ASSESSMENT OF RISK BEHAVIOUR AND HIV PREVALENCE AMONG PEOPLE WHO INJECT DRUGS IN NAIROBI COUNTY, KENYA

By

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I wish to dedicate this work to the many Kenyans who have directly or indirectly experienced the debilitating and degrading effects of injecting drugs. I also dedicate this work to my departed parents who would have been very proud, and to my wife Vivienne who had to bear with late nights and long periods of absence. Finally, I wish to appreciate my sons Ethan and Daniel and daughter Michelle who were very supportive with words of encouragement and in their private prayers throughout this project.

All praise and glory be to the Lord God Almighty, the King of Kings and the Lord of Lords, who gives wisdom, strength, favour and enablement to those whom He loves.

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ABBREVIATION/ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
ART	Antiretroviral therapy
BCC	Behavioral Change Communication
CBO	Community Based Organisation
CSDH	Commission for Social Determinants of Health
DIC	Drop In Centre
DU	Drug Users
FBO	Faith Based Organisation
FP	Family Planning
GBV	Gender based Violence
GNP +	The Global Network of People living with HIV/AIDS
GUD	Genital Ulcer Disease
HBC	Home Based Care
HCC	Hepatocellular carcinoma
HCT/HTC	HIV Counseling and testing
HCV& HBV	Hepatitis B and C Virus
HIV	Human Immunodeficiency Virus
ICD	International Classification of Diseases and Health Problems
ICW	The International Community of Women Living with HIV and AIDS
IDU	Injecting Drug User
IEC	Information, Education and Communication

KMOT	Kenya Modes of Transmission Study
KNASP	Kenyan National AIDS Strategic Plan
M&E	Monitoring and Evaluation
MARPs	Most At Risk Persons
MAT	Medication Assisted Therapy
MLR	Multivariate Logistic Regression
MS	Microsoft (Access, Excel)
MSM	Men who have Sex with Men
NACADA	National Association for Control and Abuse of Drugs and Alcohol
NACC	National AIDS Control Council
NASCOP	National AIDS and STI Control Programme
NGO	Non Governmental Organisation
NSP	Needle and Syringe Programmes
OB/GYN	Obstetrics and Gynecology
OPD	Outpatient department
OVC	Orphans and Vulnerable Children
PEP	Post Exposure Prophylaxis
PLHA	People Living with HIV/AIDS
PMTCT	Prevention of Mother Transmission to Child Control Therapy
PWID	People Who Inject Drugs
PWUD	People Who Use Drugs
Ref.	Refer

RSA	Rapid Situational Assessment
SAS	Statistical Analyses Software
TB	Tuberculosis
UNAIDS	Joint United Nations Programme for HIV & AIDS
UNGASS	United Nations General Assembly Special Session on HIV & AIDS
UNODC	United nations Office on Drugs and Crime
VCT	Voluntary Counseling and Testing
WHO	World Health Organisation

OPERATIONAL DEFINITION OF TERMS

Detoxification	Detoxification refers to the treatment of withdrawal from the opioid or sedatives/Hypnotic over a short period of time by the use of the alternate drug that alleviates the distress in decreasing doses. The objective of detoxification is to facilitate the patients transitions to a drug free state
Drug Treatment	Drug treatment aims to improve the health of drug users by providing treatment for their addiction as well as for their general health. The time out from continuous drug use while in treatment gives users space to deal with other issues in their lives and creates a breathing space from the daily cycle of buying and using drugs. Agonist pharmacotherapy (OST or MAT) involves treating drug-dependent people with a drug that has a similar action to the drug on which they are dependent, thereby preventing a withdrawal syndrome and craving.
Harm Reduction	Harm reduction refers to policies, programs and practices that aim to reduce the harms associated with the use of psychoactive drugs in people unable or unwilling to stop. The defining features are the focus on the prevention of harm, rather than primarily on the prevention of drug use itself, and the focus on people who continue to use drugs.
Injecting Drug User	Persons who is using narcotic drugs through injecting mode in the last one year.
Medically Assisted Therapy (MAT)	See Opioid Substitution Therapy below
Most at Risk Population	Persons, who are at the risk of contracting HIV, due to risk behaviours (unprotected non-regular-partner sex, sharing injecting equipment) that these groups are exposed to or engage in. These comprise of four MARPs have been prioritized. These are Female Sex Workers (FSW) and their Clients, Male having Sex with Male (MSM), and Injecting Drug Users (IDUs).
Needle and Syringe Program (NSP)	NSP is one of the critical components of Harm Reduction program. NSP involves distribution of sterile and disposable syringes and needles in adequate quantity to the injecting drug users. This should be done on a regular basis as a support in injecting drugs and as a way of preventing HIV infection by minimizing sharing of needles.
Opioid Substitution Therapy (OST)	Substitution therapy (“agonist pharmacotherapy”, “agonist replacement therapy”, “agonist-assisted therapy”) is defined as the administration, under medical supervision, of a prescribed psychoactive substance,

	pharmacologically related to the one producing dependence, to people with substance dependence, for achieving defined treatment objectives.
Outreach	Outreach is one of the key delivery mechanisms within targeted intervention, focused on providing information and services (including BCC) at the convenience of the MARPs – that is reaching out to location where MARPs can be reached and in the timings best suitable for them. Outreach is a process and not a one-time activity. Outreach consists of registration, repeat contact, risk assessment and risk reduction inputs through one to one and one to group BCC sessions, Referral for VCT, health care (STI) and to the drop in centre, distribution of condoms and sterile injecting equipments.
Quota	This is the maximum number of recruits any one participant can recruit. This is done so as to reduce respondent duplication and impersonation and to discourage recruiters from monopolizing recruitment rights.
Risk Reduction	It is a process of decreasing a MARPs risk behaviors from a previous stage of higher/more risks to a stage of lower/reduced risk of contracting HIV infection. It is done using counseling/interpersonal communication/behavior change communication. The intervention is person-centered. Risk reduction can also be accomplished by resetting social or community norms (e.g. "normalizing" condom use, or regular usage of health services). The process of resetting social and/or community norms can occur accidentally, but can also be done through specific outreach and communication strategies.
Seed	In Respondent Driven Sampling method, the set of initial subjects with whom the sampling process begins with, are referred to as 'seed'. The seeds expand the chain of referrals.
Targeted Intervention	Targeted Intervention is a cost effective HIV prevention model for reaching people who are most at risk of HIV infection. The program provide prevention services that include information focusing on behavior change (through educative sessions, peer education, counseling etc), treatment services for STIs, Condom services or Needles and Syringe program for IDUs and facilitation of enabling environment.

ABSTRACT

Kenya is experiencing a mixed HIV epidemic with characteristics of both 'generalised' epidemic among the mainstream population, and a 'concentrated' epidemic among specific Most at Risk Populations including Injecting Drug Users (IDUs). The KNASP 2009-2013 recognizes that this group has a high potential to transmit HIV and present a lot of challenges for effective intervention because of overall lack of data on how to access them, their numbers and distribution. The objectives of the study were to document Injecting Drug Use Practices, assess the behaviours that predispose IDUs to risk of HIV infection, estimate the HIV prevalence among IDUs and determine the services available for HIV and AIDS prevention, care and treatment among IDUs in Nairobi county. Using a cross-sectional survey design on IDUs who had been injecting drugs for the last twelve months in Nairobi. The study used Respondent Driven Sampling methodology for its proven effectiveness in sampling hidden populations. Key Informant Interviews, Focus Group discussions and a structured questionnaire were used for data collection. The study was approved by the KNH/UoN Ethical Review Board. The study comprised 344 (322 men, 22 women) respondents from the eastern and western regions of Nairobi. Written and verbal informed consent was voluntary provided by all respondents. RDSAT software, MS Access, MS Excel and SAS were used for data management, presentation and statistical analyses. Statistical methodology comprised descriptive statistics, cross tabulations and Multivariate Logistic Regression on HIV status with other predictor variables. Chi squared tests were used to test significance at 0.05. The age range for study respondents were from 17 to 55 years. Although awareness of HIV was universal, their knowledge of HIV transmission and prevention ranged from limited and severely limited. The HIV prevalence for IDUs was determined to be 18.3% with women exhibiting higher prevalence (37%) compared to men (17%). Injecting drug use commenced early from 11 years and the age group exhibiting the highest HIV prevalence ranged between 15-29 years among both genders. Residential location (χ^2 =19.2, 2df, p<0.0088) and sex of respondent (χ^2 =25.1, 1df, p<0.0001) were found to be highly associated with HIV status. Significant behavioral variables were age at first drug injection (χ^2 =11.4, 4df, p<0.04), Reason for starting to inject - a better high (χ^2 =5.0, 1df, p<0.02), sharing needles and syringes (χ^2 =8.9, 2df, p<0.01), Injecting with HIV positive person (χ^2 =18.3, 2df, p<0.0001), Injecting with a female injector (χ^2 =5.8, 2df, p<0.04). Significant risky sexual behaviours comprised Unprotected sex with multiple partners (χ^2 =9.2, 3df, p<0.03), casual sex with HIV positive partners (χ^2 =6.3, 2df, p<0.04) and transactional sex (χ^2 =20.6, 6df, p<0.0021). The study found that specialised health and support services for IDUs were minimal or non-existent. HIV prevention, health management and drug treatment services for IDUs do not exist and may be contributory to the high HIV risk being experienced by this group. Due to risky injecting and sexual behaviours, HIV prevalence for IDUs was three times the national average. The findings in this study showed extensive vulnerability of IDUs to HIV infection and identified lack of knowledge and awareness of HIV transmission and prevention; lack of IDU friendly health and drug treatment services, antagonistic national policies and negative societal attitudes were the key associative factors. Based on this, the study recommends urgent, comprehensive and targeted intervention programs comprising of contextualized IEC and BCC interventions on risks associated with drug use; provision of free injecting equipment; national campaign to in school and out of school youths at risk of drug use; provision of free, convenient and IDU friendly medical treatment and drug treatment for IDU; HTC and ART treatment.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Injecting Drug Users (IDUs) are persons who use syringes to intravenously inject drugs direct into their blood veins. Sharing of contaminated needles and other drug paraphernalia is a particularly efficient way of exchanging blood and of transmitting the HIV virus from infected to uninfected users.

Drug use and its consequences in sub-Saharan Africa started receiving attention as early as 1999 in a publication by the United Nations Office on Drugs and Crime (UNODC). The UNODC report "The Drug Nexus in Africa" documented trends in drug production, trafficking to and through sub-Saharan Africa, and the consumption of cannabis, heroin, cocaine, and other drugs, suggesting that illicit drug use in sub-Saharan Africa was not a "minor" concern as was often assumed (UNODDCP, 1999). Following the publication of the UNODC report on drugs in Africa in 1999, a series of meetings were convened commencing in 2000, to review HIV in drug-using populations in sub-Saharan Africa. The link between drug use and HIV was formally discussed at the Third Annual Meeting of the Global Research Network for the Primary Prevention of HIV/AIDS in Drug-Using Populations, Durban (NIDA 2000). In 2001, the UNODC and UNAIDS held the first joint workshop on drug abuse and HIV/AIDS in Africa in Sharm-el-Sheik, Egypt. Despite limited data available to characterize HIV and injection drug users (IDUs) in sub-Saharan Africa, there were reports of the expansion of both injection and non-injection drug use and the emergence of HIV among drug-using populations. Since that

time, the literature on drugs and HIV in sub-Saharan Africa has expanded, although they are still limited (Needle R. K., 2006).

In 2004, Aceijas *et al.*, through review of literature, documented injection drug use in 130 countries and HIV among IDUs in 78 countries. Nine of these were sub-Saharan Africa countries (Côte d'Ivoire, Ghana, Guinea, Mauritius, Niger, Nigeria, Somalia, South Africa, and Zambia). They found that only South Africa, reported on HIV prevalence among IDUs. The prevalence was 2% in a study done in the early 1990s (Aceijas, Stimson, Hickman, & Rhodes, 2004). In 2005, a review of published and unpublished data and reports found evidence for injection drug use in 23 sub-Saharan African countries and HIV among IDUs in 5 of these countries (Needle, Hegle, & & Jones, 2005). Global estimates indicate that 13 million people inject drugs, and at least 10% of all new HIV infections occur among IDUs (Aceijas, Stimson, Hickman, & Rhodes, 2004). In Eastern Europe, Central Asia and a number of countries in the Middle East, North Africa, South and Southeast Asia and Latin America, injection drug use is the major mode of HIV transmission (UNAIDS, 2005). Sub-Saharan Africa has become increasingly vulnerable to illicit drug production, trafficking, and consumption.

Historically, a number of sub-Saharan African countries were sources for large scale trafficking of indigenously cultivated cannabis (Affinnih Y. , 1999). Heroin, which is not indigenous to sub-Saharan Africa, is, in increasing volumes, shipped through Africa en route to European and North American drug markets (UNDCP, 1999). In addition to heroin shipments that originate in Asia, cocaine shipments that originate in South

Americaweretrafficked through South, West and Central Africa en route to Europe (UNODC, 2006).

The expansion of drug trafficking in the region can be attributed to several factors, including international air and sea connections, international trade links, and inadequate law enforcement. Lax border controls and a weak criminal justice system, along with modern telecommunications and banking systems, and international trade links with South America, North America, Europe and Asia all contribute to an increase in the transhipment of drugs, both heroin and cocaine, through the region. This has resulted in an expansion of the local drug market and consumption of a greater variety of drugs, including heroin from Asia and cocaine from South America. Trafficking and transport of drugs is not limited to sea and airports; drugswerealso shipped overland and along interior transport corridors, which introduces drugs into new geographic areas, expands domestic markets, and can introduce HIV into new communities and populations along transport routes (Parry & Pithey, 2006). This has been shown in Burma, China, India and Vietnam, where molecular epidemiology has been used to document the spread of particular sub-types of HIV along drug trafficking routes (Beyrer, *et al*., 2000).

Heroin is the established primary drug used by both IDUs and non-injection drug users (NIDUs) in Kenya, as it is in Mauritius and Tanzania (Abdool et al., 2006). Initially, when heroin was introduced to sub-Saharan Africa in the 1980s, it was more commonly available as “brown sugar,” which is its less refined form and was also relatively inexpensive at the time. As the price of heroin increased, ‘white crest’ which is a more

refined form of heroin become available and it required to be injected (Beckerleg and Hundt, 2004). Injection was found to be more cost effective and efficient way of delivering the drug into the body.

1.2 Statement of the Problem

Whereas limited studies analyzing IDU and its linkages to HIV and AIDS have been undertaken in Kenya, they do not provide sufficient updated information necessary to inform an effective action plan for IDU engagement in the national response to HIV and AIDS. Drug treatment in Kenya is mainly done by private sector and NGOs with a few government health facilities. This includes both inpatient and outpatient treatment, rehabilitation residential and outpatient services.

It is not clear how the size of the global population of IDUs has changed over time. The first estimation exercise done in 2004 brought the potential size of the global population of IDUs to greater international attention. However, HIV prevalence among IDU has been reported at 36.3% in Nairobi (Odek-Ogunde, Okoth, Lore, & Owiti, 2004), making them a group that needs specific attention for programming. Determining the size of IDU populations is challenging due to the hidden nature of this group and the criminalization of drug use. The most recent national data indicated an estimated 18,000 to 30,000 IDU in Kenya (Needle & Zhao, 2010).

Few countries have produced estimates in different time periods to allow for trends to be observed. Injecting drug use may increase or emerge in countries where it is not already established (WHO; UNODC; UNAIDS, 2009). There is cause for concern about this in

some regions such as those without adequate resources to deal with the problem. Little is known about injecting drug use in sub-Saharan Africa, but a constellation of risk factors exist for the development of injecting drug use, as has occurred in other regions such as central Asia (Renton, Gzirishvilli, Gotsadze, & Godinho, 2006). First, injecting drug use is already well-established in a number of countries (Kenya, Mauritius, Nigeria, South Africa, and Tanzania). Second, people are experiencing harsh socioeconomic conditions and most are exposed to conflict situations. Thirdly the region is increasingly being used for transit of illicit drugs into Europe. Because sub-Saharan Africa is a region with particularly high HIV-1 prevalence and a range of social and biological risk factors (Buve, Bishikwabo-Nsarhaza, & Mutangadura, 2002), the potential emergence of injecting drug use as an additional route of HIV transmission warrants close and serious attention.

The dynamics of the spread of HIV infection are significant: HIV was not identified among people who inject drugs in Estonia (Ball, Aggleton, Jenkins, & Malcolm, 2007); by contrast, a more recent estimate now suggests that the prevalence of HIV infection had reached 72% in one sample of IDUs (EMCDDA, 2007). Australia and New Zealand have maintained very low levels of HIV infection (University of New South Wales, 2008) despite a higher prevalence of injecting than in some other countries; this difference has been attributed to geographic isolation, as well as the swift introduction of needle and syringe programmes when HIV infection was first noted in the 1980s (Sendziuk, 2007).

There exists a lack of consistency in definitions of IDUs in prevalence estimation studies worldwide, making comparisons between countries and studies difficult. In many instances, data are presented in the literature without qualification of how injecting drug use has been defined. Furthermore, populations of IDUs are typically hard to access, and measuring their size is challenging. Many different methods to measure this behaviour have been reported in the literature, some of which may not provide good prevalence estimates. For some countries, the only measure available is the number of registered IDUs.

Registration of drug users is a common practice in many countries but the nature of registration can range from treatment registers to arrest counts; however only a proportion of IDUs would ever be registered. Among some countries, such as Canada, no indirect prevalence estimates are available, and estimates of lifetime injecting derived from household surveys are the normal mode of estimation. Extrapolation of national estimates from city or regional estimates is problematic because geographic variation in the extent of drug injection might occur within a country. This problem is also noted for estimated HIV prevalence in a number of countries, which can vary substantially from site to site as reported in Russia and India. To derive an accurate national estimate based on samples with limited geographic coverage of a country is thus extremely difficult. Lastly, in many countries, data on HIV prevalence among people who inject drugs were gathered by sentinel surveillance methods. These methods have limitations. Treatment centers are the most common access points, and there are limitations with a reliance on

this approach; respondent-driven sampling might be a better method for monitoring HIV prevalence in this population (Magnani, Sabin, Saidel, & Heckathorn, 2005).

There is a clear mandate to invest in HIV prevention activities such as needle and syringe programmes and opioid substitution treatment and to provide treatment and care for those who are living with HIV/AIDS (Calabria B, 2008). The magnitude of the risk has not been met with an equally concerted investment in research to accurately quantify the problem. Such investment could currently be beyond the capacity of some countries; guidelines for the conduct of good quality research in this area could assist such countries, with a focus on indirect estimation of prevalence and regular sentinel HIV surveillance. Developing research capacity within countries is an important priority: only then can efforts to prevent HIV infection among this population be targeted appropriately to effectively and comprehensively reduce the transmission of HIV and other harms related to drug injecting, and to assess the outcomes of these interventions (UN, 2001).

According to the Kenya National AIDS Strategic Plan (KNASP) III, 2009/10-2012/13, Kenya is experiencing a mixed HIV epidemic(s) with characteristics of both a 'generalized' epidemic among the mainstream population, and a 'concentrated' epidemic among specific Most at Risk Populations (MARPs) including IDUs. NACC proposes drivers of HIV to be addressed through a more gender and MARPS sensitive service delivery. This is also in line with the Joint UN Programme on AIDS 2007-2012, which amongst other activities aims to deliver evidence-based HIV prevention response

among MARPs, including, IDUs, Commercial Sex Workers (CSWs), and Men Having Sex with Men (MSMs) (NACC, 2009).

The KNASP III, 2009/10-2012/13 recognizes that although the number of IDUs in the population is relatively low, it is a group with a high potential to transmit the disease, but which presents a lot of challenges for effective intervention such as overall lack of data on their numbers and distribution; their hidden and often criminal nature of injecting drug use, marginalization and intolerance from even among professional planners and policy makers.

The second Kenya National HIV prevention summit 2008 report recommended conducting of evaluations and more research on the prevalence, behaviour, cultural issues requiring behaviour change and utilization of services among IDUs and other MARPs.

1.3 Research Questions

i. What is the Injecting Drug Use Practice in Nairobi County
ii. What are the behaviours that predispose IDUs in Nairobi County to risk of HIV infection;
iii. What is the HIV prevalence among IDUs in Nairobi County;
iv. What services are available for HIV and AIDS prevention, care and treatment among IDUs in Nairobi County

1.4 Research Hypothesis

Null Hypothesis

Infection of IDUs by Human Immuno-Deficiency Virus (HIV) is not associated with any kind of risky behavior or demographic characteristics.

Alternative Hypothesis

Infection of IDUs by Human Immuno-Deficiency Virus (HIV) is associated with risky behavior and demographic characteristics.

1.5 Objectives

1.5.1 General Objective

To assess Injecting Drug Use Practice, to identify the behaviours that place them at risk of infection and determine the prevalence of HIV among IDU population in Nairobi.

1.5.2 Specific Objectives

The specific objectives of the study are the following:

i. Document Injecting Drug Use Practice

ii. To assess behaviours that predispose IDUs to risk of HIV infection;

iii. To estimate the HIV prevalence among IDUs in the general population;

iv. To determine services available for HIV and AIDS prevention, care and treatment among IDUs in the general population;

1.6 Justification

Beyond the obvious physical risks associated with drug injection, drug users may also be vulnerable to HIV because of their social and legal status. Drug users often live on the fringes of society, away from family and friends and beyond the reach of health, education or treatment programmes; many drug users simply do not see themselves as vulnerable to HIV infection and do not even bother going to test for the virus. The sharing of syringes by IDUs is a major driver of the AIDS pandemic and the major cause of HIV transmission in Eastern Europe and Central Asia, where it accounts for more than 80 percent of all HIV cases.

Injecting Drug Use is also the entry point for HIV epidemics in a wide range of countries in the Middle East, North Africa, South and South-East Asia and Latin America. Health practitioners in sub-Saharan African countries, such as South Africa and Kenya, are increasingly concerned over rising HIV prevalence rates among IDUs. Africa is playing an ever more significant role in the trafficking and transit of drugs, like heroin and cocaine, and the number of IDUs is growing in tandem. Worryingly, education and treatment programmes reach only about 5 percent of the global IDU population (WHO; UNODC; UNAIDS, 2009). Use of contaminated equipment during injecting drug use represents an especially efficient means of HIV transmission, often leading to the rapid spread of HIV infection in localized networks of drug users.

UNAIDS has estimated that injecting drug use accounts for around one-third of new HIV infections outside of sub-Saharan Africa. At the end of 2003, the global number of

IDUs was estimated at 13.2 million, with 8.8 million in Eastern Europe and Central, South and South-East Asia. The world's highest rates of HIV infection among IDUs are found in Asia - by 1999, they made up about 77 percent of HIV infections in Malaysia and 69 percent in China (WHO; UNODC; UNAIDS, 2009).

While the risk of HIV is highest among the networks of drug users, evidence show that IDUs contribute to the spread of HIV far beyond the circles of those who inject. It is well documented that people who have sex with an injection drug user also are at risk of infection through sexual contact, children of those born to IDUs also may become infected (Degenhardt & Hall, 2012).

According to a report by the Global Network of People living with HIV and AIDS, HIV transmission through injecting drug use has been an increasing public health problem in many countries and regions more than two decades after the AIDS epidemic was first recognized. Globally it is estimated that there are 13.2 million IDUs worldwide and the bulk (80%) of them live in developing and transitional countries (GNP+ & ICW, 2005).

In Kenya, prioritization of IDUs has been supported through Joint AIDS Programme Review 2008, National HIV Prevention Summit 2008, National AIDS Strategic Plan and the Kenya Joint UN Programme of Support on AIDS (2007-2012) to address comprehensive HIV prevention and care services among IDUs. The inclusion of IDUs in the United Nations General Assembly Special Session on HIV and AIDS (UNGASS) country review has been supported. The Kenya National HIV prevention summit 2008

report recommended conducting of evaluations and more research on the prevalence, behaviour, cultural issues requiring behaviour change and utilization of services among IDUs and other MARPs (NACC, 2008).

1.7 Significance and Anticipated Output

The second KNASP III and the Kenya National HIV prevention summit report (NACC, 2008) recommended conducting of evaluations and more research on the prevalence, behaviour, cultural issues requiring behaviour change and utilization of services among IDUs and other MARPs. This study documented the existing drug treatment centres in Kenya, the services they provide and gaps in the prevention, treatment and care of IDUs with/without HIV.

1.8 Conceptual/Theoretical Framework

The following conceptual model is an adaption of the model developed by the Commission for Social Determinants of Health (CSDH) (Figure 1.1). CSDH proposes that health outcomes are determined by two major components i) Structural Determinants of health inequalities comprising of the socio-political context and the socioeconomic position; and by the ii) intermediary determinants of health comprising mainly of social determinants.

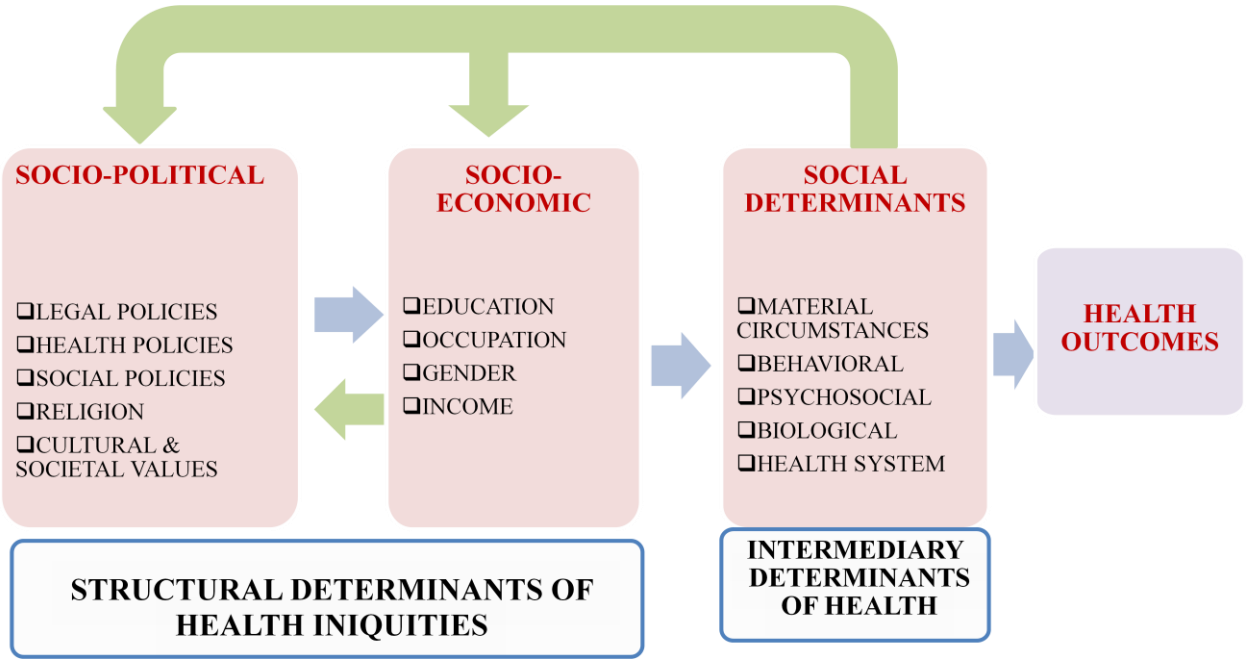


Figure 1.1: Conceptual Framework

Within the structural determinants of health, the socio- political context refers to the spectrum of factors in society that cannot be directly measured at the individual level. 'Context' encompasses a broad set of structural, cultural and functional aspects of a social system which impact on individuals and exert a powerful formative influence on patterns of social stratification and thus on people's health opportunities. Within this context are social and political mechanisms that generate, configure and maintain social hierarchies such as the labor market, educational system, laws, social and health policies, societal and cultural values. Policy choices are reflected in family-friendly labor policies; active employment policies involving training and support; the provision of social safety nets; and the degree to which health and social services and other resources are available to citizens (Raphael, 2006), (Raphael & Bryant, 2006) . The organization of health care is a direct result of policy decisions made by governments

and public policy decisions are driven by political, economic, and social forces. Issues can be categorized in six comprising of legal policies; health policies which determine how health is provided and to whom; social policies affecting labor, social welfare, land and housing distribution; public policy in areas such as education, medical care, water and sanitation; culture and societal values affects the treatment; and epidemiological conditions (Casas). Variables which were used as measures in this study comprised access to health and treatment services, experience of stigma, fear of authorities, contact with law enforcement and confiscation of injecting equipment, and incarceration.

The second aspect within structural determinants of health is the social determinants of health inequities context and refers to people's socioeconomic position, access to material resources, health-promoting resources and exposure to risk factors. Within society, material and other resources are unequally distributed as is portrayed as a system of social stratification or social hierarchy (Giddens, 2000). People attain different positions in the social hierarchy according mainly to their social class, occupational status, educational achievement and income level.

The CSDH framework posits that structural determinants are those that generate or reinforce social stratification in the society and that define individual socioeconomic position. These mechanisms configure the health opportunities of social groups based on their placement within hierarchies of power, prestige and access to resources (economic status). Structural social stratification mechanisms, joined and influenced by institutions and processes in the socioeconomic and political context, are conceptualized as the

social determinants of health inequities (Solar & Irwin, 2007). Major variables used to measure social stratification, comprise of income, education, occupation, habitation, and gender.

The third element is the intermediary determinants which operate through a series of intermediary social factors or social determinants of health. The social determinants of health inequities are causally antecedent to these intermediary determinants, which are linked, to a set of individual-level influences, including health-related behaviors and physiological factors. The intermediary factors flow from an array of underlying social stratification and, determine differences in exposure and vulnerability to health-compromising conditions. The models also emphasizes genetic and biological processes mediating the health effects of social determinants (Graham, 2004). The main categories of intermediary determinants of health are: material circumstances; psychosocial circumstances; behavioral and/or biological factors; and the health system itself as a social determinant. In the context of Injecting Drug Use associated variables comprised Knowledge of HIV transmission and prevention, Access to Health and Drug Treatment, Injecting behaviour, and Sexual Behaviour.

1.9 Study Assumptions and Limitations

Due to the inherent discrimination and social marginalization and discrimination that IDUs face from the general public and the fact of being criminalized by authorities, it was assumed that this did not affect or limit their access to the study sites and bias their responses because of fear.

IDUs are either in a state of intoxication or experiencing withdrawal symptoms, it was assumed that these states did not result in loss in memory or loss and reduction in the quality and reliability of their responses during the interviewing process.

The infection by HIV is not only due to injection with contaminated needles but also from sexual related transmission. Studies have been carried out which indicate that HIV infection risk after injection with an HIV contaminated syringe has been estimated at 0·67% (Baggaley, Boily, White, & Alary, 2006). There are no statistics currently available on the risk of HIV infection from sharing of other drug-use equipment, however the risk is probably comparably lower. The risk of sexual transmission of HIV between HIV-positive IDUs and their sexual partners is much lower at 0·02–0·05% per heterosexual sex act (Marincovich, Castilla, Del Romero, *et. al*;, 2003), (Pedraza, del Romero, Roldán, *et. al*., 1999), (Boily, Baggaley, Wang, *et. al*., 2009); risk during receptive anal intercourse between men can be 0·82% (95% CI 0·24–2·76%) (Vitinghoff, Douglas, Judon, McKiman, MacQueen, & Buchinder, 1999). Although, anal intercourse has a higher probability of infection (0.82%) compared to infection through a contaminated syringe (0.67%) and through heterosexual sex (0.02-0.05%), it can be argued that sharing of syringes carries a probability higher risk because the practice is more regular among IDUs compared to anal sex which is comparably less common.

CHAPTER TWO: LITERATURE REVIEW

2.1 Global trends in Injecting Drug Use

Injecting drug use has become a major public health problem throughout the world. It has played a critical role in the spread of HIV infection and other blood borne infections such as hepatitis B and C, malaria and tetanus. Injecting drug use can also result in other health complications, including drug overdose and sexually transmitted infections such as syphilis among users who exchange sex to obtain the drug (WHO, 2005).

In 2004, 5 million people became newly infected with HIV, and more than 3 million people died from AIDS. By the end of 2004, an estimated 40 million people worldwide were living with HIV. Since the beginning of the epidemic, close to 70 million people have been infected, and it has become the fourth largest killer globally (UNAIDS, 2004). Most people living with HIV/AIDS are believed to be between 15 and 24 years old, and most are unaware that they carry the virus (UNAIDS, 2002) .

Injecting drug use continues to spread around the world regardless of religious persuasion, stage of economic development, social class, environment (urban or rural) or the political system a country adopts. Where injecting drug use occurs, HIV infection associated with the sharing of contaminated injecting equipment quickly follows. Needle et al. (2000) estimated that the proportion of HIV infections caused by injecting drug use was 50–90% in Eastern Europe, central Asia and eastern Asia and the Pacific, 25–50% in North America and western Europe, 10–25% in Latin America; 1–10% in southern and south-eastern Asia; and less than 1% in sub-Saharan Africa.

In 1992, 80 countries in the world reported injecting drug use, with 52 of these reporting HIV infection linked to drug injecting. By 1999, reports came from 134 countries and territories and, of these, at least 114 had identified HIV infection among IDUs (Stimson & Choopanya, 1998).

HIV infection spreads from drug distribution epicenters and along distribution routes. This happened in the United States during the early 1980s (from New York), and a similar pattern can be seen in southern Europe (northern Italy, southern France, Austria, Switzerland and the former Yugoslavia) and in parts of south-eastern Asia (Myanmar, China, Thailand and northern India). Drug distribution routes often no longer follow direct geographical patterns. In Nigeria (western Africa), a spillover for local consumption of illicit drugs being trafficked to Europe, coupled with the emergence of an IDU community, gave rise to HIV transmission among IDUs.

2.2 Injecting Drug Use and HIV infection

Nearly one-third of new HIV infections, outside sub-Saharan Africa, are due to injecting drug use. There is considerable regional variation in the proportion of HIV infections that are attributed to injecting drug use (UNAIDS, 2006a). Factors that are thought to underlie this regional variability include differences in the prevalence of HIV amongst the population of IDUs, the extent of programmes providing counseling in harm reduction and clean injecting equipment, and the availability of treatment for IDUs (NIDA, 2002). There is evidence that, with attention to these factors, it is possible to

contain or even reverse the epidemic of HIV infection related to injecting drug use (NIDA, 2002).

Since sharing or use of contaminated syringes and needles is a very efficient means of transmitting HIV, it can spread very rapidly amongst IDUs (Des Jarlais Friedman, Woods, & Milliken, 1992), (Stimson, 1995). Additionally there is even a wider spreading to the general population through sexual contact with people who are not drug users, as well as transmission to unborn children by infected parents. Links between drug use and commercial sex work are also significant drivers for the spread of HIV beyond the population of IDUs (Grassly NC., 2003). Although benzodiazepines, amphetamine-like substances and opiates are the main classes of injecting drugs, opiates in particular heroin is the most used worldwide by IDUs Kenya included and indeed WHO described drug dependence treatment, particularly opioid dependence treatment, as integral to the scale-up of HIV prevention, treatment, care and support to achieve the goal of universal access to these services and programmes by 2010 (WHO, 2006a).

The Joint UNAIDS Policy Statement on HIV Prevention and Care Strategies for Drug Users and 2007-2010 Strategic Framework (UNAIDS, 2006a) using the available evidence recognizes that a package of harm reduction interventions which aims to prevent the onset of injecting drug use, prevent HIV transmission and other adverse health effects in people who use drugs, provide care for drug users who are HIV-infected, promotion of rights-based and gender-sensitive responses would assist in stopping and reversing HIV epidemics in this population (UNAIDS, 2005, 2006a).

2.3 Injecting Drug Use in Kenya

Little is known about injecting drug use in sub-Saharan Africa, but a constellation of risk factors exist for the development of injecting drug use, as has occurred in other regions such as central Asia (Renton, Gzirishvilli, Gotsadze, & Godinho, 2006). Injecting drug use is already well-established in a number of countries (Kenya, Mauritius, Nigeria, South Africa, and Tanzania). People are experiencing harsh socioeconomic conditions and most are exposed to conflict situations. The region is increasingly being used for transit of illicit drugs into Europe. Sub-Saharan Africa has become a region with particularly high HIV-1 prevalence and a range of social and biological risk factors (Buve, Bishikwabo-Nsarhaza, & Mutangadura, 2002), the potential emergence of injecting drug use as an additional route of HIV transmission warrants close and serious attention.

Injecting Drug Use (IDU) in particular has been documented in Kenya for more than two decades with evidence showing an increasing contribution of IDU to new HIV infections (Gelmon, Kenya, & Oguya, 2009). The initial surveys showed increasing evidence of narcotics use in Mombasa and Nairobi with the practice of polydrug use being more common (Mwenesi, 1995), (Ndetei, 1997). A WHO commissioned study conducted in 1999 estimated the number of heroin users, including IDUs, at 25,000 and revealed high frequency of multiple sex partners (58%) versus single sex partners (24%). Crosby *et. al.* demonstrated high risk and prevalence of HIV infections among IDUs (IDUs) attending outpatient drug treatment facilities that were only in their infancy in Kenya especially in Nairobi and Mombasa (Crosby, Stall, Paul, & Barrett, 2000).

A study of cohorts of drug users conducted by UNODC in 2004 in five major towns found heroin (8.0%) to be the fourth most abused drug after alcohol (36.3%), nicotine (17.5%), and cannabis (9.9%). Cocaine was sixth at 2.2%. In terms of method of drug use the injecting method was used by 10.4% of the drug users. Risky behavior (sharing of needles) was reported in all the areas even in those who knew they were HIV positive (Ndetei D. , 2004). HIV prevalence among IDUs was found to be high at 68-88% which compared with findings in other areas outside Sub-Saharan Africa, Myanmar and Spain (66%), Italy (69%),Thailand (80%) which implies that soon the IDUs may account for a third of new infections in Kenya (UNODC, 2007). A limited sample of 120 drug users (101 IDUs) in Mombasa underwent serological testing for HIV and Hepatitis C. 49.5% tested positive for HIV (all IDUS) and 70.29% were Hepatitis C positive (Ndetei D. , 2004). The drugs that were injected by this cohort were heroin, cocaine, valium and pethidine.

The Kenya Modes of Transmission Study (Gelmon, Kenya, & Oguya, 2009) indicated that discordant couples, people having multiple concurrent sex partners, sex workers and their clients, Men having Sex with Men (MSM), including contextualized MSM in prisons and IDUs contribute to more than two thirds of new infections. Injecting Drug Users and MSM constituted an estimated 15% of new infections in Kenya. The model for Nairobi placed this group's contribution at 26% and in Mombasa at 31%, almost one-third of new infections. Although the number of cases in IDU is low, modeling results indicated extremely high incidence rates of the epidemic among IDU at 256 per 1,000 and the partners of IDU (78/1,000). This was a clear indication that this group

was at high risk of infection because the virus was spreading among them at a very high rate compared to the other risk groups.

Besides providing very efficient means of transmission through sharing needles and anal sex, the high incidence rate among these groups may be an indicator of their marginalization and the lack of interventions directed towards them.

In order to get the total population of drug users in Nairobi and Coast provinces a mapping exercise was conducted in April 2007 by 4 NGOs, with the support of UNODC which identified 103 new drug using sites, 54 in Nairobi Province and 49 in the Coast, with an estimated 12,200 heroin users, 5,680 in Nairobi Province and 6,520 in Coast Province. These people were not receiving any HIV prevention and drug dependence treatment services. Approximately 10% were IDUs, and women accounted for just below 10% (Ong'olo, 2007).

Whereas limited studies analyzing IDU and its linkages to HIV and AIDS have been undertaken in Kenya, they do not provide sufficient updated information necessary to inform an effective action plan for IDU engagement in the national response to HIV and AIDS. Drug treatment in Kenya is mainly done by private sector and NGOs with a few government health facilities. This includes both inpatient and outpatient treatment, rehabilitation residential and outpatient services. Most of these centres lack uniformity and coordination and this study will set out to document services available and gaps in the prevention, treatment and care of IDUs.

In many countries, data on HIV prevalence among people who inject drugs are gathered by sentinel surveillance methods, however in Kenya treatment centers would be the best approach, however because of existing policies, stigma and lack of IDU friendly health services and common access points, these approach has limitations. Currently IDU are a group which is completely ignored by society, existing service providers as well as national policies. For the public health good, it is critical to integrate this group into the health and treatment services and develop policies which address their needs (Magnani, Sabin, Saidel, & Heckathorn, 2005).

CHAPTER THREE: MATERIALS AND METHODS

3.1 Study Design and Approach

The study design adopted for this study was the Cross-sectional design. In studying disease the approaches used would comprise surveillance and epidemiologic research whose purpose are to monitor aspects of disease occurrence and spread and to harvest valid and precise information about the causes, preventions, and treatments for disease. Where the term disease refers to a broad array of health-related states and events including diseases, injuries, disabilities and death (Aschengrau & Seage, 2008).

The Cross-sectional design is a type of observational design used in epidemiological studies and is particularly effective for harvesting information from the kind of subjects represented in this study. The selection of this design was based on this design having scientific rigor, being cost effective, efficient and practical. This design enables the examination of association between a disease and exposure among individuals in a defined population at a specific point in time (MacMahon & Trichopoulos, 1996).

Given the study goals and objectives, the type of population (IDUs), disease and exposure related issues being addressed in this study, the cross-sectional study design provided the most relevant and efficient design to undertake this study.

The main observational tool used in the study was the structured questionnaire. Each respondent was screened to ascertain that they were IDUs prior to being interviewed by

a trained research assistant. After the interview, the respondent was tested for HIV by a trained VCT counselor.

3.2 Independent and Dependent Variable

The independent variables in this study were the social demographic characteristics of the study population, knowledge of drug use, Sexually transmitted infections including HIV, drug use history, injecting knowledge and practices, sexual behaviour, stigma and discrimination, access and knowledge about VCT, attitude towards HIV and drug dependence, relations with law enforcement agencies, and availability and accessibility to information. These independent variables were analysed to measure their knowledge, attitudes, sexual and injection behavior and practice. The HIV status of respondents was the dependent variable.

3.3 Location of Study

3.3.1 Location and History of Nairobi City

Nairobi County is the capital and largest city of Kenya and is located on coordinates 1°17′S 36°49′E. The city and its surrounding area currently form the Nairobi City County. Since its foundation in 1899, Nairobi has grown to become the largest city in East Africa, despite being the youngest city in the region. The total Population of Nairobi county is 3,138,369 residing in 985,016 households and in an area of 695.1 SQ. KM. The Population density is 4,515 PER SQ. KM and 22% of the population live below the poverty line. The growth rate of Nairobi is currently 4.1%. It is estimated that Nairobi's population will reach 5 million in 2025 (CIA/USG, 2011).

Most wealthy Kenyans live in Nairobi, but the majority of Nairobians are average and poor. Half of the population has been estimated to live in slums which cover just 5% of the city area. The growth of these slums is a result of urbanisation, poor town planning, and the unavailability of loans for low income earners.

Kibera is one of the largest slums in Africa (BBC News, 2008), and is situated to the west of Nairobi. The slums cover two square kilometers and are on government land (CSG Kibera). Other slums include Mathare and Korogocho located in the eastern parts of Nairobi. Eastern parts of Nairobi commonly known as Eastlands, also houses most of the city's middle class and includes Eastleigh, Huruma, Jerusalem, South C, South B, Embakasi, Buru Buru, Komarock, Donholm, Embakasi, Kasarani, Kibera, Makadara, Pumwani.

Many Nairobi non-slum-dwellers live in relatively good housing conditions. Large houses can be found in many of the upmarket neighborhoods, especially to the west of Nairobi. These comprise areas such as Gigiri, Muthaiga, Langata, Karen and other middle and high income estates such as Parklands, Westlands, Hurlingham, Kilimani, Milimani, Spring Valley, Lavington, Rosslyn, Kitisuru, and upperhill. Areas such Kangemi, Riruta Satellite, Kawangware, and Dagoretti are neigbouring but are low income areas.

3.3.2 Justification of Study Area

The study was a National study and was carried out in selected sites of Nairobi County in Kenya (ref. to Appendix 8 for map of Nairobi). The WHO commissioned study of 1999 estimated the number IDUs at 25,000 and the mapping exercise conducted by four

NGOs in 2007 in Nairobi Province and Coast provinces estimated the total of heroin users to be 12,200 of which 5,680 were in Nairobi Province and 6,520 where in Coast Province (Odek-Ogunde, Lore, Owiti, Munywoki, & Moor, 2001), (Ong'olo, 2007). Nairobi and Coast provinces have traditionally been the centers for drug trade and related activities. Bekerleg *et. al.* reported that heroin injection was occurring in most large towns of Kenya and Tanzania. Nairobi, Mombasa, and Malindi were epicenters for injecting drug use in Kenya (Beckerleg, Telfer, & Hundt, 2005). Nairobi country was chosen for proximity and convenience reasons, as a substantial number of IDUs were based in Nairobi county.

Drug related activities have tended to be associated with people living in low income suburbs such as the slums and the lower to middle income areas. The Eastern and Western study sites in Nairobi were selected on the basis of its representativeness, existing evidence from previous studies and the transient nature of persons (Ong'olo, 2007).

3.4 Target Population

3.4.1 Target Population

All persons who inject drugs in Nairobi County.

3.4.2 Study Population

The study population comprised of persons who had been injecting drugs for the last twelve months in the selected locations in Nairobi county.

3.4.3 Inclusion criteria

All persons who had injected drugs in the last twelve months were included in the study.

3.4.4 Exclusion criteria

Those who were minors, were ill, experiencing severe withdrawal symptoms or were high on drugs were excluded from the study. Severe opioid withdrawal signs and symptoms were identified through restlessness, irritability, low moods, running nose, tearing a lot, nausea, yawning, vomiting, abdominal cramps and diarrhea, body temperature deregulation, fever or chills, Skin: goose pimples and Sweating, Muscle aches and cramps, lack of sleep and craving for the Drug, Fast heart beats increased blood. Signs and symptoms used to identify those who were high on drugs were being in a state of euphoria, inability to feel pain, drowsiness, slow movements, constipation, constriction of the pupils in the eyes, low respiratory rate (<10), low pulse rate (<70), and coma. (Kenya, Oguya, Ongecha, & Shaw, 2013). These were done with support from a medical practitioner.

3.4.5 Sampling Methodology and Sample Size determination

3.4.5.1 Sampling Methodology

Populations at increased risk or most-at-risk (MARPs), for HIV are often referred to as hidden or hard-to-reach. These populations are composed of individuals who engage in behaviours that are sometimes illegal or stigmatizing so these populations tend to avoid disclosure. MARPs are often reluctant to participate in activities or programs that may personally identify them, such as HIV surveillance activities and HIV prevention, care

and treatment programs. Due to the illegality of Injecting drug use in Kenya, the IDU population is a hidden population often fearful and hunted by law enforcement officers. Accessing them tends to be a challenge because they do not identify themselves openly and the drug use behavior tends to take place in secret and hidden locations.

Respondent Driven Sampling (RDS) is a recent method which is becoming commonly used in studies which seek to reach hidden populations. The studies conducted to date suggest that this method is at least as effective and perhaps better than other sampling methods for obtaining representative samples of hidden populations such as IDUs (Semaan, Lauby, & Liebman, 2002), (Magnani, Sabin, Saidel, & Heckathorn, 2005), (Heimer, 2005). This method is suitable when members of the target population know one another and are densely interconnected (chain referral sampling) (Erickson, 1979). In this method of sampling, sampling begins with a set of initial subjects referred to as 'seed' for an expanding chain of referrals, with subjects from each wave referring subjects of subsequent wave. The best known form of this type of sampling is the snow-ball sampling (Goodman, 1961). The seeds were drawn randomly from the population and were asked to provide names and contact information of other potential subjects whom they knew to be IDUs. In each of the two sites in Nairobi, twelve seeds were selected and four were randomly recruited into the study as recommended by Heckathorn's sampling methodology. For this study the quota was set to three and the number of waves was not limited (Heckathorn D. D., 2002), (Abdul-Quader, Heckathorn, McKnight, et. al., 2006). These quantities were based on the calculated sample size, projections on potential participants based on the RDS methodology. From

this list of potential recruits, four persons (quota) were selected and three coupons issued to them. This process was continued until the desired sample size (344) was reached.

The purpose of imposing the quota system on recruitment was to reduce respondent duplication and impersonation so as to discourage recruiters from monopolizing recruitment rights. The quota was the number of recruits any one participant was allowed to recruit. The quota was set at three recruits after the initial interview and each follow-up interview. The quota system was implemented using a coupon system, in which potential recruiters were provided with a credit card sized coupons to give to recruits. The coupon had the name of the study, phone number to call to make an appointment for an interview, and the interview site. The coupon had a serial number that documented the link between the recruiter whom it was given and the recruit who returned it to the research office (Heckathorn D. D., 2001).

Potential seeds were identified through key informant referrals and street outreach. Seeds were purposefully selected to maximize diversity on race, ethnicity, sex and drug of choice. The seeds were asked to provide information about the size and characteristics of their social networks, sex, ethnicity/race, age, employment, type of drug injected among the injectors they know and have related to the last 6 months. These were the source of recruits from which they drew their recruits from. Relationship of the respondent to the recruiter (e.g., friend, injection partner, sex partner etc.) was also sourced. This was necessary to ensure representativeness and reduction of potential bias. A database system was developed and used for tracking and analyses.

The initial seed and subsequent respondents were asked to make a list of referrals who they knew to be IDUs. From this list three referrals (quota) were selected randomly and issued with coupons. The seed and subsequent recruits took the coupons to the potential subjects. On reporting to the research office, the potential recruits were asked to present the coupons to the research assistant. They were then informed about the study and requested to consent to participate in the study. Those who consented were screened to confirm injecting drug use behavior. The purpose of the screening was to identify existing track marks and to confirm if the participant has detailed knowledge of injecting procedures (Heckathorn D. , 2002).

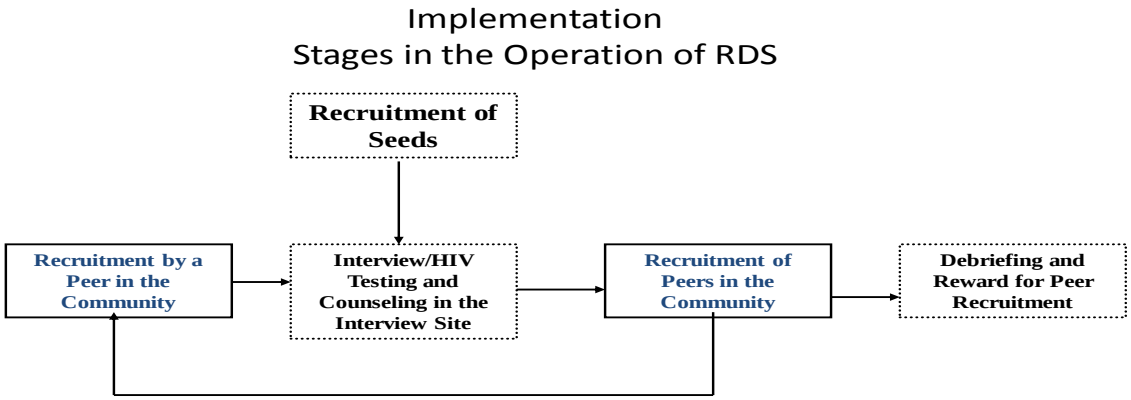


Figure 3.1: The implementation of the Respondent Driven Sampling

The structured questionnaire was administered to each respondent and followed by an HIV test. The HIV testing was carried out by counseling and testing officers who have been trained and certified by NASCOP and in accordance with the serial algorithm for rapid HIV testing based on the National guidelines for HIV testing and Counseling (NASCOP, 2008). This process was repeated for subsequent referrals.

3.4.5.2 Sample size determination

Sample size was calculated based on the formula. (Fisher, 1998)

n = z^2 p q/d^2

p = 0.66 prevalence of HIV among IDUs (Ndetei D. , 2004)

q = 1- p = 0.34

d = 0.05 desired precision

z = 1.96 (standard normal deviate for 0.05 probability)

n = (1.96^2 x 0.66 x 0.34)/ 0.05^2 = 344 respondents

The Table below indicates the locations, sample size by site location in Nairobi.

Table 3.1: Sampling locations and estimated sample sizes

	County	**Sample size**	**Region**	**Site Location**	
1.	Nairobi	344	East	1 site	172
			West	1 site	172

3.4.5.3 Study Implementation

The Narcotic drugs and psychotropic substances (control) Act no. 4 (revised edition 2012 [1994]) covers provides for guidance on use and penalties of possession, trafficking, cultivation, handling receiving and prescription, import/export, and manufacture of narcotic drugs and psychotropic substances (Kenya T. R., 2012). In order to be within the law, the research was restricted to observing persons who were

confirmed injecting drug users. The study did not handle, receive or prescribe any drugs or drug using equipment to study subjects. Study subjects were strictly required not to be in possession of drugs within the research sites.

Based on the Respondent Driven Sampling recruitment (RDS) methodology, a group of ten confirmed IDU comprising of three women and seven men at each of the two study sites. These ten IDUs were identified by peer educators who work closely with them. The ten IDUs were interviewed by the investigators and their network size ascertained (see Appendix 4 for seed evaluation and selection form). For each study site, four IDUs were selected as seeds on the basis of their large network size, the heterogeneity of their network in terms of education, race and ethnicity, gender and location of birth or present residence. The initial seeds were interviewed as follows:

i. Each seed and subsequent referrals were screened using the IDU screening questionnaire (appendix 5) to ascertain that they were current injectors by presence of track marks as evidence of actual injecting and correct answers to pertinent questions about their injecting behaviour, drug use, mode of use and drug preparation techniques. Those who answered questions correctly and showed clear evidence of injecting through presence of track marks and abscess scars were recruited into the study.

ii. The seeds were recruited to resemble the race, ethnic and gender profiles of drug users in the county. They were asked to come to a study site in the county the following day to complete a WHO modified questionnaire through face-to-face administered interview and to have their blood drawn for an HIV test. Each

seed, and subsequent study subjects, received KShs. 200 compensation for their time and transport.

iii. When subjects arrived at the study site, they were questioned by the study coordinator who was also the study screener to ensure eligibility (see Appendix 5 for IDU screening form). Once they were deemed eligible by the screener, each subject was assigned a unique code to serve as their study identification. This code included the following information: the first two letters of the last name, first letter of mother's first name, the last two digits of the birth year, and one letter for gender. This code was used to identify blood work and questionnaires and could be regenerated if the subject forgot it. No names or other identifying information were asked.

iv. After being assigned a study code, subjects met with an interviewer to undergo informed consent and to be interviewed. The questionnaire was administered by the interviewer. The interview consisted of a structured questionnaire which took approximately one hour and asked about drug-use frequency, drug and sexual risk behavior, syringe acquisition, and knowledge of HIV. After the completion of the interview, the respondent was sent to a room where HIV pre-test counseling and a blood draw for an HIV test was conducted. The testing was carried out by a VCT trained counselor who is certified by the National AIDS and STI control Program (NASCOP).

v. After the HIV counseling, and blood collection, each subject was given three coupons to recruit three other drug users into the study. The subjects were briefly trained on how to recruit others, with specific emphasis on the recruitment of

friends and acquaintances who use drugs. Eligible respondents had to have injected an illicit drug in the past 6 months (those who smoked only cannabis (marijuana) were not eligible for the study); turned age 18 years or older by the time of the interview; been able to speak English or Kiswahili adequately to consent to the study and complete the questionnaire; and lived, bought, and/or used drugs in the county.

vi. Coupons contained a unique number (to make each one distinct). To make them difficult to duplicate, coupons were printed on thick cardstock paper with color images. To track the coupons and payment for each respondent, coupons were retained after payment was made. These coupons were to be used for recruiting three IDUs from his/her network. When the new recruits came with these coupons, it was possible to identify their recruiter by matching the identity (seed id.) on the coupon with the seed id. on the stub from which the three coupons were torn in the coupon book (see figure 3.2 below). Like the seed recruiter, the respondent also received KShs. 200 (US$2.5) to assist with transport needs and compensation for time.

vii. Information such as respondent's unique code, physical traits, coupon number, and the numbers of the coupons each respondent distributed were all recorded in the site/centre study register. This information enabled investigators to link coupons together, determine when respondents should be paid and who gave coupons to whom. When respondents came in to make an appointment, the coupon was checked in the register to verify that it had not been used previously. Additionally, each person's code was checked in the register after being screened

to determine whether a person with that code had previously been enrolled in the study. If another study subject had that code, the screener looked at the physical traits listed for that person for verification. Additionally, if the screener felt that a person looked familiar, he/she would search for the person's demographic characteristics matched with what was in the register and see if another person with similar characteristics was previously enrolled.

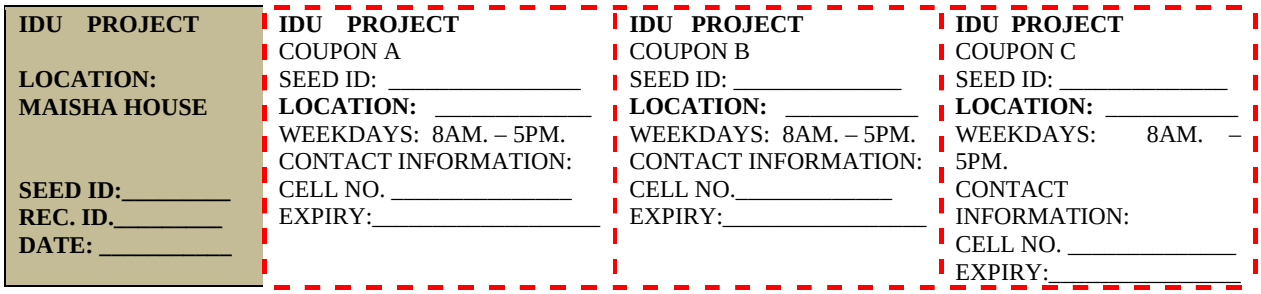


Figure 3.2: Sample of Recruitment Coupon

3.5 Pilot study

In order to ensure that data collection instruments are going to collect valid and reliable data, it is essential that they are carefully designed and tested before use. Pretesting procedures help to ascertain that the instrument for collecting data is free from ambiguous and unclear questions eliminate bias and sensitivities that would have surfaced in the main data collection process if the pretesting of the instrument had not been done. Pretesting was done to help point out any flaws or errors that might be committed during the construction of the instrument. Based on the findings of the pretest study, the instruments were revised and refine to enhance the reliability and validity of the final instrument in this study.

A pilot study was carried out to serve as a trial run and to identify potential problems in the proposed study or instruments of data collection. The pilot study was carried out in the Eastern region of Nairobi. Although the location of the pilot study was in Eastern Nairobi, the specific location was far removed from the location chosen for the main study, this was done to ensure that the main study would not be biased through repeat respondents. The pilot study helped to identify questions which were not clear to the respondents and review logistical issues which helped to implement the study better.

3.6 Research Instruments

3.6.1 The Structured Questionnaire

A structured questionnaire was used as the data collection instrument. The structured questionnaire was prepared and guided by the WHO Drug Injecting Study II., Version 2b, 2001 questionnaire which is the standard for IDU work and modified and contextualized to suit the local situation (see Appendix 1). The questionnaire was tested for validity, verified and contextualized for local application. The questionnaire covered the areas Knowledge of drug use; Sexually Transmitted Infections including HIV; Drug use history; Injecting drug use practice; Access to prevention and care services: drug dependence, HIV and STIs; Sexual behaviour and HIV; General stigma and discrimination; Access and knowledge about VCT; Attitude towards HIV and drug dependence; Relation with law enforcement agencies and Availability and accessibility to information. The questionnaire was administered by research assistants who were trained to ask questions in both Eanglish and Kiswahili.

3.6.2 Focus group discussions

Four (4) focus group discussions were carried out in the study area, two in each of the regions of Nairobi county. The Focus group discussions were carried out separately for each gender using a pretested FGD guide with open ended questions (ref. Appendix 3). Focused group participants were asked about the emergence of injecting drug use in society, the practice, behaviours and types of drugs injected, the problem of HIV/AIDS and link to IDU practice and availability of other services such as PMTCT, VCT, ART and needle exchange programs. Participants were also asked for the kind of services required by IDU and measures and interventions required to curb drug use. The interviews were conducted in a private room at each study site by the investigator with notes being compiled by a research assistant.

3.6.3 Key Informant Interview

Key Informant Interviews were carried out using a pretested interview guide with open ended questions. (appendix 2). The guiding questions were on Injecting Drug Use in society, the linkage between HIV and IDU behaviour, the organisations response in managing the IDU problem and the organisation's response to HIV epidemic among IDU, their challenges and achievements, and the existing gaps and proposed interventions. Interviews were carried out at the offices of the institutions.

The following institutions were visited: NACADA, Ministries of Public Health and Medical Services, Mathare mental hospital, national law enforcement (police

department), various NGOs, and international organisations such as NASCOP, NACC, UNAIDS, UNODC, and WHO.

3.7 Data Management and Statistical Analyses

3.7.1 Data Management

Data for the study were acquired using the following instruments and methods:

i. Structured questionnaires
ii. Individual HIV test results
iii. Respondents cards
iv. Key Informants and Focus Group Discussion notes

A data entry template was created in Microsoft Access software and used to enter the data from the structured questionnaire. Data validation and verification formulas and double checks were instituted in the data entry process to ensure quality in the data entry process.

3.7.2 Statistical Analyses

The data was transferred to Respondent-Driven Sampling Analysis Tool (RDSAT) analyses software (Volz, Wejnert, Degani, & Heckathorn, 2007) for specialized analyses and generation of weights based on Respondent Driven Sampling Methodology. Netdraw software was used to generate graphical representation of the social network characteristics among people who inject drugs (PWID).

Data presentation such as bar charts, histograms and line graphic were generated using Microsoft Excel software. Statistical Analyses Software (SAS/STAT version 9.4) was used to carry out basic and advanced statistical analyses. Statistical analyses techniques comprised descriptive statistics, cross tabulations and Multivariate Logistical Regression procedures. The statistical analyses aimed at finding association between risky sexual behavior, drug use practices and HIV status. Significant relationships between groups were assessed using the χ^2 statistic, t statistic and odds ratios. Statistical significance was assessed at the conventional probability value of 0.05.

3.8 Ethical Considerations

The study protocol was subjected to Ethical Review for approval on handling of human subjects by Kenyatta National Hospital Ethical Review Committee. (Ref. Appendix 7 for ERC research approval letter) The participation into the study was voluntary and participants gave written informed consent to participate in the study (see Appendix 6 for study consent form). Participants' confidentiality was assured. Their identification data were coded and were not to be released to any third party. The documents with the identifying data were also kept confidentially in a secure location.

CHAPTER FOUR: RESULTS

4.1 Socio-demographic Characteristics

Of the 344 participants recruited into the study, 322 participants or 93.6% (adjusted) were males and the remaining 22 participants (6.4% adjusted) were female. Table 4.1 gives a breakdown of the demographic profiles of IDUs respondents to the study in Nairobi county. 178 (51.74%) of all respondents were recruited from Eastland's and 166 (48.26%) from the Western sections of Nairobi. In general the non-response rate was less than 5% as most participants who were eligible, fulfilled all the requirements of the study and voluntarily consented to participate in the study, were enrolled into the study. As indicated, not all recruits of the SEEDS came to the study secretariat for enrollment in the study and this represents less than 5% in Nairobi.

4.1.1 Net Draws Diagrams

The Net Draws diagrams below present the natural structures of client recruitment in the study using the RDS sampling technique, starting with the SEED to the recruitment of other study participants in subsequent waves.

The seeds in Nairobi comprised of two women and six men. The eight seeds in Nairobi were distributed equally between East Nairobi and West Nairobi.

Figure 4.1 is a netdraw diagram and is a pictorial representation of respondents who participated in the study. The netdraw diagram shows how respondents were recruited into the study from the seed, to the three quota and the number of waves until the final respondent. Enlarged circles or squares indicate male or female SEEDs and the smaller

circles and squares represent male and the female respondents. The red colour indicates respondents who subsequently tested HIV positive and the blue colour are those who tested negative.

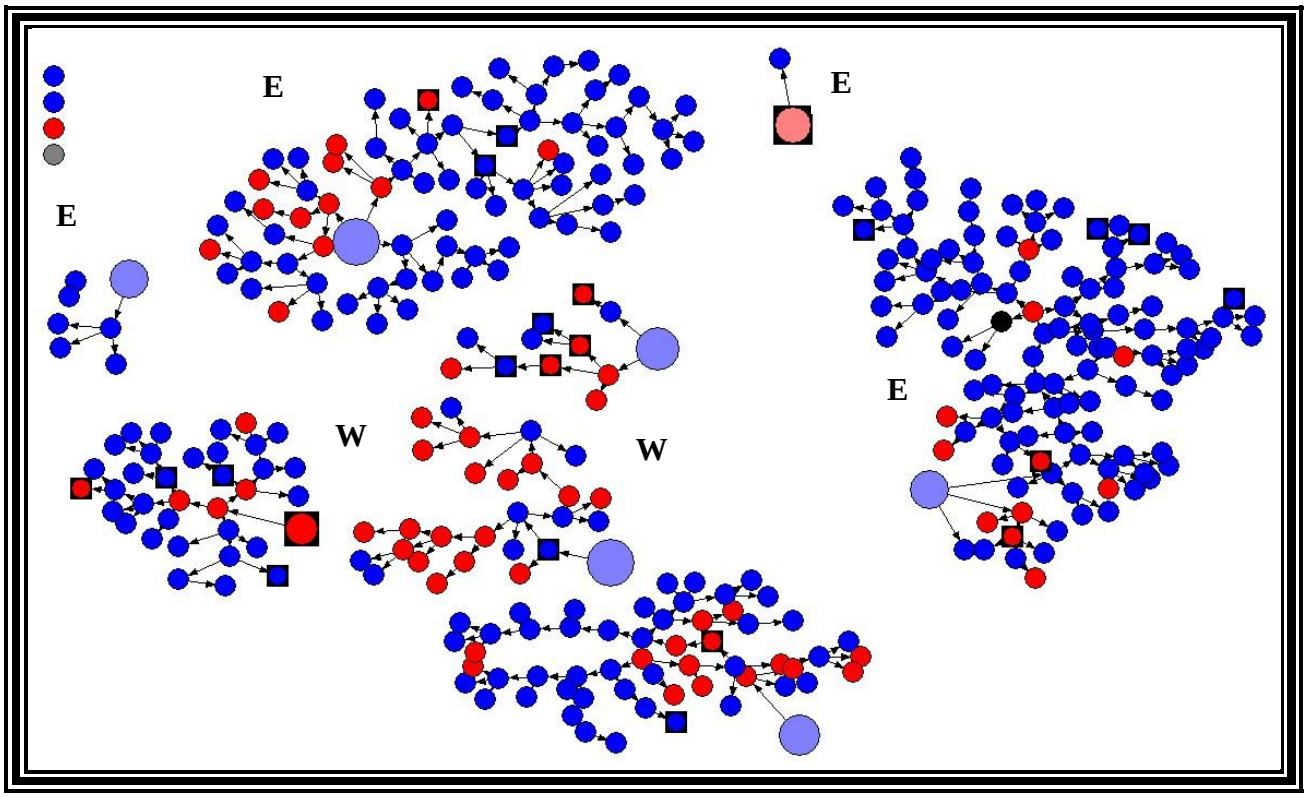


Figure 4.1: Nairobi Net Draw Diagram

The netdraw diagrams for east and west Nairobi are marked with an "E" and "W" respectively. It can be observed that some netdraw diagrams are small and others are large, this represents the size of the network. It is noteworthy that number of circles far exceeds the boxes and that west Nairobi diagrams have more red coloured shapes implying that there were more HIV positive respondents from west Nairobi compared to East Nairobi. This gives indication that there were fewer female IDUs compared to

males and that that the prevalence of HIV in West Nairobi may be higher compared to East Nairobi.

4.1.2 Socio-demographic Profiles of IDUs

Table 4.1 shows that over 80% percent of people who inject drugs in Nairobi were of Christian faith, being either Roman Catholic or Protestants. Only 15% were of Muslim faith. The minimum age of respondents in the study was 17 years and the maximum age was 55 years. Overall, the mean and median age of respondents were 31.6 years and 31 years (IQR: 27-36) respectively. Women IDU were younger compared to men. The mean and median age for women was 28.2 and 28 years respectively (IQR: 24-32). The mean and median age for men was 31.8 and 31 years respectively (IQR: 27-36). Over seventy percent of IDUs were aged between 25-39 years and the peak age of injecting drugs was 25-29 years. People who inject drugs were characterized with low levels of education. Four percent (4%) of study participants never attended school, and over 69% were educated to primary school level and a further 25% reported having secondary level education, only 1.7% had post secondary education. There were six students from a local University. Over fifty percent (52.8%) of respondents were single and never married, 30% were divorced, separated or widowed. Out of the whole study sample, only 7% were married and 9% of males were in monogamous relationships.

Table 4. 1: Respondents Background Characteristics in Nairobi County				
	Adjusted		95% Confidence Interval	
	N	%	Lower	Upper
LOCATION				
East Nairobi	178	51.74	51.67	51.85
Nairobi West	166	48.26	48.18	48.34
SEX				
Female	22	6.40	6.30	6.51
Male	322	93.60	93.57	93.63
RELIGION				
Muslim	53	15.45	15.35	15.56
Other	11	3.21	3.11	3.31
Protestant	135	39.36	39.28	39.44
Roman Catholic	144	41.98	41.90	42.06
AGE GROUPS				
15-24yrs	48	13.95	13.85	14.06
25-29yrs	108	31.40	31.31	31.49
30-34yrs	89	25.87	25.78	25.96
35-39yrs	62	18.02	17.92	18.12
40-55yrs	37	10.76	10.66	10.86
EDUCATION LEVEL				
College/University	6	1.74	1.64	1.85
Never Attended	14	4.07	3.97	4.17
Primary	238	69.19	69.13	69.25
Secondary	86	25	24.91	25.09
MARITAL STATUS				
Divorced/ Separated/Widow	103	30.03	29.94	30.14
Married	24	7.00	6.90	7.10
Monogamous	33	9.62	9.52	9.72
Never Married/ Single	181	52.77	52.70	52.84
Polygamous	.	.		
TOTAL	**344**			

4.1.3 Socio-economic profiles of IDUs

Table 4.2 presents the distribution of socio economic profiles of the study population of IDUs in Nairobi. About 40% of respondents live with their relatives comprising of

either or both parents, grandparents, siblings, aunts or uncles. Thirty two percent (32%) responded that they were living on their own, and 15% were living with friends. Twelve percent (12%) were living with their spouse or partner. The distribution of professional skills of respondents showed that 67% had no professional skills and were engaged in unskilled work, about 22% were semi-skilled, 5.9% were skilled artisans and just over 3% were professionals.

Respondents' household incomes in the past one month ranged from as low as KShs. 100 to KShs, 500,000. Twenty two percent (22%) of respondents earned up to KShs. 6,000, 40% earned from KShs. 6,000 to 15,000, 33% earned from KShs. 15,000 to 40,000 in the past month and only 4% of respondents earned over KShs. 40,000 (Table 4.2). Respondents reported a range of occupation as their source of income with the main one being temporary work (55.4%). Fourteen percent of respondents were self employed, 14.9% engaged in criminal activities such as theft, robbing and stealing. Three percent of respondents were in regular employment, 2.9% engaged in sex work and drug sales, 3.2% were supported by spouses, relatives or friends, and 6.7% reported other sources of income (Figure 4.2).

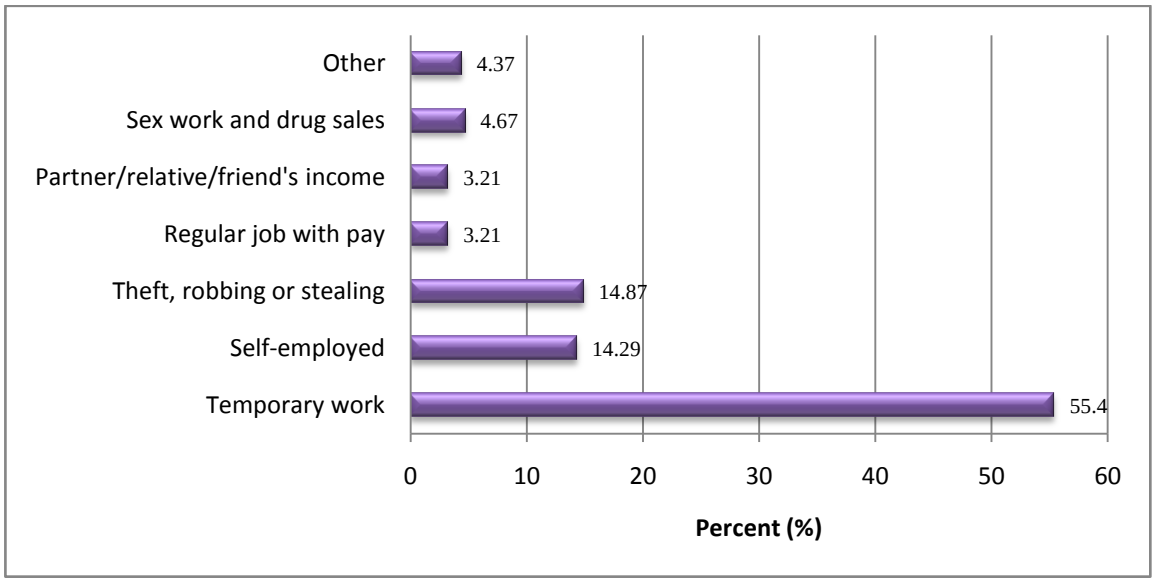


Figure 4.2: Occupation of IDUs respondents (%)

Table 4.2: Socioeconomic status of respondents in Nairobi County				
		Adjusted	95% Confidence Interval	
	N	%	Lower	Upper
LIVING WITH WHO				
Alone	110	32.35	32.26	32.44
Friends	53	15.59	15.49	15.69
No Fixed Address	1	0.29	0.18	0.40
Relatives	134	39.41	39.33	39.49
Spouse/Girl/ Boyfriend	43	12.65	12.55	12.75
PROFESSION				
Accountant	3	0.88	0.77	0.99
Professional	8	2.36	2.25	2.47
Pupil/Student	5	1.47	1.36	1.58
Semi-skilled	75	22.12	22.03	22.21
Skilled Artisan	20	5.90	5.80	6
Unskilled	228	67.26	67.20	67.32
INCOME				
Up to 6,000	67	21.75	21.65	21.85
6-15,000	124	40.26	40.17	40.35
16-40,000	103	33.44	33.35	33.53
41 – 500,000	13	4.22	4.11	4.33
OCCUPATION				
Temporary work	190	55.39	55.32	55.46
Self-employed	49	14.29	14.19	14.39
Theft, robbing or stealing	51	14.87	14.77	14.97
Regular job with pay	11	3.21	3.11	3.31
Spouse, partner, relative or friend's income	11	3.21	3.11	3.31
Sex work and drug sales	10	2.90	2.83	2.97
Other	23	6.72	6.61	6.83
TOTAL	**344**			

4.1.4 Future plans and desires of respondents

Table 4.3 presents the self reported desires and future plans of respondents in the study. One of the desires was to have children. Out of 135 people who responded to this question, 73.8% positively expressed the desire to have children in the following year. Among the respondents, 78% of males and 48% of the females were positive about this

desire. About 95% of 177 respondents expected to change their drug consumption in the next 12 months to reduced levels or to quit the habit altogether (100% women and 96.6% men). About 90% of respondents expected to secure employment or improve their employment status in the coming year (100% women and 95.6% men). Respondents also expressed a desire to change their source of income and improve their health status, out of the 170 male and female respondents, 91.4% and 91.9% of IDU, expressed positive expectation in each of these two aspects respectively. Generally, most male and female respondents expressed comparably positive expectations about the future except in the case of desiring to have a child, where female respondents showed marginally reduced optimism compared to their male counterparts.

Table 4.3: Desires and future plans

Desire/Plan to:	Unadjusted	Adjusted % [95% CI]	
	All N (%)	Females	Males
Plan to have a child	135 (73.8)	48.6 [48.1-49.1]	79.8 [79.7-79.8]
Reduce drug consumption	177 (94.6)	100.0 [100-100]	96.6 [96.6-96.6]
Improve employment status	169 (90.4)	100.0 [100-100]	95.6 [95.5-95.6]
Change main source of income	170 (91.4)	100.0 [100-100]	95.8 [95.8-95.8]
Improve health status	170 (91.9)	100.0 [100-100]	94.6 [94.5-94.6]

4.2 Drug Use Practice among IDUs

4.2.1 Drug Use initiation, History and Sources of drugs

Majority (45%) of IDUs initiated injection practice below 24 years of age as shown in figure 4.3. For both men and women the main drug of choice during initiation of injecting was Heroine. Women commenced drug use at a mean and median age of 24.4 years and 20 years respectively [IQR: 20-26). Men initiate injecting at a later mean and median age of 26.3 and 26 years respectively (IQR: 22-30).

The earliest age of initiating injection drug use was 11 years for men and 12 years for women and the latest was 53 years for men and 49 years for women. Therefore initiation of injection drug use begins early and peaks mainly after formal school years (19-24 years).

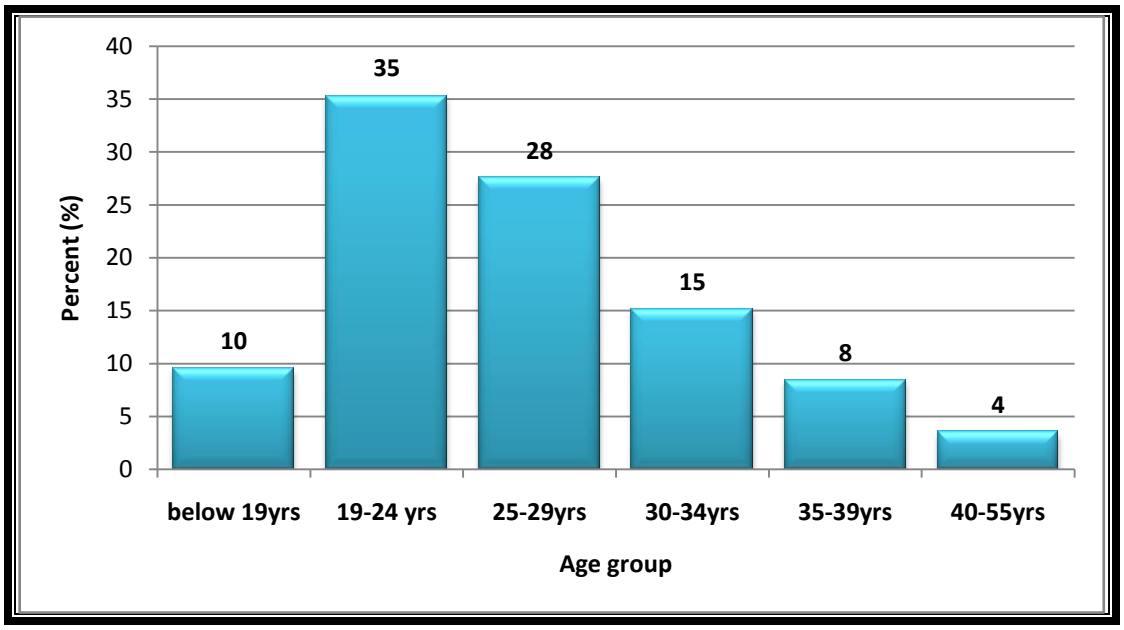


Figure 4.3: Age group at first drug injection

4.2.2 Characteristics of drug injection for the first time

The main drugs injected at initiation by the study respondents were Heroin (98%) and Cocaine (2%). Heroine is available in two forms, white crest or brown sugar. Focus group discussions reported that white crest Heroin is a more refined form of Heroine and is currently more readily available compared to brown sugar (less refined) which is rarely available in the market presently.

On prior non-injecting use of the drug, over 98% of respondents had used the same drugs of injection through other methods such as smoking prior to injecting or even

while injecting. Over 70% had used the same drug in another way when they were below 24 years and the youngest used the same drug at age 12 years.

Respondents were asked about their relationship with the person who administered the injection during initiation. Over 87% reported that they had been injected by a close friend, 6% said they injected themselves, 4.1% were injected by a primary sex partner and 3% were either injected by the drug dealer, a friend/acquaintance or a relative.

4.2.3 Injection initiation practices

Table 4.4 show the practice of injecting with used needles and locations where people initiate injecting. Results indicate that 28.3% of the respondents injected with a used needle and male IDUs were more prone to injecting with used needles compared to female IDUs (27% females and 33.5% males). Over eighty percent (82%) injected for the very first time in their current area of residence (75.4% males and 82.5% females) (Table 4.4). This indicates that injecting is common within certain regions of Nairobi.

Table 4.4: Prevalence of injecting with used needle and whether injected in current residence

	UNADJUSTED	**ADJUSTED % [95% CI]**	
	N [%]	**Female**	**Male**
Injection with used needle	97 [28.3]	27 [26.7-26.8]	33.5 [33.5-33.6]
Injection in current area of resident	283 [82.0]	75.4[75.3-75.6]	82.5 [82.4-82.5]

Slightly over a third of all respondents injected for the very first time in an outdoor shooting gallery, nearly 40% injected at their own residence, indoor gallery or dealer's place. Other popular injection places comprised friends' residence or safe and private

locations such as abandoned building, forest and parks and vehicles (Figure 4.4). Drug users initially sourced drugs on their own (80%), 14% got it as a gift, 4.4% sent someone to buy the drugs and only about 1% obtained it from dealers or peddlers. None got their initial drugs in exchange for sex.

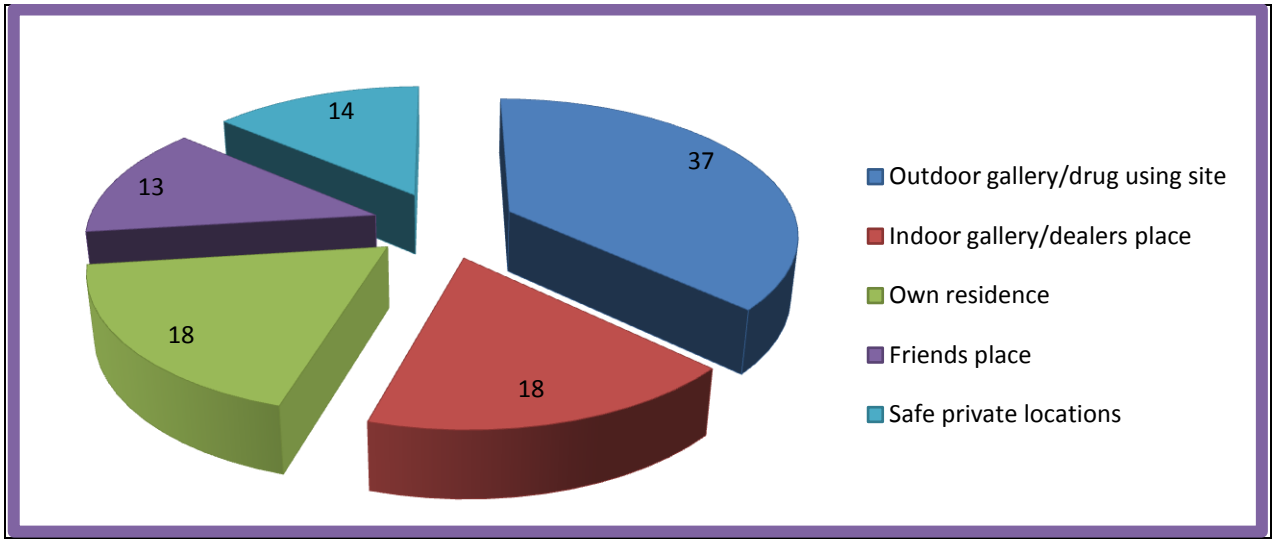


Figure 4.4: Locations of first Injection

4.2.4 Initiation, Perception and companionship among people who inject drugs

Respondents gave several reasons for initiating drug injecting drugs (Figure 4.5). Majority (90.2%) thought injecting would give them a better high. Up to thirty five percent (35%) of respondents commenced injecting because their friends and companions were also injecting. Curiosity was mentioned by 26.5% of all respondents, and 21.5% mentioned drug type and quality as the reason for commencing injecting. Other reasons comprised peer pressure (15.4%), depression (8.7%), worry over health consequence of sniffing (5.5), everyone else injecting (4.9%) and partying (4.4%).

Respondents were asked what their perception of the consequences of injecting were prior to initiating drug injection, 84.1% thought they would try once or twice and stop, 10.9% thought they would become regular users and 4.9% did not think about the consequences. Two months after initiating injecting, majority of the type of friends and companions respondents they had were mainly non-injectors (46%), 28% had an equal proportion of injecting and non-injecting friends while 25% had mainly injecting friends.

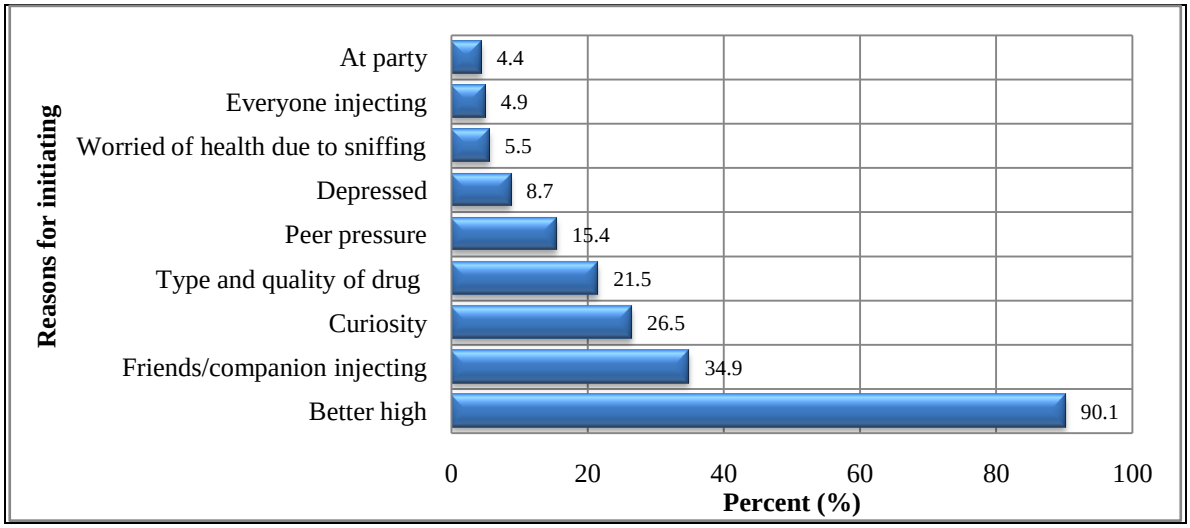


Figure 4.5: Reasons for initiating injecting

Although 53.8% of respondents reported never initiating another person into injecting drug use, 46% agreed to initiating others on weekly basis (11.6%), monthly (11.4%), every six months (10.5%), yearly (4.1%) and more than yearly (8.4%). This is a clear indication that there is strong peer influence by drug users over their non using friends in initiating them into drug use. Of the 160 respondents (62.3%) who had initiated someone else into injecting drug use in the last six months. Of these respondents 16.5%

had initiated one, 19.6 had initiated two people and 26.7% had initiated at least three into injecting drug use in the last six months. Based on these statistics and some basic calculations, at least 215 people were initiated into injecting drug use in the last six months.

4.2.5 Injecting Practices in the past six months

Figure 4.6 shows the frequency of injecting by drug users. Majority of respondents (34.7%) injected three times a day, 25.4% injected four times daily, 18.7% injected twice a day and 17.8% injected five of more times per day. Only 3.5% of respondents injected once a day.

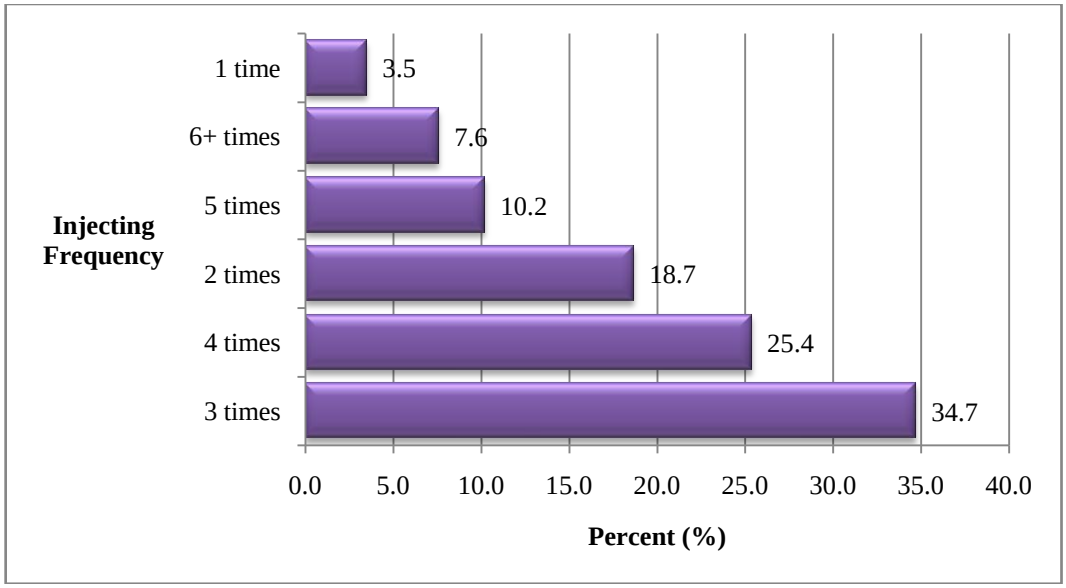


Figure 4.6: Daily Injecting Frequency (%)

4.2.6 History of incarceration and encounter with law enforcement

Some IDUs have had their injecting equipment confiscated by police or other authorities in the last six months prior to the study. The distribution of the encounter of the study respondents and the police or other authorities is presented in Table 4.5 and is showing

that 36.7% of IDUs had confrontations with the police or other authorities in Nairobi. Male IDUs (36.9%) appeared to have had more frequent interaction with authorities compared to female IDUs (18.1%). Results indicated that most IDUs (87.8%) had been incarcerated in their lifetime, the frequency is similar among gender. Eighteen IDU (6.2%) reported that they had ever injected drugs while in prison and 15.9% reported to have injected with already used needles and syringes while in prison.

Table 4.5: Encounter with law enforcement, imprisonment and injecting while in prison

Characteristic		Adjusted% [95% CI]	
	unadjusted N (%)	Female	Male
Ever had injecting equipment confiscated by police or other authorities in the last six months	31 [36.7]	18.1 [17.7-18.5]	35.9 [35.8-36.0]
Ever been in jail/prison	337 [87.8]	89.2 [89.1-89.3]	89.1 [89.1-89.1]
Ever injected drugs in jail/prison	18 [6.2]	10.8 [10.3-11.2]	6.0 [5.8-6.2]
Ever injected drugs with used needles or syringes in jail/prison	14 [15.9]	3.8 [2.9-4.8]	9.8 [9.6-10.0]

Figure 4.7 shows nearly 50% of both female and male IDUs have been incarcerated once or twice (45% and 43% respectively). Over 30% of IDUs have been in jail 3 to 4 times and 24% of IDUs have been jailed over 4 times.

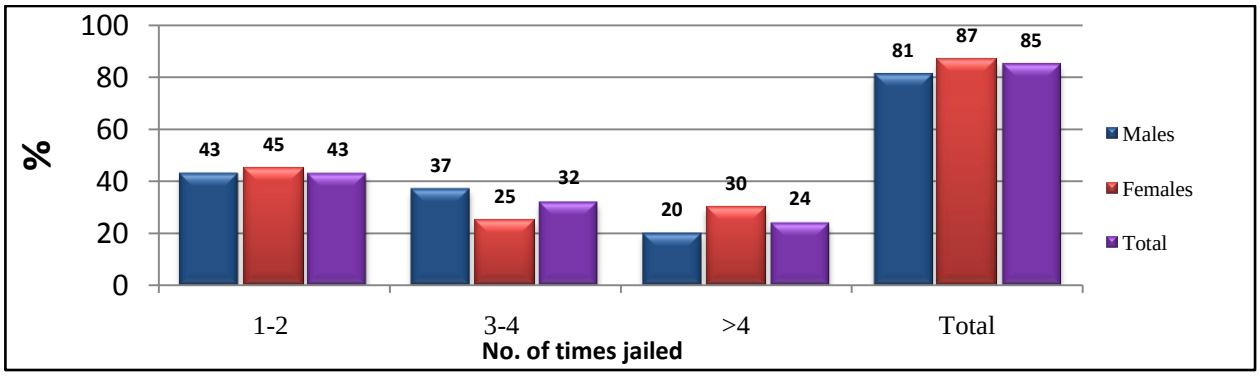


Figure 4.7: Nairobi - % IDUs by Number of times jailed or imprisoned

4.2.7 Multivariate logistic regression analyses on drug use practice

To be able to test hypothesis regarding objective two, Multivariate Logistic Regression was carried out on variables associated with Drug Use Practice and the results are shown on Table4.6 below. Variables found to be significantly associated with HIV status were Age at first drug injection ($p<0.027$); Reason for starting to inject ($p<0.02$); Reason for initial injection ($p<0.016$); and the number of people initiated into injecting ($p<0.02$).

For age at first injection, results indicated that those who initiated injecting at an older age (30 years and above) where 2.3 times more at risk of infection compared to those who initiated injecting at a younger age. Those whose main reason for starting to inject was for a better high, were 3.4 times more at risk of HIV infection compared to those commenced injecting for other reasons. Similarly, those whose main reason for initial injection was to become a regular injector, were 6.2 times more at risk compared to those who were just experimenting. Initiating one or two people into injecting was not significantly associated with increased risk of HIV infection, however, those who had never initiated anyone into injection were 2.8 more times at risk of HIV infection.

Table 4.6: MLR Analyses on Sexual and Drug Use Behaviour

ODDS RATIOS FOR INFECTION WITH HIV	Odds ratio	SE	95% confidence interval of Odds		P-value
INJECTION AND DRUG USE PRACTICE					
Age at first drug injection (Log-Likelihood =11.4, Chi-square =11.0 (4df), P<.0.027)					
• 20-24yrs	1.05	0.28	0.58	1.89	0.37
• 25-29yrs	1.73	0.29	0.92	3.24	0.38
• 30-55yrs	2.32	0.30	1.19	4.54	0.07
Reason for starting to inject -a better high (Log-Likelihood =4.5, Chi-square =5.0 (1df), P<.0.02)					
Yes	3.44	0.28	1.16	10.10	0.025
Reason for initial injection – experimental or to be a regular injector? (Log-Likelihood =10.7, Chi-square =8.3 (2df), P<.0.016)					
• Become a regular injector	6.16	0.37	1.79	21.24	0.005
• Try once or twice and stop	1.72	0.22	0.82	3.60	0.27
Number of people you have initiated into injecting (Log-Likelihood = 10.7 , Chi-square = 9.8 (3df), P<.0.02)					
• None	2.80	0.25	1.45	5.43	0.02
• One	1.84	0.24	0.83	4.11	0.82
• Two	1.80	0.23	0.82	3.98	0.89
• Yes	2.63	0.44	1.23	5.63	0.01

4.3 Behaviours that predispose IDUs to HIV infection

4.3.1 Awareness and sources of information on HIV and AIDS

HIV is transmitted through heterosexual contact between an infected partner and a non-infected partner. HIV prevention programmes focus their messages and efforts on three important aspects of behaviour: using condoms, limiting the number of sexual partners or staying faithful to one partner, and delaying sexual debut for young persons (abstinence). Table 4.7 shows that all respondents have heard about the existence of HIV (100%). However, response towards knowledge of prevention methods such condom use, abstinence, and being faithful to one partner were varied and low at 43%, 40% and 15% respectively. Only 15% of respondents always discussed about HIV with other persons, 55% discussed about HIV sometimes and 29% never discussed HIV at all.

Respondents were asked whether they discussed about HIV with drug using friends and family. The responses indicate that 44.1% never discussed about HIV with family compared to 13.9% who never discussed with drug using friends. Similarly 72% discussed about HIV sometimes with drug using friends compared to 50% with family. Only 13% and 4.1% always discussed with drug using friends and family respectively. On whether they thought a person infected with HIV can look well, 84% answered in affirmative and 16% disagreed.

These responses indicate compared to family members, respondents felt more at ease to discuss HIV related issues with peers and drug using friends. This would indicate that peer based outreach may be more effective in reaching out to people who inject drugs because of the closeness and ease of communication between drug using friends

compared to family members. These responses may also reflect a gap in knowledge among family members on how to approach their drug using relatives.

Although knowledge of existence of HIV appears to be universal among these respondents, there is a clear lack of knowledge on HIV prevention methods and this needs urgent intervention. Indications are that most IDUs feel comfortable to discuss about HIV with their drug using friends rather than with members of their family.

Table 4.7: Respondents Knowledge and communication about HIV in Nairobi County

	Number	**%**
Heard about HIV		
Yes	344	100.0
Protection of HIV		
Condom use	139	40.4
Abstinence	149	43.2
Being faithful	53	15.4
Don't know	3	0.9
Whether discuss about HIV		
Sometimes	188	54.8
Never	98	28.6
Always	52	15.2
Discuss about HIV with drug using friends		
Sometimes	251	73.0
Never	48	13.9
Always	45	13.0
Discuss about HIV with family		
Sometimes	174	50.6
Never	152	44.1
Always	14	4.1
Do you think a person can be infected with HIV and look well		
Yes	288	84.0
No	55	16.0
Don't know	.	.
Total	**344**	

Respondents were asked where most IDUs got information about HIV and AIDS. The responses are shown in figure 4.8 below. Seventy percent of study respondents indicated that their main source of information about HIV/AIDS were health and

outreach workers, other sources comprised electronic media (12%), print media (6%), posters and brochures (6%), peer and fellow IDUs (3.2%) and organizations such as people Living with HIV and AIDS as well as Faith based organization (1.2%). This clearly shows that the use of health and outreach workers is more effective in reaching out to IDUs.

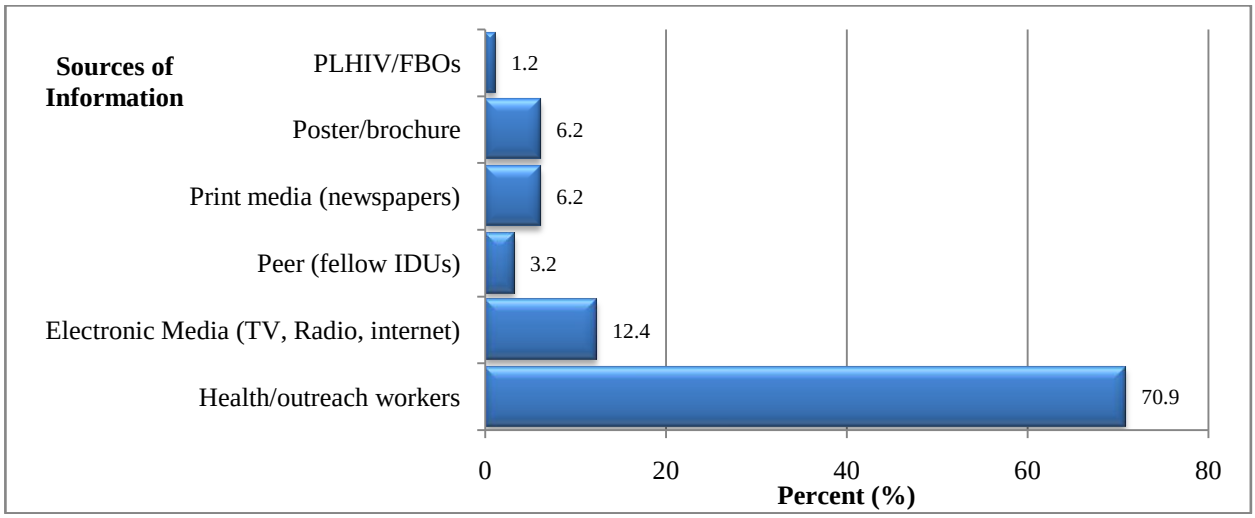


Figure 4.8: Sources of information on HIV and AIDS

4.3.2 Knowledge of transmission and prevention

Figure 4.9 shows the proportion of respondents who answered in affirmative on knowledge of risky behaviour which leads to being infected by HIV. Unprotected sex was identified by 66% of respondents as one of the methods of transmission of HIV. Only 39% of respondents positively identified sharing of injecting equipment, drugs and solutions as a means of HIV transmission and a further 22% identified sharing of needles and syringes. Only 18% of respondents identified contact with infected blood and blood transfusion as being possible ways of HIV transmission. These low responses

indicate a lack of awareness and knowledge among IDUs in Nairobi on behaviours that put them at risk of infection and on how HIV is transmitted.

Respondents were asked to state their knowledge on ways in which HIV can be transmitted and how a person can be protected from acquiring HIV. Their responses comprised of transmission through heterosexual sex, injecting drug use and mother to child. Actual responses were abstinence from sexual contact, being faithful/monogamous, condom use every time during sex, male circumcision, sharing needles and/or syringe, sharing other injecting equipment or drug solutions, having sex *(protection not specified), h*aving unprotected sex, transfusion of blood/blood products, mother to child and sharing tattooing equipments. Misconceptions comprised sharing utensils with a person infected with HIV, contact with infected blood, and affected and look well.

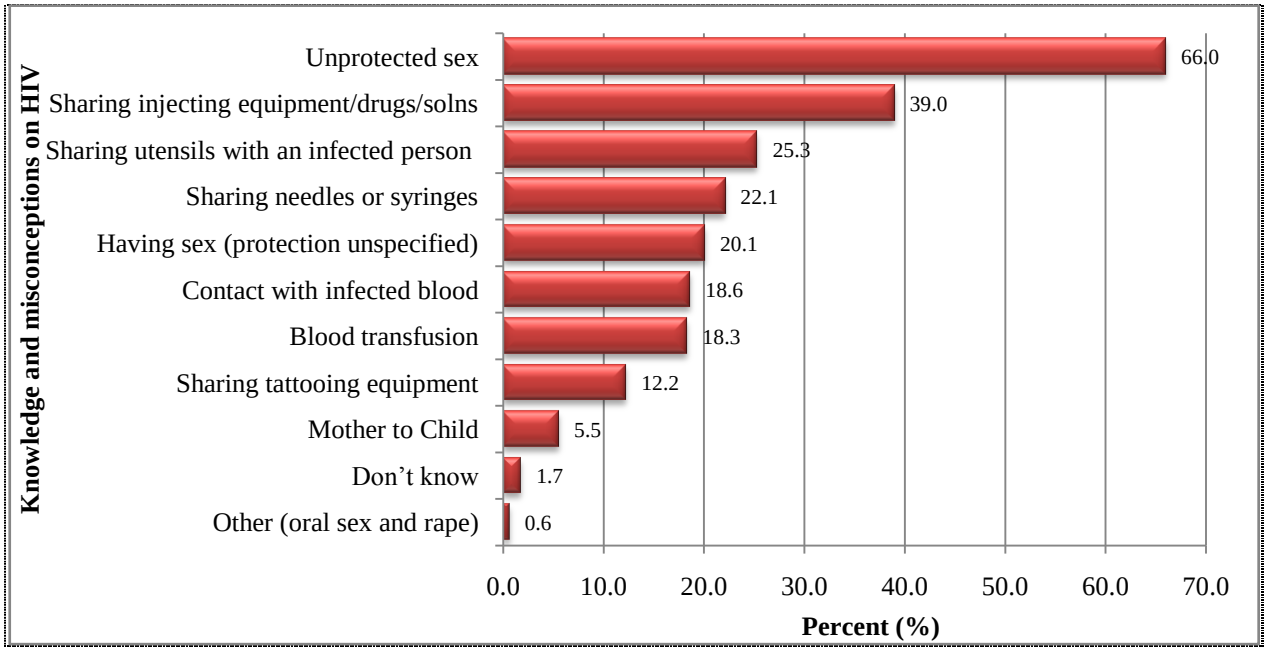


Figure 4.9: Knowledge and Misconceptions on Transmission of HIV

Each of the 344 respondents was given a score for each correct answer and the respondents total score calculated into a percentage of the total. The percentage score were categorised into four knowledge levels comprising of severely limited for those who got less than 5 correct answers, limited (5-7 correct), Moderate (8-10 correct) and good knowledge for those who got at least ten correct responses (Table 4.8)

Table 4.8: Knowledge scores of HIV transmission and prevention

Score based on number of correct responses	**Percent of correct response**	**Level of knowledge**
10 and above	80-100%	Good knowledge
8-10	50-79.9%	Moderate knowledge
5 to 7	30-49.9	limited knowledge
less than 5	0-29.9%	severely limited

Figure 4.10, presents the results of the status of knowledge of HIV transmission and prevention among respondents. Out of the 344 study respondents, 267 (76%) had limited knowledge, 11.9% had severely limited knowledge, 9.9% had moderate knowledge and only 2 (0.6%) had good knowledge of HIV transmission and protection. Reid also identified that among injection drug users in Africa, knowledge that needle sharing and syringe reuse transmit HIV is still very limited, in contrast with the more successfully instilled knowledge that HIV is transmitted sexually. She cautions that the new injection risks will take on increased epidemiological significance over the coming decade and will require much more attention by African nations to the range of effective harm reduction tools now available in Europe, Asia, and North America (Reid, 2009).

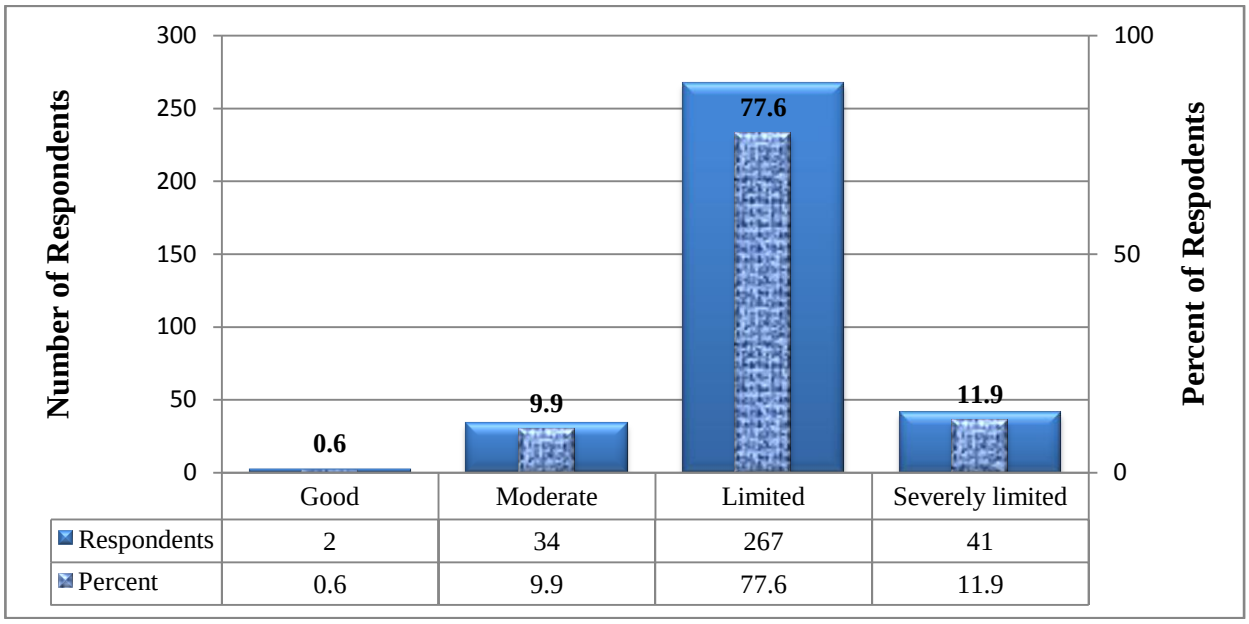


Figure 4.10: Status of knowledge of HIV transmission and prevention among respondents

4.3.3 Awareness of sexually transmitted diseases and access to Health Care

Two hundred and ninety (84%) IDUs responded affirmatively to being aware about STIs. Table 4.9 shows STI symptoms and the level of knowledge by respondents. Among the symptoms that appear to be well known by respondents were itching (42%), burning pain during urination (39%), genital discharge (32%), foul-smelling discharge (26%) and genital ulcer/sore blisters (19%) and others ranging from swellings, abdominal pain and bleeding.

Table 4.9: STI symptoms known by respondents

	Number	%
Itching	126	42.1
Burning pain during urination	118	39.5
Genital discharge	96	32.1
Foul-smelling discharge	77	25.8
Genital ulcer/ sore blisters	56	18.7
Swelling in groin area	42	14.0
Low abdominal pain	40	13.4
Bleeding	16	5.4

On whether respondents had previously experienced symptoms of STIs, 326 participants responded and 48 (15%) had been previously infected (Table 4.10 below). Out of these, 39 had sought treatment. Overall 84% of those who were infected with STIs sought treatment in public health facilities, 9% sought treatment with a private doctor and the remaining sought treatment from herbalist and other sources.

Table 4.10: Ever experienced STI symptoms previously

	Number	%
Have you ever experienced any symptoms of STI		
Yes	48	14.7
Did you seek treatment		
Yes	77	47.0
Source of treatment		
Public Health facility	37	84.1
Private Doctor	4	0.1
Others	2	1.6
Herbal medicine	1	0.8

4.3.4 Risk reduction behaviour

Figure 4.11 below, shows the actions taken by Nairobi IDU respondents to avoid infection by HIV. Although 90% of the study respondents were affirmative that they had taken action to prevent themselves or their partners from infection by HIV, the specific actions they took were minimal and as reflected in their response. On sexual behaviour, 43.9% reported commencement or increased condom use, 23% reduced their sex partners, 19.5% stopped having sex and 1.5% reduced the number of male, gay, bisexual and drug user partners. On drug use practices, 40% reported that they stopped sharing equipment and drug solutions, 19.5 reduced sharing of equipment or drug olutions, 18.6 commenced or increased cleaning drug use equipment, 5.2% stopped injecting drugs and 2.6% reduced their drug use.

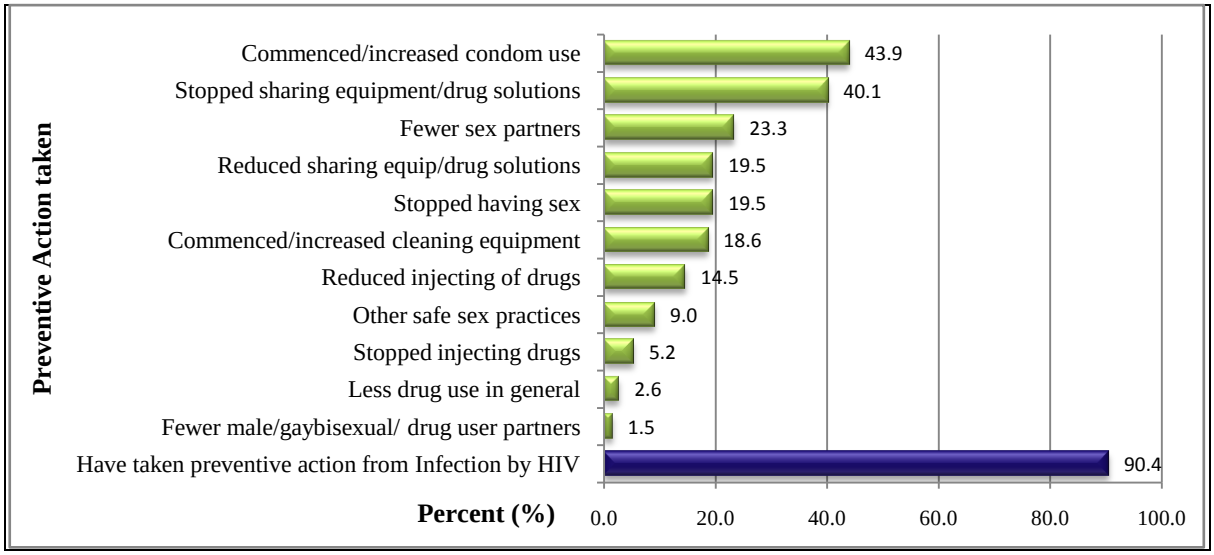


Figure 4.11: Preventive action taken to avoid infection by HIV

4.3.5 Prior HIV testing and knowledge of HIV/AIDS status

Table 4.11 below, presents results of ever taking an HIV test prior to the study. Responses to specific questions on HIV testing showed that a high proportion of the study population had ever had pre-test counseling concerning an HIV test. Up to 84.3% of the study population had undergone pre-test counseling for HIV. Up to 93% of the study populations indicated having received results of HIV test and 85.8% indicated ever receiving post test counseling. About 85% had received an HIV negative test result and a small proportion (9.4%) had ever received an HIV positive test result, these comprised 24.9% women and 7.1% men.

Table 4.11: Prior history of HIV testing

	Unadjusted	**Adjusted**	
Characteristic of HIV test	N (%)	% Female	% Male
Ever received any drug treatment	330 (7.9)	11.3[10.8-11.7]	8.6 [8.5-8.7]
Ever had pre-test counseling for HIV	337 (84.3)	90.6[90.5-90.7]	82.4 [82.3-82.4]
Ever been tested for HIV	339 (84.4)	89.0[88.9-89.2]	82.7 [82.6-82.7]
Ever received results for HIV test	301 (93.4)	98.2[98.1-98.2]	95.2 [95.1-95.2]
Ever received post test counseling	204 (85.8)	97.9[97.8-98.0]	90.1 [90.1-90.2]
Ever received an HIV negative test result	208 (87.5)		
Ever received an HIV positive test result	339 (9.4)	24.9[24.5-25.3]	7.1 [7.0-7.2]
Ever informed by health worker of having AIDS disease	339 (4.7)	4.2	3.3
Ever taken anti-AIDS medication?	16 (31.2)	0	3.1 [2.7-3.3]

It was also observed that only 4.7% (unadjusted) of the study population had ever been informed by health professional of having AIDS disease. Of the respondents who had ever been informed of having AIDS, only a small fraction had ever taken anti-retroviral (ART) medication and these were mainly men and none of the women reported taking any ART medication.

4.3.6 Risky Sexual Behaviours among IDU

A primary partner is a person who is a most important regular sex partner of the opposite sex. Table 4.12 reports on the respondents' sexual behaviour with primary sex partners. Of the 241 respondents who reported on their sexual relations with their primary sex partners during the past six months, 23 (9.5%) respondents reported not having had any sexual relationships, 168 (69.9%, unadjusted) had sexual relationships with a single primary partner and 50 (23% unadjusted) had sex with multiple sexual partners. Among the two gender, only men reported abstinence during the period in question. A higher proportion of women (84% adjusted) reported sex with their primary partner compared to men (75.3% adjusted). Similarly, the proportions of respondents reporting multiple sexual partnerships were similar between women (16%) and men (17.4%). Regular use of condoms during vaginal or anal sex with primary sex partners was generally low at 13.8% (adjusted) for females and 16.7% (adjusted) for men. Thirty one percent (31%) reported using condoms sometimes and 52.4% (unadjusted) never used condoms with their primary sexual partners (69.6% for women and 56.3% for men).

Respondents were asked about their primary sex partners behaviour with 30.5% (unadjusted) indicating that their primary sex partners had injected drugs, 32 (14%)

knew that their primary sex partners were infected with HIV, 1 (0.4%) knew that their partner had been diagnosed with Hepatitis and 17 (9.6%) male respondents knew that their primary sex partners have had sex with other men.

Table 4.12: Sexual and Injecting behaviour in the last six months			
	unadjusted	**Adjusted % [95% CI]**	
	N (%)	**Females**	**Males**
Number of partners of the opposite sex whom you had vaginal or anal sexual intercourse			
0	23 (9.5%)	0	7.2 [7.1, 7.4]
1	168 (69.7%)	84.0 [83.8,84.1]	75.3 [75.3,75.4]
More than 1 partner	50 (20.7%)	16.0 [15.5,16.2]	17.4 [17.3,17.6]
How often did you use condoms with your primary partner of the opposite sex			
Never	129 (52.4)	69.6 [69.4,69.7]	56.3 [56.2,56.4]
Sometimes	77 (31.3)	16.6 [16.1,16.7]	27.0 [26.8,27.1]
Always	40 (16.3)	13.8 [13.4,14.0]	16.7 [16.6,16.9]
Partner had injected drugs	61 (30.5)	11.3 [10.7,11.4]	26 [25.9,26.2]
Partner is HIV positive	32 (13.7)	11.2 [10.7,11.4]	8.1 [7.9,8.3]
Partner has been diagnosed with Hepatitis	1 (0.4)		0.3 [0.2,0.5]
Partner had sex with other men (men only)	17 (7.4)	-	9.6 [9.4,9.7]

4.3.7 Multiple partners: casual sex practices among IDUs

Table 4.13 below reports high risk sexual activities with casual partners of the opposite sex in the last six months. Casual partners were persons other than primary partners. About two thirds (64.4%) of study respondents stated that they had never had sex with a casual partner; however the remaining 35.6% were engaged in casual sexual relations with varying degrees of frequency. About eleven percent (unadjusted) had engaged in casual sex on less than monthly basis. It is noteworthy that 16.6% (adjusted) of females were having the highest frequency of casual sex at a rate of more than once a week compared to 4.4% of men. Nearly 84% (adjusted) of women reported having more than one casual partner compared to men's 54% (adjusted).

When asked about the characteristics of their casual partners, 12.7% (unadjusted) of respondents reported one or more casual partners having injected drugs, 25 (8.4%) of respondents knew their partners were infected with HIV, comprising of 3.9% (adjusted) female IDU and 11.9% (adjusted) males. Although 13 men representing 11.2% (adjusted) of respondents knew that their partners had sex with other men, they still had casual sex with them.

Table 4.13: High risk sexual practices among IDUs - Casual Sexual Practices in the last six months

	Unadjusted	Adjusted % [95%CI]	
	N (%)	Females	Males
How often had sex with casual partner			
Never	81 (64.4)		71.9 [71.8-72.0]
<once a month	30 (10.7)	11.6 [11.2-11.8]	14.5 [14.4-14.7]
>once a month	28 (10.0)	0.8 [0.4-1.0]	4.8 [4.6-5.0]
>once a week	17 (6.1)	16.6 [16.2-16.8]	4.4 [4.3-4.6]
Weekly	24 (8.5)	1.7 [1.2-1.9]	4.4 [4.3-4.6]
How many casual partners have you had sex			
0	11 (3.7)	15.6 [14.8-15.8]	7.1 [6.9-7.3]
1	31 (10.4)	0	39.0 [38.9-39.2]
More than one	61 (20.4)	84.4 [82.2-84.9]	53.9 [53.2-54.6]
How often did you use condom			
Never	33 (29.5)	11.9 [11.2-12.1]	32.2 [32.1-32.4]
Sometimes	45 (40.2)	40.4 [39.9-40.6]	28.5 [28.3-28.6]
Always	34 (30.4)	47.7 [47.1-47.8]	39.3 [39.1-39.4]
Casual partners who ever injected drugs			
0	58 (19.4)	64.3 [63.9-64.4]	65.6]65.4-65.7]
1	17 (5.7)	33.3 [32.7-33.5]	19.8 [19.6-20.0]
More than one	21 (7.0)	2.4 [1.6-2.6]	14.6 [14.2-15.0]
Partner been told they were HIV+ or have AIDS	25 (8.4)	3.9 [3.2-4.1]	11.9 [11.7-12.0]
Partner had sex with other men	13 (9.4)	0	11.2 [11.0-11.4]

4.3.8 Transactional sex: exchange of sex for money, goods, and drugs

Transactional sex involves the receipt or provision of drugs, money or goods in exchange for sex. Both male and female IDUs engaged in transactional sex both as

recipients and providers. Injecting Drug Users who were affirmative to receiving either money or goods in exchange for sex numbered 40 (12.4%) men and 9 (48.3%) women (Table 4.14). Those who received drugs in exchange for sex were 34 (10.6%) men and 7 (31.8%) women. The mean age for these men was 29.7 years (IQR: 26-32) and for these women was 26.1 years (IQR: 22-30). Transactional sex in the form of receiving money, good or drugs in exchange for sex is more prevalent among women compared to men, this finding compare with the findings from the WHO six city study, in which they found that most female IDUs were also sex workers (Des Jarlais, Perlis, Stimson, Poznyak, & al., 2006). It should be noted that there is homosexual activities among male IDUs as has been identified in this study. The mean and median age of men who sell sex in exchange for drugs is 30.9 year and 31 years respectively. The women who sell sex in this manner also fall in the same age bracket. The results indicate that the practice of selling sex in exchange for money, goods and drugs is common among IDUs and it appears to be more prevalent among female IDUs.

Condom use during these engagements was low, 29 (34%) never used condoms, 32 (37%) used condoms sometimes and only 23 (27%) consistently used condoms. Of the participants who responded to the question regarding their ever having had anal or oral sexual intercourse in prison or for money, only 4 (6.3%) answered in affirmative.

Table 4.14: High Risk Behavior among IDUs – receive money, goods or drugs in exchange for sex.			
	Unadjusted	Adjusted% [95% CI]	
	N (%)	Female (N=22)	Male (N=322)
A client who gave you money or goods for sex			
Never/none	261 (84.4)	51.7 [51.4-52.0]	87.1 [87.0-87.1]
<1 a month	14 (4.5)	15.8 [15.4-16.2]	3.9 [3.8-4.0]
>1 a month	15 (4.8)	10.1 [9.7-10.6]	3.4 [3.3-3.6]
Once a week	13 (4.2)	16.7 [16.3-17.1]	3.5 [3.4-3.6]
>once a week	6 (1.9)	3.3 [2.9-3.8]	2.1 [2.0-2.2]
Daily	1 (0.3)	2.4 [1.9-2.8]	-
A client who gave drugs for sex			
Never	223 (84.5)	80.2 [80.0-80.4]	86.2 [86.1-86.2]
<1 a month	12 (4.6)	3.8 [3.3-4.2]	3.9 [3.8-4.0]
>1 a month	12 (4.6)	11.5 [11.0-11.9]	5.0 [4.8-5.1]
Once a week	11 (4.2)	1.9 [1.4-2.3]	2.5 [2.3-2.6]
>once a week	6 (2.3)	2.7 [2.2-3.1]	2.5 [2.3-2.6]
Daily	.	.	.
How often were condoms used			
Never	29 (34.1)	16.7 [15.9-16.9]	37.4 [37.2-37.6]
Sometimes	32 (37.7)	10.1 [9.2-10.2	33.9 [33.8-34.1]
Always	23 (27.1)	73.2 [72.8-73.3]	28.3 [28.1-28.4]
Number of male partners had anal/oral sex in the last 6 months:			
None	60 [93.8]	33.4 [31.1-33.6]	98.7 [98.6-98.7]
One or more partners	4 [6.3]	66.6 [65.0-66.7]	---

Respondents who were involved in transactional sex were asked to state the average number of clients they had on monthly basis. Their response showed that the nearly 40% have more than five clients per month, 20 percent have an average of one client per month, the rest vary between two and four clients (Figure 4.12).

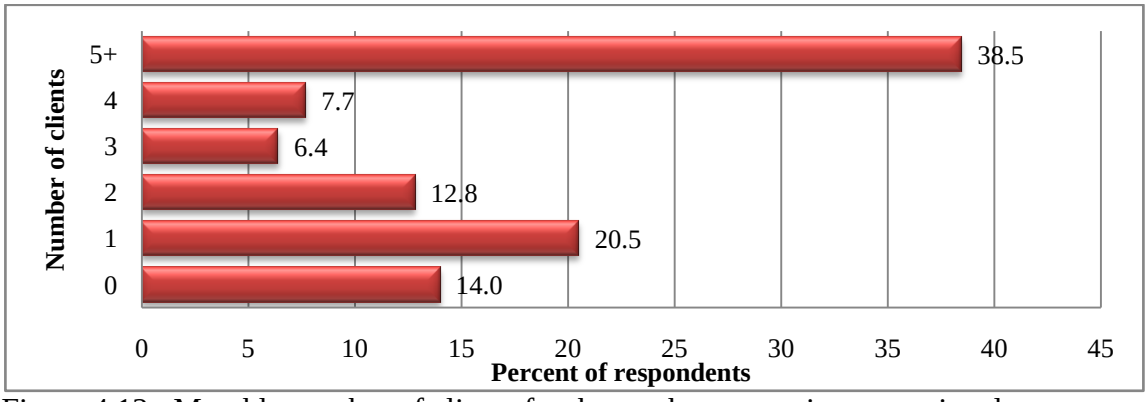


Figure 4.12: Monthly number of clients for those who engage in transactional sex

4.3.9 Frequency and sources of shared injecting equipment

Table 4.15 shows the frequency of sharing of needles/syringes among those who shared. Up to 154 (44.6%) of respondents indicated that they shared needles/syringes. Of those who shared needles and syringes, 21.4% reported sharing needles more than once daily, while 16.9% shared on daily basis, 19.4% shared 2 to 3 times weekly and 13.6% shared needles once to three times a month and 14% shared less than once a month. These shows the existence of a rampant practice of sharing needles with other PWID.

Table 4.15: Frequency of sharing needles/syringes in the last six months among those who shared

Frequency of reuse of needles/syringes	**Unadjusted**
	N=154[%]
More than once a day	23 [21.4]
Daily	26 [16.9]
2 to 3 times weekly	30 [19.4]
Weekly	22 [14.3]
1 to 3 times month	21[13.6]
Less than once a month	22 [14.3]

Table 4.16 shows the source of shared needles/syringes. In Nairobi, 33.2% of respondents reported that they got their needles from close friends, 13.5% from a primary sex partner, 6.4% from a dealer, 4.9% from someone else and only 3.1% from a relative.

Table 4.16: Source of shared needles/syringes

	N	**%**
Primary sex partner	178	13.5
Relative	163	3.1
Close friend	211	33.2
dealer	172	6.4
Someone else	164	4.9

4.3.10 Types of reagents used for cleaning injecting equipment

Respondents were asked the type of reagents they used to clean reused needles/syringes. For those, 92.7% of respondents reported using plain water. The numbers of those who responded were higher than those who shared needles/syringes because they employed more than one method depending on the circumstances. Up to 4.2% reported using boiling water, whereas 1.2% used bleach which is the recommended method of cleaning needles/syringes in harm reduction strategies. The use of plain water was common due to its ready availability and ease of use. Respondents cited lengthy procedures and steps employed in the use of bleach which they considered to be unfriendly as the reason for not using it.

4.3.11 Reasons for sharing injecting equipment

Figure 4.13 presents reasons for sharing injecting equipment among respondents. The foremost reasons for sharing injecting equipment among IDUs were due to access to needles and syringes totalling to 28.3%. These reasons comprised lack of own needles (15%), difficulty in accessing needles and syringes (10%) and being in prison and expensiveness (3%). The remaining reasons indicated a lack of knowledge and awareness of the HIV virus and its transmission characteristics. These comprised, "that the needle was safe because I cleaned it" (10%) and "being careful with whom I share with" (9.7%) and peer pressure (7.1%). In addition 22.1% of IDUs acknowledged injecting drugs using a syringe that someone else had squirted drugs into from their used syringe. This practice is known as frontloading, back loading or splitting. 29.4% of

IDU's in the study reported that they shared other injecting equipment such as vials, cotton, water and other paraphernalia. These results clearly show that IDUs lack knowledge of HIV transmission and prevention and that they experience difficulties in accessing injecting equipment for safe injecting practice.

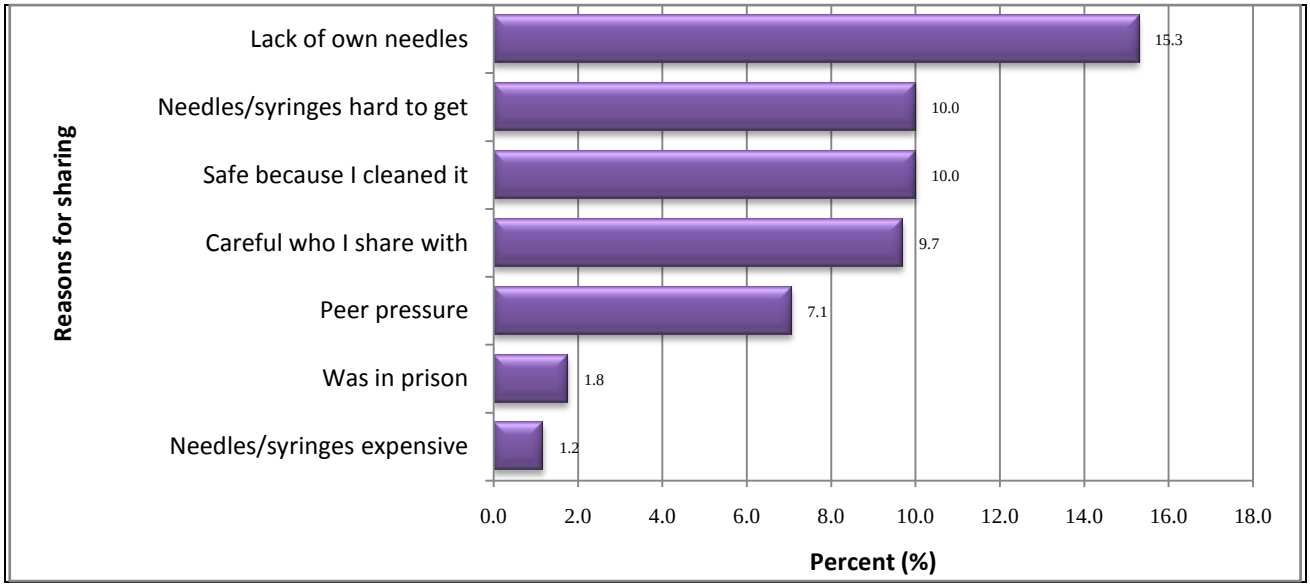


Figure 4.13: Reasons for sharing injecting equipment (%)

4.3.12 Injection practices in prison

A total of 18 (6.2%) respondents indicated that they had injected while in prison. Of those who had injected drugs while in prison, 14 (77.8%) had shared injecting needles/syringes while in prison (Figure 4.14). This results show clear evidence that drugs are available in prison settings and due to the challenging environment, IDUs are forced to share injecting equipment in such difficult settings.

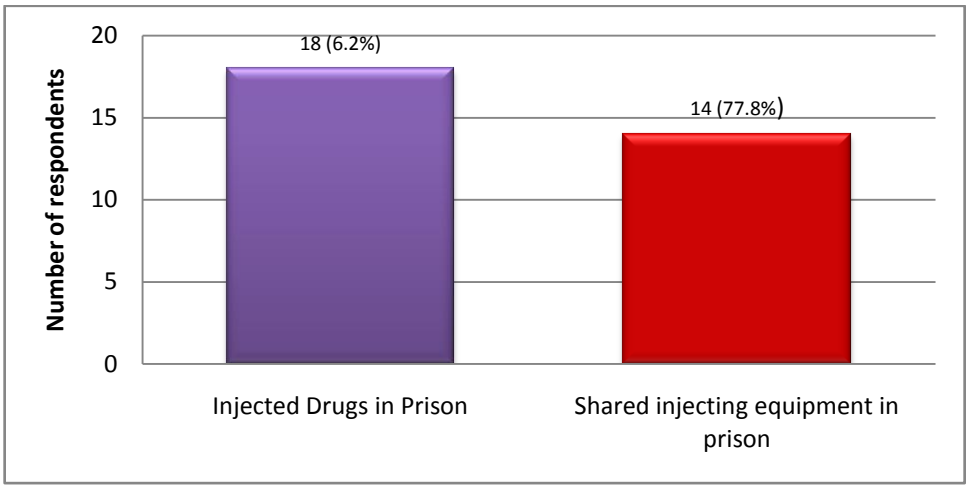


Figure 4.14: Sharing Injecting equipment while in Prison

4.3.13 Multivariate Logistic Regression Analyses on behavioral variables

As means to test hypothesis regarding objective three, Multivariate Logistic Regression was carried out on variables associated with sexual and drug use behavior and the results are shown on Table 4.17 below. The sexual behavior variables which were found to be significantly associated with HIV status were number of sexual partners who have ever injected drugs ($p<0.03$), casual sex partners who have ever been told they were HIV positive ($p<0.04$) and Whether clients gave drugs in exchange for sex ($p<0.0021$). Injection and sharing behaviours identified to be significantly associated with HIV status were Used a syringe used by someone else ($p<0.01$); Gave, lent or sold needles/syringes that you have used ($p<0.01$); Gave lent or sold needles/syringes to a close friend ($p<0.01$); Drug worker agency source of needles/syringes ($p<0.016$); Ever inject with an HIV positive person ($p<0.0001$); Ever injected with a female drug injector (0.04).

Table 4.17 MLR Analyses on Sexual and Drug Use Behaviour					
ODDS RATIOS FOR INFECTION WITH HIV	**Odds ratio**	**SE**	**95% confidence interval of Odds**		**P-value**
SEXUAL BEHAVIOUR					
Number of casual sex partners who have ever injected drugs (Log-Likelihood = 8.7, Chi-square = 9.2 (3df), P<.0.03)					
• 1	1.33	0.34	0.56	3.17	0.30
• 2	3.50	0.38	1.30	9.39	0.01
• 3 and above	2.75	0.37	1.07	7.10	0.03
Casual sex partners ever been told that they are HIV positive (Log-Likelihood = 6.0, Chi-square = 6.3 (2df), P<.0.04)					
• Refused	4.52	0.35	0.62	32.83	0.24
• Yes	1.98	0.68	1.06	3.73	0.90
Client who gave you drugs in exchange for sex (Log-Likelihood = 23.3, Chi-square = 20.6 (6df), P<.0.0021)					
• More than once a week	6.17	37.6	1.83	20.77	0.98
• Daily	5.14	37.6	1.02	25.99	0.96
• More than 1 a month	2.57	37.6	1.11	5.95	0.94
• Once a week	2.29	37.6	0.69	7.62	0.95
INJECTION AND SHARING BEHAVIOUR(last six months)					
Used a syringe used by someone else (Log-Likelihood =9.2, Chi-square = 8.9 (2df), P<.0.01)					
• Yes	1.99	119.7	1.27	3.13	0.01
How often give, lend or sell needles/syringes that you have used (Log-Likelihood =9.2, Chi-square = 8.9 (2df), P<.0.01)					
• 1-3 times monthly	1.32	24.2	0.58	2.99	0.97
• 2-3 times weekly	2.25	24.2	1.18	4.29	0.01
• more than once daily	2.99	24.2	1.44	6.21	0.01
• refused	2.88	24.2	0.26	2.31	0.95
• daily	2.19	24.2	1.03	4.63	0.01
• weekly	2.52	24.2	0.99	6.41	0.96
Gave, lent or sold used needles/syringes to a close friend (Log-Likelihood = 5.6, Chi-square =5.8 (1df), P<.0.01)					
• Always	2.18	51.0	1.23	3.86	0.01
• Sometimes	1.90	51.0	1.08	3.36	0.01
Drug worker/agency as source of un-used needles/syringes (Log-Likelihood = 5.6 , Chi-square =5.8 (1df), P<.0.016)					
Yes vs No	2.31	0.17	1.17	4.58	0.016
Did you ever inject with anyone who was infected with HIV? (Log-Likelihood =17.2, Chi-square =18.3 (2df), P<.0.0001)					
• Refused	2.84	0.49	0.67	12.15	0.49
• Yes	2.94	0.29	1.76	4.90	0.020
Did you ever inject with a female drug injector? (Log-Likelihood =5.8, Chi-square =62 (2df), P<.0.04)					
• Refused	0.79	0.74	0.09	6.82	0.51
• Yes	2.63	0.44	1.23	5.63	0.01

4.4 HIV Prevalence and Risk Factors

4.4.1 Overall HIV Prevalence

The adjusted HIV prevalence in IDUs in Nairobi was 18.3%. In general the HIV prevalence among People Who Inject Drugs (PWID) was found to be unexpectedly high and study respondents residing in the eastern regions of Nairobi and particularly those of the male gender had lower HIV prevalence (8.8%) compared to female respondents from the western regions of Nairobi who exhibited extremely high HIV prevalence of 40.8% (Table 4.18). The study showed that respondents from the western regions of Nairobi were significantly more vulnerable to HIV infection compared to those from the Eastern regions of Nairobi (χ^2 = 15.3, 2 df, p<0.0088). Additionally the results indicated that women who injected drugs were significantly more vulnerable to HIV compared to their male counterparts (χ^2 = 25.1, 1df, p<0.0001).

Table 4.18: Adjusted HIV Prevalence by Sex

	ADJUSTED HIV PREVALENCE [95% CI]	
Nairobi County	18.3	[18.2, 18.4]
	Women	**Men**
East Nairobi	36.5 [36.1, 36.9]	8.8 [8.6, 8.9]
West Nairobi	40.1 [39.3, 40.8]	27.9 [27.7, 28.0]
Nairobi County	**37.3 [36.9, 37.6]**	**17.1 [17.0, 17.2]**

4.4.2 HIV Prevalence by Sex and Age

Figure 4.15 below show the adjusted HIV prevalence for women and men IDU for different age groups in Nairobi county. The HIV prevalence among women who inject drugs is relatively high compared to men. In particular women IDUs who were below 30 years were particularly vulnerable to the epidemic. The HIV prevalence for both men and women in the 15-29 years age range is particularly high ranging between 40.3% to 54.3% percent for female IDU and between 14.4% to 28.9% for male IDUs. The results

indicated that among both gender, younger IDUs aged below 30 years appear to be much more vulnerable to HIV infection compared to older drug users.

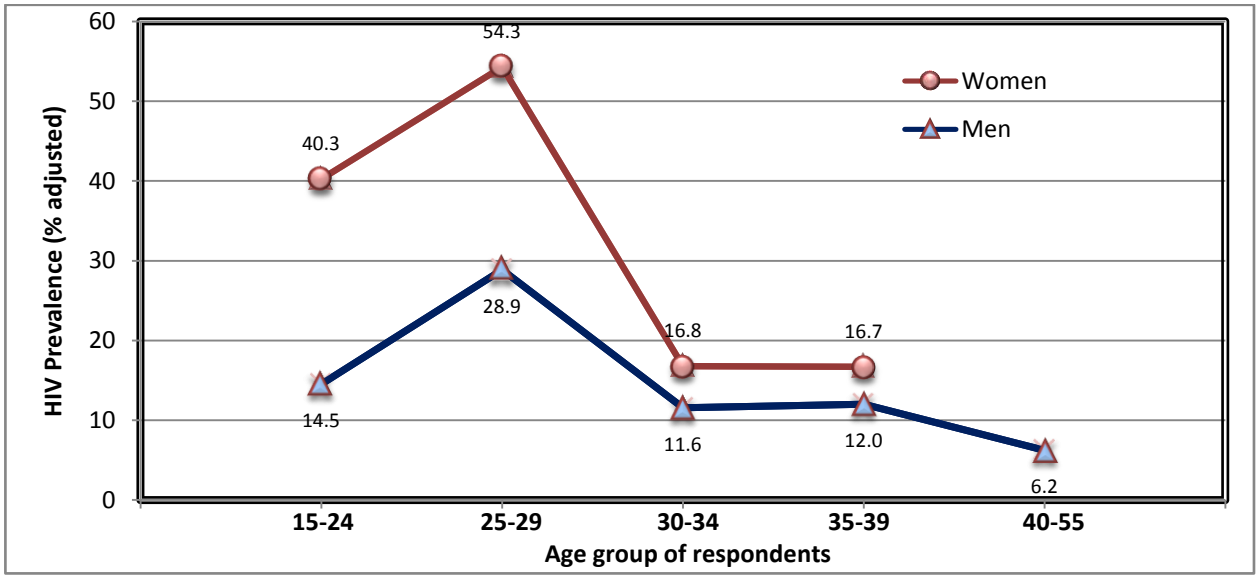


Figure 4.15: Adjusted HIV Prevalence of Respondents by Sex

4.4.3 HIV prevalence by socio-demographic risk factors

The mean and median age of HIV positive IDU women in Nairobi was 26.4 years and 27 years respectively. Table 4.19 shows the HIV prevalence by the two study sites in Nairobi, by age group, religion, educational level and profession. In this study women were fewer in number compared to men, however they were at extremely high risk of HIV infection with an overall prevalence of 37.3% compared to men's 17.1%. Women from both East and Western regions of Nairobi showed extremely high levels of HIV prevalence of 36.5% and 40.1% respectively (Figure 4.15 & Table 4.19). Generally women IDU in Nairobi tend to be fewer compared to men IDU, this has been established in a number of previous studies. These studies have also noted that they exhibit high levels of HIV prevalence compared to male IDU (Des Jarlais, Perlis, Stimson, Poznyak,

& al., 2006), (Deveau, Levine, & Beckerleg, 2006). Although the study sample comprised of more male IDU respondents, their HIV prevalence was much lower in both regions; men from West Nairobi showed an elevated HIV prevalence (27.9%) compared to those from the Eastern regions of Nairobi (8.8%), both of which were much higher than the national HIV prevalence of 6.3% and the regional prevalence of 4.6% for Nairobi.

The two age groups ranging from 15-24 and 25-29 years showed elevated HIV prevalence of over 40% and 54% among female IDUs respectively and 14.5% and 28.8% for young men in the same age group respectively. The national statistics estimates for HIV prevalence for these age groups were 1.7% and 4.2% (Kenya National Bureau of Statistics (KNBS); ICF Macro, 2010). Comparison of these HIV prevalence figures in this study with the National figures for the two age groups shows that female IDUs exhibit HIV prevalence that were respectively in multiples of over 20 and 12 times higher and male IDUs were approximately 8 times the national figures.

The prevalence reported in the 15-24 years is a proxy of the HIV incidence in the population while the high levels in the 30-34 years is an accumulation of cases of HIV resulting from infections from earlier years and the reduced mortality due to AIDS as consequence of the wider use of the ARVs. Another area of great concern for Kenya is the increasing involvement in IDU practice by young people of school going age who were dropping out of school due to indulgence in drug galleries in which they were increasingly being converted to drug injectors. They were also the same population that is contributing to the (19-24) years age group.

The elevated HIV prevalence for all factors of religion and education indicated that being a adherent any religion or having a certain level of educational attainment was not protective against infection by HIV. Both Muslims and Christians IDUS were affected by HIV to the levels of over 40% for women and over 14% for men in Nairobi county. Women who have attained primary and secondary school education recorded heightened levels of HIV infection ranging from 40.4% and 47.7% respectively. Male IDUs who had attained primary and secondary level education had lower HIV prevalence (14.5% to 24.6%) compared to the female IDUs. The highest HIV prevalence levels of 24.6% was observed among those with secondary level education followed by those with post secondary education (20.9%). Those who had attained primary level education had similar HIV prevalence of 14.4% with those with no education. These HIV prevalence statistics were still higher by a factor ranging from 3 to 5 compared to national figures (Kenya National Bureau of Statistics (KNBS); ICF Macro, 2010).

Table 4.19: Adjusted HIV Prevalence of IDU population by socio-demographic Characteristics

	Women		Men	
Demographic Characteristics	**HIV Prevalence**	**95% CI**	**HIV Prevalence**	**95% CI**
STUDY AREA				
East Nairobi	36.5	[36.1, 36.9]	8.8	[8.6, 8.9]
West Nairobi	40.1	[39.3, 40.8]	27.9	[27.7, 28.0]
All	**37.25**	**[36.9, 37.6]**	**17.09**	**[17.0, 7.2]**
AGE GROUPS				
15-24yrs	40.25	[39.6, 40.9]	14.54	[14.2, 14.8]
25-29yrs	54.31	[53.8, 54.8]	28.86	[28.7, 29.0]
30-34yrs	16.8	[16.0, 17.6]	11.55	[11.3, 11.8]
35-39yrs	16.72	[14.9, 18.5]	12.01	[11.8, 12.2]
40-55yrs	-		6.23	[5.9, 6.6]
RELIGION				
Muslim	25.21	[24.7, 25.7]	22.77	[22.5, 23.0]
Protestant	32.27	[31.6, 33.0]	9.58	[9.4, 9.7]
Roman Catholic	67.37	[66.9, 67.9]	20.37	[20.2, 20.5]
EDUCATION LEVEL				
Primary	40.43	[40.0, 40.8]	14.46	[14.3, 14.6]
Secondary	47.72	[47.0, 48.5]	24.6	[24.4, 24.8]
Post secondary	-	-	20.9	[20.4, 21.4]
Never Attended	5.74	[4.6, 6.9]	14.46	[14.3, 14.6]
PROFESSION				
Pupil/Student	-	-	28.15	[27.1, 29.2]
Unskilled	33.2	[32.6, 32.8]	17.73	[17.5, 17.9]
Semi-skilled	51.9	[51.1, 52.7]	17.49	[17.1, 17.9]
Skilled Artisan	-	-	16.35	[16.2, 16.5]
Professional	-	-	30.4	[30.2, 30.6]

In Nairobi, IDUs of all professions were affected by HIV, women who were unskilled (33%) or semi-skilled (51.9%) showed increased vulnerability. Among men IDUs, those who were professionals (30.4%) and those who were still in school (28.2%) were most vulnerable to HIV infection (Table 4.18).

4.4.4 HIV status versus age at initiation of drug injection

The unadjusted HIV prevalence for IDUs in Nairobi was 24.4%, which is higher compared to the adjusted HIV prevalence of 18.3%. Those who initiated injecting drug

use at 11-19 years had the highest prevalence of HIV at 44.7% (unadjusted), followed by those initiated at 20-24 years (29.4%). The group which exhibited the lowest HIV prevalence, comprised IDUs of age group 30-55 years who had been injecting for a comparably shorter period and subsequently had prevalence of 11.8% (Figure 4.16). These results indicates a possible relationship between duration of taking drugs and risk of infection by HIV, as those who initiated injecting drugs at a younger age exhibit heightened levels of HIV prevalence compared who initiated at an older age. The results may also indicate that those who initiate injecting at a younger age were more vulnerable because of being less aware of risks associated with sharing injecting equipment and engaging in safer sexual practices. Whereas those who initiate injecting drugs at an older age were less vulnerable because of being aware safer and less risky injecting and sexual behavior, were more financially capable and able to negotiate safer practices.

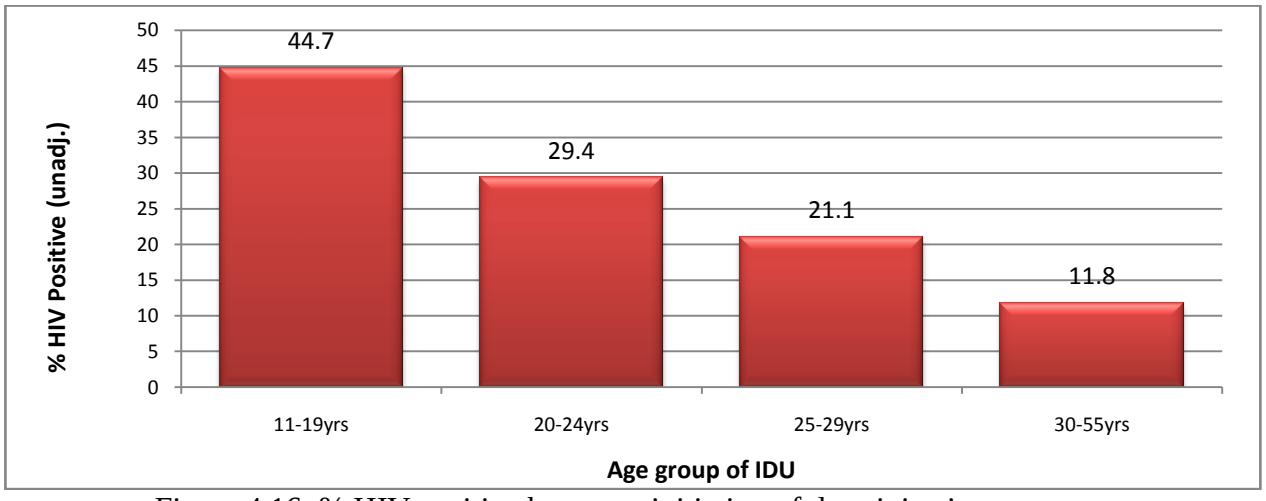


Figure 4.16: % HIV positive by age at initiation of drug injection

4.4.5 Multivariate Logistic Regression Analyses on Socio-demographics

Multivariate Logistic regression modeling was carried out on the data to identify socio-demographic variables that were associated with individual HIV status. Table 4.20 lists out the variables which were significantly associated with HIV status. The table provides the log-likelihood of the model, the associated chi squared statistic and probability. The table also gives the odds ratios, standard errors, 95% confidence interval and level of significance.

On background characteristics, the respondent's sex (χ^2=25.1, 1df, p<0.0001) and residential location (χ^2=19.2, 2df, p<0.0088) were found to be significantly associated with HIV status. The odds ratio of disease was 4.32 for women IDU, 11.1 and 4.3 for those residing in Western and Eastern regions of Nairobi respectively. Women IDUs were 4.32 times more at risk of HIV infection compared to men IDUs and those residing in western regions of Nairobi were more at risk of infection compared to their east Nairobi counterparts. On knowledge and behaviour change, the variable on self perception of risk to HIV was significantly associated with HIV status (χ^2=22.8, 3df, p<0.0001) and showed that those who perceived themselves to be at high risk were identified to be more than twice at risk (OR=2.11, p<0.0019) compared to those who perceived themselves to be at no risk.

Table 4.20: Multivariate Logistic Regression on HIV status and Socio-demographic Variables

ODDS RATIOS FOR INFECTION WITH HIV	Odds ratio	SE	95% confidence interval of Odds		P-value
Sex (Log-Likelihood = 23.5, Chi-square = 25.1, 1df, P<.0.0001)					
• Female	4.32	0.15	2.44	7.65	<0.0001
Residence (Log-Likelihood = 19.2, Chi-square = 15.3 (2df), P<.0.0088)					
• West Nairobi	11.11	0.24	1.47	83.90	0.0013
• East Nairobi	4.33	0.27	0.56	33.31	0.51
AIDS KNOWLEDGE AND BEHAVIOUR CHANGE					
Self perception of being at high/low/no risk of HIV infection (Log-Likelihood = 24.4, Chi-square = 22.8 (3df), P<.0.0001)					
High Risk	2.33	0.52	1.34	4.05	0.0019
Don't know	2.11	0.32	0.82	5.39	0.19
Low Risk	0.75	0.21	0.39	1.45	0.37

4.5 Availability of Services for HIV Prevention, Care and Treatment

4.5.1 Perception of health status and diagnosed illnesses

Study respondents were asked to describe their current health status in accordance with how they were feeling at the time of the interview. They were asked to state whether they were feeling excellent, good, fair or poor. Figure 4.17 presents the distribution of current health status as self assessed by the study respondents during the study interviews. The majority of the study respondents (61.6%) described themselves as being in a fair state of health, 34% considered themselves to be in poor health, while only 4.1% considered themselves to be in excellent health.

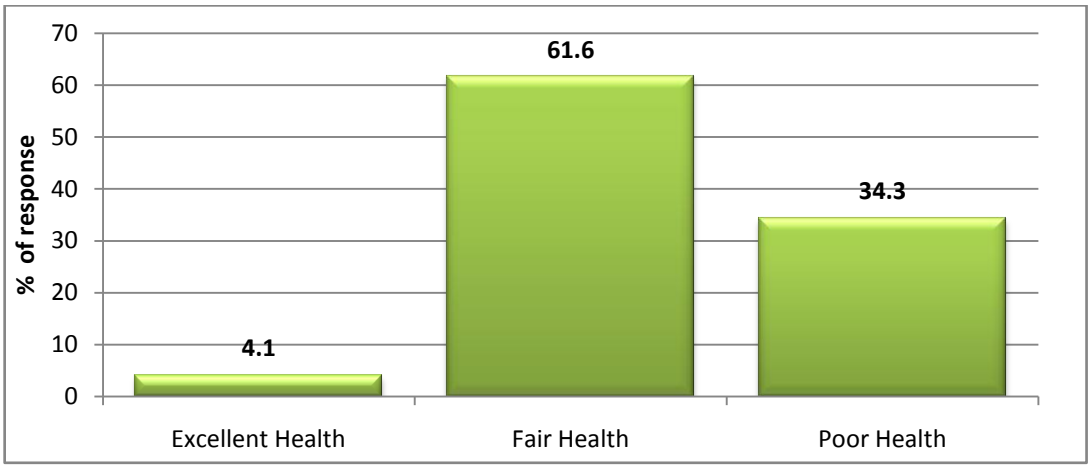


Figure 4.17: Respondents' perception of their health status

On ailments reportedly diagnosed on respondents through previous medical visits, the most common was Malaria. Malaria had been diagnosed in 47.3% of the study population, 13.6% of respondents reported diagnosis of abscess and collapsed veins, 13.4% of the study population reported not having had any infections and 8.1% reported other infections (Figure 4.18). Sexually transmitted infections, comprising of Gonorrhea, Syphillis, Genital warts and Chlamydia were reported by 13%. Tuberculosis

and Mouth infections were reported by 4.2% and 0.5% of the study population respectively.

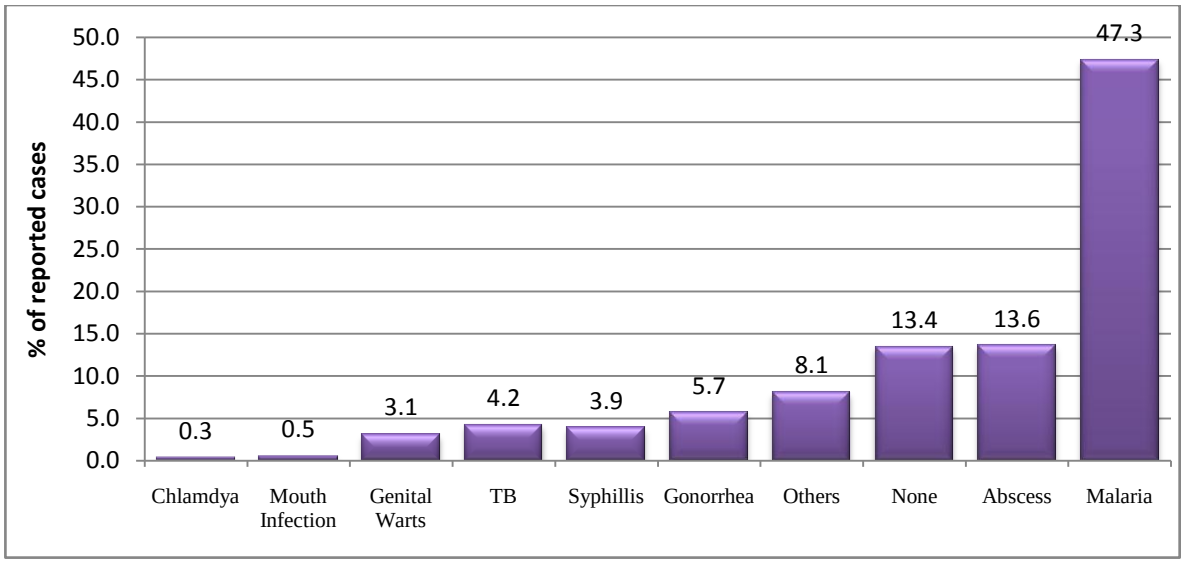


Figure 4.18: Respondents ever diagnosed with HIV-related or other infections

4.5.2 Overdose experience

A drug overdose is a condition that results from taking too much of a drug (or combination of drugs) for your body to be able to cope with. There were a number of signs and symptoms that show someone has overdosed, and these differ with the type of drug used. Depressant overdose results from use of opioids, benzodiazepines and alcohol which are all depressants. Depressants tend to slow the central nervous system, including breathing and heart rate. Too much of any one of these substances on their own or in combination can kill or cause permanent brain damage. Stimulant overdose results from the use of substances such as amphetamines in the form of speed and ice. Amphetamine overdose increases the risk of heart attack, stroke, seizure or drug-induced psychotic episodes. Overdoes due to mixing drugs results from taking more than one kind of drug at a time. This puts a lot of strain on the body and can increase both effect

and risk. Most heroin-related overdose are caused when it is taken in combination with other depressant drugs. For instance alcohol and benzos like alprazolam and temazepam (Temaze) are depressants, and mixing them with drugs like heroin, oxycodone (Oxycontin) or morphine (MS Contin) greatly increases the risk of an overdose (/facts-stats/overdose-basics/, 2014). Overdose may also result when a person takes drugs after a period of abstinence due to treatment or imprisonment (Darke, Degenhardt, & Mattick, 2006).

Table 4.21 presents the distribution of the problem of accidental narcotic overdose in the study population. The data indicates that a very high proportion of the study population (92.1%) had witnessed another person accidentally overdosing on narcotics, indicating that overdose is a common problem among IDUs. Similarly, high proportion of the study population had known someone who had died of narcotics overdose (90.6%); Accidental self overdose on narcotics is relatively common with the study registering 33.6% of the study population reporting having experienced this.

The study respondents (86.9%) reported that overdose victims were assisted by expert service providers. The fear of medical persons notifying law enforcement was expressed by 30% of study respondents. Cardiopulmonary resuscitation is a first respondent's skill taught by NGO peer educators to assist IDUs to support those who may experience accidental overdose. The study observed that only 24.8% of the study respondents had been taught this skill.

Table 4.21: Frequency distribution of accidental overdose history and management		
Characteristic	**Nairobi**	
	N	**%**
Ever been present when another person overdosed on narcotics	342	92.1
Ever known someone who died of narcotics overdose	339	90.6
Number of people who died of narcotics overdose	339	90.5
Ever accidentally self overdosed on narcotics	342	33.6
Frequency of self overdose on narcotics	342	34.0
Injected substances that led to overdose	124	91.9
Non-injected substances that contributed to overdose	102	65.7
Persons that helped during last narcotics overdose episode	139	68.3
Perception of getting help from expert service providers	337	86.9
Fear of medical persons notifying law enforcement	340	30.3
Ever taught cardiopulmonary resuscitation	322	24.8

Figure 4.19 presents the distribution of the specific substances that may have had a contribution to overdose episodes. Heroin, both white and brown, was incriminated in 88% of the study population that were using these substances, while cocaine was specified in only 9% of overdose cases. A cocktail of substances (alcohol and unspecified non-prescription drugs) accounted for 10% and the remaining substances contributing approximately 2%.

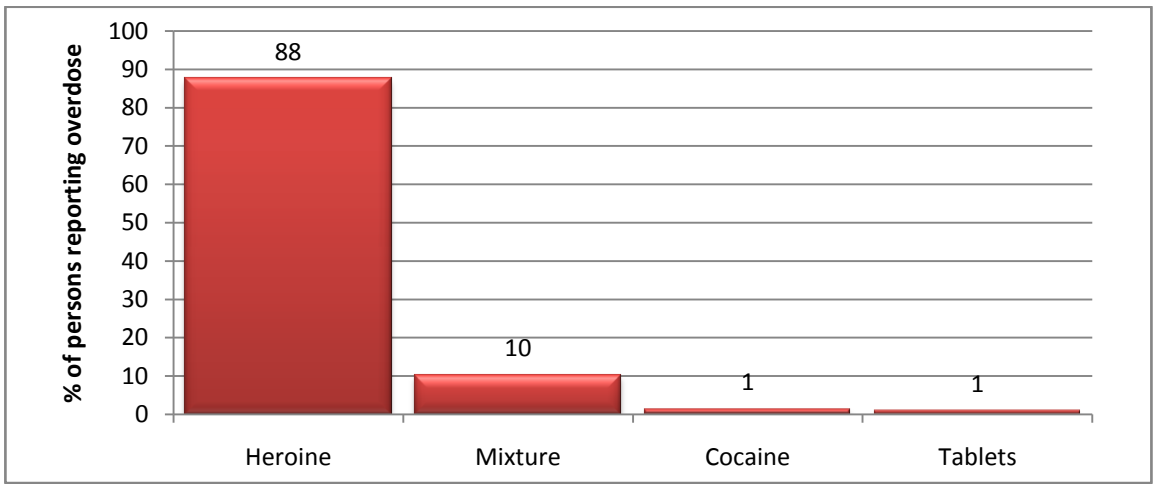


Figure 4.19: Injected substances that led to overdose

Figure 4.20 shows the distribution of non injectable substances that were involved in the occurrence of accidental overdose in the overall study population. A cocktail of substances was the leading cause of overdose in the study population with 30% contribution, followed by cannabis which reported by 25% of the study population. Overall, Heroin accounted for 13% while valium and alcohol accounted for 9% and 17% respectively.

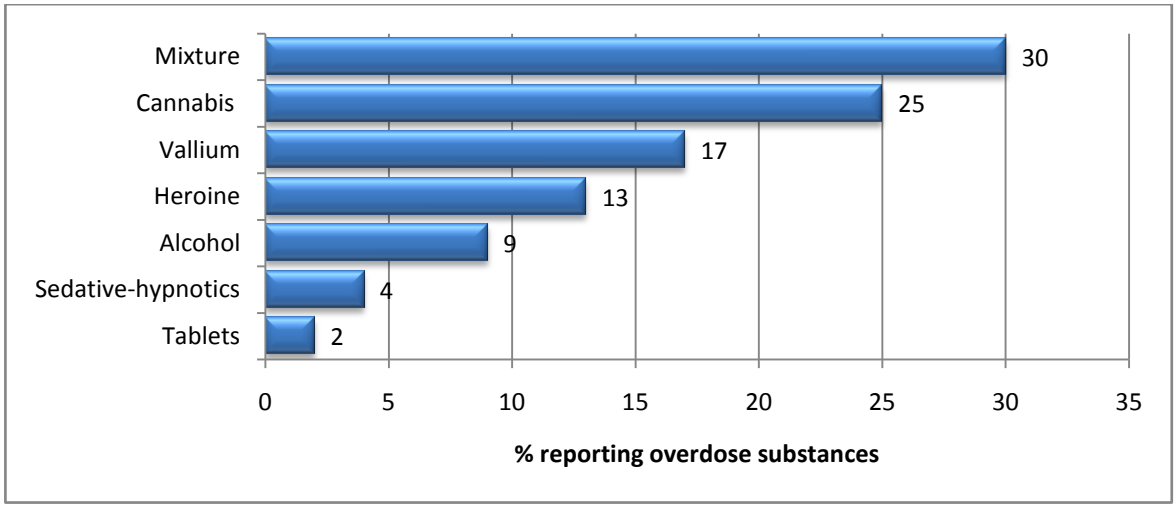


Figure 4.20: Non injected substances which led to overdose

4.5.3 Use of contraception

Respondents were asked to state the methods of contraception that they used with their primary sex partners (Table 4.22). Half of the study population (172 persons) responded to this question. The main method of contraception was condoms as stated by 102 (59%) of the 172 respondents. Other methods comprised Oral contraceptives (23%), Depo-Provera (11.6%), female condoms (2.9%) and IUD (2.9%). The distribution of responses regarding the different types of contraception methods may be indicative of knowledge and the gender responsibility for contraception.

Table 4.22: Use of contraceptives among IDUs (desegregated by gender)			
Contraception method	**Unadjusted**	**Adjusted**	
	N (%)	**Females**	**Males**
Male condom	102 (59.3)	93.6 [93.4, 93.7]	84.0[83.9-84.0]
Oral Contraceptives	40 (23.3)		
Depo provera	20 (11.6)	48.5 [47. 48.6]	45.1 [44.9-45.2]
Female condom	5 (2.9)	63.1 [62.4-63.3]	11.3[10.9-11.5]
Intrauterine device	5 (2.9)	81.1 [80.6-81.2]	5.9[5.5-6.1]
Total	172 (50.0)		

Overall the most common form of contraception known and used by both sexes is the male condom as recorded by the response by both gender (93.6% for females and 84% by male IDU). A limited number of IDU responded regarding use of the female condom and intrauterine devices.

4.5.4 Health seeking behaviour

Respondents were informed of medical needs and how those needs were met from a health perspective. These medical needs were differentiated from drug treatment requirements as those required specialized treatment in rehabilitation clinic or health facility. Respondents were then asked to answer questions on their access to medical services and facilities. Figure 4.21 shows the distribution of their responses on the duration since they last sought medical treatment services. Only 19% of the study population sought and received medical services since the last month, 22% sought services in the last 6 months to one year and the majority (59%) last received medical services more than one year ago. These results were indicative of poor pattern of health seeking behaviour among IDUs in the study population.

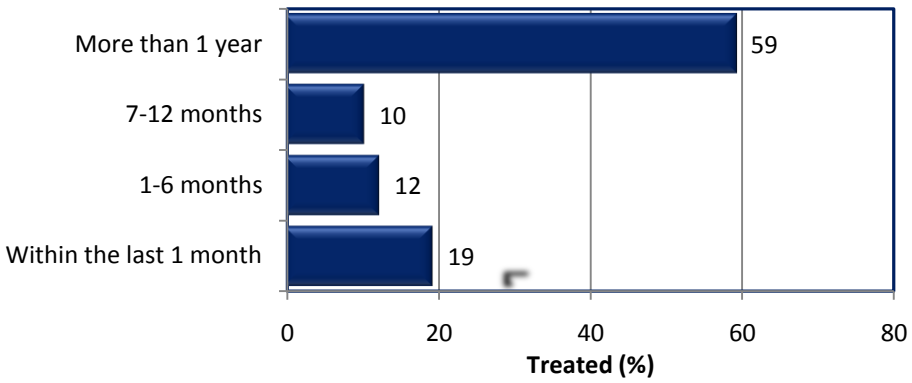


Figure 4.21: Duration since last treatment

4.5.5 Access and utilization of Medical services

On the average, 22.6% of the study population indicated having difficulties in getting medical treatment when sick (Table 4.23). The study respondents were asked whether they were currently having difficulty getting drug treatment if they needed it, more than 58.2% responded in the affirmative. Societal attitudes towards IDUs and the existing discriminatory policies against their lifestyle causes them live in hiding and fear of police or any other authority (Deveau, Levine, & Beckerleg, 2006). As a result of this type of existence, drug users, especially IDUs tend to avoid utilizing certain services such as medical, HIV prevention, drug related services and other health services due to the fear. When asked whether there were any medical, HIV prevention, drug-related, or other services that they avoided because they were afraid of the police or other authorities, only 5.3% of the study respondents answered in the affirmative.

Table 4.23: Frequency distribution of utilization of health services in Nairobi

Characteristic	N	%
Currently have difficulty getting medical treatment when sick	341	22.6
Currently have difficulty getting drug treatment when needed	292	58.2
Ever avoided using health services due to fear of police or other authorities	319	5.3

Figure 4.22 presents main health related services avoided by IDUs due to the fear of police and other authorities disaggregated by gender. On average 63.5% of women and 49.8% of men IDUs stated that avoided services because of fear of authorities. Specifically drug treatment was one of the main services avoided by respondents (77% women and 64.1% men), followed by general medical treatment (77.4 women and 44% men) and HIV related medical treatment (77.4% women and 19.5% men). Others were psychiatric treatment, STD treatment and treatment for violence. When disaggregated by gender, the services avoided were similar except that the proportion of women avoiding treatment was generally higher in most cases except for treatment for violence where they do not feature at all. Three areas where disparity was observed between women and men IDUs, was in seeking HIV related medical treatment which was 77.4% versus 19.5%; Psychiatric treatment (46.1% versus 8.5%) and STD related treatment (46.1 versus 20.1%). In these three cases, the proportion of women IDUs was higher and may be indicative of the magnitude by which these specific health issues were affecting them compared to men IDUs.

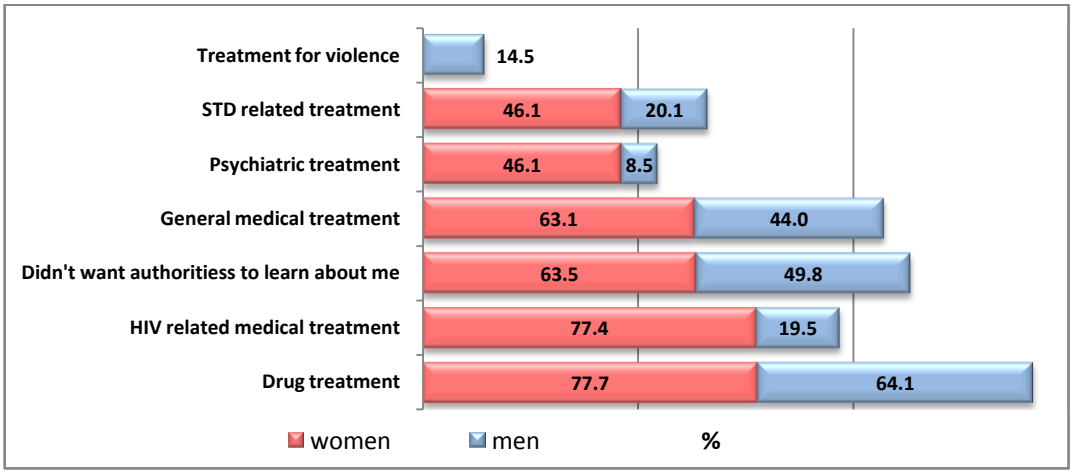


Figure 4.22: Types of services avoided due to the fear of police and other authorities by men

4.5.6 Barriers to accessing medical treatment

Respondents were asked for to specify the barriers they had experienced in accessing medical services when sick. The barriers were shown on Figure 4.23 and 4.24 below for the different gender. Inability to pay, as reported by 84% and 92% of female and male IDUs respectively, appears to be the major barrier being experiences by IDUs in accessing health care service. Lack of services nearby was cited by 37% and 46% of women and men IDUs respectively was the second barrier of access to medical treatment. Fear of painful treatment was cited by 29% of women and 25% of men IDUs. Other reasons comprised: "no way to get there", "I don't satisfy the criteri"', "afraid of arrest by authorities", "inconvenient hours", "treatment not what I need", "don't believe in Doctors", "no service exists", "I speak a different language" and "other". The proportion reporting these barriers to accessing medical treatment, were similar for both gender, except in the case of 'lack of service', where the proportion of women (24%) compared to men (8%) was slightly higher.

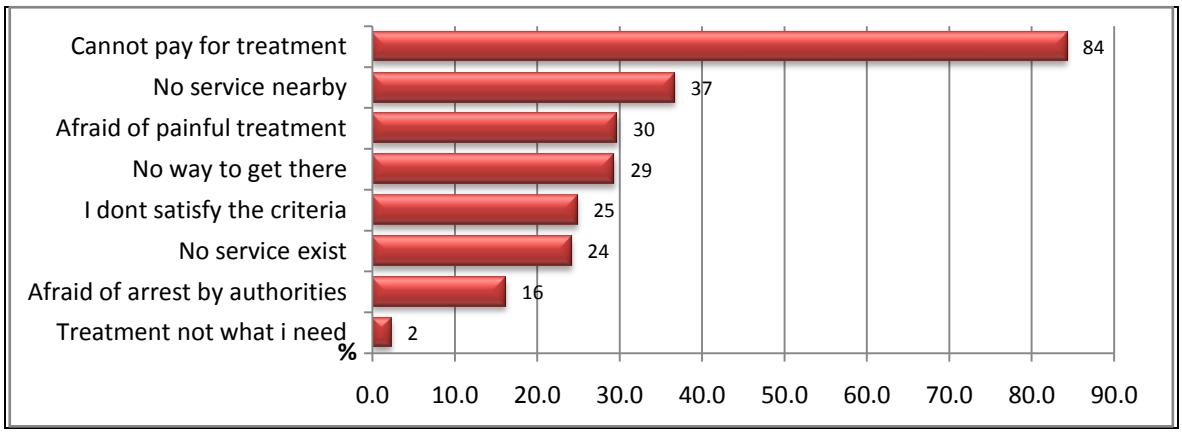


Figure 4.23: Barriers to access medical services for female IDUs

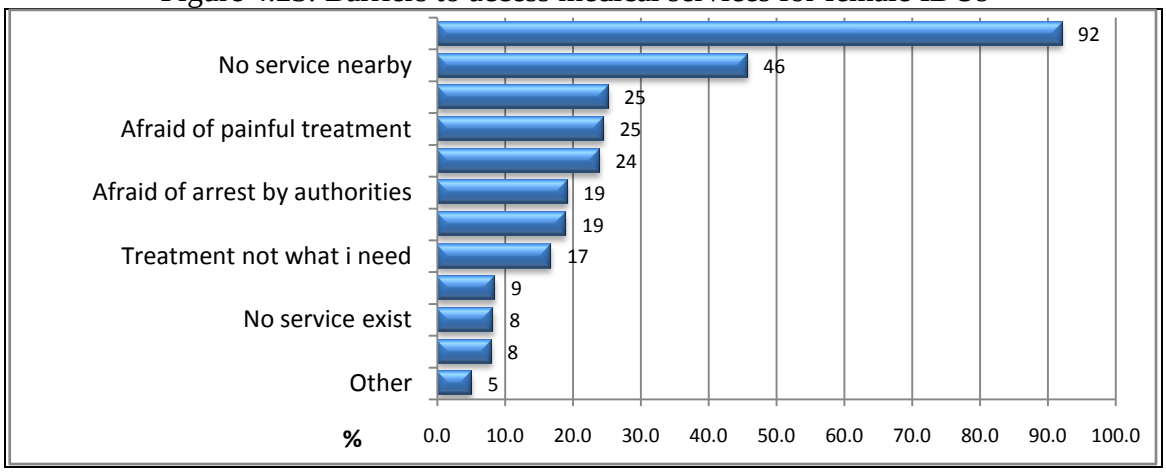


Figure 4.24: Barriers to access medical services for male IDUs

4.5.7 Access to Drug treatment

Drug treatment is intended to help addicted individuals stop compulsive drug seeking and use. Treatment can occur in a variety of settings, take many different forms, and last for different lengths of time. Because drug addiction is typically a chronic disorder characterized by occasional relapses, a short-term, one-time treatment is usually not sufficient. For many, treatment is a long-term process that involves multiple interventions and regular monitoring (NIDA, NIH, 2012).

Table 4.24 illustrates the history of drug treatment for IDUs in Nairobi county and it shows that only a small number of IDUs have ever received drug treatment (7.9%) and 2 [2.5%] IDUs were currently on drug treatment. Similarly, one (1.8%) IDU has initiated treatment in the last 30 days. Proportionately, more women compared to men have ever received drug treatment. For those receiving treatment and initiating treatment in the last 30 days, women showed higher proportion 5.3% versus 1.1% and 12.5% versus 0% respectively.

Table 4.24: History of drug treatment			
	Unadjusted	Adjusted (% [95%CI])	
Characteristic	N [%]	Female	Male
Ever received any drug treatment	330 [7.9]	11.3 [10.8-11.7]	8.6 [8.5-8.7]
Currently receiving drug treatment	81 [2.5]	5.3 [4.2-6.4]	1.1 [0.9-1.4]
Initiated treatment in last 30 days	56 [1.8]	12.5 [10.9-14.1]	0.0

Figure 4.25 shows that the history of utilization of out-patient type facilities for drug treatment by Nairobi IDUs. Historically Public facilities have been the most preferred with 48% of respondents reporting previous use of public facilities for their out-patient drug treatment services. The other treatment facility types such as other NGO (29%), faith-based (12.9%) and private (9.7%) have comparably lower utilization as drug treatment facility choices.

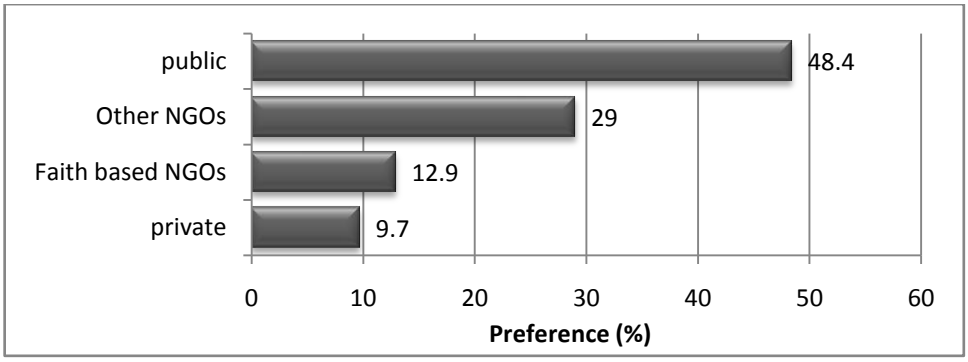


Figure 4.25: Preference of type of facility for drug treatment for out-patient services

On in-patient based drug treatment, private and public type facilities had similar rates of utilization at 50.0% each in Nairobi (Figure 4.26). Faith based NGOs or any other NGOs were not mentioned as in-patient based treatment choices among IDUs. This is because these facilities do not have the capacity to provide in-patient type of services.

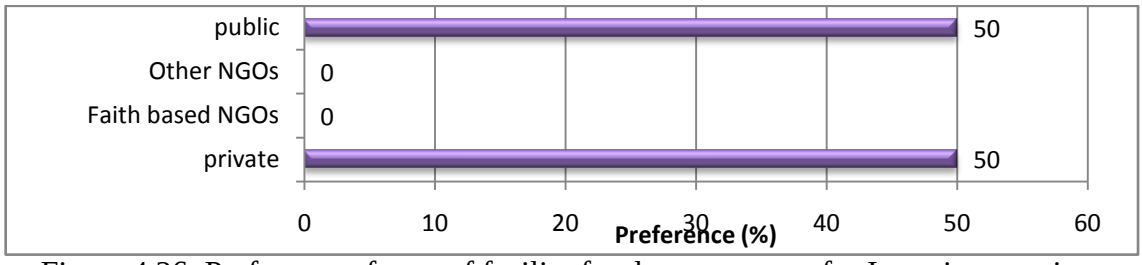


Figure 4.26: Preference of type of facility for drug treatment for In-patient services

Figure 4.27 presents the distribution of the preferences for treatment choices in the form of daily out-patient treatment currently being received. Public facilities were leading at 50% followed by other NGO facilities were second with 22% preference and faith based NGOs and private facilities tied at 14% each.

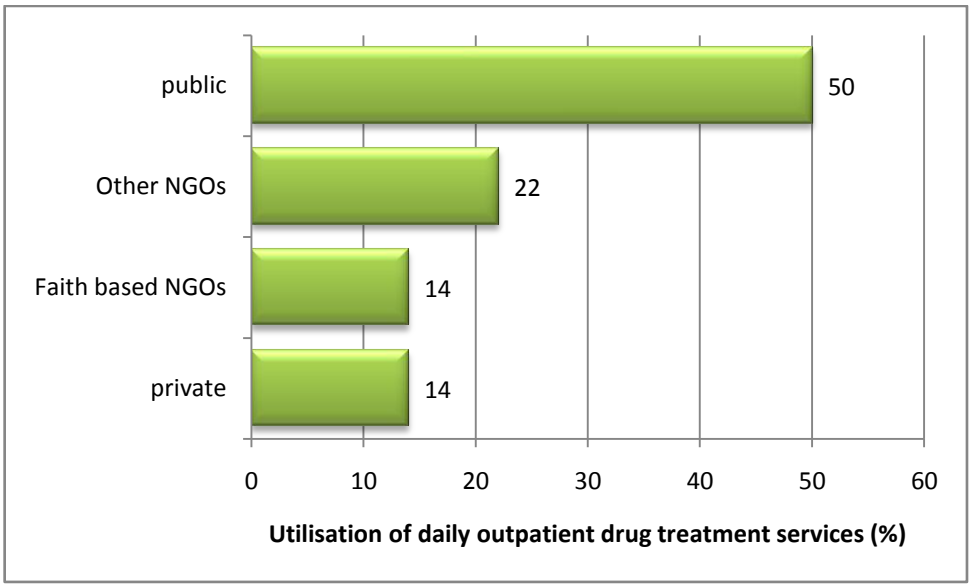


Figure 4.27: Out-patient type treatment currently being received

4.5.8 Barriers to Accessing Drug Treatment

Respondents were also asked to state their reasons for not getting drug treatment when needed. The reasons were largely similar to those given earlier for not getting medical treatment when sick (Figures 4.23 and 4.24). Figures 4.28 and 4.29 presents the reasons

for not getting drug treatment for different gender. For separate gender inability to pay was cited by 84% and 92% for women and men respectively. Lack of service nearby and non-existence of service were cited by both gender at 37% and 46% for women and men IDUs respectively. Other reason comprised fear of painful treatment, not satisfying criteria, fear of authorities, inconvenient hours, un-needed treatment, disbelief in Doctors and speaking a different language.

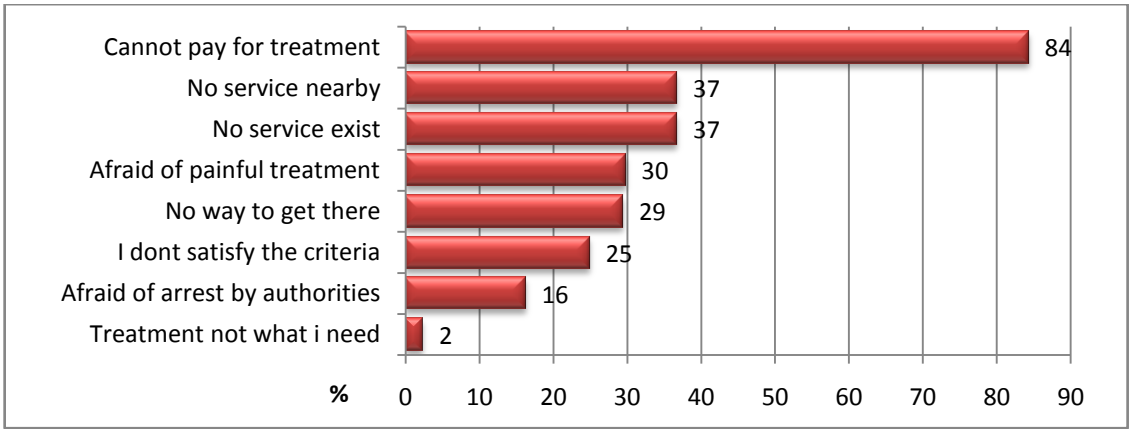


Figure 4.28: Reasons for not getting drug treatment when needed for women

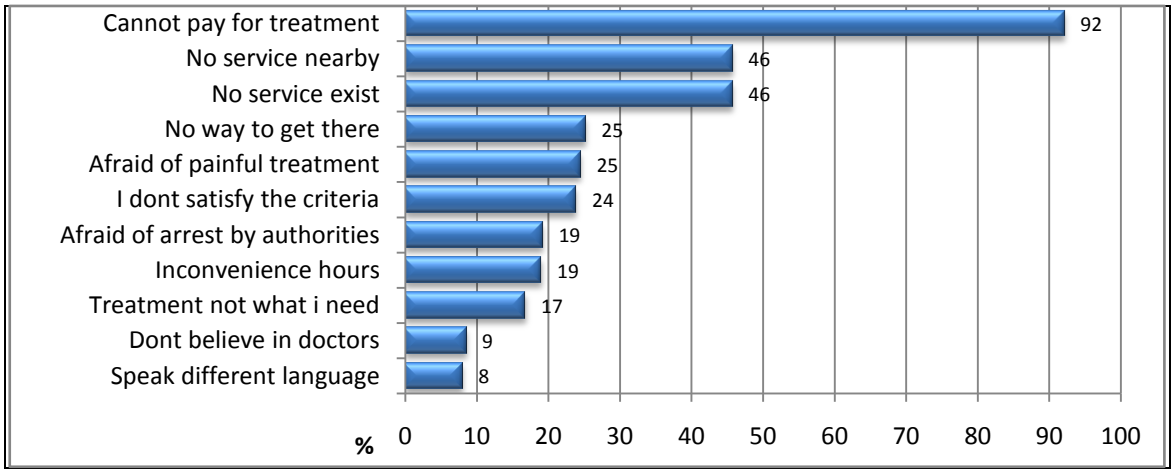


Figure 4.29: Reasons for not getting drug treatment when needed for men

CHAPTER FIVE: DISCUSSION

5.1 Key findings

HIV prevalence among IDUs has declined from between 68% to 88% (Ndetei, 2004) and 36.3% among IDUs in Nairobi (Odek-Ogunde, Okoth, Lore, & Owiti, 2004). The study findings clarify that female IDUs and IDUs from Western Kenya are Most at Risk Population (MARPs) in Nairobi county. The main factors associated with high risk are limited knowledge by IDUs of modes of HIV transmission and methods of protection from infection; risky injecting behaviour involving sharing of needles, equipment and solutions; risky sexual behaviour involving unprotected sex, transactional sex, sex with multiple partners, male to male sex and unprotected sex with partners who are HIV positive. Other factors contributing to increased incidence of HIV are lack of access to health services, drug treatment and rehabilitation services.

5.2 Socio demographic characteristics of IDUs in Kenya

This study indicates that majority of IDU were men [93.6%) and women make up a minority of IDUs (6.4%). The low numbers of female IDUs respondents in this study has also been reported in other studies globally. In study involving drug users participating in a programme in Nairobi and Mombasa, eighty eight percent of all drug users contacted were male, however there were more contacts made with female drug users in Nairobi (15.5%) compared to Mombasa (8.9%) (Deveau, Levine, & Beckerleg, 2006). Des Jarlais, *et. al.* in their global 10 cities IDU study, in which they found that females IDUs comprised less than one quarter of the overall sample in each city. In their report they state that very few females were recruited from Lagos (14%), Nairobi (7%),

and Rio de Janeiro (9%). Nairobi was reported to have the highest percentage of female sex workers who were injecting drugs (Des Jarlais, Perlis, Stimson, Poznyak, & al., 2006). Similarly In their study in Zanzibar, Tanzania, Mohammed *et. al.* reported that female DUs only accounted for 5.1% of the 508 study participants who participated in their study (Mohammed, et al., 2006).

This study found that Injecting drug use commences as early as 11 years for men and 12 years for women and peaks at between 15 to 34 years (70%). These findings were similar to Deveau *et. al.* study in which the age range of IDUs was from mid teens to mid 50s, with a mean age of 27 years in Nairobi and 29 in Mombasa. (Deveau, Levine, & Beckerleg, 2006).

The majority of IDUs were single (53%) and a further 30% were divorced, separated or widowed. Most IDUs have very low levels of education, 70% of the study sample had been educated up to primary school level and a further 25% attained secondary school level. Only 8% were either professionals or skilled artisans, the remaining over 60% were unskilled or a further 22% were semi skilled. Majority (over 90%) had monthly incomes ranging from KShs. 6,000 (US$60) to KShs. 40,000 (US$400). Due to their drug addiction, most IDU were unable to engage in regular employment and rely on temporary work (55%), 14% were self employed and a further 15% engage in theft, robbery and stealing. Des Jarlais *et. al.* also found that most drug users worked to support themselves, and almost three quarters of the Nairobi recruits were engaged in some form of work, primarily temporary jobs (Des Jarlais, Perlis, Stimson, Poznyak, &

al., 2006). Other findings indicate that the living situations of male IDU varied from city to city, but most held only temporary jobs or relied on crime and begging to support their drug habits, and homelessness was common (Dewing, Pluddemann, Myers, & Parry, 2006), (Cleland, DesJarlais, T., G., & Poznyak, 2007) . In Ghana 48% of IDU were unemployed and involved in petty theft to support their drug habit (Affinnih, 1999). The addiction related cravings for drugs is a to maintaining the discipline required in regular employment for IDUs. Numerous studies have suggested the use of Methadone in Medical Assisted Therapy (MAT) as a means to reduce the dependency and enable IDUs to maintain good work related habits.

Over 90% of IDUs have expectations for a better life in the near future expressing hopes of having a child, reducing drug consumption, getting employed, changing their main source of income and improving their health.

5.3 Drug Use practice among IDUs

5.3.1 Drug Use initiation

Injecting drug Use initiation commences early at age 11 years, peaks at age 19-24 years and continues to age 55 years. This has similarities to the Havinga *et. al.* study in which the age at first injection ranged from 13 to 58 years and nearly half of the sample had first injected before the age of 20 in the Netherlands (Havinga, van der Velden, de Gee, & van der Poel, 2014). The median age for drug use was 31 years (IQR: 27-36), for Women IDU, it was 28 years (IQR: 24-32) which is younger compared to men at 31 years (IQR: 27-36). The results from this study demonstrate that the median age for

IDUs has risen slightly to 31 years from 28 as reported by Des Jarlais *et. al.* (Des Jarlais, Perlis, Stimson, Poznyak, & al., 2006).

5.3.2 Drug used at Initiation

The main drug for injection was Heroine in the form of white crest which is more refined and readily available presently in Nairobi. Heroin is the primary drug used by both IDUs and non-injection drug users (NIDUs) in Kenya, as it is in Mauritius and Tanzania (Abdool, Sulliman, & Dhannoo, 2006). Heroin was introduced to sub-Saharan Africa in the 1980s in a less refined form known as "brown sugar" which was high in quality and relatively inexpensive. Brown sugar was commonly smoked in the form of a cigarette or was heated and the fumes were inhaled. With time and as the price of heroin increased drug use shifted from inhalation of brown sugar to injection of the 'white crest' which was a more refined form of heroin and is readily soluble in water (Beckerleg & Hundt, 2004). Injection of white crest is more cost-effective, efficient and provides a better high compared to inhalation. White heroin is less expensive and readily available compared to brown sugar, (Deveau, Levine, & Beckerleg, 2006), (Timpson, et al., 2006).

This study found that most initiates purchased their own drugs and were initiated by a close friend who was more likely to be a male. Men are historically more likely to initiate others to injection than were women. Initiators were more likely to have been in prison or detention, to have lent a used syringe, to have injected others recently, and to

have obtained needles and syringes from informal Sources (Reference Group to the United Nations on HIV and Injecting Drug Use , 2010).

Majority of initiates do so at their own residences, indoor or outdoor galleries or dealers place. The main reasons for initiating injecting were to get a better high, peer pressure, curiosity, and type and quality of drug. As noted in the earlier paragraph, the introduction of "white crest" form of Heroine created a transition from inhalation of "brown sugar" to injection and this is what respondents refer to as a "better high" or as type and quality of drug in their response. This implies that most initiators into injecting were already taking some form of drugs prior to their initiation into injecting.

Most initiates did not understand the consequences of drug use and thought that they would be able to stop after one or two injecting episodes and only a small proportion wanted to become regular injectors. Most IDUs have continued to initiate others into drug injecting practice with increasingly regular frequency. Evidence indicates that IDUs do not fully understand the addictive or dependence nature of drugs and therefore consequences of injecting drugs. Similarly, most IDUs were unaware that injecting drugs would put them at risk of infection with HIV/AIDS. On average, most IDU need to inject at least 2 to 3 times on daily basis. Injecting Drug Users have had their injecting equipment confiscated by police or other authorities and 37% have had encounters with the police or other authorities. Most IDUs (88%) have been incarcerated in their lifetime and some report of injecting drugs while in prison and using reused needles and syringes to inject while in prison. Thus clearly showing that

drug injecting is ongoing in our jails and prisons with used needles and syringes, putting them at an increased risk of infection by HIV.

Multivariate Logistic Regression showed significant association between HIV infection and age at first drug injection, reason for starting to inject, reason for initial injection and the number of people initiated into injection.

The period of initiation to injection, from the first injection and including the first few years of injection, has been well documented as an important time in a drug using career. During this period injectors may be exposed to great risk of infection by blood-borne diseases such as HIV, HCV and hepatitis B virus (HBV). Hypothetically, this increased risk stems from new injector engagement in risky behaviours because of ignorance of the risks, lack of planning around injections or through the influence of their initiators (Reference Group to the United Nations on HIV and Injecting Drug Use , 2010). In a study of IDU in Paris, 57% of IDU shared equipment and 22% borrowed injecting equipment at first injection and that HCV seroconversion was strongly correlated with sharing and borrowing equipment at first injection (Vidal-Trecan, 2002).

Contrary to the expectation, this study found that those who initiated injecting at an older age (30 years and above) where at an increased risk of infection compared to those who initiated injecting at a younger age. Similarly, those whose main reason for initiating injecting was to get a better high as well as those whose main reason for initial injection was to become a regular injector, were at significantly increased risk of

infection by HIV. These findings indicate that the IDUs who were at an increased risk of HIV infection were older, have intentionally decided to inject so as to get a better high (compared to other drug forms/type) and have purposed to become a regular injector. The study also found that those who had never initiated anyone into injecting drugs were at a significantly increased risk of infection compared to those who had initiated one or two people into injecting. These findings may be pointing to a lack of awareness and knowledge on the link between HIV infection and injecting drugs and the risks that drug use practice places on the user.

5.4 Behaviours that predispose IDUs to HIV infection

Nearly 90% of IDU showed knowledge levels ranging from limited to severely limited and only 0.6% had good knowledge of HIV transmission and prevention. This is an indication that IDUs are not knowledgeable on how to prevent infection by HIV through condom use, abstinence, being faithful to one partner, through sharing of injecting equipment, needles and blood products. Most IDU respondents also showed lack of knowledge of symptoms of STIs. Majority of respondents had been previously tested for HIV. This gap in knowledge on HIV transmission and practice was observed by Ndetei (Ndetei D. , 2004). Health and outreach workers would be the most effective group to reach IDUs as this study identified them as the main source of HIV and prevention information for IDUs.

Risky sexual behaviour is so rampant among IDU that even after learning that their partners were HIV positive, the IDUs continued to share needles and engage in

unprotected sex with their partners. Casual sexual relations, multiple sexual partnerships, MSM, Transactional sex involving sex in exchange for goods or drugs and drugs in exchange for sex were very common practices in over 20% of the IDU population. Condom use even during such risky engagements was selective and low. Deveau et. al. report significant levels of drug and sexual risk behaviours among IDUs in Mombasa and Nairobi with 43% of IDUs in Mombasa share needles and 88% of IDUs in both Nairobi and Mombasa inject heroin more than once weekly. Injecting Drug Users had sex with an average of 3.4 partners during the six months prior to the outreach contact and condom use was low; only 32% used condoms more than 50% of the time and 33% of the total number of sexual acts involved condoms (Deveau, Levine, & Beckerleg, 2006). In Lagos, Nigeria, unprotected and multiple sexual activity were identified as major risk factors, particularly among the female users who engage in commercial sex work as a means of maintaining their drug habit (Adelekan & Lawal, 2006).

Risky injecting practices involving sharing of needles/syringes and other injecting equipment is common among IDUs with over a third of all IDUs reusing needles/syringes. The prevalence of sharing needles and syringes was high among Nairobi IDUs (45%) and most of the used equipment was sourced from close friends. There is weak knowledge of general hygiene as only 1% of IDUs use bleach to clean needles for reuse and majority used plain water which they also shared frequently among themselves. The most common reasons for sharing injection equipment were lack of own needles, difficulty in accessing needles and syringes, perception that they were safe

because they cleaned the equipment and as long as they were careful whom they shared with. Deveau *et. al.* also found that sharing needles was common, with approximately 39% of the IDU in Mombasa sharing needles at least once during the previous week. Although they did not collect data on Nairobi, the pattern and frequency of needle sharing in Nairobi, as reported by outreach workers, appears to be similar to that of Mombasa (Deveau, Levine, & Beckerleg, 2006).

Multivariate Logistic Regression identified sexual behaviour variables which were significantly associated with HIV status were the number of sexual partners who have injected drugs, casual sex partners who were HIV positive and Transactional sex involving drugs in exchange for sex. Logistic regression analyses identified the following drug use behaviour variables to be significantly associated with HIV status: "used a syringe used by someone else"; "gave, lent or sold needles/syringes to a close friend", "sourced needles/syringes from drug worker agency"; "ever injected with an HIV positive person/s" and "ever injected with a female IDU".

5.5 HIV prevalence among IDUs in the general population

At 18.3%, the HIV prevalence among IDUs in Nairobi is quite high. Female IDU seem to be particularly vulnerable to HIV as shown by the heightened prevalence of 37.3% and IDU from western part of Nairobi were more vulnerable due to their high HIV prevalence (Women -40.1%, Men -27.9%) compared to IDUs from Eastern Nairobi (Women 36.5%, Men 8.8%). HIV prevelance among IDU has been on the decline since Ndetei's study in 2004 which estimated the HIV prevalence in Kenya to be between 68% to 88% and Odek-Ogundi's study which also estimated HIV prevalence to be

36.3% among IDUs in Nairobi (Ndetei, 1997), (Odek-Ogunde, Okoth, Lore, & Owiti, 2004). It has been postulated that this decline is partly due to mortality and intervention by local NGOs who were working among the IDUs in Nairobi. IDUs who were aged below 30 years were much more vulnerable to infection compared to their older counterparts. Evidence from this study indicates that increasingly younger people of school going age were indulging in drug use and dropping out of school. This is giving rise to a groups with low levels of education contributing to unskilled and semi skilled labour force who were posing a challenge to employ professionally and contributing to criminal activity.

Multivariate Logistic Regression identified sex, residential location and self perception of risk to be significantly associated with HIV status.

5.5.1 Female IDUs and sex work

Studies have found that compared to male IDUs, women IDUs are more likely to engage in sex work (DeBeck *et. al.*, 2007), (El-Bassel & al., 2000), (Bretteville-Jensen & Sutton, 1996), (Grapendaal, 1992), (Nguyen *et. al.*, 2004). Women IDU are also more likely than their male counterparts to acquire HIV through sex transmission (Ickovics & Rodin, 1992), (Haverkos, 1993); sex work has been found to be an independent risk factor for HIV among female IDU (Estebanez *et. al.*, 2000). There is a high prevalence of injecting drug use among women who engage in street-level (Estebanez *et. al*., 2000) sex work, with studies estimating that between 22-82% of SW are also IDU (Carr, Goldberg, Elliott, Green, Mackie, & Gruer, 1996), (Lakhulamani, 1997).

Reid reported that almost all female IDUs in Nairobi, were also engaged in sex work and that they were at greatest risk of HIV infection, with an HIV prevalence two to ten times higher than among male IDU (Reid, 2009). This increased vulnerability to HIV infection for women is associated with high levels of stigma experienced by women IDUs, coupled with risky injection behaviour, multiple sexual partners and involvement in sex work to sustain the drug habit. In Dar es Salaam, female IDUs report an average of 3 sexual partners per heroin binge, and an average of 61.2 sex partners in the past month. The average was 2.4 partners in a month for men (MCleland, DesJarlais, Perlis, Stimson, & Poznyak, 2007). Timpson *et. al.* in their study of VCT clients in Dar es Salaam found that female IDU exhibited high HIV prevalence of 58%, triple that of the lowest group and nearly double that of the highest group of female VCT clients. In this study Eighty five percent of the women IDU engaged in sex work (Timpson S. , *et al.*, 2006).

Several studies have found that women who inject drugs have greater overlap between sexual and injection social networks than men do, and that they are more likely than their male counterparts to have a sexual partner who injects drugs (Roberts, Mathers, & Degenhardt, 2010). Due to this women experience social isolation because of stigma of associated with drug use, as well as the fact that women are a minority of the IDU population (Doherty, Garfein, Monterroso, Brown, & Vlahov, 2000), (MacRae & Aalto, 2000). Female IDU are more likely than male IDU to be dependent on a sexual partner for help acquiring drugs and injecting (Roberts, Mathers, & Degenhardt, 2010). Being injected by someone else has been found to be an independent predictor of HIV incident

infection, meaning that dependence increases women's HIV risk (Tyndall, Hogg, Schechter, & Wood, 2004).

Participation in sex work has been associated with syringe sharing and inconsistent condom use, as well as other risks posed by the dangerous circumstances in which sex work often takes place (Roberts, Mathers, & Degenhardt, 2010). Sex workers often risk losing work if their clients or employers find out that they inject drugs, which can deter sex workers from seeking harm reduction services when needed (Pinkham & Malinowska-Sempruch, 2007). Sex workers who trade sex for drugs or who work to support a drug habit often work in higher risk situations (e.g., on a highway, where they are alone and very vulnerable to violence, including rape) and may be less likely to use condoms, in part because the pain of drug withdrawal presents a more immediate threat than HIV or STIs (Epele, 2002). Research has shown that women IDU who engage in sex work have higher HIV prevalence than their IDU peers who do not sell sex (UNAIDS, 2009). Punitive policy and legal environments often prevent this population from accessing essential HIV prevention services, and exacerbate the vulnerabilities and risks that they face (UNAIDS, 2009). All these factors may be contributing to the increased vulnerability of women IDUs to HIV (Pinkham S. , 2012).

5.6 Availability of services for HIV Prevention, Healthcare and Drug Treatment

5.6.1 Access to HIV Prevention and healthcare services

Over 80% of IDUs perceived themselves to be in a fair to poor state of health and only 4% of respondents described themselves as being in excellent state of health. Nearly

50% reported of ever having malaria and over 40% had abscess and mixed infection in various combinations including various STIs, TB, mouth infections and Chlamydia. Generally IDUs have a very poor pattern of health seeking behaviour as majority of them (59%) last received medical services over a year ago. The main reason they gave for not getting medical treatment when sick was inability to pay for the treatment (Women-84%, Men-92%). Due to stigma and discriminatory policies, IDUs tend to live in hiding, always trying to avoid police or any other authority. As a result IDUs tend to avoid medical, HIV prevention, drug related services and other services due to the fear of police and other authorities. Based on HIV testing prior to this study, 4.7% (unadjusted) of respondents had been informed of having AIDS disease by a health professional however only a small fraction were on anti-retroviral (ART) medication and these were comprised of men exclusively. This indicates that there were access challenges being experienced by IDUs in accessing ART services. Additionally evidence on awareness of family planning methods and contraceptives choices showed a lack of awareness, knowledge and access to family planning options available for both men and women IDUs. The elevated HIV prevalence rates among IDUs coupled with very low utilization of health care services in this group means that this 'most at risk population' (MARP) of drug users has the potential to exacerbate the generalized heterosexual HIV epidemic in Kenya (Deveau, Levine, & Beckerleg, 2006).

Lianping *et. al.* in their study involving 350 Thai IDU reported similar findings. They found that stigmatizing attitudes of healthcare providers and the sharing of information between healthcare workers and police were factors that caused some IDU to avoid

conventional healthcare settings, including those that provide HIV testing services in Thailand. Other factors associated with avoidance of health care services were being of male gender, high intensity drug use, syringe sharing, increased police presence, and being refused healthcare services were positively associated with HIV test avoidance, while ever receiving a hepatitis C test was negatively associated. Their findings highlighted the need for interventions to reduce stigma in health care settings (Lianping, et al., 2013).

5.6.2 Access to Drug treatment

Drug treatment, as a means of stopping drug use, is an effective HIV prevention intervention. However, only about 8% percent of the study population had ever received any drug treatment for the purpose of stopping drug use. Injecting Drug Users preferred out-patient type drug treatment in public institutions and Faith based NGO institutions. Main reasons cited were inability to pay for services, lack of services nearby, fear of painful treatment, inability to access services, non existense of service and fear of arrest by authorities. This findings were similar to those of the study carried out in two cities in Nigeria where roughly 25% of respondents and less than 10% in the two city study reported ever having received treatment intended to help modify their drug habits. About a third of the subjects reported they had encountered difficulty in getting drug treatment when they needed it in Lagos and Port Harcourt (Dahoma, et al., 2006). In Kenya drug treatment services were very limited, and imprisonment is more common than access to drug treatment services (Reid, 2009). Availability of addiction services were limited to a few NGOs, mental health institutions, family counseling and a

handful of private institutions (Deveau, Levine, & Beckerleg, 2006). In Nairobi and the coastal region there is small service for heroin addicts offered by NGOs such as Maisha house in Nairobi, MEWA and the Omari Project, who have all incorporated injection safety into their counseling sessions. However access to addiction services in Kenya is limited primarily to residential facilities serving males who can pay for care. Most drug treatment in Kenya goes on at government hospitals such as Mathare mental hospital in Nairobi (Reid, 2009).

5.6.3 Drug overdose

Drug overdose is a common problem reported by 90% of respondents. 50% of respondents reported of having experienced someone dying of drug overdose and 34% of respondents had previously self overdosed on narcotics. The main causes of drug overdose were Heroine through injection and non-injected substances such as cannabis and a cocktail of various substances including valium.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The burden of HIV disease among IDUs is significant in the country although decreasing compared to the past prevalence studies (Mwenesi, 1995), (Ndetei D. , 2004). The overall mean prevalence of HIV in IDUs is currently 18.3 percent in Nairobi county. There were approximately between 20,000 and 120,000 IDUs in Kenya, with an estimated 23,000 living with HIV. Among IDUs, HIV and other blood-borne infections, such as hepatitis B (HBV) and hepatitis C (HCV), were spread primarily through risk behaviors related to multi-person reuse (sharing) of contaminated syringes and drug injection equipment. Recently emerging twin epidemics of both injecting drug use and HIV infection among IDUs were present in sub- Saharan Africa (Needle R. K., 2006), (Reid, 2009).

Male and female IDUs were not only at risk for acquiring and transmitting HIV through the sharing of drug injection equipment, but also through high-risk sexual behaviors, including but not limited to unprotected sex and engaging in sexual behaviors under the influence of drugs or in exchange for drugs (Institute of Medicine, 2007). This vulnerability underscores the need for responsive programming so that we can better meet the specific and comprehensive needs of both male and female IDUs. Of additional concern is the potential bridging effect, whereby an epidemic, initially fueled by the sharing of contaminated injecting equipment, is spread through sexual transmission from IDUs to non-injecting populations and through perinatal transmission to newborns. This is of particularly concern to Kenya where sexual partner networks

were highly interconnected (Institute of Medicine, 2007). For IDUs, access to HIV prevention services, including treatment and care for their drug use, is sub-optimal in Kenya and an urgent action is required. The coverage for each of NSPs, opioid substitution and anti-retroviral therapy (ART) interventions is extremely low (Needle & Zhao, 2010). Access to and receipt of ART by IDUs remains disproportionately low relative to the burden of HIV experienced in IDUs. Injecting Drug Users not only have poor access to ART, but they also tend to begin ART later, at a more advanced stage of infection than other groups, resulting in poorer treatment outcomes.

6.2 Conclusions

6.2.1 Drug Use Practice

1. Although use of drugs is not a new phenomenon in Kenya, injecting drug use is comparably new. This mode of drug use has been increasing in urban centers gradually and is now spreading rapidly into the general population away from urban centers. Initiation into drug use commences early at 11 years and peaks at age 19-24 years. Most users were initiated by close male friends and initiates do not understand the consequences and addictive nature of using drugs and thought they would stop after one or two episodes of injecting. There is need for appropriate intervention programs targeting youths in upper primary school to those in post secondary school institutions including work place and out of school youth.

2. The main reasons for initiating injecting were to get a better high, peer pressure, curiosity and type and quality of drug. Majority of respondents commenced injecting in order to become regular injectors
3. Most IDUs have continued to initiate others into drug injection practice with increasing frequency. Evidence indicates that IDUs do not fully understand the addictive or dependent nature of drugs and therefore the consequences of injecting drugs. Similarly, most IDUs were unaware that injecting drugs would put them at risk of infection with HIV/AIDS.
4. IDUs leave in a state of fear because they were stigmatized and discriminated upon by society and their equipment were confiscated by authorities and they face constant harassment by police and authorities

6.2.2 Behaviours that predispose IDUs to risk of HIV infection

1. The study showed that IDUs were universally aware of HIV, their knowledge of HIV transmission and prevention methods was very limited in close to 90% of respondents.
2. Although 90% stated that they had taken action to reduce their HIV risk, they still continued to share injecting equipment and solutions, with risky sexual behaviour.
3. IDUs engage of risky sexual behaviour involving casual sexual relations, sex with multiple partners including anal sex with minimal use of condoms. There were also cases where the respondents had sex with partners who they knew to be HIV positive.

4. Over half of IDU regularly engage in risky injecting practices of sharing needles, syringes and fluids. Sharing is practiced among close friends and with primary sex partners. The main reasons for sharing were cost of injecting equipment and difficulties in accessing needles and syringes. Injecting Drug Users perceived that sharing was safe if they were careful with whom they injected and that used equipment was safe after cleaning with water
5. High risk behaviour in the form of transactional sex involving the receipt of drugs, goods or money in exchange for sex for both male and female IDU was common among IDU and particularly among female IDU. Over 50% of IDU had at least four clients every month and condom use during such encounters was low.

6.2.3 HIV prevalence among IDUs in the general population

1. Although the HIV prevalence of IDUs in Nairobi county is still high, it has decreased considerably from levels described in the UNODC of 2004 (Ndetei D. , 2004). In that study, HIV prevalence among IDUs in Coast and Nairobi countys was found to range from 68% – 88%. In the current study the overall prevalence of HIV in the same population of IDUs was found to be 18.3%. Women IDU had particularly high HIV prevalence (37.3%) as well as IDUs residing in the western regions of Nairobi (Women 40.1% and men 27.9%) were particularly vulnerable.
2. The majority of drug users in Kenya and especially IDUs were males, however Female IDU were found to be much more vulnerable compared to men because of their HIV prevalence of 37% compared to 17.1% prevalence for male IDU.

3. Among both male and female IDUs, the age range which appears most risky is from 15-29 years and the region which appears to be comparably most at risk was the western region of Nairobi county.

6.2.4 Availability of services for HIV prevention, care and treatment

4. A third of respondents perceived themselves to be in a poor state of health and the study showed this perception to be strongly associated with HIV positive status. 64% of the study population previously been sick with malaria disease, abscess, collapsed veins, sexually transmitted infection (Gonorrhea, Syphilis, Genital Warts and Chlamydia).
5. In general health seeking behaviour among respondents was poor and this was contributed to by their inability to pay, non-availability of specific services, fear of painful treatment and inconvenient access to services and by fear of police and authorities.
6. Drug treatment has been proved to be effective in mitigating against drug use, including injecting drug use but very few rehabilitation centre's were available in Kenya to offer these services.
7. IDUs avoid major services because of a lack of IDU friendly services. Injecting Drug Users were usually dirty and smelly and suffer from low self esteem, depression and stigma and this makes the general public treat them with derision and stigma. Compared to their male counterparts, women particularly suffer from stigma and fear of authorities and this increases their avoidance of critical health

services such as drug treatment, HIV related medical treatment, medical treatment, psychiatric treatment, STD treatment and family planning.

8. Overdose on narcotics is a very common phenomenon among people who inject drugs. Death due to overdose is also common among IDUs and episodes of accidental self overdose was reported by 34% of respondents in this study. Accidental overdose is due to injected substances (Heroine) and also from a mixture of non injected substances such as cannabis, valium, prescription drugs, alcohol and other drugs.
9. A high percentage of respondents had been tested for HIV prior to the study and of the 9.4% who had been found positive 4.7% had developed full blown AIDS and needed to be on ARV. However only a small fraction comprising of men only were on ART. The women had not gone for ART because of fear and stigma associated with their IDU habit.

6.3 Recommendations

6.3.1 Introduction

The current HIV epidemic in large parts of the sub-Saharan region puts a heavy burden on the health and social service systems that were already struggling to cope with other pressing issues. Existing prevention responses have been largely developed to tackle the mainstream heterosexual transmission of HIV. Current trends related to increasing drug use and associated HIV risk need to be addressed in order to sustain the early successes in curbing and slowing down the HIV epidemic in the region.

Injecting Drug Use is still a fairly new phenomenon in Kenya. Injecting Drug Users were a hidden and hard to reach population with very unique and specialized health and treatment requirements. Injecting Drug Users are a population at high risk with very high mortality caused by their behavior and the fact that they are shunned and neglected by society. Initiation into Injecting drug use commences early at 11 years and peaks mainly after formal school years. Injecting Drug Use is contributing 6% of new cases of HIV in Nairobi annually and exhibited the highest rates of transmission of HIV (Gelmon, Kenya, & Oguya, 2009).

Harm reduction programs are considered essential HIV prevention responses to address HIV risks among those who are currently using drugs. The evidence is out that injecting drug use is playing a strong role in the HIV epidemic, but very few harm reduction policies and services have been implemented.

Risk reduction programmes on the other hand address drug use through awareness campaigns, school-based and community-based programmes are responses to inform, educate and empower young people to meet the challenges of the increasing availability of illicit drug use.

Early intervention and drug treatment programmes are recognised as very important responses that can indirectly have a great value in HIV prevention programmes among those who are in initial stages of drug use. Existing interventions, however, lack the scale necessary to meet the growing needs of drug use; likewise, the high cost of adequately scaled programmes for in-patient treatment may be a burden for Kenya. Out-

patient treatment, support groups, home detox, and community-based treatment and support could have a significant additional impact at a lower cost.

Harm reduction responses are considered essential HIV prevention responses addressing HIV risks among those who are currently using drugs (WHO; UNODC; UNAIDS, 2009). Presently there is recognition in Kenya that injecting drug use is playing an important role in the HIV epidemic, but very few harm reduction policies and services have been implemented. Following are recommendations which will reduce harm and risk posed by Injecting drug use behaviour.

6.3.2 Drug Use Practice

Recommendation I: Implement targeted Information, Education and Communication (IEC) and Behaviour Change Communication (BCC) on Risks of Drug Use and HIV Infection

IEC stands for Information, Education and Communication (IEC) in health programmes. IEC interventions for PWUDs can be defined as a process of sharing information and ideas in a way that is culturally sensitive and acceptable to the community, using appropriate channels, messages and methods to reduce the risks and harm associated with drug use and HIV/STI.

IEC approaches may range from the use of mass media to inform or establish positive norms among the general population to the use of targeted, interpersonal communication to help those at particular risk evaluate their own behaviour and develop new personal skills.

Several studies suggest that the inclusion of IEC within a harm reduction programme can have a significant impact on HIV-related risk behaviour. In the Ukraine IEC

materials increased the use of condoms, decreased the reported number of sexual partners and promoted harm reduction through the use of sterile injecting equipment (Aggleton, Jenkins, & Malcolm, 2005). In Russia, IEC has been shown to be a key component in facilitating needle and syringe exchange programmes (Burrows, 2001). Information and education can be used to increase IDUs' awareness of, and access to, clinics and testing sites where VCT can be obtained. Risk reduction counseling uses interpersonal communication to help PWIDs clarify their feelings and thinking to reach the right decision (Burrows, 2001).

6.3.3 Behaviours that predispose IDU to risk of HIV Infection

Recommendation II: Provide IDU with free Injecting Equipment and Condoms

Harsh criminal penalties against drug use or possession of a used syringe have given rise to closed subcultures with a specialized language for discussing drug-related issues. Although needles and syringes are theoretically available for purchase at pharmacies, some pharmacy staff refuse to sell injecting equipment to people they suspect of using drugs (Beckerleg *et. al.*, 2005). Sharing of injecting equipment is common among drug users

Needle and Syringe programmes (NSPs) is the supply of sterile needles and syringes to people who inject drugs in order to reduce transmission of HIV and other blood borne viruses. NSP also includes the supply of other injecting equipment (e.g. filters, mixing containers, tourniquets and sterile water), puncture proof boxes, medications, condoms, IEC materials, etc). Additional services include advice on safer injecting practices,

overdose prevention, safe disposal of injecting equipment, HIV testing and treatment, and first aid.

The aim of NSP is to reduce transmission of HIV and other Blood Borne Viruses caused by sharing of injecting equipments. It provides an opportunity to ensure that every injecting act is covered with safe injecting equipment while reducing other harms caused by injecting drugs.

Supportive evidence to NSP shows that NSPs result in marked decreases in drug-related risk behavior by as much as 60%, and decreases in HIV transmission, by as much as 33-42% (Committee on the Prevention of HIV Infection Among IDUs, 2007). NSP evaluation studies reveal these programs increase the availability of sterile injection equipment, reduce contaminated injection equipment in circulation, reduce the HIV incidence, and result in referrals to other services, such as HCT and ART (Kaplan, 1989). Successful needle exchange programmes have been conducted in Australia, the Netherlands and the United Kingdom of Great Britain and Northern Ireland. In 52 cities without needle exchange programs the incidence of HIV increased by about 6% per year and in 29 sities where NSP was being implemented a decrease of HIV incidence of 5.8% per year was recorded. The New York City needle exchange programmes have been studied in prospective cohorts: lower rates of incident HIV infection were documented among IDU using needle exchange programmes (1.4% - 1.6% per year) than among those who did not attend needle exchange programmes (5.3% per year, 95% CI: 2.4 to 11.5) (BEYRER, 2002). A WHO commissioned review of more than 200 studies revealed that HIV infection rate declined by 18.6% annually in 36 cities with

NSP, while it increased by 8.1% annually in 67 cities lacking such programmes (Vickerman, Hickman, Rhodes, & Watts, 2006.).

There is no convincing evidence that providing sterile injecting equipment to IDUs increases the initiation of injecting among people who have not injected previously, or increase the duration or frequency of illicit drug use or drug injection (Jones, Pickering, Sumnall, McVeigh, & Bellis, 2008). It is estimated that 80% coverage and sustained provision of NSP services could reduce new HIV infections among IDUs by 67% (Strathdee, et al., 2009).

6.3.4 HIV prevalence among IDUs

Recommendation III: Because IDU are a hidden, stigmatized and high risk group with unique health and treatment needs, the government needs to urgently implement targeted and comprehensive intervention programmes towards IDU groups:

- **i)** School going youth in primary schools, secondary school and colleges as well as out of school youth
- **ii)** Women and girls need special attention for information, support, special access to health care, ART, Family planning services and women empowerment
- **iii)** Women and men in Western regions of Nairobi need specialized intervention through health and peer workers

The HIV prevalence among IDU is nearly three times the national average. Young IDUs aged below 25, women IDUs and IDUs in Western Nairobi were found to be

highly vulnerable to HIV infection. Through organizations such as NACADA, the government needs to implement specialized interventions targeting these vulnerable groups with information programs, unique livelihoods support programs and programs targeting homes which vulnerable youths come from.

6.3.5 Services for HIV and AIDS prevention, care and treatment

Recommendation IV. Provide free IDU friendly Medical Treatment, Drug Treatment and HIV/AIDS Treatment

i) Create pro-poor and IDU friendly Health and Medical services for IDU

The study findings showed that IDUs were lowly educated, have low income and were highly vulnerable and experience stigma and discrimination from communities and at home. Female IDU were particularly vulnerable as they were often sexually exploited and face additional challenges related to child care and sexual and reproductive health. The study showed that most IDU prefer to discuss health issues with fellow IDUs and their main source of information was health workers. Over 47% of all respondents reported that they had suffered from malaria, while nearly 30% had previous mixed infections including obsesses, septiceamia, bactereamia, Tuberculosis, Viral Hepatitis C and other infections (Neale, 2008). Additionally, despite experiencing a variety of ailments, majority of respondents reported poor health seeking behaviour. Because most IDU fear going to institutions and have poor health seeking behaviour, it is recommended that they are offered pro-poor and specialized services which meets with their lifestyles and location. The IDU friendly medical services will provide clinical

care of health conditions associated with drug use. The aim of this intervention would be to treat all medical complications arising from drug use by PWID and to maintain healthy lifestyle, promote proper and safe injecting practices among PWID, facilitate entry to general health and social services, and reduce drug injection through increased knowledge and awareness, Family planning and contraceptive services, improved access to drug treatment and encouragement of non-injecting methods of drug use.

The following service delivery modes are recommended for IDUs:

- Fixed sites: a place to which PWUDs come to collect free male or female condoms and make use of other services (E.g. drop in centre, health facility)
- Mobile sites: services are provided from a temporary point
- Outreach: services offered outside a fixed site (e.g. peer educator) and can be offered at locations which are convenient for PWUDs.

ii) Provide addiction treatment through Medication Assisted Therapy (MAT)

Injecting drug use increases morbidity and mortality associated drug overdose, results in low self esteem, stigma and rejection, and increases the tendency for involvement in drug related crime. Medical Assisted Therapy MAT results in the achievement and maintenance of physical, psychological and social well-being of opioid dependent persons by reducing the risk-taking behaviors & practices associated with illicit opioid drug use.

Medication Assisted Therapy (MAT) is the administration under medical supervision of a prescribed psychoactive substance, pharmacologically related to the one producing

dependence, to people with substance dependence problem, for achieving defined treatment aims.

MAT uses methadone, Buprenorphine, Buprenorphine/Naloxone or other medications/therapies, when they become available, as an effective option for treatment of heroin dependence and preventing the transmission of HIV. MAT has been shown to be an effective treatment for opioid dependence, reducing risk behaviors related to injection drug use, preventing HIV transmission and improving adherence of PWUDs to ART, but to date, availability of MAT in most low economy countries is very limited (Institute of Medicine, 2007).

Methadone is used for opioid dependence in a Methadone Maintenance Therapy (MMT). Buprenorphine with Naloxone can also be used in place for methadone.
Methadone Maintenance has proven to be a safe method of harm reduction therapy for individuals suffering from opiate addictions that can't seem to maintain abstinence. It gives them the opportunity to re-enter society and the workforce, and stop abusing heroin and a variety of prescription drugs. In addition counseling services should also be provided so that clients can address the core issues of their addictions.

iii) Provide convenient HIV Testing and Counseling (HTC) and Antiretroviral Therapy (ART)

a) HIV Testing and Counseling (HTC)

HIV testing and counseling is a process that allows an individual to know their HIV status and learn how to cope with a positive or negative result with an aim of reducing HIV transmission.

Having access to HTC will increase the number of PWUDs who know their HIV status in order to reduce HIV transmission. This will increase uptake of HIV care and treatment services for those found to be HIV positive, those who are found to be negative will develop risk reduction skills in order to remain HIV negative and will generally promote positive living among the HIV infected PWUDs

Evidence indicates that HTC is an important intervention in and of itself because HIV positive persons who know their status are significantly more likely to reduce their HIV risk behaviours in order to protect HIV-negative partners (Weinhardt, Carey, Johnson, & Bickham, 1999b), (Coyle, Needle, & Normand, 1998). A cohort of 401 voluntary HIV counseling and testing (VCT) clients in Kenya showed significant reduction in the number of partners, decrease in acute STIs, and an increase in condom use after receiving a HIV negative result (Arthur, Nduba, Forsythe, Mutemi, Odhiambo, & Gilks, 2007).

b) Antiretroviral Therapy (ART)

The study clearly showed that the number of HIV positive IDU who had enrolled into ART programs were very limited. The aim of this intervention will be Increase the number of HIV positive PWUD who enroll in HIV care and treatment and to increase the number of eligible PWUDs initiated and retained on ART. This will result in a reduction in HIV associated morbidity and mortality through use of ART among PWUDs.

ART is the treatment with drugs that inhibit the ability of the human immunodeficiency virus (HIV) or other types of retroviruses to multiply in the body. ART restores and maintains the immunological functions of HIV positive persons reducing their morbidity and mortality, hence improving their quality of life.

Left untreated, most HIV-positive people will eventually develop HIV-related illnesses and die. If they receive ART, however, they can live in relatively good health for many years. Such results have been observed even in "hard to reach" HIV-positive populations such as people who inject drugs, and in challenging contexts such as resource-poor countries (Dobkin, 2005).

Existing evidence shows that adherence to and outcome of ART among PWUDs can be enhanced, by concomitant drug dependence treatment (MAT), and peer and psychosocial support (Umbricht, Hoover, Tucker, Leslie, Chaisson, & Preston, 2003). Directly observed ART treatment for PWUDs receiving MAT, at NSPs, or in specialized residential facilities, has been demonstrated as an effective method of improving

adherence to ART (Bouhnik, Chesney, Carrieri, Gallais, Moreau, & Moatti, 2002), (Carrieri, JP., D., Y., Reynaud-Maurupt, & Chesney, 1999).

6.4 Suggestions for further research

6.4.1 Conduct research targeting Female IDU

In this study it was surprising that there were only 22 (6.4%) Female IDU respondents, it was further shocking that their HIV prevalence was more than double 37.3% compared to 17.1% for men. At age groups 15-24yaers and 25-29 years the HIV prevalence for women was 40.3% and 54.3% respectively indicating that nearly half of female IDU in this age groups were HIV positive. This is an indication of heightened vulnerability among these gender possibly resultant from stigma, sexual exploitation by male IDU colleagues, harsh economic challenges resulting in increased high risk transactional sex, sexual and reproductive health, poor access to health care and so on. Clearly this is a group that needs urgent intervention to identify the causes for such vulnerability.

6.4.2 Conduct research on IDUs in Western Nairobi

Compared to Eastern sections of Nairobi, the IDUs ailing from Western Nairobi were significantly more vulnerable to HIV. The reasons for these were not clear and there is need for further studies to shed light on the situation.

6.4.3 Conduct research on the reported high prevalence of accidental overdose among drug users

In this study 92.1% of respondents reported being present when another person accidentally overdosed in their midst. An equally high proportion of respondents had

known someone who had died of accidental narcotics overdose (90.6%). 33.6% of respondents reported having accidentally self overdosed on narcotics. These were clear evidence that self overdose is a relatively common problem among drug users. The reasons for accidental overdose were not quite clear and needs to be studied further as the mortality due to overdose seems to be high. There were also reports that the prevalence of IDU may have gone down over the years due to overdose deaths.

REFERENCES

/facts-stats/overdose-basics/. (2014, March 20). Retrieved March 20, 2014, from www.overdoseday.com: http://www.overdoseday.com/facts-stats/overdose-basics/

Abdool, R., Sulliman, F., & Dhannoo, M. (2006). The injecting drug use and HIV/AIDS nexus in the republic of Mauritius . *African Journal of Drug and Alcohol Studies* , 5(2), 107-106.

Abdul-Quader, A., Heckathorn, D., McKnight, C., & al., e. (2006). Effectiveness of respondent-driven sampling for recruiting drug users in New York City: findings from a pilot study. *J Urban Health. 2006;83(3): ,* 459–476.

Aceijas, C., Stimson, G., Hickman, M., & Rhodes, T. (2004). Global overview of injecting drug use and HIV infection among injecting drug users. . *AIDS 18(17) ,* 2295-2303.

Adelekan, M., & Lawal, R. (2006). Drug use and HIV infection in Nigeria: a review of recent findings . *African Journal of Drug & Alcohol Studies* , 5(2).

Affinnih, Y. (1999). A review of literature on drug use in Sub-Saharan Africa countries and its economic and social implications. *Substance Use & Misuse ,* 34(3): 443-454.

Affinnih, Y. (1999). Drug Use in Greater Accra, Ghana: Pilot Study. *Subst Use Misuse* , 34(2):157-169.

Aggleton, P., Jenkins, P., & Malcolm, A. (2005). HIV/AIDS and injecting drug use: Information, education and communication. *International Journal of Drug Policy 16S (2005) ,* S21-S30.

Arthur, G., Nduba, V., Forsythe, S., Mutemi, R., Odhiambo, J., & Gilks, C. (2007). Behaviour change in clients of health centre-based voluntary HIV counseling and testing services in Kenya. *Sexually Transmitted Infections, (83)* , 541-546.

Aschengrau, A., & Seage, G. R. (2008). *Essentials of Epidemiology in Public Health,2nd Edi. Sc.D.* Malloy Inc.

Baggaley, R., Boily, M., White, R., & Alary, M. (2006). Risk of HIV-1 transmission for parenteral exposure and blood transfusion: a systematic review and meta-analysis. . *AIDS* , 20: 805–12.

Ball, A., Aggleton, P., Jenkins, P., & Malcolm, A. (2007). Rapid assessment and response: methods for developing public health responses to drug problems; HIV/AIDS and injecting drug use: Information, education and communication. *International Journal of Drug Policy, Volume 16, Issue null* , 21-30.

BBC News. (2008). *"Living amidst the rubbish of Kenya's slum"*. Retrieved from BBC News (20 September 2005): http://news.bbc.co.uk/

Beckerleg, S., & et., a. (2005). The rise of injecting drug use in east Africa: a case study from Kenya. *Harm Reduction Journal 2:* , 12.

Beckerleg, S., & Hundt, G. (2004). The characteristics and recent growth of heroin injecting in a Kenyan coastal town. *Addiction Research and Theory* , 12(1), 41-53.

Beckerleg, S., Telfer, M., & Hundt, G. (2005). The rise of injecting drug use in East Africa: a case study from Kenya. *Harm Reduction Journal* , 2:12.

BEYRER, C. (2002). Human immunodeficiency virus (HIV) infection rates and heroin trafficking: fearful symmetries . *Bulletin on Narcotics* , vol. LIV, Nos 1 and 2.

Beyrer, C., Razak, M.H., Lisam, K., Chen, J., Lui, W., et al. (2000). Overland heroin trafficking routes and HIV-1 spread in south and southeast Asia. . *AIDS* , 14(1): 75-83.

Boily, M., Baggaley, R., Wang, L., & al., e. (2009). Heterosexual risk of HIV-1 infection per sexual act: systematic review and meta-analysis of observational studies. . *Lancet Infectious Diseases* , 9: 118–29.

Bouhnik, A., Chesney, M., Carrieri, P., Gallais, H., Moreau, J., & Moatti. (2002). Nonadherence among HIV-infected injecting drug users: the impact of social instability. *American Journal of Addiction, 11(4):* , 271-8.

Bretteville-Jensen, A., & Sutton, M. (1996). The income-generating behaviour of injecting drug-users in Oslo. *Addiction* , 91(1): p. 63-79.

Burrows, D. (2001). *A best practice model of harm reduction in the community and in prisons in the Russian Federation (final project report).* Washington/Moscow: World Bank.

Buve, A., Bishikwabo-Nsarhaza, K., & Mutangadura, G. (2002). The spread and eff ect of HIV-1 infection in sub-Saharan Africa. *Lancet 2002; 359:* , 7.

Buve, A., Bishikwabo-Nsarhaza, K., & Mutangadura, G. (2002). The spread and effect of HIV-1 infection in sub-Saharan Africa. *Lancet 2002:359* , 7.

Calabria B, P. B. (2008). *Searching the grey literature to access information on drug and alcohol research. NDARC Technical Report No. 293.* Sydney: National Drug and Alcohol Research Centre.

Carr, S., Goldberg, D., Elliott, L., Green, S., Mackie, C., & Gruer, L. (1996). A primary health care service for Glasgow street sex workers- 6 years experience of the “drop-in centre”, 1989-1994. *AIDS Care* , 8(4): p. 489-497.

Carrieri, M., JP., M., D., V., Y., O., Reynaud-Maurupt, C., & Chesney, M. (1999). Access to antiretroviral treatment among French HIV infected injection drug users: the influence of continued drug use. *Journal of Epidemiological Community Health* , 53:4–8.

Casas, J. *Rockefeller Health Equity programme , from Concept and trends in research on Social determinants of Health in Latin America and the Caribbean.* Caribbean: WHO.

CIA/USG. (2011). *"CIA – The World Factbook". CIA.gov*. Retrieved from "CIA – The World Factbook": http://en.wikipedia.org/wiki/Nairobi#cite_note-61

Cleland, C., DesJarlais, D., T., P., G., S., & Poznyak, V. (2007). HIV risk behaviors among female IDU in developing and transitional countries. *BMC Public Health* , 7:271.

Committee on the Prevention of HIV Infection Among IDUs. (2007). *Preventing of HIV Infection among Injecting Drug Users in High-Risk Countrie.* Washington, DC: nstitute of Medicine of the National Academy of Sciences.

Coyle, S., Needle, R., & Normand, J. (1998). Outreach-based HIV prevention for injection drug users: A review of published outcome data. *Public Health Reports 113(Suppl.1.)* , 19 -30.

Crosby, G. M., Stall, R., Paul, J., & Barrett, D. (2000). Substance use and HIV risk profile of gay/bisexual males who drop out of substance abuse treatment. . *AIDS Education and Prevention, volume 12; (1)* , 38-48.

CSG Kibera. (n.d.). *"What is Kibera?"*. Retrieved August 25., 2008, from CSG Kibera: http://www.csgkibera.org/

Dahoma, M. U., Ahmed, S., A. R., Othman, A. A., Makame, H., Ali, A. S., et al. (2006). HIV AND SUBSTANCE ABUSE: THE DUAL EPIDEMICS CHALLENGING ZANZIBAR. *African Journal of Drug & Alcohol Studies* , 5(2) .

Darke, S., Degenhardt, L., & Mattick, R. (2006). *Mortality amongst illicit drug users.* Cambridge: Cambridge University Press.

DeBeck, K., & et., a. (2007). Income generating activities of people who inject drugs. *Drug and Alcohol Dependence, 2007. 91(1):* , p. 50-56.

Degenhardt, L., & Hall, W. (2012). Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *Lancet* , 379: 55–70.

Des Jarlais Friedman, S. R., Woods, J., & Milliken, J. (1992). In *HIV infection among intravenous drug users: Epidemiology and emerging public health perspectives. In Substance Abuse: A Comprehensive Textbook, ed. Lowinson JH, Ruiz P, Millman RB, and Langrod JG. Willkins* (pp. 734-743). Baltimore.

Des Jarlais, D., Perlis, T., Stimson, G. V., Poznyak, V., & al., e. (2006). Using standardized methods for research on HIV and injecting drug on HIV and injecting drug: case study from the WHO Drug Injection Study Phase II. *BMC Public Health* , 6:54.

Deveau, C., Levine, B., & Beckerleg, S. (2006). Heroin use in kenya and findings from a community based outreach programme to reduce the spread of HIV/AIDS. *African Journal of Drug & Alcohol Studies* , 5: 2.

Dewing, S., Pluddemann, A., Myers, B., & Parry, C. (2006). Review of injection drug use in six African countries: Egypt, Kenya, Mauritius, Nigeria, South Africa and Tanzania . *Drugs Educ Prev Pol* , 13(2):121-137.

Dobkin, J. (2005). *Comprehensive Care and Treatment of HIV-Positive Injecting Drug Users.* Geneva, Switzerland: WHO.

Doherty, M., Garfein, R., Monterroso, E., Brown, D., & Vlahov, D. (2000). Correlates of HIV infection among young adult short-terminjection drug users. *AIDS, vol. 14, no. 6* , pp. 717– 726.

El-Bassel, N., & al., e. (2000). Fear and violence: raising the HIV stakes. . *AIDS Education and Prevention,* , 12(2): p. 154-70.

EMCDDA. (2007). *2007 Annual Report: the state of the drugs problem in Europe.* Lisbon: European Monitoring Centre for Drugs and Drug Addiction.

Epele, M. (2002). Gender, violence and HIV: women's survival in the streets. *Culture,Medicine and Psychiatry, vol. 26, no. 1,* , pp. 33–54.

Erickson, B. (1979). Some problems of inference from chain data. *Sociological Methodology 10:* , 276-302.

Estebanez, P., & al., e. (2000). Women, drugs and HIV/AIDS: results of a multicentre European study. *International Journal of Epidemiology* , 29(4): p. 734-43.

Estebanez, P., & al., e. (2000). Women, drugs and HIV/AIDS: results of a multicentre European study. *International Journal of Epidemiology* , 29(4): p. 734-43.

Fisher, e. a. (1998). Self-designing clinical trials. *Statistics in Medicine 1998; 17:* , 1551-1562.

Gelmon, L., Kenya, P., & Oguya, F. (2009). *Kenya Analysis of HIV Prevention Response and Modes of HIV Transmission Study – Kenya National AIDS Control Council.* Nairobi: National AIDS Control Council, UNAIDS.

Giddens, E. (2000). *Measuring socioeconomic inequalities in Health.* Europe: WHO Regional Office.

GNP+, & ICW. (2005). *Position Statement Injecting Drug Users and Access to HIV Treatment.* Amsterdam, London: GNP+ & ICW.

Goodman, L. (1961). "Snowball Sampling" . *Annals of Mathematical Statistic 32(1):* , 148-170.

Graham, H. (2004). Social Determinants and their unequal distribution: clarifying policy understandings. *The Milkbank Vol 82, n 1, 2004* , pp 101-124.

Grapendaal, M. (1992). Cutting their coat according to their cloth: economics behaviour of Amsterdam opiate users. . *International Journal of Addictions* , 27: pg.487-501.

Grassly NC., L. C. (2003). Modeling emerging HIV epidemics: the role of injecting drug use and sexual transmission in the Russian Federation, China and India. *International Journal of Drug Policy, 14* , 25-43.

Haverkos, H. (1993). Reported cases of AIDS: An update. *New England Journal of Medicine* , 329: p511.

Havinga, P., van der Velden, C., de Gee, A., & van der Poel, A. (2014). Differences in sociodemographic, drug use and health characteristics between never, former and current injecting, problematic hard-drug users in the Netherlands. *Harm Reduction Journal* , 11:6.

Heckathorn, D. D. (2001). A Methodology for Reducing Respondent Duplication and Impersonation in Samples of Hidden Populations. *Journal of Drug Issues 3 1 (2):* , 543-564. .

Heckathorn, D. D. (2002). Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations. *Social Problems. 2002;49:* , 11–34.

Heckathorn, D. D., Broadhead, R. S., & Sergeyev, B. (2001). A Methodology for Reducing Respondent Duplication and Impersonation in Samples of Hidden Populations. *Journal of Drug Issues 3 1 (2):* , 543-564.

Heckathorn, D. (2002). Respondent-driven sampling II: deriving valid population estimates from chain-referral samples of hidden populations. *Social Problems. 2002; 49* , 11–34.

Heimer, R. (2005). Critical issues and further questions about respondent-driven sampling: comment on Ramirez-Valles, et al. (2005). *AIDS Behav. 2005;9:403–8. discussion* , 409-413.

Ickovics, J., & Rodin, J. (1992). Women and AIDS in the United States: epidemiology, natural history and mediating mechanisms. *Health Psychology* , 11: p. 1-16.

Institute of Medicine. (2007). *Preventing HIV Infection among Injecting Drug Users in High Risk Countries: An Assessment of the Evidence.* Washington, DC: National Academies Press.

Jones, L., Pickering, L., Sumnall, H., McVeigh, J., & Bellis, M. (2008). *A review of the effectiveness and cost-effectiveness of needle and syringe programmes for injecting drug users.* Liverpool: Centre for Public Health, editor.

Kaplan, E. (1989). Modeling human immunodeficiency virus transmission via shared drug injection equipment in shooting galleries. *Reviews of infectious diseases 1989;11(2):* , 289-298.

Kenya National Bureau of Statistics (KNBS); ICF Macro. (2010). *Kenya Demographic and Health Survey 2008-09.* . Calverton, Maryland: KNBS and ICF Macro.

Kenya National Bureau of Statistics (KNBS)ICF Macro. (2010). *Kenya Demographic and Health.* Nairobi, Kenya: Kenya National Bureau of Statistics (KNBS); ICF Macro.

Kenya, P., Oguya, F., Ongecha, F., & Shaw, G. (2013). *Kenya National Guidelines For HIV Prevention and Management of People Who Use Drugs (PWUD).* Nairobi: NASCOP/MOPHS.

Kenya, T. R. (2012). *Laws of Kenya: Narcotic drugs and psychotropic substances (control) Act no. 4 of revised edition 2012 [1994]*. Nairobi, Kenya: National council for law Reporting with the Authority of the Attorney-General.

Lakhulamani, V. (1997). The prostitution situation in a number of cities of Russia, Ukraine and Belarus. Zh Mikrobiol . *Epidemiology Immunobiology* , 1: p. 102-104.

Lianping, T., H., K., Karyn, K., Paisan, S., E., W., Montaner, J., et al. (2013). HIV Test Avoidance Among People Who Inject Drugs in Thailand. *AIDS Behav* , 17:2474–2478.

M, C. G., Stall, R., Paul, J., & Barrett, D. (2000). Substance use and HIV risk profile of gay/bisexual males who drop out of substance abuse treatment. *AIDS Education and Prevention, volume 12; (1)* , p38-48.

MacMahon, B., & Trichopoulos, D. (1996). *Epidemiology Principles and Methods. 2nd ed.* Boston, MA: Little, Brown and Company.

MacRae, R., & Aalto, E. (2000). "Gendered power dynamics and HIV risk in drug-using sexual relationships. *AIDS Care, vol. 12, no. 4* , pp. 505–515.

Magnani, R., Sabin, K., Saidel, T., & Heckathorn, D. (2005). Review of sampling hard-to-reach and hidden populations for HIV surveillance. *AIDS 2005; 19 (suppl 2)* , S67–72.

Marincovich, B., Castilla, J., Del Romero, J., & et, a. (2003). Absence of hepatitis C virus transmission in a prospective cohort of heterosexual serodiscordant couples. . *BMJ* , 79: 160.

MCleland, C., DesJarlais, D., Perlis, T., Stimson, G., & Poznyak, V. (2007). The WHO Phase II Drug Injection Collaborative Study Group: HIV risk behaviors among female IDU in developing and transitional countries. *BMC Public Health* , 7:271.

Mohammed, J. U., Dahoma, J., Ahmed, A., Salim, A., Abdool, R., Othman, A., et al. (2006). HIV AND SUBSTANCE ABUSE: THE DUAL EPIDEMICS CHALLENGING ZANZIBAR. *African Journal of Drug & Alcohol Studies* , 5(2).

Mwenesi. (1995). *UNDCP United Nations International Drugs Control Programme in 1995. Rapid Assessment of Drug Abuse in Kenya.* UNDCP.

NACC. (2009). *Kenya National AIDS Strategic Plan, 2009/10 – 2012/13 Delivering on universal access to services.* Nairobi: National AIDS Control Council.

NACC. (2008). *Kenya National HIV prevention summit report.* Nairobi: National AIDS Control Council.

NASCOP. (2008). *Guidelines for HIV Testing and Counselling in Kenya.* Nairobi: National AIDS and STI Control Programme, MOH.

National Institute on Drug Abuse, National Institutes of Health. (December 2012). *Principles of Drug Addiction Treatment: A Research-Based Guide (Third Edition),* . USA: NIH Publication No. 12–4180.

Ndetei. (1997). *UNDCP United Nations International Drugs Control Programme: Economic-Social-Political Aspects of Illicit Drug Use in Kenya: Report.* UNDCP.

Ndetei, D. (2004). *A Study on the Linkages between Drug Abuse, Injecting Drug Use and HIV and AIDS in Kenya. A Rapid Situation Assessment. Nairobi.* Nairobi: UNODC.

Neale, J. (2008). Homelessness, drug use and hepatitis C: a complex problem explored within the context of social exclusion. *International Journal of Drug Policy, vol. 19, No. 6 (2008)* , 429-435.

Needle, R. K. (2006). Substance abuse and HIV in sub-Saharan Africa: introduction to the special issue. *African Journal of Drug & Alcohol Studies, 5(2)* , 83-91.

Needle, R., & al., e. (2000). The Global Research Network on HIV Prevention in Drug Using Populations (GRN) 1998–2000: trends in the epidemiology, ethnography, and prevention of HIV/AIDS in injecting drug users. In: 2000 Global Research Network Meeting on HIV Prevention in Drug Using. *Research Network Meeting on HIV Prevention in Drug Using Populations, Third Annual Meeting Report, 5–7 July,.* Durban, South Africa: Washington, DC, National Institute on Drug AbusE.

Needle, R., & Zhao, L. (2010). *HIV Prevention among Injection Drug Users: Closing the Coverage GAP, Expanding Access, and Scaling up Core Interventions.* Washington, DC: CSIS Global Health Policy Center.

Needle, R., Hegle, J., & & Jones, T. (2005). Injection drug use in sub-Saharan Africa: emergence of an under-recognized HIV transmission risk. *Unpublished work. Centre for Disease Control and Prevention.*

Nguyen, A., & al., e. (2004). Intravenous drug use among street-based sex workers: a high-risk behavior for HIV transmission. . *Sexually Transmitted Diseases* , 31(1): p. 15-9.

NIDA. (2002). *Principles of HIV prevention in drug-using populations. A research-based guide.* Retrieved 2012, from http://www.nida.nih.gov/POHP/Index.html

Odek-Ogunde, M., Lore, B., Owiti, F., Munywoki, S., & Moor, J. (2001). *WHO Phase II Drug Injecting Study: Rapid Assessment and Response Report.* Nairobi, Kenya: World Health Organisation.

Odek-Ogunde, M., Okoth, F., Lore, W., & Owiti, F. (2004). *Seroprevalence of HIV, HBC and HCV in injecting drug users in Nairobi, Kenya: World Health Organization Drug Injecting Study Phase II findings.* Nairobi, Kenya: World Health Organization Drug .

Ong'olo, J. (2007). *Mapping exercise to assess situation of Injecting Drug Use (IDU) in Coast and Nairobi Provinces, Kenya.* Nairobi, Kenya: UNODC.

Parry, C., & Pithey, A. (2006). Risk behaviour and HIV among drug-using populations in South Africa. *African Journal of Drug and Alcohol Studies* , 5(2):139-156.

Pedraza, M.-A., del Romero, J., Roldán, F., & al., e. (1999). Heterosexual transmission of HIV-1 is associated with high plasma viral load levels and a positive viral isolation in the infected partner. *Journal of Acquired Immune Deficiency Syndrome* , 21: 120–25.

Pinkham, S. (2012). A Review, Developing Effective Health Interventions forWomen Who Inject Drugs: Key Areas and Recommendations for Program Development and Policy. *Advances in Preventive Medicine Volume 2012* .

Pinkham, S., & Malinowska-Sempruch, K. (2007). *Women, Harm Reduction, and HIV.* New York, NY, USA: Program of the Open Society Institute.

Raphael, D. (2006). Social determinants of health: present status, unanswered questions, and future directions. . *International Journal of Health Service. 2006;36(4):* , 651-77.

Raphael, D., & Bryant, T. (2006). Maintaining population health in a period of welfare state decline: political economy as the missing dimension in health promotion theory and practice. . *Promot Educ. 2006;13(4):* , 236-42.

Reference Group to the United Nations on HIV and Injecting Drug Use . (2010). *Women who inject drugs: A review of their risks, experiences and needs.* Sydney, Australia: National Drug and Alcohol Research Centre (NDARC).

Reid, S. (2009). Injection drug use, unsafe medical injections, and HIV in Africa: a systematic review. *Harm Reduction Journal, 6:* , 24.

Renton, A., Gzirishvilli, D., Gotsadze, G., & Godinho, J. (2006). Epidemics of HIV and sexually transmitted infections in central Asia: trends, drivers and priorities for control. *International Journal on Drug Policy: 17* , 494–503.

Roberts, A., Mathers, B., & Degenhardt. (2010). *Women Who Inject Drugs: A Review of Their Risks Experiences and Needs.* Sydney, Australia: National Drug and Alcohol Research Centre (NDARC), University of New South Wales.

Roberts, A., Mathers, B., & Degenhardt. (2010). *Women Who Inject Drugs: A Review of Their Risks Experiences and Needs.* Sydney, Australia: The Reference Group to the United Nations on HIV and Injecting Drug Use, National Drug and Alcohol Research Centre (NDARC), University of New South Wales.

Roberts, A.; Mathers B.; Degenhardt on behalf of Reference Group to the United Nations on HIV and Injecting Drug Use. (2010). *Women Who Inject Drugs: A Review of Their Risks Experiences and Needs.* Sydney, Australia: NDARC, University of New South Wales.

Semaan, S., Lauby, J., & Liebman, J. (2002). Street and network sampling in evaluation studies of HIV risk-reduction interventions. *AIDS Review. 2002;4:* , 213–23.

Sendziuk, P. (2007). Harm reduction and HIV-prevention among injecting drug users in Australia: an international comparison. *Can Bull Med Hist 2007; 24:* , 17.

Solar, O., & Irwin, A. (2007). *A Conceptual Framework for Action on the Social Determinants of Health* . Cairo: CSDH & WHO.

Stimson. (1995). AIDS and injecting drug use in the United Kingdom, 1987-1993: the policy response and the prevention of the epidemic. *Social Science & Medicine, 41(5)* , 699-716.

Stimson, G., & Choopanya, K. (1998). Global perspectives on drug injecting. In: Stimson G, Des Jarlais D, Ball A, eds. Drug injecting and HIV infection. *London, UCL Press* , pp. 1–21.

Strathdee, S. A., Patrick, D. M., Currie, S. L., Cornelisse, P. G., Rekart, M. L., Montaner, J. S., et al. (2009). Needle exchange is not enough: lessons from the Vancouver injecting drug use study. *AIDS 2008 11:* , F59–F65.

Timpson, S., McCurdy, S., Leshabari, M., Kilonzo, G., Atkinson, J., Msami, A., et al. (2006). Substance abuse, HIV risk and HIV/AIDS in Tanzania. *African Journal of Drug & Alcohol Studies* , 5(2).

Timpson, S., McCurdy, S., Leshabari, M., Kilonzo, G., Atkinson, J., Msami, A., et al. (2006). Substance abuse, HIV risk and HIV/AIDS in Tanzania. . *African Journal of Drug and Alcohol Studies* , 5(2), 157-168. .

Tyndall, M., Hogg, R., Schechter, M., & Wood, E. (2004). Requiring help injecting independently predicts incident HIV infection in a prospective cohort study of injection drug users. *Proceedings of the 15th International AIDS Conference.* Bangkok, Thailand.

Umbricht, A., Hoover, D., Tucker, Leslie, Chaisson, R., & Preston, K. (2003). Opioid detoxification with buprenorphine, clonidine, or methadone in hospitalized heroin-dependent patients with HIV infection. *Drug and Alcohol Dependence, 69: ,* 263-272.

UN. (2001). *Declaration of commitment on HIV/AIDS, 2001. UN General Assembly Special Session on HIV/AIDS.* New York: United Nations.

UNAIDS. (2004). *Drug abuse and HIV/AIDS: lessons learned.* UNAIDS.

UNAIDS. (2006a). *Joint UNAIDS statement on HIV Prevention and Care Strategies for Drug Users http://data.unaids.org/UNA-docs/CCO_IDUPolicy_en.pdf Accessed online 17/01/08.* . UNAIDS.

UNAIDS. (2002). *Preventing the transmission of HIV among drug abusers: a position paper of the United Nations System.* UNAIDS.

UNAIDS. (2006a). *Report on the global AIDS epidemic*. Retrieved 2012, from www.unaids.org: www.unaids.org/en/HIV_data/2006GlobalReport/default.asp

UNAIDS. (2005). *Report on the Global AIDS Epidemic. Accessed from www.unaids.org.* UNAIDS.

UNAIDS. (2005, 2006a). *Report on the global AIDS epidemic. Available from: www.unaids.org/en/HIV_data/2006GlobalReport/default.asp.* UNAIDS.

UNAIDS. (2009). *UNAIDS Guidance Note on HIV and Sex Work* . Geneva, Switzerland: UNAIDS.

UNAIDS. (2009). *UNAIDS Guidance Note on HIV and Sex Work.* Geneva, Switzerland: UNAIDS.

UNDCP. (1999). *The Drug Nexus in Africa. UN Office for Drug Control & Crime Prevention Monographs.* Vienna: UNODCP.

UNODC. (2006). *Data Base and Progress Reports of the project. AD/KEN/04/I08 – Prevention of drug abuse and HIV/AIDS among drug users, injecting drug users and vulnerable populations in Kenya.(October 2004–September 2007).* Nairobi, Kenya : UNODC.

UNODC. (2007). *World drug report.* Vienna: United Nations Office on Drugs and Crime.

Vickerman, P., Hickman, M., Rhodes, T., & Watts, C. (2006.). Model Projections on the Required Coverage of Syringe Distribution to Prevent HIV Epidemics Among Injecting Drug Users. *JAIDS Journal of Acquired Immune Deficiency Syndromes 2006;42(3):* , 355.

Vidal-Trecan, G. e. (2002). Association between first injection risk behaviors and hepatitis C seropositivity among injecting drug users. *Annales de Medecine Interne* , 153(4): p. 219-25.

Vitinghoff, E., Douglas, J., Judon, F., McKiman, D., MacQueen, K., & Buchinder, S. (1999). Per-contact risk of human immunodifi ciency virus tramnsmision between male sexual partners. . *American Journal of Epidemiology* , 150: 306.

Volz, E., Wejnert, C., Degani, I., & Heckathorn, D. D. (2007). *Respondent-Driven Sampling Analysis Tool (RDSAT) Version 5.6.* Ithaca, NY: Cornell University. .

Weinhardt, L., Carey, M., Johnson, B., & Bickham, N. (1999b). Effects of HIV counseling and testing on sexual risk behaviour: a meta analytic review of published research, 1985-1997. *American Journal of Public Health, (89)* , 1397-1405.

WHO. (2006a). *"Towards Universal Access by 2010: How WHO is working with Countries to Scale up HIV Prevention, Treatment, Care and Support" (2006) World Health Organization.* WHO.

WHO. (2005). *Policy and programming guide for HIV/AIDS prevention and care among injecting drug users.* WHO Press.

WHO, UNODC, UNAIDS. (2009). *Technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users.* Geneve: World Health Organization.

WHO; UNODC; UNAIDS. (2009). *Technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users.* Geneva: World Health Organization.

APPENDIXES

Appendix I: Structured Questionnaire For Assessment Of Injecting Drug Use and HIV/AIDS/STI Situation in Kenya

This questionnaire will be administered to all respondents who have passed the screening and have consented to be participated in the study.

SUBJECT IDENTIFICATION

Study no. _____ Date: _____

Interview site: ……..……..……..

Interviewer's Name: …… Code:

Supervisor signature: …….. Date: ……..……..

Section 1: Background characteristics

First, I would like to ask you a few questions on your background, including information on your age, education, jobs and income.

No.	Questions	Coding categories	Skip to
101	How old are you? (In completed years)	Years _____ (DOB:_____	
102	Sex of Respondent:	Male 1 Female 2	
103	Tribe.	_____	
104	Religion.	Roman Catholic 1 Protestant 2 Muslim 3 Hindu 4 Others 5 Specify ……	

105	What is the highest level of education attained?	Never attended 0 Primary 1 Secondary 2 College 3 University 4	
106	Marital Status	Never married/Single 0 Married: Monogamous 1 Polygamous 2 Widowed 3 Divorced/separated 4 Refused 8	
107	How long have you lived here?	Number of years _____ All my life 96 Don't remember/ don't know 97 No response 98 Record 00 if less than one year	→109
108	Where did you live before moving here?	City _____ District _____ Island/Mainland_____	
109	<u>*Currently*</u>, whom are you living with? *Read out the possible answers.* *Circle one only*	Alone 1 Spouse/girl/boyfriend 2 Relatives 3 Friends 4 No fixed address 5 Other (specify) 6 _____	
110	Profession/Occupation	Professional (Doctor, Lawyer, Teacher, Accountant, Nurse etc) 1 Skilled Artisan – Clerk, Administrator etc. 2 Semi-skilled – Home servant, workman etc. 3 Pupil/Student 4 Unskilled 5	
111	What was your household income in the past month?	Ksh._____ Don't know 97 No response 98	

112	During the last 3 months what was the <u>main</u> source of money for you to live on? (Do not read out the response options. Circle one response) 88 How did you earn that money?	Regular job, employed with a regular salary (full or part-time) 1 Temporary work (include odd jobs, off-the--books, etc.) 2 Work at family business or farm 3 Self-employed (in a particular trade) 4 Government benefits (Pension, relief food, refugee etc.) 5 Spouse, partner, relative, or friend's income6 6 Student financial aid/loans/grants 7 Street begging/panhandling etc 8 Selling drugs 9 Sex for money 10 Theft, robbing, or stealing 11 Refused 99 Other (please specify)_ _____	

SECTION 2: AIDS KNOWLEDGE AND BEHAVIOR CHANGE

I would now like to ask you some questions about HIV and AIDS.

No.	Questions	Coding categories	Skip to
201	Have you ever heard of HIV or AIDS?	No 0 Yes 1 Refused 8	
202	What are the methods of protection against infection with HIV?	Don't Know 0 Abstinence from sexual contact 1 Be faithful/monogamous sexual relations 2 Can protect themselves through condom use every time during sex 3 Male Circumcision 4	
203	How often do you talk about HIV or AIDS with your sex partners?	Never 0 Sometimes 1 Always 2 Not applicable (no sex partners) 7 Refused 8	
204	How often do you talk about HIV or AIDS with your drug using friends?	Never 0 Sometimes 1 Always 2	

		Not applicable 7 Refused 8	
205	How often do you talk about HIV or AIDS with members of your family? Not at all	Never 0 Sometimes 1 Always 2 Not applicable (no family) 7 Refused 8	
206	Do you think a person can be infected with HIV (the virus that causes AIDS) and look well?	No 0 Yes 1 Refused 8 Don't know 9	
207	Now can you tell me all the ways that people can become infected with HIV? *[Do not read out list. Circle more than one "Yes" if mentioned. Probe only with "anything else?".]write 0-No and1 for yes*	Don't know any way 0 1 Sharing needles and/or syringe 0 1 Sharing other injecting equipment / drug solutions 0 1 Having sex *(protection not specified)* 0 1 Having unprotected sex 0 1 Contact with infected blood 0 1 Transfusion of blood/blood products 0 1 Perinatally, from mother to child 0 1 From sharing tattooing equipments 0 1 Sharing utensils with a person infected with HIV 0 1 Other Specify (_____)	
208	Since you had about HIV or AIDS have you done anything to avoid catching the virus yourself or to prevent someone else getting it from you?	No 0 Yes 1 Refused 8	
209	If yes, what have you done? *Do not read out list, circle more than one yes.* *Probe only with anything else.*	No Yes Started/increased condom use 0 1 Started or increased condom use 0 1 Fewer sex partners 0 1 Other safer sex practice (not specified) 0 1 Fewer male gay/bisexual partners 0 1 Fewer injection drug user partners 0 1 0 1 Stopped having sex 0 1 Other sex-related change (_____) — *Specify Local code* *DRUGS* Less drug use in general 0 1	

		Reduced injection of drugs 0 1 Stopped injection of drugs 0 1 Reduced sharing equipment/drug solutions 0 1 Stopped sharing equipment/drug solutions 0 1 Started/increased cleaning works/equipments 0 1 Other drug-related change Specify _____	
210(18)	Do you know any of the following people who are infected with HIV or who have AIDS ? *Read out each item in turn. Circle one response for each. N/A (not applicable) should be coded if the respondent knows no-one at all of the type described in the item.]* No-0, Yes -1, Not applicable -7, Refused- 8.	1.Current or former injecting drug users who've shared injecting equipment with you 0178 2.Other current or former injecting drug users 0178 3.Anyone who has been your sex partner 0178 4.Anyone living with you (in your household) 0178 5.Friends or relatives 0178 6.Any other people that you know 0178	
211 (19)	Where do most injecting drug users get information about HIV/AIDS?	Health workers 1 Print media (newspapers) 2 Electronic media (TV, Radio, Internet) 3 Posters and brochures 4 Peer groups (fellow IDUs) 5 People Living with HIV (PLWH) 6 Religious groups 7 Other Specify: ……	

212	Do you consider yourself at High/Low/No risk of getting HIV infection?	No Risk 0 Low risk 1 High risk 2(Q 22) /214 Don't know. 3	Q 21/213
213	Why do you think you are at no risk?	No sexual partner 1 Don't share tooth brushes 2 Don't share shaving instruments 3 Other 4 Specify……	
214	Why do you think you are at high risk?	Have shared skin piercing instruments 1 Sharing of shaving instruments 2 Sharing of toothbrush 3 Been tattooed 4 Had a blood transfusion 5 Unsafe sexual behaviour 6 Other 7	

		Specify. ……	

SECTION 3: SEXUAL BEHAVIOR

I would now like to ask you a few questions about your sexual relationships with a primary partner, casual partners and clients. You may find some of these questions of a personal nature, but remember we are asking everyone in the study group to answer these questions. Some of them may therefore not apply to you. All replies you give will be treated in strictest confidence.

No.	Questions	Coding categories		Skip to
301	How often have you had sexual intercourse (vaginal, anal, or oral) with someone of the opposite sex in the last 6 months?	Never/none -M (Q41) -F (Q44) Less than once a month More than once a month Once a week More than once a week Daily Refused	0 1 2 3 4 5 8	

The next questions are about sex with your primary partner of the opposite sex. By a primary partner, I mean someone who is your most important regular sex partner of the opposite sex.

No.	Questions	Coding categories		Skip to
302	In the last 6 months how often have you had vaginal or anal intercourse with a primary partner of the opposite sex?	Never/none A-->Q29 Less than once a month More than once a month Once a week More than once a week Daily Refused	0 1 2 3 4 5 8	
303	With how many primary partners of the opposite sex have you had vaginal or anal intercourse in the last 6 months?	_____		
304	In the last 6 months when having vaginal or anal intercourse with your primary partner(s) of the opposite sex, how often did you or your partner use condoms or female condoms ?	Never Sometimes Always Refused	0 1 2 8	
305	How many of these opposite-sex primary partners had ever injected drugs?	_____ Don't know	9	

306	As far as you know, have any of these opposite-sex primary partners ever ...(read out each item in turn. Circle one response for each) – No-0, yes-1, refused-8	Been told that they were HIV positive or that they had the AIDS virus? 0 1 8 Been diagnosed with hepatitis 0 1 8 Had sex with (other) men? 0 1 8	
307	In the last 6 months what methods of contraception have you and your primary partner used at any time? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anything else?".] No-0, Yes-1*	None 0 1 Male condom 0 1 Female condom 0 1 Oral contraceptives 0 1 Intramuscular contraceptive (eg depo provera) 0 1 Intrauterine device 0 1 Sponge or Spermicide 0 1 Sterilisation 0 1 Other,specify_____	

The next questions are about sexual intercourse with casual partners of the opposite sex. By a casual partner, I mean someone you have had sexual relations with other than your primary partner. Do not include paying "clients" in your answers to questions about casual partners.

No.	Questions	Coding categories	Skip to
308	. In the last 6 months how often have you had vaginal or anal intercourse with any casual partners of the opposite sex?	Never/noneA-->Q34 0 Less than once a mont 1 More than once a month 2 Once a w 3 More than once a week 4 Daily 5 Refused 8	Q 312
309	With how many casual partners of the opposite sex have you had vaginal or anal intercourse in the last 6 months?	_____	
310	In the last 6 months how often did you use condoms or female condoms when having vaginal or anal intercourse with your casual partners of the opposite sex?	Never 0 Sometimes 1 Always 2 Refused 8	
311	How many of these opposite-sex casual partners had ever injected drugs?	_____ Don't know 9	
312 Q 34	As far as you know, have any of these opposite-sex casual partners ever ... *[Read out each item in turn. Circle one response for each.]No-0, Yes-1, Refused -8*	Been told that they were HIV positive or that they had the AIDS virus? 0 1 8 Been diagnosed with hepatitis 0 1 8 Had sex with (other) men? 0 1 8	

The next questions are about sexual activity with clients of the opposite sex - by this I mean people who gave you money, goods or drugs for sex. When I refer to sex here, I mean vaginal intercourse, anal intercourse, oral sex and hand jobs.

No.	Questions	Coding categories	Skip to
313	. In the last 6 months how often have you had a client who gave you money or goods for sex?	Never/none 0 Less than once a month 1 More than once a month 2 Once a week 3 More than once a week 4 Daily 5 Refused 8	
314	In the last 6 months how often have you had a client who gave you drugs for sex?	Never/none 0 Less than once a month 1 More than once a month 2 Once a week 3 More than once a week 4 Daily 5 Refused 8	
IF NEVER TO Q313 & 314 GO TO Q 317 OR 318			
315	In the last 6 months how many different clients did you have in an **average** month?	_____	
Now I want you to think about all your clients you had in the last 6 months			
316	How often were condoms or female condoms used when you had vaginal/anal intercourse with clients?	Never 0 Sometimes 1 Always 2 Refused 8	
317 Q 39	In the last 6 months did you give money or goods to have sex with anyone of the opposite sex?	No 0 Yes 1 Refused 8	
318 Q40	In the last 6 months did you give drugs to have sex with anyone of the opposite sex?	No 0 Yes 1 Refused 8	
319	How often were condoms or female condoms used when you had vaginal/anal intercourse with these partners?	Never 0 Sometimes 1 Always 2 Refused 8	
If respondent is male ask Q 320-322, if female ask Q 323-325			
No.	Questions	Coding categories	Skip to

320	In the last 5 years, at any time have you had sexual intercourse (anal and/or oral sex) with another man (including in prison or for money and whether voluntary or not)?	No 0 Yes 1 Refused 8	
321	About how many men partners have you had sex with (anal and /or oral) in the last 6 months?	_____	
322	How often were condoms used when you having sex with another man in the last 6 months?	Never 0 Sometimes 1 Always 2 Refused 8	
323	In the last 5 years, at any time have you had sex with another woman (including in prison or for money and whether voluntary or not)?	No 0 Yes 1 Refused 8	
324	About how many women partners have you had sex with in the last 6 months?	_____	
325	How often did you use female condoms when having sex with another woman in the last 6 months?	Never 0 Sometimes 1 Always 2 Refused 8	
326	Have you had of sexually transmitted infections (STIs)	No 0 Yes 1	
327	If yes, what are the STI symptoms that you know? No-0 , Yes --1	Genital ulcer/sore blisters 0 1 Genital discharge 0 1 Foul-smelling discharge 0 1 Itching 0 1 Burning/pain during urination 0 1 Low Abdominal pain 0 1 Swelling in groin area 0 1 Bleeding 0 1 Others (specify) 8 Don't know 9	
328	Have you ever experienced any symptom of STI in the last 1 year?	No 0 Yes 1	
329	Did you seek treatment?	No 0 Yes 1	
330	If yes, What was the source of	Private Doctor 1	

	treatment?	Hospital /health facility 2 Help group 3 Others 4	

SECTION D: DRUG USE

Now I am going to ask you some questions about your drug use

No.	Questions	Coding categories	Skip to
401	How old were you when you first used cigarettes/tobacco? *[If "never" enter "00"]*	_____yrs Never 00	
402	If ever used, how many cigarettes do you now smoke each day?	_____yrs Never 00	
403	How old were you when you first drank any alcohol? *[If "never" enter "00"*	_____yrs Never 00	
404	If ever drank, how often did you drink alcoholic the last 6 months?	Never/none 0 Less than once a month 1 More than once a month 2 Once a week 3 More than once a week 4 Daily 5 Refused 8	
405	In a typical day, when you drank alcohol in the last 6 months, how many drinks did you usually have?	One 1 Two 2 Three to five 3 Six or more 4 Refused 8	
406	Did you use cannabis, hashish, or marijuana in the last 6 months?	No 0 Yes 1 Refused 8	
407	How old were you when you first used any other drug such as heroin, other narcotics or opiates, cocaine, amphetamines, other stimulants, barbiturates, tranquilizers, inhalants, solvents, steroids etc. to get high? Don't count any drugs used for medical purposes.	_____yrs	
408	What was that drug?	Specify_____	

409 (Q 61)	During your lifetime have you ever injected a drug excluding any used for medical purposes?	No 0 Yes 1 Refused 8	
END HERE IF ANSWERS NO TO Q 409 OR REFUSES TO STATE WHETHER EVER INJECTED			

SECTION5: INJECTING DRUG USE

Now I want you to think back to the very first time you injected a drug, excluding any used for medical purposes.

No.	Questions	Coding categories	Skip to
501	How old were you when you first injected a drug?	_____yrs	
502	What drug did you inject that first time?	_____ Specify	
503	Had you ever used that same drug in some other way before you injected it?	No 0 Yes 1 Refused 8	Q 506/7 Q 506
504	How often were you using that same drug in the 30 days prior to your first injection?	Never/none 0 Less than once a month 1 More than once a month 2 Once a week 3 More than once a week 4 Daily 5 Refused 8	
505	How old were you when you first used that same drug by any means of administration?	_____years	
506	During the 30 days before your first injection, did you use any of the following? *[Read out each drug/drug category in turn. Circle one response for each.]* No-0, Yes-1, Refused -8, Don't know -9	01 Speed ball(heroin & cocaine together) 0 1 8 9 02 Heroin alone 0 1 8 9 03Coacine alone 0 1 8 9 04 Methamphetamine 0 1 8 9 05 Valium 0 1 8 9 Any other, specify _____	
507	The very first time you injected, who injected the drug into you? What was his/her relationship to you? *[Do not read out response options.*	I did it myself 01 A primary sex partner 02 Another sex partner 03 A relative who was not a sex partner 04 A close friend 05 Other friend or acquaintance 06 Dealer/gallery operator/other drug professional	

	Circle one response.]	Someone I didn't know well 08 Other (_____) 09 Refused 98 Don't remember 99	
508	What was the sex of that person?	Male 1 Female 2 Refused 8 Don't remember 9	
509	That first time, did you inject with a used needle and/or syringe given, lent, rented, or sold to you by someone else (including your partner)?	No 0 Yes 1 Refused 8 Don't remember 9	

MODULE ON INJECTION INITIATION

No.	Questions	Coding categories	Skip to
510	When you injected that very first time, was it in this area?	No 0 Yes 1 Refused 8	
511	In what type of place did you inject for the very first time? *[Do not read out response options. Circle one response.]*	The place where I live 01 A sex partner's home 02 A (another) relative's home 03 A friend's home 04 Someone else's home 05 At school or college 06 In a "safe" injecting room 07 In an indoor shooting gallery, dealer's place, or other "drug using" place 08 In an outdoor shooting gallery or other "drug using" place 09 In a club or bar 10 In any other public space (street, park, abandoned building, public restroom etc.) 11 In a car or similar vehicle 12 Refused 98 Don't remember 99 Other (_____)*Specify*	
512	The very first time you injected, how did you get your	I got it as a gift (treat) 1 I bought it on my own 2	

	drug? *[Do not read out response options. Circle one response.]*	I gave someone money to buy it 3 I traded sex for it 4 I was a dealer 5 Other (…….) 6 Refused 8 Don't remember 9	
513	Why did you start injecting? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anything else?".]* *No – 0, Yes -1*	01Type/quality of drug available inadequate for non-injection 0 1 02I thought it would be a better high 0 1 03My friends/companions were injecting and I wanted to try 0 1 04Pressure from friends/companions 0 1 05Worried about the health consequences of sniffing/snorting 0 1 06I was at a party and others were doing it 0 1 07Curiosity 0 1 08I was depressed 0 1 09Everyone was doing it 0 1 91Other (_____) *Specify*	
514	Before your first injection, did you think you'd just try it once or twice and then stop, or did you think you'd become a regular injector?	Try once or twice and stop 1 Become a regular injector 2 Refused 8 Don't know, didn't think about that at all 9	
515	Before your first injection, did you know anyone who had severe problems as a result of injecting?	No 0 Yes 1 Refused 8 Don't know/Not sure 9	
516	Before your first injection, did you know about HIV or AIDS?	No 0 Yes 1 Refused 8 Don't know/Not sure 9	
517	Before your first injection, did you think that if you injected you would develop HIV or	No 0 Possibly but not very likely 1	

	AIDS?	Probably, quite likely 2 Refused 8 Don't know/Not sure 9	
518	During the month or two before your very first injection, were most of your friends and companions drug users or not?	No (only a few/ none were drug users 0 About half were drug users 1 Yes (most were drug users 2 Refused 8 Don't remember 9	
519	During the month or two before your first injection, among all of the drug users that you knew, were most of them injectors or were they non-injectors?	Mostly injectors 1 About half and half 2 Mostly non-injectors 3 Refused 8 Don't remember 9	
520	Now think about the month or two <u>after</u> your first injection compared with the month or two <u>before</u> your first injection. Would you say ... *[Read out each category in turn. Circle one response for each.]* *No-0, yes-1, refused -8, don't know-9*	1. You continued to see most of your old friends/companions from before? 0189 2. You had more drug-using friends/companions than before?0189 3. You tended to see more of people who injected than before 0189 4 You made new friends who had started injecting before you met them 0189 5 You made new friends who started injecting at the same time or after you met them?0189	
521	How long ago was the last time you initiated anyone else into injecting?*(Do not read out response options. Circle How one response.]*	Never 0 → Within the last week 1 Within the last month 2 More than 1 month ago but within the last 6 months 3 More than 6 months ago but within the last year 4 More than 1 year ago 5 Refused 8 -> More than 1 year ago 5 Refused 8 -->	Q 614 Q614
522	How many persons have you initiated into injecting in this *[name of site]* area?	None 0 One 1 Two 2 3 or more 3 Refused 8	

523	How old were you when you started injecting at least once a week on a regular basis? *[If never injected regularly, enter "00"]*	**_____years**	
524	In your lifetime, about how many times have you injected drugs? *[Do not read out response options. Circle one response.]*	Once only 1 2-9 times (A few times) 2 10-99 times 3 100-999 times 4 1000 times or more 5 Refused 8	
525	What is your primary method of taking drugs now? *[Read out all response options (exc. refused). Circle one response.]*	Injection 1 Non-injection 2 Both ways equally 3 Refused 8	
526	How many months ago did you last inject drugs? *[Probe for best estimate. If within the last month enter "001". If "too long ago to remember" enter "995".]*	**_____months** **If more than 6 months ago**	Q606

If respondent has not injected during last 6 months, skip to Sub-Section for Ex-Injectors.
If respondent says he/she injected over 6 months ago, but refuses further detail, classify as an Ex-Injector and skip to Q606
If status cannot be clarified END INTERVIEW

SUBSECTION : INJECTING DRUG USE IN THE LAST SIX MONTHS

Now we are going to talk about your drug use in the last 6 months.

No.	Questions	Coding categories	Skip to
601	In how many of the last 6 months did you inject drugs?	_____months	If 6 go to Q 603(a)
602	Why did you have some injection-free months during the last 6 months? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anything else?".]* *No-0, Yes -1*	01Trying to control/reduce/eliminate drug use 02Worried about health consequences of injection 03Worried about contracting HIV/AIDS 04Worried about contracting hepatitis 05Easier to modulate doses, avoid overdose 06Fear/dislike of needles/syringes or blood 07Don't want track marks or other stigmata 08Avoid law enforcement 09Injection paraphernalia unavailable 10Drugs for injection too expensive 11More convenient, easier, faster to use non-injection 12Prefer the high from non-injection methods	

		13Peer pressure/desire to be like companions/friends/partners 14Because of the social stigma attached to injecting 15Don't see myself as injector type 16My injecting causes family distress (psychological, economic etc.) 17I typically don't inject all the time 90. Other (_____)specify	

Now I am going to ask you some questions about specific drugs you have used in the last 6 months. For each drug mentioned, for the months in which you used it, I am going to ask separately about injected use and about non-injected use.

603. How often did you inject _____ *[name of drug]*?

604. How often did you use _____ *[name of drug]* in a non-injected way?

[Repeat the set of questions for each drug/drug category.]

SHOW PROMPT CARD A

Never	0	4 to 6 times a week	5
Less than once a month	1	About once a day	6
1 to 3 times a month	2	2-3 times a day, almost every day	7
About once a week	3	4 or more times a day, almost every day	8
2 to 3 times a week	4	Refused	9

		QD55 How often injected	*XD56 How often non-injected?*
01	Speedball (heroin & cocaine)	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
02	Heroin alone	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
03	Cocaine alone	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
04	Methamphetamines	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9
91	Other (_____) __ __ *Specify* *Core code*	0 1 2 3 4 5 6 7 8 9	0 1 2 3 4 5 6 7 8 9

Now I want you to think about your overall injecting in the last 6 months.

No.	Questions	Coding categories		Skip to
605	In the months that you injected, how often did you inject?	Never Less than once a month 1 to 3 times a month About once a week 2 to 3 times a week About once a day More than once daily Refused	0 1 2 3 4 5 6 8	

606	During the last 6 months, in an average month when you injected, how many days per month did you inject?	_____ days	
607	During the last 6 months, on an average day when you injected, how many times per day did you inject?	_____ times per day	

SECTION 7: INJECTION AND SHARING BEHAVIORS

In the next section, I would like to ask you a few questions about how you injected drugs in the last 6 months (including any occasions when another person injected <u>you</u>). I am interested in the times you have injected with a USED needle and/or syringe, that is a needle and/or syringe that you thought someone else had already used.

No.	Questions	Coding categories	Skip to
701	When you injected in the last 6 months, how often was it with used needles and/or syringes given, lent, rented, or sold to you by someone else (including your partner)?	Never 0 Less than once a month 1 1 to 3 times a month 2 About once a week 3 2 to 3 times a week 4 About once a day 5 More than once daily 6 Refused 8	
702	Of the times you injected with used needles and /or syringes in the last 6 months, how often were they from…., *[Read out each category in turn. Circle one response for each.]* Never 0 Sometimes 1 Always 2 Refused 8	1A primary sex partner? 1 2 3 4 5 8 2A relative who was not a primary sex partner? 3A close friend? 1 2 3 4 5 8 4Dealer/gallery operator/"hit doctor"/other drug professional 1 2 3 4 5 8 5Someone else you did not know well?	
703	From how many different people in total did you get used needles and/or syringes in the last 6 months?	_____	
704	In the last 6 months when you used needles/syringes given, lent, rented, or sold by someone else, how often did you clean them first?	Never 0 Sometimes 1 Always 2 Refused 8	Q 705

705	In the last 6 months how did you usually clean needles and/or syringes that someone else had used? *[Do not read out response options. Circle one response*	Water 1 Boiling water 2 Soap or detergent 3 Bleach 4 Alcohol 5 Refused 8 Other (_____)specify *Specify* *Local code*	
706	Now I will read you a list of reasons why you might have shared needles and/or syringes in the last 6 months. Do any of these apply to you? *(Read out each item in turn. Circle one response for each)* Never 0 Sometimes 1 Refused 8	1. Other drug injectors put pressure on me to share 0 1 8 2. I thought it was safe because I cleaned it 0 1 8 3. I am careful who I share with 0 1 8 4. I was in prison 0 1 8 5. I didn't have my own needles and/or syringes 0 18 6. Needles and/or syringes are hard to get 0 1 8 7. Needles and/or syringes are expensive 0 1 8 8. Any other(_____) 0 1 8	
707	In the last 6 months, at any time did you inject drugs using a syringe after someone else had squirted drugs into it from his/her used syringe (frontloading/ backloading/splitting)?	No 0 Yes 1 Refused 8	
708	In the last 6 months, at any time did you share a cooker/vial/container, cotton/filter, or rinse water when you injected drugs?	No 0 Yes 1 Refused 8	
Now I would like to ask you a few questions about the times you have given, lent, rented, or sold your needles and/or syringes to someone else (not including when someone else injected you).			
709	When you injected in the last 6 months, how often did you give, lent, rent or sell to someone else a needle and/or syringe you had already used?	Never 0 Less than once a month 1 1 to 3 times a month 2 About once a week 3 2 to 3 times a week 4 About once a day 5 More than once daily 6 Refused 8	Q711
710	How many different people in total have you given, lent, rented, or sold used needles		

	and/or syringes to in the last 6 months?		
711	Of the times you gave, lent, rented or sold someone else a used needle and/or syringe in the last 6 months, at any time did you give them to …. *[Read out each category in turn. Circle one response for each.]* **Never 0** **Sometimes 1** **Always 2** **Refused 8**	1A primary sex partner? 1 2 3 4 5 8 2A relative who was not a primary sex partner? 3A close friend? 1 2 3 4 5 8 4Dealer/gallery operator/"hit doctor"/other drug professional 1 2 3 4 5 8 5Someone else you did not know well?	
712	In the last 6 months, at any time did you help someone to inject for the very first time?	No 0 Yes 1 Refused 8 Don't know/not sure 9	Q714 Q714 Q714
713	In the last 6 months, how many different people did you help to inject for the very first time?	_____	
714	Were any of them …. **No-0** **Yes -1** **Refused -8**	1A primary sex partner? 0 1 8 2 Another relative not a sex partner? 0 1 8 3A son or daughter of yours? 0 1 8	
Now I would like to ask you about your use of brand new sterile needles and/or syringes, that is needles and/or syringes never used before by anyone else, even yourself			
715	In the last 6 months, did you get <u>any</u> new and unused needles and/or syringes?	No 0 Yes 1 Refused 8	Q 717 Q717
716	In the last 6 months, how did you get new unused needles and /or syringes? Circle **Never 0** **Sometimes 1**	01. Pharmacist/chemist 0 1 02. Other shop or store 0 1 03. Market place or street vendor 0 1 04. Family doctor/general practitioner 0 1 05. Hospital 0 1 06. Drug worker/drug agency 0 1 07. Outreach worker or street unit 0 1 08. Other health/welfare agencies 0 1 09. Sex partner 0 1 10. Family member, not a sex partner 0 1 11. Friends 12. Other drug users 0 1 13. Drug dealer 0 1	

		14. Needle/Syringe Exchange program 0 1 15. Theft from legitimate source 0 1 16. Buy on the streets 0 1 91.Other (_____) 0 1	
717	*If more than one way mentioned in Q716* Which source did you use most frequently?	_____code	
718	In the last 6 months, did the police or other authorities ever confiscate any injecting equipment from you?	No 0 Yes 1 Refused 8	
719	In your lifetime, to the best of your knowledge did you ever inject with any of the following? **No-0, yes -1 , refused -8**	1Anyone who was infected with HIV? 0 1 8 2Anyone who had hepatitis? 0 1 8 3A male drug injector who had sex with men?0 1 8 4A female drug injector who had sex with women? 0 1 8	

Years old

SECTION 8 / 9: TRAVEL

[Ask this section only if respondent is a Current or Ex-Injector.]

Now I would like to ask you some questions about the different places you have travelled to in the last two years and any drug injecting activity there.

901. Have you injected drugs outside this city area in the last two years?

No 0
Yes 1
Refused 8

902. If yes, where _____

SECTION 10: TREATMENT INFORMATION

[Ask only if respondent is recruited from non-treatment setting.]

1001. Have you ever received any treatment intended to help you modify your drug use?

No 0 -->QC08
Yes 1
Refused 8-->QC08

I am going to ask you about types of drug treatment or help you have had since you first started taking drugs. For each treatment type, tell me if you had out-patient/day treatment or in-patient/residential treatment, or both. Then tell me whether you had it once, twice, or 3 or more times in your life. I am interested in the number of times you entered a course of treatment, not the number of individual sessions. Remember that we're only talking about treatment intended to help you reduce or stop your drug use.

Any _____ *[treatment type]?*
[If "yes"]

No.	Questions	Coding categories	Skip to
1001	How many times did you receive treatment in following settings?	*Out-patient/day* *In-patient* Public institution Private institution Faith based NGO Other NGO 91Other (_____)	
1002	*[Ask only if respondent is recruited from non-treatment setting.]* Are you currently receiving drug treatment?	No 0 Yes 1 Refused 8	
1003	Did you begin your treatment in the last 30 days?	No 0 Yes 1 Refused 8	
1004	What kind of treatment are you currently receiving?	*Out-patient/day* *In-patient* Public institution Private institution Faith based NGO Other NGO 91Other (_____)	
1005	How many months ago did you <u>last</u> receive drug treatment intended to help you modify your drug use?	_____ months ago (or indicate date)	

1006	Have you ever been in jail/prison?	No 0 Yes 1 Refused 8	
1007	How many times have you been in jail/prison?	1-2 1 3-4 2 More than 4 times 3 Refused 8	
1008	Did you ever inject drugs in jail/prison?	No 0 Yes 1 Refused 8	Q1010
1009	When you injected in jail/prison, did you ever inject drugs with needles and/or syringes that someone else had	No 0 Yes 1 Refused 8 Don't Know/Not sure 9	

	already used?		
1010	In the last 6 months how often have you had contact or involvement with any of the following AIDS prevention activities? **0 Never** **1 Once a month** **2 more than once a month** **3 Once a week** **4 More than once a week** **5 Daily** **8 Refused**	01Group counseling 0 1 2 3 4 5 8 02Individual counseling 0 1 2 3 4 5 8 03 Group education 0 1 2 3 4 5 8 04 Individual education 0 1 2 3 4 5 8 05 Street outreach 0 1 2 3 4 5 8 06 Mass media 0 1 2 3 4 5 8 07 HIV testing 0 1 2 3 4 5 8 08 Bleach provided 0 1 2 3 4 5 8 09 Condoms provided 0 1 2 3 4 5 8 10 Needle/Syringe Exchange Program 0 1 2 3 4 5 8 11Drug Users' Organization 0 1 2 3 4 5 8 91 Other _____ *please specify*	

SECTION11: MEDICAL HISTORY

	Questions	Coding categories	Skip to
1101	How would you describe your current health? Would you say it is -- *[Read out all response options (exc . refused and DK). Circle one response)*	Excellent 1 Good 2 Fair 3 Poor 4 Refused 8 Don't know/not sure 9	
1102	Have you ever been told by a doctor, nurse, other health professional or counselor that you had_____*(infection type)* *(Read out each item in turn. Circle one response for each)If 'yes'*	_____*(infection type)*	
1103	Have you ever had pre-test counseling concerning an HIV test?	No 0 Yes 1 Refused 8	
1104	Have you ever been tested for the HIV virus?	No 0 Yes 1 Refused 8 Don't know 9	
1105	Where did you get tested? *[Do not read out list. Circle more than one "yes"*	01 Drug treatment center 0 1 02 STD clinic 0 1 03 Hospital 0 1 04 Private doctor 0 1	

	if mentioned. Probe only with "anywhere else?".]	05 Home test kit 0 1 06 Jail/prison 0 1 07 VCT centre 0 1 91 Other _____	
1106	Did you get the results of any HIV test?	No 0 Yes 1 Refused 8 Don't know 9	Q1112 Q1112 Q1112
1107	Did you ever get a positive test result, meaning you were infected with HIV?	No 0 Yes 1 Refused 8	Q1110 Q1110
1108	Did you receive post-test counseling?	No 0 Yes 1 Refused 8	
1109	When was the first time you were told you were positive for HIV?	_____ Month year	
1110	Did you ever get a negative test result?	No 0 Yes 1 Refused 8	Q1112 Q1112
1111	When was the last time you were told you were negative for HIV?	_____ Month Year	
1112	In the last 6 months, have you taken any anti-AIDS medication such as AZT, DDI, protease inhibitors, or some other?	No 0 Yes 1 Yes, but don't know which type 2 Refused 8	Q1114 Q1114 Q1114
1113	In the last 6 months, which anti-AIDS medications have you taken? *[Read out each item in turn. Circle one response for each.]* *No -0 , Yes- 1, Refused -8*	01 AZT 0 1 8 02 DDI 0 1 8 03 DDC 0 1 8 04 Protease inhibitors 0 1 8 05 Something else but you don't know name 0 1 8	
1114	Have you ever been told by a doctor, nurse, other health professional or counselor that you had the AIDS disease?	No 0 Yes 1 Refused 8	
1115	When was the first time you were told you had AIDS?	_____ Month year	
	Questions	Coding categories	Skip to
1116.	When was the last time (year) you had _____ *[Infection type]*.	*[Infection type]* **specify year** 01 Tuberculosis (TB)? _____	

	No 0 **Yes 1 specify year** **Refused 8** **DK 9**	02 Liver disease _____ 05 Mouth infections such as candida or thrush, due to fungus or yeast? _____ 06 Syphilis? _____ 07 Gonorrhea? _____ 08 Genital warts? _____ 09 Genital herpes _____ 10 Chlamydia (non-gonococcal urethritis)? _____ 11 Hepatitis? _____ 12 Malaria? _____ 13 Abscesses at an injection site? _____ 14 Abscesses elsewhere on the body? - _____ 15 Collapsed veins or other direct bodily damage from injecting? _____ ***[Ask items 16-17 only if respondent is female]*** 16 Pelvic inflammatory disease? _____ 17 Cervical cancer? _____	
1201.	How long ago did you last receive any medical services? I'm talking about services intended to help you when you were sick or ill, or to check on your health. Don't include drug treatment services. *[Do not read out response options. Circle one response.]*	Never 0 Within the last 1 month 1 More than 1 month ago but within the last 6 months 2 More than 6 months ago but within the last 1 year 3 More than1 year ago 4 Refused 8	
1202.	Do you currently have difficulty getting medical treatment if you are sick or ill?	No 0 > Q1204 Yes 1 Refused 8-->Q1204	0-> Q1204 8-->Q1204

SECTION12: SERVICE UTILIZATION

	Questions	Coding categories	Skip to
1203.	Why can't you get medical treatment if you need it? ***[Do not read out list.***	01 No service exists 02 No service nearby 03 No way to get there 04 Not always open/inconvenient hours 05 They speak a different language	

	Circle more than one "yes" if mentioned. ***Probe only with "anything else?".] No Yes***	06 Don't like/trust/believe in doctors 07 Treatment available but cannot pay for it 08 Treatment available, but it can't help me, not what I need 09 Treatment available, but I don't satisfy the criteria to get it 10 Afraid of painful treatment procedure 11 Afraid of interference or arrest by authorities 12 Treatment facilities are very unfriendly to drug users 13 Treatment facilities don't accept drug users 91 Other (_____) *Specify*	
1204.	*[Ask only if respondent is recruited from non-treatment setting.]* Do you currently have difficulty getting drug treatment if you need it?	No 0 -→ Q1206 Yes 1 Refused 8-->Q1206	0-→ Q1206 8-->Q1206
1205. (a).	Why can't you get drug treatment if you need it? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anyone else?".]* **Mentioned** **No 0** **Yes 1** **Refused 8**	01 No service exists 0 1 02 No service nearby 0 1 03 No way to get there 0 1 04 Not always open/inconvenient hours 0 1 05 They speak a different language 0 1 06 Don't like/trust/believe in treatment services 0 1 07 Treatment available but cannot pay for it 0 1 08 Treatment available, but it can't help me, not what I need 0 1 09 Treatment available, but I don't satisfy the criteria to get it 0 1 10 Afraid of painful treatment procedure 0 1 11 Afraid of interference or arrest by authorities 0 1 Other (_____) *Specify*	
1205 (b).	Were there ever <u>any medical, HIV prevention, drug-related, or other services</u> that you didn't want to use because you were afraid of the police or other authorities?	No 0 Yes 1 Refused 8	

	Questions	Coding categories	Skip to
1206.	What were those services? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anyone else?".]*	01 All services because I didn't want the authorities to learn about me 0 1 02 HIV-related medical treatment 0 1 03 STD-related medical treatment 0 1 04 Treatment for overdose/psychotic episode 0 1 05 Drug treatment 0 1 06 Needle/Syringe Exchange Program 0 1 07 Treatment for trauma from violence 0 1 08 General medical treatment 0 1 09 Psychiatric treatment 0 1 91 Other (_____)	

SECTION 13: OVERDOSE

Now I am going to ask you some questions about overdose on narcotics. Overdose means that someone lost consciousness or stopped breathing as a result of taking narcotics by injection or any other route of administration.

No.	Questions	Coding categories	Skip to
1301	Have you ever been present when another person overdosed on narcotics to the point where they lost consciousness ?	No 0 Yes 1 Refused 8	Q1302
1302	Have you known anyone who died of an overdose of narcotics? (if 'yes' How many people? (*Do not read out response options. Circle one response)*	None 0 1-2 1 3-5 2 >5 3 Refused 8	
1303	Have you ever overdosed on narcotics to the point where you lost consciousness?	No 0 Yes 1 Refused 8	Q1309 Q1309
1304	How many times has that happened?	1-2 1 3-5 2 >5 3 Refused 8	
1305	What narcotics or other		

	substances had you injected on that occasion?	_____ _____specify	
1306	What narcotics or other substances had you used in any non-injected way on that occasion? This includes alcohol.	_____specify	
1307	Did you receive help from anyone after the last time you had overdosed on narcotics?	No 0 Yes 1 Refused 8	Q1309 Q1309
1308	Who helped you? *[Do not read out list. Circle more than one "yes" if mentioned. Probe only with "anyone else?".]*	01Drug-using sex partner(s) 0 1 02 Drug-using relative(s), not sex partners 0 1 03Drug-using friend(s) 0 1 04 Other drug user(s) 0 1 05 Non drug-using sex partner(s) 0 1 06 Non drug-using relative(s), not sex partners 0 1 07 Non drug-using friend(s) 0 1 08 Law enforcement personnel 0 1 09 Drug worker/Outreach worker 0 1 10 Other strangers 0 1 11 Unknown persons (while I was unconscious) 0 1 12 Other (_____) 0 1	
1309	If you were to seek medical help for an overdose of narcotics, do you believe that you would be treated well by people with the expertise to help you?	No 0 Yes 1 Refused 8	
1310	If you were to seek medical help for an overdose of narcotics, do you believe that you would be reported to law enforcement authorities?	No 0 Yes 1 Refused 8	
1311	Have you ever been taught CPR (cardiopulmonary resuscitation)	No 0 Yes 1 Refused 8	

SECTION 14: CONCLUSION

Just a few more questions now.

No.	Questions	Coding categories	Skip to
1401	Do you consider yourself to be…….. *[Read out all response options that apply (exc. refused). Circle one response.]*	Straight or heterosexual 1 *[Ask men only]* Gay or homosexual 2 *[Ask women only]* Lesbian or homosexual 3 Bisexual 4 Refused 8	
1402	Do you plan to ever have a (another) child?	No 0 Yes 1 Self or partner currently pregnant 2 Refused 8 Don't know 9	
1403	. If no, explain	_____	
1404	Think ahead to about twelve months from now . Do you expect any change in any of the following? (read out each item in turn. Circle one response for each) No 0 Yes 1 Refused 8	Your primary mode of drug administration 0 1 8 Your level of drug consumption 0 1 8 Your employment status 0 1 8 Your main source of income 0 1 8 Your health status 0 1 8	

THANK YOU VERY MUCH FOR YOUR CORPORATION

PLEASE NOW GO AND SEE THE VCT COUNSELOR

……END…….

Appendix 2: Key Informants Interview guide

Questionnaire no: _____

INTRODUCTION

My name is ……and I work with ……. We are conducting a survey. The purpose of this study is to collect information on the magnitude and prevalence of injecting drug use (IDU), existing policies, and the status of service delivery, barriers, opportunities and gaps in accessing services.

Interviewers name……Date:……...

Interviewee name…….Designation: ……

1. Name of organization/institution: ……...

2. Year of registration: ……..…

3. Services offered:

a)…… Duration…..……..
b) ……..……. Duration ….…….
c)…… Duration……...
d) ……... Duration…….. .

4. What is your organization's mission?

……..……

.....
.....
.....

Section A. Injecting Drug Use

- Is injecting drug use an existing/emerging problem in your area of work?
- How big is the problem?
- What are the commonly abused drugs?
- How are they accessed by the users?
- What are the factors that drive the abuse of injecting drugs in your area of work?
- What preventive actions are /should be put in place?

Section B: IDU/HIV linkage

o What individual/risk behaviours are likely to promote the spread of HIV among the IDUs?

o What infrastructural factors are likely to promote the spread of HIV among IDUs?
o What legal/policy framework factors are likely to promote the spread of HIV among IDUs?
o What logistical factors are likely to promote the spread of HIV among IDUs?

Section C: Management

- How has your organization responded to the prevention and management of IDU?
- What are the best practices relating to IDU management?
- What are some of the challenges met in executing these best practices?
- Should needles and syringes be made available to IDUs? Explain your answer….

Section D. Response to HIV epidemic, gaps and proposed interventions.

- Are there any existing policies on IDU management?
- If yes, specify
- What is your organizations policy in regard to HIV control among IDUs?
- What are the major challenges, achievements and gaps in the organization's response to IDU/HIV management?
- What are the opportunities and strengths within your organisation that can facilitate a well coordinated response to the HIV epidemic among IDUs?
- What do you propose as future interventions to consolidate a national response to the IDU/HIV epidemic?

Thank you.

Appendix 3: Focus Group Discussion guide

Target Audience: Drug users/IDUs / Service providers (Tick as appropriate)

INTRODUCTION

My name is ……and I work with ……. We are conducting a survey. The study is about injecting drug use and HIV/AIDS. I am interested in finding out your knowledge and opinions on injecting drug use and HIV/AIDS/STI as well as individual and community behavioral factors that promote the spread of IDU/HIV.

I would like to give opportunity to the other two colleagues (the rapouteur and his/her assistant) to introduce themselves.

Section A. Injecting Drug use

Is injecting drug use an emerging or existing problem in this community?

1. How is the habit of injecting drug use in this community?
2. What types of drugs are abused in this community?
3. Who abuse these drugs and how do they access them?
4. Why do they take the drugs?
5. What problems are associated with injecting drug use?

Section B: HIV/AIDS

6. In your opinion, is it possible to acquire HIV from drug use (probe behavioral factors)?
7. What is being done (by the community, drug users) to control the spread

of HIV in the community? (Probe behaviour change interventions)

8. In your opinion how well is care, treatment and support to individuals with

IDU/HIV? (Probe status of VCT, PMTCT and ART and needle exchange and condom programmes)

9. What should be done to control the abuse of injection drugs in the community?

10. In your opinion what should be done to control the spread of HIV among drug abusers?
11. In your opinion what should be done to improve care and treatment of injecting drug users living with HIV/AIDS?

THANK

Appendix 4: Seed Evaluation and Selection Form

Town: _____ Site: _____
Seed no._____ Coupon number: _____ Date: ____/_____/_____

1. Full names on ID Card: _____
2. Cell Phone Number: _____
3. Date of Birth: _____/_____/_____ Age: _____ in years
4. Full name of Mother: _____
5. Race and Ethnic Group: _____
6. Home Village: _____
7. Where do you stay _____
8. Primary School attended or nearest Primary school to your village:_____
   _____
9. Highest level of Education: (tick)
   No Education
   Primary School
   Secondary School
   High School
   University and above
10. Present occupation: _____
11. Which Drugs do you inject? Name them _____
12. Do you inject as a group? _____ How many other injecting drug users do you know very well? _____
13. What is your relationship to the recruiter? ___ Friend ___Sex partner ___Drug partner ___Brother/sister _____Other please specify _____
14. Can you give me a list of persons whom you have injected drugs within the last one month?
15. Potential recruits

	Age	**Gender**	**Race**	**Residence**	**selections**
1.					
2.					
3.					
4.					
5.					

Appendix 5: IDU Screening Questionnaire

Town: _____Site _____
Seed no. _____Coupon no. _____Date_____
1. Date of Birth: _____/_____/_____ Age: _____ in years
2. Full name of Mother: _____
3. Race and Ethnic Group: _____
4. Home Village: _____
5. Primary School attended or nearest Primary school to your village:_____

6. Highest level of Education: No Education 0

Primary School 1
Secondary School 2
High School 3
University and above 4
How old were you when you first used cigarettes/tobacco? *Years old*
Never 00

1. How old were you when you first drank any alcohol?
2. How old were you when you first used cannabis, hashish, or marijuana?
3. How old were you when you first used any other drug such as heroin, other narcotics or opiates, cocaine, amphetamines, other stimulants, barbiturates, tranquilizers, inhalants, solvents, steroids etc. to get high? Don't count any drugs used for medical purposes. __ __

Years old
4. What was that drug?

Specify
5. During your lifetime have you ever injected a drug excluding any used for medical purposes?
No 0 (end here)
Yes 1 (continue to number 7)
Refused 8 (end here if refuses to state whether ever injected)

6. When was the last time you injected drugs? _____ (days or months or years)
7. Did you experience any withdrawal symptoms? No 0 Yes 1
8. If yes please specify _____
9. If you did, how did you relieve your withdrawal symptoms?
    Nothing 0
    Smoking a joint 1
    Seeking health care 2
    Getting another shot 3
    Other 4
10. Ask the respondent to physically show any visible injection tracks:
    No marks 0
    Some marks 1

Numerous marks 2

If the respondent is a confirmed current INJECTING drug user by his statements of confirmation and by clear identification of injecting track marks then accept him into the study and administer the informed consent.

Appendix 6: Study Consent Form

This questionnaire will be administered to all respondents who will consent to be involved in the study.

INTRODUCTION AND CONSENT

Greetings. My name is ……and I work with ……. We are conducting a survey on behalf of ICHIRA.

Purpose: The study is about HIV and injecting drug use in the general population. We are interested in finding out your knowledge about HIV and injecting drug abuse in the general population. In addition, your knowledge and opinions regarding HIV/AIDS/STI as well as individual and community behavioral factors that promote the spread of these diseases among injecting drug users will be explored.

Procedure: You will be asked questions about your health, knowledge of HIV/AIDS, sexual transmitted diseases, injecting practice and health seeking behaviour. You will also be asked about your sexual behaviour. You will be requested to voluntarily be tested for presence of HIV either through a needle prick on the finger or have 5mls of blood removed from your upper arm. You will undergo pretest counseling before the test and a post-test counseling after the test. You will be informed of your HIV status after the testing and referred to a place that you can get more help in HIV care. Your participation in this study is voluntary; you can refuse to participate now or at any time of the interview. You are free to refuse to answer any questions. All your answers as well as the HIV test results will be kept strictly confidential.

Benefits: You will receive KShs. 200 for transport reimbursement. You will get to know your status and where you can seek further information about HIV care. You will receive free condoms if you wish. therefore be able to take full control of your health. There may be no other direct benefits to you if you choose to participate in this study; however, you will be helping in the development of better programs to improve health care delivery for IDUs.

Risks: You may feel dizzy or faint when blood is being withdrawn. You may feel uncomfortable when talking about your injecting drug use and sexual behaviour. Even though we will do everything to keep your confidentiality , you may feel stigmatised when people know that you are an injecting drug user by participating in the study.

All the information you give will be held in strict confidentiality. Your names will not appear in the questionnaires and the information will only be linked with a code which will only be accessible to study staff.

At this time do you want to ask anything about the survey? Yes/ No.

If you agree to participate please append your Name:_____
signature_____Date_____
Witness_____Signature _____

Appendix 7: Ethics and Research Committee Approval Letter

KENYATTA NATIONAL HOSPITAL
Hospital Rd. along, Ngong Rd.
P.O. Box 20723, Nairobi.
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP", Nairobi.
Email: KNHplan@Ken.Healthnet.org

Ref: KNH-ERC/ A/648

3rd December 2010

Prof. Patrick Kenya
International Centre for Health Interventions and
Research in Africa(ICHIRA)
P O BOX 59921-00200
KENYA

Dear Prof. Kenya

Research proposal: "Assessment of HIV Prevalence and related risk behavior among IDU in the General population in Kenya (P345/10/2010)

This is to inform you that the KNH/UON-Ethics & Research Committee has reviewed and **approved** your above revised research proposal for the period 3rd December 2010 - 2nd December 2011.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimens must also be obtained from KNH/UON-Ethics & Research Committee for each batch.

On behalf of the Committee, I wish you a fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

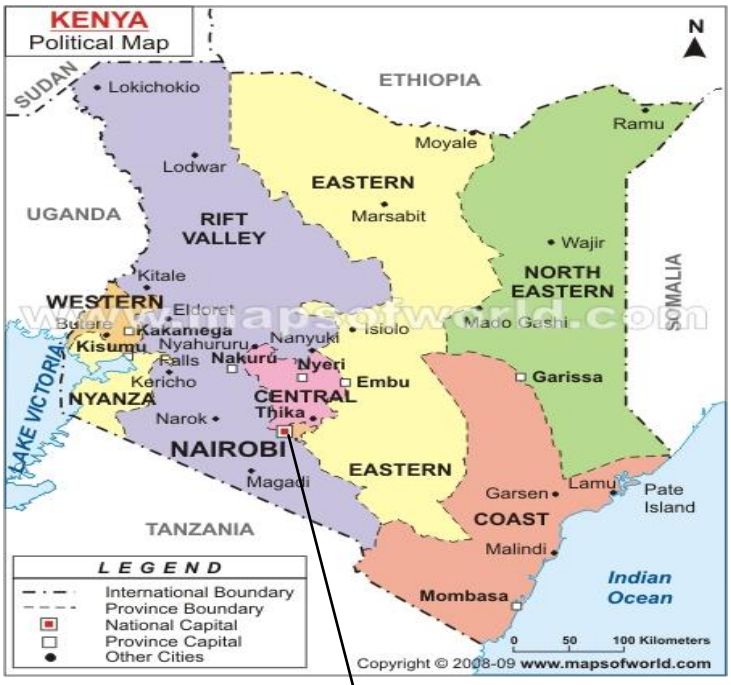
This information will form part of the data base that will be consulted in future when processing related research study so as to minimize chances of study duplication.

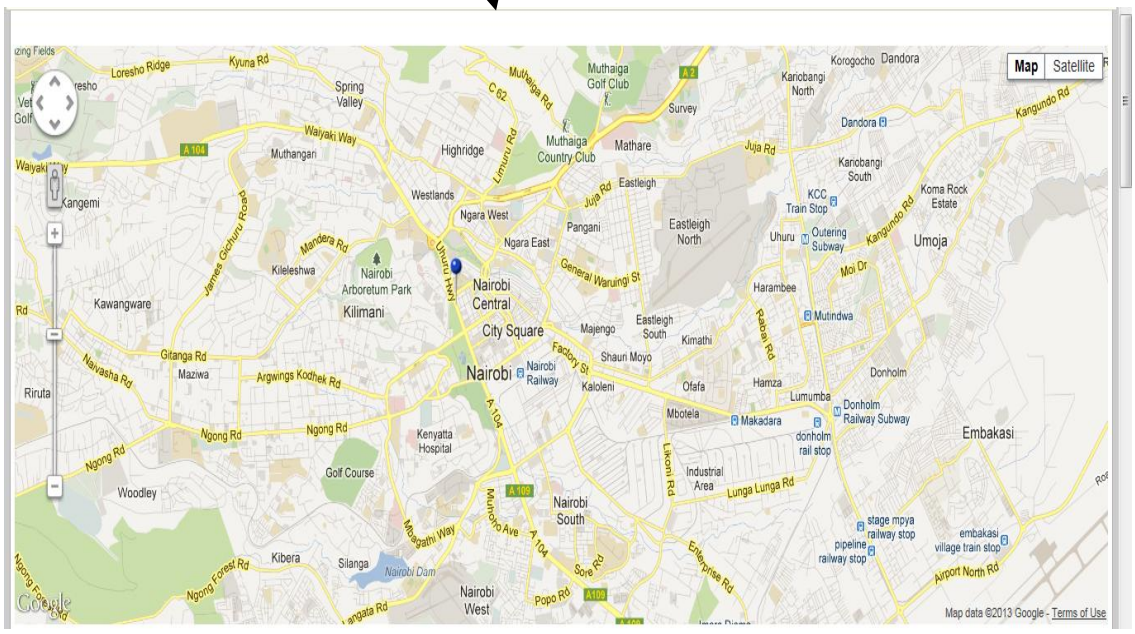
Yours sincerely

PROF A N GUANTAI
SECRETARY, KNH/UON-ERC

c.c. The Deputy Director CS, KNH
The HOD, Records, KNH
Co-investigators: Dr. Francesca Ongecha-Owour
Mr. Francis Oguya

Appendix 8: Map of Nairobi County





Map by googlemaps: http://www.travelblog.org/Africa/Kenya/Nairobi-Province/map-Nairobi-province.html