a medical model to provide treatment and restraint. Drugs such as morphine, cocaine and opium were widely used because they were marketed as cures for many ailments until the Harrison Act of 1914, which brought the paradigm of criminality to drug policy (Ghatak, 2010). Hence, after the passage of the Act, physicians were no longer allowed to prescribe narcotics for the purpose of maintaining an addict's comfort. Moreover, addicts themselves became criminalized and some have argued that drug policy became a means to control urban ethnic minority working class young men (Cohen, 2006).

Early psychoanalysis exerted a profound influence on perceptions and treatment of addiction. Freud and his followers tended to view addiction as the result of distorted psychosexual development (White: 1998, 96). As White points out, there are three key areas where psychoanalysis has had an influence: 1). the view that addictive behavior is driven by unconscious motivations, 2). the belief that practitioners must have certain qualifications, and 3). the notion that addicts must reconstruct their sense of self and identity as sober (White: 1998, 99). The psychoanalytic paradigm thus made addiction treatment a clinical practice.

Harm reduction emerged during the early days of the AIDS pandemic as a targeted approach of public health policies and measures that seek to reduce the harm associated with certain activities, rather than banning such activities completely. Examples of harm reduction interventions include requiring the use of seat belts in cars to decrease physical injury in the case of an accident and training bar staff in the responsible serving of alcohol to reduce the risks associated with intoxication. In 1974, the World Health Organization endorsed harm reduction as a means "... to prevent or reduce the severity of problems associated with the non-medical use of dependence-producing drugs." (World Health Organization, 1974) Needle exchange is the primary method of harm reduction with narcotics that are injected.

The aim of a needle exchange program (NEP) is to provide each injecting drug user with a clean syringe for every injection. In this way, NEPs reduce the harm associated with sharing or re-using needles including the transmission of blood-borne diseases, such as HIV and HCV, as well as other infections from the use of dull, contaminated needles. NEPs can have a collateral impact on user's wellbeing by providing a gateway to services.

Harm reduction interventions with drugs were introduced into the United States by Edith Springer, who worked with drug users in New York City, and observed NEPs in London and Amsterdam (Harm Reduction Coalition, 2011). The first American NEPs were started in the late 1980s in Tacoma, Washington, Portland, Oregon, San Francisco and New York City (Centers for Disease Control, 2005). These NEPs were largely run by community-based groups with little state support. Unlike other western industrialized countries which made harm reduction interventions a central part of public health strategies against the spread of AIDS, the United States instituted a ban on the use of federal funds for needle exchange in 1989 (Clark & Fatus, 2010). Hence there is a patchwork of laws, regulations, policies and practices across the US with regard to needle exchange that militates against the development of a centralized harm reduction strategy (Clarke, 2015).

NEEDLE EXCHANGE AS A SOCIAL AND HEALTHCARE INTERVENTION

In 1988, the US government banned federal funding of needle exchange until the efficacy of harm reduction in reducing HIV rates could be proven (Lurie, 1997). There were also concerns that needle exchange could encourage injection drug use (McLean, 2012). The first American needle exchanges emerged in the 1990s through the work of grassroots community-based harm reduction groups, who often focused on a range of social justice issues (McLean, 2011). Public health research focused on whether NEPs actually prevented infection (Hou et al., 2007) as well as cost calculations of the value of harm reduction prevention efforts through NEPs (Lurie & Drucker, 1997). There were also studies of how the health behavior of people using NEPs was impacted by access to clean needles, especially with regard to reduced needle sharing (Ksobiech et al., Latkin & Forman, 2001). By 1998, needle exchange was considered a best practice in the medical community for the prevention of the transmission of blood borne diseases (Royner, 1998). During the same year, Health and Human Services Secretary Donna Shalala stated that "...needle exchange programs can be an effective part of a comprehensive strategy to reduce the incidence of HIV transmission and do not encourage the use of illegal drugs." (Shalala, 1998) The federal ban on funding for needle exchange nonetheless has remained in force until today amidst fears that NEPs could promote drug use (Clark & Fatus, 2010; Rovner, 1998), even though studies of needle exchange indicated that users of its services were more likely to enroll in addiction treatment services than non-users (Latkin et al, 2006).

Research on needle exchange in the social sciences has largely focused on medical-anthropological explorations of the dynamics of drug addiction and changing social structures (Bourgeois, 2003), the ethnographic context of needle exchange (Gowan et al., 2012; McLean, 2012; MacNeil & Pauly, 2011), and the politics of needle exchange (Clarke, 2015; McLean 2011; McLean 2013).

In social work, some researchers have noted that the substance abuse field remains largely shaped by the disease model of addiction with little focus on harm reduction which may contribute to a paucity of social work attention to the issue (Brocato & Wagner, 2003). Recently, there have been a greater number of articles emerging focusing on social work students' attitudes towards harm reduction (Moore & Mattaini, 2014) and challenging dominant epistemologies of the disease model of addiction (Lushin & Anastas, 2011; Souleymanov & Allman, 2015). Though there are many studies of social work at NEPs abroad (e.g. Hyshka et al., 2012), there are very few in the United States. This may be due to the ban on federal funding, lack of social workers at community-based programs, and prevailing view that needle exchange promotes drug use (Bowen, 2012).

THE CONTEXT OF THE STUDY

Fresno, California is a city of 500,000 people located in middle of the San Joaquin Valley. It is one of the most rapidly growing and most impoverished regions of California with some of the lowest marks on the national Human Development Index (Lewis et al., 2010). Fresno has some of the highest rates of intravenous drug use per capita in the U.S. (Tempalski et al., 2007). The main drugs of choice are heroin, oxycontin, and methamphetamine. It also has higher rates of admission to drug and alcohol treatment than the rest of the state and is ranked number 23 in the list of American cities with high HIV infection rates (US Census, 2012).

The needle exchange program in Fresno has been operated by volunteers for over 20 years. Until California law changed in 2012, legalizing needle exchange, the Fresno program operated as a "tolerated illegal" intervention. The Fresno NEP is set up on a quiet street and accepts and exchanges needles for approximately 100-150 people each week during a period of two hours every Saturday. It has a mobile medical clinic located next to it.

METHOD

The exploratory study presented here used a descriptive, quantitative research design to evaluate injection drug use in participants at an NEP in Fresno, California. Information was collected anonymously to answer these questions:

1. How do NEP participants report the impact of the NEP on their needle sharing behavior?
2. How do NEP participants describe the effect of the NEP on their needle re-use behavior?
3. How do participants report the effect of the NEP on their infection control techniques?

This study was approved by the California State University, Fresno Institutional Review Board and was conducted between December 2010 and March 2011 at the NEP in Fresno, California. A convenience sampling procedure was used, offering participation to individuals standing in line to exchange needles. Each participant received a \$5 card redeemable for groceries as an incentive. Participants completed a closed-ended

questionnaire developed by the medical staff at the NEP. During the pilot study, the participants completed the questionnaire independently but left much of the questionnaire blank or asked for assistance when completing the questionnaire. Therefore, the method was changed to an interview format where the participants were asked the questions verbally and the researcher transcribed responses.

One researcher and two social work students with human subjects training interviewed the participants. Attendees were asked to participate in a survey about their drug abuse and the NEP. They were informed that there was no connection between their participation in the survey and their ability to use the NEP. Upon consent, the researcher asked individuals to step away from the other clients and proceeded with the questionnaire. If they declined, the researcher thanked the individuals for their time.

All information from the questionnaires was entered into SPSS version 20 (IBM Corp., Armonk, NY) for analysis. Each questionnaire was assigned a unique identifying number to ensure anonymity. Descriptive statistics were used to summarize the data. Subgroups for analysis were created based on gender and risk status. Risk status was positive if the respondent reported being positive for either HIV or HCV. A chi-squared analysis was used to compare categorical demographic characteristics by subgroup. Age was not normally distributed and a Wilcoxon Rank Sum Score test was used to compare risk groups. The Mid-P Exact method was used to create 95% confidence intervals with OpenEpi (Open Source Epidemiologic Statistics for Public Health version 2.3.1) for the proportions of reported needle use behaviors before and after using the NEP by subgroups.

RESULTS

A total of 106 persons participated: 72 males (68%) and 34 females (32%) (see Table 1). The median age was 46 years, with the majority of participants aged 34-54. Most individuals (93%) gained knowledge of the program from a friend. Sixty-five percent had attended the exchange for more than one year. Seventy percent, exchanged needles at least every 2 weeks. The percent of participants bringing 1-50 needles to the exchange was 52%, while 46% brought >50 needles. Most individuals (52%) exchanged needles for their own use, while 48% exchanged for more than one person. Of those who injected only a single drug, 53% injected heroin, 26% injected methamphetamine, and 2% injected cocaine. For the other 19% who injected more than one drug, heroin and methamphetamine was the most common combination. Counting both single users and multiple users, 69% used heroin, 39% used methamphetamine, and 8% used cocaine. When asked their status, 5% indicated they had tested positive for HIV, and 40% stated they had tested positive for HCV. Only 3% reported being positive for both.

Sharing needles

Individuals were asked about their needle exchange behavior prior to and while attending the NEP. Forty-three percent denied sharing needles prior to or after attending the NEP (see Table 2). Forty-eight percent (95% CI; 39% – 58%) reported sharing needles before attending the NEP, but stopped sharing needles after attending; this showed a substantial decrease in self-reported needle sharing behavior after attending the NEP. There was no

difference in needle sharing behavior modification based on reported HIV or HCV status or gender.

Re-using needles

Participants were asked if they re-used needles before or after attending the NEP. Eighteen percent (95% CI; 12% - 26%) of individuals who re-used needles before attending the NEP did not re-use needles after attending the NEP. Participants who were not HIV or HCV infected were even more likely to reduce needle re-use, but there was no gender difference.

Infection control

Participants were asked about their use of risk reduction infection control techniques during drug use. Of the 106 respondents, 83% used alcohol wipes, 67% used cookers or cottons, 55% used soap and water, and 91% used sterile syringes.

DISCUSSION

Respondents who attended the NEP reported less risky IDU behavior: close to 50% no longer shared needles after attending the NEP, 70% obtained clean needles at least every two weeks, and most reported using clean paraphernalia. Our needle sharing findings differ from those of Bluthenthal et al. (2004) who found that individuals altered their behavior regarding re-use of needles but not the sharing of needles. The proportion who reported sharing needles before attending the NEP (55%) was also much higher than the 13% of IDUs who reported sharing needles in the National Survey on Drug Use and Health (SAMSHA, 2013).

One might expect needle sharing percentages to differ by HIV-HCV positive status, but we did not find this to be the case. NEP participants who were younger and regular attendees were more likely to be HIV-HCV negative than their HIV-HCV positive counterparts, but this could reflect lead-time bias or other confounding variables that were not measured, such as the HIV-HCV status of participants' friends and associates. Further study is needed to determine the interaction between IDU, HIV-HCV status, NEP participation, and needle sharing and re-use behavior.

The impact of the NEP on re-use of needles was not as dramatic as needle sharing, with only 18% no longer re-using needles after attending the NEP, and over 60% continuing to re-use needles. This suggests further research and education may be needed regarding the dangers of introducing skin-borne infections such as methicillin-resistant *Staphylococcus aureus*, and the increased potential for transmission of blood-borne pathogens if used needles are then shared.

Over 90% of respondents reported hearing about the NEP through friends. With liberalization of needle exchange laws there are potentially more opportunities to launch traditional public health education campaigns now, compared to when NEPs were illegal (Alexander, 2011).

The demographics of respondents did not fit the stereotype of IDUs as young male heroin addicts. Close to one-third were female, 50% were between 34-54 years old, and 11% were

over 60 years old. Although 70% were heroin users, close to 30% reported injecting methamphetamine and 4% reported using cocaine. Nearly 70% said they attended the NEP every 2 weeks or more, suggesting a degree of stability that could be a starting point for public interventions.

Participants were evenly split between those exchanging for themselves and those exchanging for others. The number exchanging 1-50 needles and those exchanging 51-100 needles was also evenly split. Although participants were not asked about frequency of injection drug use, the number of needles exchanged suggests participants were injecting two to four times per day, assuming the needles were not being diverted.

This NEP survey focused on individual participants, not on the NEP itself. Further study would be beneficial to better understand both the total number of IDUs and the proportion in the community who avail themselves of the NEP. The number of needles exchanged at the Fresno NEP suggests that the 400,000 IDUs in America found by the National Survey on Drug Use and Health may underestimate the actual number of IDUs in our country (SAMSHA, 2013).

Our findings have several limitations. These data were gathered from voluntary participants who gave self-reported information. No efforts were made to verify the information they provided in order to protect their confidentiality, particularly because attendance at the NEP was illegal during the study period. We did not measure the validity and reliability of the information. Another limitation was the relatively small sample size of 106.

In summary, a convenience sample of respondents reported significant decreases in high risk IDU behaviors, including sharing of needles and to a lesser extent re-using of needles. They also reported frequent use of clean paraphernalia. HIV or HCV status was not associated with needle sharing behavior. This study demonstrated that IDUs are willing to use clean needles when they are available and available clean needles reduce infections related to sharing behaviors; therefore, NEPs are a valid public health tool for reducing HIV and HCV infection.

IMPLICATIONS FOR THE INTERSECTION OF HEALTH AND SOCIAL WORK PRACTICE

Early harm reduction interventions emerged out of the AIDS epidemic of the 1980s and were pioneered by community activists. Needle exchange programs urgently sought to address the public health concerns of infectious disease, such as HIV and HCV, by ensuring that every drug user had a clean needle for each injection. Evidence shows, however, that NEPs often provide much more than simply a syringe. Outreach by trusted staff can translate into support for finding housing, counseling, or starting on the path of recovery. NEPs are uniquely low threshold sites to reach out to the most vulnerable in society.

The findings of this small study in Fresno has social work practice implications, particularly in a time when opiate addiction is rapidly rising. The fact that so many people found the needle exchange program through word-of-mouth indicates that these types of interventions

have great potential to tap into the networks of marginalized people with a variety of needs. Collaboration between social and health outreach professionals at these types of sites could provide important frontline assistance to people excluded from mainstream office-based services. Informants in the study indicated behavioral change resulting from their participation in the Fresno NEP. This shows that users are indeed interested in finding and using tools to enhance their safety and wellness. Social work professionals could be an important part of multi-professional community-based teams to develop interventions to empower NEP users to deal with a range of issues from infectious disease prevention to intimate partner violence to homelessness to mental health issues. Social workers are professionally and ethically committed to advocacy, a role which they could use to great effect in working with this already marginalized population.

There have been limited studies about the role of social work in harm reduction interventions (Brocato & Wagner, 2003). As many NEPs are constructed solely as public health interventions or unofficial community outreach, social work sometimes struggles to find a role. The ban on federal funding and complex variety of laws and regulations on needle exchange has hindered the development of consistent social work efforts to enhance access to services. Moreover, harm reduction is often minimally discussed in social work education as the topic of addiction is generally framed through the abstinence or recovery model. However, as a social justice profession committed to ethical advocacy for human rights, social work belongs together with public health at the forefront of harm reduction activities that provide nonjudgmental, low threshold, and participant-centered support and empowerment.

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Table 1**Demographics by Risk Status**

Characteristic	Entire sample	HIV+ and/or HCV+	No reported HIV or HCV	p-value
Sample size	106	44	62	
Gender (%)				0.08
Female	32	23	39	
Male	68	77	61	
Knowledge of Program (%)				>0.999 ^a
Friend	92	93	92	
Hospital/Medical Office	5	2	6	
Police	1	2	0	
Other	2	2	2	
Age, yrs (median, Q1 – Q3)	46 (34 – 54)	51 (46 – 58)	38.5 (27 – 51)	<0.001
Length of time using NEP (%)				0.03
1 yr	35	23	44	
> 1 yr	65	77	56	
How often attend NEP (%)				0.03 ^b
At least every 2 weeks	70	59	77	
Once a month	29	41	21	
No answer	1	0	2	
Number of needles collected (%)				0.37 ^b
50	52	48	55	
>50	46	52	42	
No answer	2	0	3	
Exchanged for (%)				0.95 ^c
Self	52	52	52	
2 people	25	25	26	
3-5 people	20	20	19	
>5 people	3	2	3	
Drugs Used (%)				0.17 ^d
Heroin alone	53	64	45	
Methamphetamine alone	26	20	31	
Other single drug	3	2	3	
2 drug combination	13	9	16	
3-5 drug combination	5	5	5	

Note. Q1 is the value at the 25th percentile. Q3 is the value at the 75th percentile. HIV is human immunodeficiency virus. HCV is hepatitis C virus. + is a self-reported positive status for a disease.

^a Compared 'Friend' to all other categories combined.

^b Did not include 'No Answer' values in test.

^c Compared 'Self' to all other categories combined.

^d Compared 'Heroin alone' to 'Methamphetamine alone' to all other categories combined.

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Table 2

Needle Use Behavior by Risk Status

Shared Needle use ^a	Entire Sample	HIV+ and/or HCV+	No reported HIV or HCV
Never shared (before or after) (%; 95% CI)	43 (34 - 53)	33 (20 - 48)	51 (38 - 63)
Shared before do not share now (%; 95% CI)	48 (39 - 58)	56 (41 - 70)	43 (31 - 55)
Did not share before but share now (%; 95% CI)	2 (0 - 6)	0 (0 - 7)	3 (1 - 10)
Shared before and now (%; 95% CI)	7 (3 - 13)	12 (4 - 24)	3 (1 - 10)
<i>Needle Re-use^b</i>			
Does not re-use (before or after) (%; 95% CI)	14 (9 - 22)	9 (3 - 20)	18 (10 - 29)
Re-used before do not re-use now (%; 95% CI)	18 (12 - 26)	23 (12 - 37)	15 (7 - 25)
Did not re-use before but re-use now (%; 95% CI)	6 (2 - 12)	5 (1 - 14)	7 (2 - 15)
Re-used before and now (%; 95% CI)	62 (52 - 71)	64 (49 - 77)	61 (48 - 72)

Note. CI is confidence interval. HIV is human immunodeficiency virus. HCV is hepatitis C virus. + is a self-reported positive status for a disease.

^aEntire sample size 104; HIV+ and/or HCV+ sample size 43; No reported HIV or HCV sample size 61.

^bEntire sample size 105; HIV+ and/or HCV+ sample size 44; No reported HIV or HCV sample size 61.