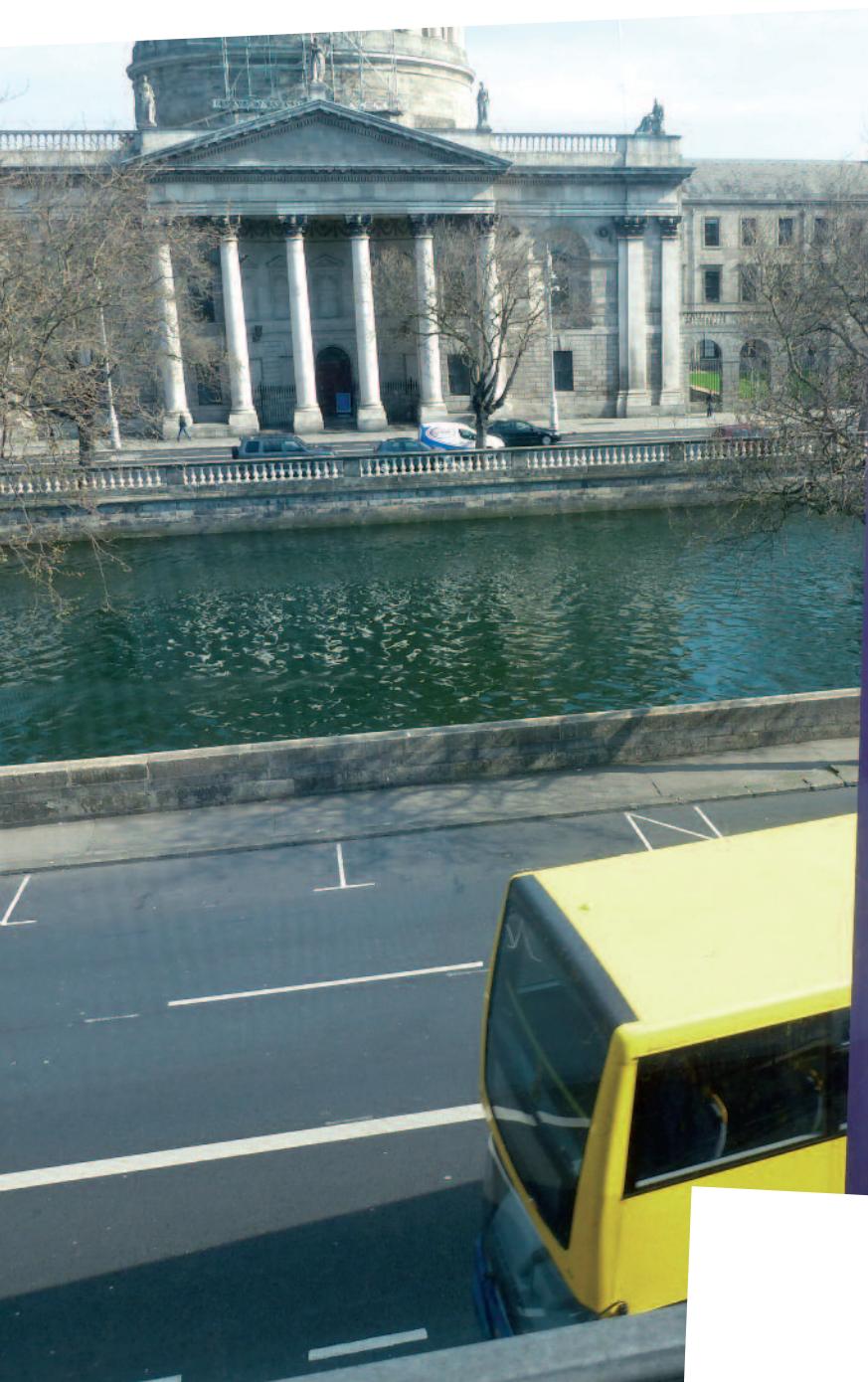# Re-establishing Contact:

A profile of clients attending the Health Promotion Unit
– Needle Exchange at Merchants Quay Ireland

MQI

Merchants Quay Ireland
Homeless & Drugs Services

Re-establishing Contact: A profile of clients attending the Health Promotion Unit - Needle Exchange at Merchants Quay Ireland

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<center>**Executive Summary**</center>

The present study was commissioned by, and conducted within, Merchants Quay Ireland (MQI). Within the spectrum of facilities offered in Dublin, MQI Open Access provides frontline homeless and drug services. A cornerstone of the open access drug service is the Health Promotion Unit - Needle Exchange. The main objectives of the Health Promotion Unit are concerned with minimising the harms associated with drug use and educating drug users on the potential risks. The primary aim of the present study was to gain an up-to-date profile of the clients accessing the Health Promotion Unit with a view to providing an informed platform for service provision.

Overview of Key Research Findings

- A total of 338 participants took part in the study. The sample consisted of 290 males (86%) and 48 females (14%). The male to female gender ratio of approximately 6:1 observed in the present study is notably higher than those found in most European and Irish studies.

- The mean age for males was approximately 34 years and the mean age for females was approximately 32 years. The age distribution found in the present study echoes a general trend identified across drug studies which have observed that the population of Irish opiate users is ageing.

- Although the majority of participants were Irish nationals (88%), the sample was made up of nineteen different nationalities, which highlights the ethnic diversity in those frequenting the Health Promotion Unit - Needle Exchange at MQI.

- The results highlighted that the majority of MQI service users are Dublin based. Indeed, only 9% resided outside Dublin, and only 4% resided outside Leinster.

- Approximately 31% of participants in the present study were residing in categories which were classified as homeless.

- Heroin was the most prevalently used substance in the past month (86%). Use of prescribed methadone (49%), benzodiazepines (34%; illicit 18%, prescribed 16%), cannabis (24%) and alcohol (22%) was also prevalent. Steroids (7%), cocaine (6%),

mephedrone (6%), crack (6%), other (4%), illicit methadone (2%) and amphetamines (1%) were all used by less than 1 in 10 participants within the past month.

- A large majority of participants were poly-substance users (75%). Approximately 30% of the sample reported use of two substances over the past month, 25% reported use of three substances, 12% reported using four substances and 6% reported using five substances. Less than 2% of participants reported use of more than five substances within the past month.

- Almost all of the participants attending the Health Promotion Unit - Needle Exchange were injecting drug users (97%). 51% of participants reported injecting 6 or more times in the past week.

- Approximately three-quarters of the sample reported use of only one main injection site. Almost a third of participants reported injecting in to either the groin or the neck.

- Overall, approximately 27% of respondents reported incidences of sharing injecting equipment and paraphernalia in the past month. The overall rates of sharing of items were water (13%), tourniquets (12%), cookers (10%), syringes (10%), filters (9%), frontloading (8%), needles (7%) and backloading (5%).

- During the past week; around 41% reported generally injecting with other people and 59% reported injecting on their own; almost 88% reported generally injecting themselves and just over 12% reported being generally injected by another person/s; almost 86% of respondents had generally been injecting in a private domain and just over 14% had generally been injecting in a public area.

- Almost four-fifths of participants reported that they had been tested for HIV. The prevalence of HIV reported by those who had been tested was 8.33%. Approximately 55% of the participants who reported being negative for HIV had not been tested within the past year. Uptake of treatment for those who reported being positive for HIV also appears to be a problematic issue.

- Just over four-fifths of the sample reported being tested for Hepatitis C. The prevalence of Hepatitis C reported by those who had been tested was approximately

45%. Approximately 37% of the participants who reported being negative for Hepatitis C had not been tested within the past year. Another significant concern was the low rate of participants accessing treatment for Hepatitis C.

- Approximately 78% of participants reported that they had ever been tested for Hepatitis B. The prevalence of Hepatitis B reported by those who had been tested was approximately 5%. Approximately 48% of participants who had previously tested negative for Hepatitis B had not been tested within the past year.

- The prevalence of Hepatitis C/Hepatitis B co-infection was approximately 3% for those who had been tested for both viruses. The prevalence of HIV and Hepatitis C co-infection was approximately 6% of those who had been tested for both infections. One participant also reported being positive for HIV, Hepatitis B, and Hepatitis C. In combination this indicated that almost 73% of those who were HIV positive were also Hepatitis C positive.

Recommendations

Research represents a primary pillar of the National Drugs Strategy (Interim) 2009-2016, in which, the strategic aim of ensuring the availability of accurate, timely, relevant and comparable data on the extent and nature of problem substance use in Ireland, is emphasised. Contemporary research within the context of low threshold services and needle exchange programmes in Ireland is particularly sparse. Consequently, there is paucity of germane data available for evidence informed decision-making and policy formulation in this domain. The present study offers a contribution towards fulfilling national policy research objectives, and provides a foundation for the construction of an up to date evidence base in relation to Irish harm reduction services. Based on the research process and findings presented herein, a number of recommendations are proposed:

Policy Based Recommendations

- Sharing of injecting equipment and paraphernalia persists. The National Drugs Strategy (NDS) document Building on Experience (2001-2008) advocates that in order to reduce "the reported level of injecting drug misuse and the rates of sharing injecting equipment" (pp. 110) there should be "continued efforts to enhance harm reduction measures such as needle exchange facilities" (pp. 110) and "access for all

injecting drug misusers to sterile injecting equipment" (pp. 124). In this regard, there is a need to ensure that needle exchange programmes are providing injecting equipment consistent with guidelines recommended in the international research (e.g. Strike et al., 2006) so as to optimise harm reduction. Where deficits are identified in the provision of injecting equipment, reasons for these gaps should be examined and communicated to Health Service Executive suppliers, in the effort to eliminate equipment related barriers in supporting safer injecting practices among injecting drug users.

- A major finding of the present study is the prevalence of blood-borne viruses (BBVs), coupled with insufficient levels of testing and low rates in uptake of treatment for Hepatitis C and HIV. Furthermore, the results indicate that frequency of testing is a concern. The evidence in previous studies suggests that convenience is an important factor for injecting drug users in management of BBVs and low-threshold services are ideally placed to attract clients which have not been previously screened. The recommendation that screening is offered and promoted within harm reduction services, as advised by the National Hepatitis C strategy 2011-2014, the European Centre for Monitoring Disease and Drug Addiction (2010) and the World Health Organisation (2010), is therefore supported.

- The proportion of assisted injecting and injecting in public places reported in the present study represents a significant amount of injecting drug users who are at elevated risk of severe health consequences. An emerging strategy designed to combat such risks is the development of medically supervised injecting centres (MSIC). Such amenities are currently not available in Ireland and such a strategy is not endorsed through national policy. Reference to drug consumption rooms was made in the National Drugs Strategy (NDS) document Building on Experience 2001-2008 which stated 'the Review Group does not consider that the introduction of such forms of treatment is warranted at this time. However, the situation should be kept under review and the results of research, both national and international, should be monitored' (Section 4.13.3.). The National Drugs Strategy (Interim) 2009-2016 makes little elaboration on the issue. It is therefore advised that in line with the recommendation from the Strategic Response Group's 'A Better City for All' report

(Connolly, 2012), further consideration of safer injecting facilities in an Irish context is warranted in future national policy deliberations.

Research Based Recommendations

- The present study provides additional evidence that the population of Irish opiate users is ageing. As the needs of older drug users tend to be more complex, future research should address if services are structured to cater for impacts which may accompany this shift in age profile.

- The gender ratio found in the present study supports previous findings which indicate that females may be under-represented in drug services. Future research should aim to explore the potential barriers for female drug users and investigate appropriate gender-specific approaches.

- As indicated by the present study, the level of substance use among the homeless population continues to present concern. As stated in the National Drugs Strategy (Interim) 2009-2016, gaps in the provision of treatment services for homeless drug users persist. Further research in the vein of Corr and Lawless (2005) is necessary to update research regarding meeting the needs of homeless drug users.

- The present study indicates a high prevalence of poly-drug use and highlights the current patterns of use. Future research should examine needs, impact, harm reduction interventions, and treatment and rehabilitation options in relation to poly-drug use.

- There has been little published data in Ireland regarding steroid use, or steroid users' engagement with services. The findings of the present study are consistent with international and Irish research which suggests that steroid users are becoming more prevalent in harm reduction services. As a marginalised group with divergent characteristics, there is the need to develop an evidence base which explores the profile of harm within this group, and to identify tailored approaches within the context of low threshold services.

- Findings for sharing of injecting equipment and paraphernalia in the present study were incongruous with results from previous research. Future research should further investigate rates of sharing and consider the appropriateness of conducting related research in the context of needle exchange services.

- Findings concerning BBVs in the present study were based on self-report. In order to ascertain a definitive prevalence, future research which incorporates serological testing is advisable.

- A significant concern presented by the current study is management of Hepatitis C in injecting drug users. As noted in the National Hepatitis C strategy 2011-2014, evaluation of different models of care is needed to address the range of barriers faced by injecting drug users so as the enhance treatment access, delivery, and adherence.

Practice Based Recommendations

- There are varied issues and barriers around service access and service use amongst female and migrant drug users. It is recommended that services make continued efforts to adopt a pro-active stance in regard to these groups. Service providers should monitor the level of service use by under-represented groups (e.g. numbers, profile and needs of under-represented groups) to ensure that services are attracting members of these groups and meeting their needs. A gendered approach which recognises the needs unique to females is advocated. In the effort to address barriers faced by migrant drug users to accessing services, implementation of the recommendations from Corr (2004) are advised: translated materials could help breach the language barrier and increase knowledge and perceived accessibility of services; outreach could help interaction with underrepresented migrant groups; recruitment of staff from such backgrounds could help to attract and engage users from these communities; and more flexible and appropriate services could respond to unique needs more effectively.

- It is vital that services are familiar with the profile of poly-drug use among their client base and are able to identify individual harm reduction needs. The provision of continuous up-skilling for staff is necessary to offer appropriate harm reduction

advice and to address the risk behaviours associated with different patterns of drug use. The same applies in emerging areas such as steroid use.

- Given the prevalence of BBVs found in the present study, as well as the concerns presented in relation to access to testing and uptake in treatment, it is recommended that in the case on-site BBV management options are not available; services should further develop collaborative relationships with appropriate external agencies. It is further advised that ongoing up-skilling with regard to BBV education, testing regimes, and treatment options, is provided for staff.

- A high proportion of high risk behaviours such as injecting in to the groin/neck and not rotating injecting sites were found in the present study. Thus, the findings highlight the importance of the role of safer injecting workshops and suggest that there is a need to ensure that every effort is being made to direct clients to such a service. Services should encourage client participation in safer injecting workshops irrespective of whether clients are newly injecting or have longer injecting careers.

- Drug use does not exist in isolation. The complex of personal and structural problems faced by drug users, particularly those who are homeless, requires a multi-disciplinary approach to address their needs. Services should continue to strive to provide a case management approach that is client-centred. Such an approach requires greater collaboration and integration across the range of voluntary and government organisations involved in the provision of homeless, drug, and health services. Re-skilling of staff in providing a multi-disciplinary spectrum of care also requires increased interagency transfer of training knowledge.

1. Introduction

1.1. Background to the study

The present study was commissioned by, and conducted within, Merchants Quay Ireland. Originally established in 1989, the Merchants Quay Project initiated a range of services for people affected by drug use and HIV. In 1996, a homeless service was introduced designed to cater for the daytime needs of homeless people. In 2001, the homeless and drugs services operating at Merchants Quay were brought together under one management structure and became Merchants Quay Ireland (MQI). In response to the growing incidence and acknowledgement of the geographical diffusion of poverty, social exclusion, homelessness and problematic drug use over the last decade, the organisation has expanded significantly, and is currently in operation in eleven counties across Ireland.

Within the spectrum of facilities offered in Dublin, MQI Open Access provides frontline homeless and drug services. A cornerstone of the open access drug service is the Health Promotion Unit - Needle Exchange. The main objectives of the Health Promotion Unit are concerned with minimising the harms associated with drug use and educating drug users on the potential risks. Accordingly, the primary focus is on HIV and Hepatitis prevention, promoting safer injecting behaviours and techniques, providing information on associated risks and offering users a pathway in to treatment.

A further aim of the Health Promotion Unit is to evaluate changes and trends in drug use and associated behaviours. The availability of research within the landscape of drug services has witnessed a dramatic downturn in recent years due to the economic impact of the recession. As a result, current trends can only be estimated through previous, anecdotal or non-specific evidence. MQI open access services in Dublin have recently moved to the new Riverbank Centre located on Merchants Quay. Consequently, 2013 presents fresh challenges for the organisation and represents a prime time for exploration of the Health Promotion Unit. As outlined in the next section, the principal purpose of the present study was to gain an up-to-date profile of the clients accessing the Health Promotion Unit, allowing the service to investigate and benchmark current trends, and to develop an informed platform for decision-making. It also offers a step towards standardising data collection within the service with a view to providing a practical framework and methodology for future research.

1.2. Research Aims

- To attain an up-to-date profile of clients presenting to the Health Promotion Unit at Merchants Quay Ireland

- To examine the socio-demographic characteristics of clients

- To investigate current levels and trends of drug use, and identify patterns of poly-drug use

- To explore frequency and manner of injecting risk behaviours

- To gain a portrait of the prevalence of blood-borne viruses, and associated treatment status

- To provide an evidence base, which could be incorporated in to future policy, research and service provision

- To identify strengths and deficiencies, and facilitate possible adaptation of services to better cater for the needs of the client base

- To contribute to the community of discourse surrounding harm reduction research, policy and practice

2. Literature Review

2.1. Harm Reduction

2.1.1. Harm reduction. As defined by the World Health Organisation (WHO), harm reduction refers to a concept aiming to prevent or reduce negative health consequences associated with certain behaviours (WHO, 2003). Interventions designed to reduce harm have long been applied in the public arena. In everyday contexts, features such as speed limits and car seatbelts serve as strategies to minimise harm from behaviours which may generate negative health outcomes (HRSS, 2010). Harm reduction, as it relates to drug use, is a relatively modern approach and "encompasses interventions, programmes and policies that seek to reduce the health, social and economic harms of drug use to individuals, communities and societies" (Rhodes & Hedrich, 2010; p. 19).

Traditionally, international drug policy had mandated a focus on drug control measures which advocated prevention and abstinence. The relationship between drug policy and public health had long been recognised, with the collective aim of improving the health of populations, preventing ill-health and disease, and promoting well-being. However, in response to heightening awareness of the public health concerns emerging in the early 1970s, a paradigm shift in drug policy was called for, encouraging a transition towards a harm reduction directive, which prioritised public health over drug control (Ball, 2007). With the emergence of global blood-borne virus epidemics in the proceeding decades, an international harm reduction movement has gradually evolved. Harm reduction has become a mainstream pillar of international drug policy, employed in particular as an agent intended to minimise the risk factors associated with the contraction and transmission of blood-borne viruses (BBVs) such as human immunodeficiency virus (HIV), Hepatitis B (HBV) and Hepatitis C (HCV).

As a central tenet, the philosophy of the harm reduction model pragmatically accepts that drug use is a prevailing reality and acknowledges the self-determination of those who choose to use drugs. Within this ethos, public health, which encompasses both the personal and social components, is the prime concern. Hence, rather than directly concentrating on prevention or abstinence, primary focus is placed on reducing the incidence and impact of drug related harm, and facilitating accessible pathways in to drug services. Within this framework, the notions of abstinence and harm reduction are not considered mutually exclusive or dichotomous extremes. While reducing harm may be delineated as the focal

objective, contemporary visions of harm reduction conceptualise it as a "combination intervention" that is comprised of a variety of interventions adapted to the diversity of settings, systems and populations in which it is operationalised (Rhodes & Hedrich, 2010).

As stated on their website, the World Health Organisation (WHO) "strongly supports harm reduction as an evidence-based approach to HIV prevention, treatment and care for people who inject drugs". The WHO actively encourages the implementation of a comprehensive strategy of harm reduction which includes "needle and syringe programmes, drug dependence treatment - in particular opioid substitution therapy, HIV testing and counselling, HIV treatment and care information, education and risk reduction counselling, condom distribution and STI management, management of tuberculosis and viral hepatitis". A number of other international bodies including the Joint United Nations Programme on HIV/AIDS (UNAIDS), the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the United Nations Office on Drugs and Crime (UNODC) are also proponents of the harm reduction approach. Accordingly, harm reduction is currently endorsed in policy or practice in approximately ninety-seven countries and territories (IHRA, 2012).

2.1.2. Harm reduction in Ireland. Butler (1991) describes that similar to the examples seen in other countries, the development of harm reduction practices emerged in Ireland in the late 1980s in response to the threat of HIV and the identification of injecting drug users as a high risk group for contracting and transmitting the virus. As a consequence, methadone maintenance and needle exchange programmes were introduced, designed in particular to reduce the incidence of needle sharing, which had been recognised as a major risk factor in the transmission of HIV. As part of the needle exchange programme, outreach services were also developed which sought to establish links with drug users.

On a policy level, the shift away from the dominant prevention and abstinence based strategies was first endorsed by the *Government Strategy to Prevent Drug Misuse* (1991). In light of a developing understanding of the complex dynamics involved in drug use, Irish drug policies and practices have increasingly adopted a harm reduction strategy over the last two decades. The National Drugs Strategy (NDS) document *Building on Experience 2001-2008* was created with the overarching strategic objective "to significantly reduce the harm caused to individuals and society by the misuse of drugs" to be achieved through "a concerted focus on supply reduction, prevention, treatment and research" (NDS; pp. 10). The National Drugs

Strategy (Interim) 2009-2016 further advocates the continuing development of harm reduction.

2.1.3. Issues surrounding harm reduction. Despite a growing evidence base, which strongly supports the efficacy of harm reduction, there is continuing debate surrounding the approach. Critics have argued that harm reduction provides a safety net that enables and perpetuates drug use, and is associated with the movement towards the liberalisation of drug legislation (Hunt et al., 2003). Some authors have also suggested that the focus on drug dependence has been somewhat lost within the harm reduction shuffle, with services overlooking the harm caused to the individual by the addiction itself (Negete, 2001).

A further issue within the harm reduction paradigm is that there is no agreed upon formal definition of harm reduction and it is commonly used indiscriminately as an umbrella term to simultaneously describe a principle, concept, ideology, policy, strategy, set of interventions, target and movement (Ball, 2007). For practical purposes, there is general consensus on how harm reduction should ideally be operationalised, however the ambiguity surrounding the interpretation of the term has led to the differential application of harm reduction across the global landscape. Moreover, some countries employ harm reduction as a strategy which is explicitly endorsed through national policy, while other countries have developed programs such as Needle and Syringe Programmes (NSP) and Opioid Substitution Therapy (OST) without the overt support of policy (IHRA, 2012). Concerns over the challenges of developing harm reduction approaches in low- and middle-income countries have also been raised, pointing to the need for research designed to examine whether harm reduction programmes would be viable in contexts which face economic and political uncertainty and extreme public health issues (IHRA, 2012).

2.2. Needle Exchange Programmes

2.2.1. Needle exchange programmes. Originally conceived as an intervention response to the epidemic of BBVs emerging in Edinburgh (Burns et al., 1996) and Amsterdam (Buning et al., 1986) in the early 1980s, needle exchange programmes have since been gradually implemented on an international scale. Within the harm reduction ethos, needle exchange programmes play a central role in reducing drug-related harm, particularly in the attempt to minimize the risk factors associated with the contraction and transmission of BBVs such as HIV, Hepatitis B and Hepatitis C, and to reduce the prospect of bacterial infections. These services supply clean needles and syringes to injecting drug users (IDUs)

and allow for the safe disposal of used equipment. Injecting drug use involves multiple processes and requires a range of 'Injecting paraphernalia', which is the collective term used to describe equipment used by IDUs in the preparation and administration of drugs for injection (Scott, 2008). Therefore, NEPs may also distribute a range of paraphernalia such as cookers, filters, alcohol swabs, sterile water, and critic acid. Such equipment offers clients the means for safer injection. This is supplemented with health education to inform clients on the harms associated with injecting drug use and the sharing of drug injecting equipment. NEPs often act as the first point of contact for drug users, facilitating initial connection with drug services in a non-judgmental interaction, providing access to health services, and opening avenues for further treatment options (Kuo et al., 2003).

Needle exchange programmes have been extensively researched and evaluated. As a consequence, a substantial body of evidence has been established which indicates that needle exchange provision is an effective element of public health strategies and a fundamental component in the architecture of harm reduction systems. A review of effectiveness studies spanning 1989-2002 conducted by the World Health Organisation (Wodak & Cooney, 2004) offers considerable support for needle exchange programmes, most notably, that provision of sterile injecting equipment lessens the occurrence of HIV infection, and does so in a cost effective manner. Furthermore, it was found that programmes provide additional benefits such as increased transition in to drug treatment and primary healthcare, and does not seem to stimulate amplified initiation, duration or frequency of drug use. There is however the caveat that reduction of risk-behaviour is not achievable through provision of sterile injecting equipment alone, and must be supplemented by appropriate support and education structures. Needle exchange programmes are in operation in at least seventy-seven countries worldwide (Cook, Lines, Stimson, & Bridge, 2009) and have received significant endorsement from the World Health Organisation as a means of HIV prevention (WHO, 2003; Wodak & Cooney, 2004).

   2.2.2. Needle exchange programmes in Ireland. As part of the growing movement towards a harm reduction approach emerging in the late 1980s, needle and syringe exchange services were first introduced in Ireland in 1989, with the establishment of five exchange programmes (Butler & Mayock, 2005). Needle exchanges are explicitly endorsed by Irish policy. The National Drugs Strategy (NDS) document *Building on Experience 2001-2008* advocated that in order to reduce "the reported level of injecting drug misuse and the rates of sharing injecting equipment" (pp. 110) there should be "continued efforts to enhance harm

reduction measures such as needle exchange facilities" (pp. 110) and "access for all injecting drug misusers to sterile injecting equipment" (pp. 124). The National Drugs Strategy (Interim) 2009-2016 further encourages the expansion of Opioid Substitution Treatment and (OST) Needle Exchange Programmes (NEPs) in the co-ordinated effort to address drug use issues. As of 2008, there were thirty-four needle exchanges programmes in Ireland which operated a number of models of service including fixed-site exchanges, home visit exchanges and exchanges in public locations (Robinson, Gibney, Keane, & Long, 2008).

2.2.3. Issues surrounding needle exchange programmes. As stated by Strike and colleagues (2006) the effectiveness of needle exchange programmes is mediated by their accessibility, ability to attract and retain clients, and to encourage/facilitate behaviour change. To these means, a variety of models of services have been developed internationally including centre-based/fixed-site, outreach/mobile, home-visits, pharmacies, peer-based, and vending machines. Differing elements such as local conditions, funding and staffing availability (NACD, 2008), combined with varying IDU characteristics such as age, gender, culture, personal preferences and financial resources, means that services need to be tailored accordingly (Strike et al., 2006). The appropriateness of each mode is dependent on how the service delivery meets the client needs within the available resources, with the primary objective of providing ease of access for IDUs to engage with these services.

Given the variation in services and clients, needle exchange programmes may need to retain a degree of flexibility and adaptability in regard to structure and operations. That being said, throughout international harm reduction studies, there is an evident lack of consistency across policies and services in relation to the provision of sterile injecting equipment. Within England, figures indicate that only 25-50% of needle exchange services supply cooking equipment and filters (Abdulrahim, Gordon, & Best, 2007) with service providers stating that lack of funding often restricts best practice (Griesbach, Abdulrahim, Gordon, & Dowell, 2006). Best practice guidelines recommend that in order to minimise the risk of viral and bacterial infection, and other drug-related harm, needle exchange programmes must supply a comprehensive array of injecting equipment and paraphernalia, which should consist of sterile needle and syringes, single-use cookers, sterile water, acidifiers, filters, sterile alcohol swabs, tourniquets and foil (Strike et al., 2006). Although best practice may not always be practical or realistic due to a lack of resources or expertise, services should aim to move towards best practice.

2.3. Problem Drug Use

    2.3.1. Problem drug use. As defined by the European Monitoring Centre for Drugs and Drug Addictions (EMCDDA), problem drug use refers to injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamine. Injecting drug use has been documented in at least 158 countries and territories worldwide (Cook & Kanaef, 2008). Estimates suggest that there are approximately 16 million (range 11-21million) injecting drug users globally (Mathers et al., 2008). The past half century has witnessed a wide geographical diffusion of injecting drug use, with a phenomenon, which was once predominantly confined to North America and Europe, extending across the world. Epidemiological studies show that 78% of IDUs currently reside in developing and transitional countries (Aceijas, Stimson, Hickman, & Rhodes, 2004).

Heroin, cocaine and amphetamine-type-stimulants are the most prevalently injected drugs (Cook & Kanaef, 2008). Within Europe, problem drug use consists primarily of opioid use, with the greatest social, personal and public health consequences stemming from injecting heroin use (EMCDDA, 2011). The most recent estimations indicate that there are approximately 1.3 million problem opioid users within the European Union/Norway (EMCDDA, 2011). Within this region, the average prevalence of problem opioid use is estimated to be between 3.6 and 4.4 cases per 1 000 population aged 15–64 (ECMDDA, 2011). Ireland ranks among the EU countries with the highest levels of problem opioid use, with a documented prevalence of 6.2-8.1 cases per 1000 population aged 15–64. The most current data available regarding prevalence of opiate drug use in Ireland comes from a national study conducted in 2006 (Kelly, Teljeur, & Carvalho, 2009) which updated a similar study which took place in 2001 (Kelly, Carvalho, & Teljeur 2003). The findings from this study estimated that the prevalence of opiate users in Ireland was between 18,136 and 23,576, which represented an overall increase of 42% in opiate users from 2001-2006. The magnitude of this rise should however be interpreted with caution due to some of the methodological concerns evident in the source study.

    2.3.2. The socio-demographics of problem drug use. The global population of problem drug users is comprised of an ever expanding range of individuals with diverse features and divergent needs. However, a number of key socio-demographic characteristics are highly relevant within the spectrum of drug use. Most significantly, prevalence of

problem drug use and risk behaviours has been found to be associated with a range of variables including gender, area of residence, housing status, and social marginalisation.

2.3.2.1. Gender. Research has consistently demonstrated differences in the gender distribution of injecting drug users, namely that IDUs are more likely to be male. Approximately 70-75% of IDUs in Europe and North America, and up to 90% in Asia, are men (Aceijas et al., 2004).The most recent estimated prevalence of opiate users in Ireland approximated that 71% are male (Kelly et al., 2009) and almost 75% of opiate users entering treatment in Ireland are male (Cox & Comiskey, 2007). Previous research with IDUs in the context of Merchants Quay have observed 75.7% male (Geoghegan, O'Shea, & Cox, 1999) and 77% male (Cox & Lawless, 2000) among new clients.

A common theme emerging from research in the mid-late nineties was that female IDUs were a 'hard to reach' group and were under-represented at drug treatment services (Lawless, 2003). Female IDUs have been found to be more likely to engage in injecting risk behaviour, sharing needles and injecting equipment more frequently than their male counterparts (Montgomery et al., 2002). Female IDUs are also more likely to have sexual partners with whom they inject drugs (Evans et al., 2003) and are more likely to be living with a drug misusing partner (Fagan, Naughton, & Smyth, 2008).Therefore, female IDUs represent a highly vulnerable group in relation to BBVs.

This gender distribution is particularly relevant on a harm reduction service level. Literature has suggested that the difficulties encountered by male and female drug users differ significantly (Copeland, 1997), with women facing heightened barriers to accessing services (Hunter & Judd, 1998), higher levels of medical and psychological problems (Geoghegan et al., 1999) and a lack of services catering for problems specific to females (DAWN, 1994). Female drug users with children reported that they mistrusted drug services and feared that if they presented as a drug user that their children would be taken away (Taylor, 1993). It was also found that a majority of women were reluctant to utilise needle exchange services as they were more affected by the stigma associated with drug use (Barnard, 1993).

2.3.2.2. Area of residence. Research shows that injecting drug use does not tend to be randomly distributed across the population as prevalence figures for problem drug use are higher in urban areas (ECMDDA, 2011). In the case of Ireland, early studies showed that the proliferation of opiate use originated in Dublin, with a large concentration of users residing in inner city areas where poverty and unemployment were endemic (Dean, Bradshaw, &

Lavelle, 1983; O'Kelly, Bury, Cullen, & Dean, 1988). As a result, intravenous drug use was held to primarily be a Dublin based phenomenon (O'Higgins, 1998). The past decade has witnessed a geographical spread in opiate use and a corresponding dispersal of drug services. Based on data from 2006, Kelly and colleagues (2009) estimated that almost 28% of opiate users in Ireland resided outside Dublin.

Although figures for opiate use by county are not available, the number of clients accessing methadone treatment provides a useful indicator of geographical prevalence (HSE, 2011). Treatment services in the HSE Dublin Mid Leinster region and Dublin North East region remain the most accessed programs, though both regions only witnessed a 5% increase in the number of clients in the period from 2007-2011. While the overall treatment numbers remain much lower in the HSE South region and HSE West region, these areas observed increases of 286%, and 48%, respectively. This suggests that opiate use is remaining relatively stable in Dublin and the surrounding areas but increasing dramatically in the South and West of Ireland.

2.3.2.3. Housing status, migrants and social marginalisation. A consistent finding in the research literature is that the prevalence of drug use is significantly higher among the homeless population than the general population (Cox and Lawless, 2000). An illustration of the magnitude of homelessness as a risk factor for drug use is evident in the results from an Australian based study, which revealed that homeless people were 7.5 times more likely to be dependent on heroin when compared to the general population (Horn, 1999). The scale of homelessness in Ireland is highlighted by the most recent figures released by the Central Statistics Office which found that around 3,800 people were counted in homeless accommodation and rough sleeping on census 2011 night (CSO, 2012). The geographical distribution within this count showed that over 60% were based in Dublin.

Homelessness has also been linked to increased levels of injecting risk behaviour (Cox & Lawless, 2000; Donoghoe, Dolan, & Stimson, 1992). Although previous research has found that drug use is predominantly initiated prior to becoming homeless, changes in patterns of drug use as a result of becoming homeless have been reported, with elevated frequency of drug use and initiation in to using different types of drugs (Wright, Oldham & Jones, 2005; Fountain & Howes, 2002; Cox & Lawless, 2000). Sharing of injecting equipment is also more common among homeless drug users (Aidala et al., 2005; Cox & Lawless, 2000). A higher prevalence of BBVs has been found among homeless drug users in comparison to

those in stable accommodation (Corneil et al., 2006; Rhodes et al., 2006a). Unstable housing has also been implicated as an influence in nonadherence to HIV treatment (Pach, Cerbone, & Gerstein, 2003).

Such elevated risk and vulnerability may be connected not only to individual factors but also to structural and contextual factors. It is widely acknowledged within the research literature that the environment in which drug use takes place impacts the level of associated harm (e.g. Rhodes, 2002). Homeless injecting drug users may lack private facilities in which to inject and therefore, are more likely to inject in public places (Klee & Morris, 1995).

The robust link between problematic drug use and social exclusion has long been established with low educational levels, unemployment, low income, insecurity of accommodation and homelessness all demonstrating an association with drug use (ECMDDA, 2003). Migrants have been found to be an at-risk population for social exclusion (ECMDDA, 2003) and unsurprisingly given the covariance; research has also identified a connection between drug use, social exclusion and ethnicity (Fountain, 2004; Corr, 2004). In addition to the usual elements of social exclusion, migrants also experience stresses such as displacement, seeking asylum and lack of social and community support which constitute further risk factors for engagement in drug use (Corr, 2004). Migrants who are drug users may face a double stigma which increases the level of marginalisation they encounter (Domenig, Fountain, Schatz, & Broring, 2007).

2.4. Blood-borne Viruses

Injecting drug use has been consistently found to be a serious risk factor for blood-borne virus infection, particularly in the case of human immunodeficiency virus, hepatitis C virus and hepatitis B virus. Research over the past two decades has primarily implicated injecting risk behaviour, such as sharing of injecting equipment and paraphernalia, as the principal cause of transmission. HIV and HBV can also be sexually transmitted creating a further risk factor for drug users who engage in sexual risk behaviour such as unprotected sex and prostitution. In addition, there is the risk of virus transmission from injecting drug users to the general population from the improper disposal of injecting equipment and through sexual contact. BBVs present severe personal and public health consequences, increasing the risk of morbidity and mortality, as well as impacting public health costs.

2.4.1 HIV. When infected, the HIV virus is present in all bodily fluids. Thus, there are a variety of possible modes of transmission which include sexual intercourse, mother to foetus, contaminated blood products, and injection with unsterile needles (Long, 2006). As previously stated, the move towards the harm reduction model evolved primarily from the growing epidemic of HIV infection witnessed among injecting drug users. Research has estimated that approximately 10% of global HIV cases have occurred from injecting drug use (Aceijas et al., 2004). Out of the 16 million IDUs worldwide, reports indicate that in the region of 3 million of these are estimated to be infected with HIV (Mathers et al., 2008).

There are however large geographical variances in HIV prevalence among IDUs. Reports of HIV among IDUs have been documented in 120 countries (Mathers et al., 2008). Countries such as Australia and New Zealand have achieved prevalence rates of HIV below 5% whereas in areas such China, Vietnam, Russia and Ukraine the prevalence of HIV infection is over 50% (IHRA, 2012). The most current data indicates that prevalence of HIV infection among injecting drug users in EU member states ranges from less than 1% up to 60% (Irish Focal Point, 2011. Within these countries, a steady decline in HIV prevalence rates has been documented among IDUs. Since 2004, a 44% reduction in the number of new HIV diagnoses among IDUs has been charted (Pharris et al., 2011). While much of the national prevalence data across Europe indicates a declining level of HIV infection among IDUs, certain regions such as Portugal, Italy, Spain and Eastern Europe have retained higher rates. Major outbreaks of HIV were documented in Estonia, Latvia and Lithuania in the early 2000s leading to a rapid elevation in HIV levels across the EU. Even within the past year, outbreaks of HIV have been documented in Greece and Romania (EMCDDA/ECDC, 2011).

A number of studies conducted in an Irish context have endeavoured to extrapolate the prevalence of HIV among IDUs. Johnson and colleagues (1994) research a cohort of attendees at a Dublin needle exchange and found prevalence of HIV antibodies was 14.8%. Prevalence estimates among IDUs in drug treatment settings range from 11% (Grogan et al., 2005) up to 17% (Fitzgerald, Barry, O'Sullivan, & Thornton, 2001). Studies among injectors in prison settings have found prevalence rate s of 3.5% (Allwright et al., 2000) and 5.8% (Long et al., 2001). On a national level for Ireland, the most recent data from the HPSC mirror the declining trends observed across the majority of Europe, showing a decrease of new cases of HIV among IDUs every year from 2006-2010. As of 2010 there were 5700 cases of HIV, with around 26% of these cases reasoned to have stemmed from injecting drug use (O'Donnell, Jackson, Moran, & O'Hora, A2011). The decline in overall HIV rates

presents strong evidence that the harm reduction interventions such as needle exchange programmes and opioid substitution therapy, implemented during the 1990s have been successful in stemming the tide of HIV. However, HIV remains a constant threat as witnessed with the outbreaks during the early 2000s, which saw a rapid spread of the virus among IDUs and a consequent establishment of high HIV prevalence levels.

2.4.2. Hepatitis C. Acute Hepatitis C usually presents as asymptomatic. While a fifth of acute cases of Hepatitis C will spontaneously clear, four-fifths will progress to chronic infection and up to 20% of these will ultimately lead to cirrhosis, and hepatocellular carcinoma (NACD, 2008). The primary route of transmission is parenteral (via injection) with infection occurring most commonly through contaminated blood. The majority of infections among IDUs worldwide stem from unsafe injecting practices (Cook & Kanaef, 2008).

Hepatitis C is the most common infection found among IDUs, with an estimated 10 million cases among IDUs worldwide and prevalence rates of over 50% in forty-nine countries or territories (Aceijas, & Rhodes, 2007). However, wide variances exist in prevalence between regions. China (1.6 million), USA (1.5 million) and Russia (1.3 million) show the highest populations of IDUs living with Hepatitis C (Nelson et al., 2011). The ECDC and EMDDA report that an estimated 1 million IDUs in Europe are living with HCV, with prevalence rates among IDUs across Europe ranging from 22%-83% (ECMDDA, 2012).

Despite the increased transmission efficiency of viral hepatitis, it has received much less research attention than HIV (Cook & Kanaef, 2008). This is particularly true in Ireland where knowledge surrounding the epidemiology of Hepatitis C is severely limited. Recent research has estimated that as of 2009, there are 10,000 cases of diagnosed Hepatitis C in Ireland, with drug use considered to be the main risk factor of infection in 80% of cases (Thornton et al., 2011). This would suggest there are at least 8,000 current and former drug users living with Hepatitis C in Ireland. There is also reasoned to be a large amount of undiagnosed cases which would elevate this figure further. Research among IDUs attending drug treatment services in Ireland have demonstrated prevalence rates ranging from 52.1% up to 72% (O'Sullivan, 2004). High rates have been found among drug injecting prison entrants and inmates ranging from 71.7% - 81.3% (Allwright et al., 2000; Long et al., 2001).

2.4.3. Hepatitis B. When infected, the hepatitis B virus is present in blood, semen, vaginal fluids and saliva. Similar to HIV, the main routes for transmission are through

contaminated blood, mother to foetus, and sexual interaction (Long, 2006). Chronic infection occurs in approximately 1-10% of adult cases of Hepatitis B and 15-40% of these will result in cirrhosis, liver failure, or hepatocellular carcinoma (Te & Jensen, 2010). The health consequences of Hepatitis B are similar to Hepatitis C in that it may lead to cirrhosis and cancer of the liver. However, unlike HIV or Hepatitis C, Hepatitis B is a vaccine-preventable disease.

Research suggests that approximately 1.2 million IDUs worldwide are infected with Hepatitis B (Nelson, et al., 2011). Again, there is substantial variability in prevalence across countries and regions, with east and Southeast Asia showing the highest levels. In research relating to prevalence, there is an important distinction made between two markers of the infection. Hepatitis B surface antigen (HBsAG) is indicative of chronic infection, whereas hepatitis B core antigen (anti-HBc) points to whether the individual has or has ever had the virus (Long, 2006). Studies conducted with a sample attending Irish drug treatment services have reported prevalence figures of 28.1% for anti-HBc and 5.1% for HBsAg (Fitzgerald et al., 2001). In Irish prison settings, research indicates that 18.5% of inmates (Allwright, 2000) and 17.9% of entrants (Long et al., 2001) tested positive for anti-HBc. There has been no research conducted concerning Hepatitis B status in needle exchanges in Ireland. Long (2006) states that prevalence among IDUs in Ireland has remained lower than expected, which may be attributable to the relatively small prospect of chronic infection and the vaccination programmes that operate in Irish drug treatment services and prisons.

     2.4.4. Co-infection. In addition to being at increased risk for acquiring the aforementioned viruses individually, IDUs also face the risk of contracting more than one of these viruses. Co-infection with HIV and HCV is particularly common among IDUs (IHRA, 2008) and presents even more potent health implications. Studies have shown that persons co-infected with HIV and HCV show an increased risk of hepatic disease. HIV infection has a detrimental effect on the outcome of Hepatitis C, with co-infection accelerating the progression to cirrhosis (Di Martino et al., 2001). Co-infection also leads to an earlier onset of hepatocelluar carcinoma (Soriano et al., 2002). In addition to this bleak prognosis, co-infection also complicates the efficacy of the treatment of HIV (Rhodes et al., 2006b) and the presence of Hepatitis C virus increases the risk of progression to AIDs (Long, 2006). End-stage liver disease is a major cause of death among individuals who are co-infected with HIV and hepatitis C (WHO, 2006a).

Although co-infection with HIV and HBV appears to be less common, similar health consequences are apparent, with co-infection accelerating the natural course of Hepatitis B related liver disease (DiMartino et al., 2001) and leading to a much higher likelihood of developing chronic Hepatitis B (Gatanaga, 2000). Risk of liver-related mortality has been found to be 17 times more likely for men who are co-infected with HBV and HIV compared to those mono-infected with HBV (Thio, 2002).

2.5. Injecting Risk Behaviour

2.5.1. Injecting risk behaviour. Injecting drug users face the prospect of a number of associated health consequences. Drug-related overdoses contribute to high mortality rates among IDUs, while BBVs present a range of acute health conditions and chronic illnesses. The injecting process also puts users at risk of acquiring bacterial infections such as septicemia and endocarditis, and may cause trauma to the skin, veins and soft tissue which in turn can lead to abscesses, cellulitis and vein collapse.

As previously outlined, IDUs represent a high-risk group in relation to BBVs. The link between needle sharing and virus transmission has long been established, and is reasoned to be the primary factor in the spread of HIV, HBV, and HCV among IDUs. Considering the direct contact with blood, needles and syringes carry the most significant threat of becoming contaminated. There is general consensus that needle exchange programmes have lead to the operative prevention and containment of HIV (Wodak & Cooney, 2004). While at first glance, the minimal spread of HIV prevalence among IDUs may seem to herald the success of needle exchange programmes in preventing viral transmission, Ashton (2003; pp 4) describes this as 'false reassurance". Although HIV rates may have remained steady, research over the past decade has documented that in spite of the increased accessibility and availability of sterile needles and syringes in developed countries, the rates of HCV transmission among IDUs continues to rise significantly (Vickerman, Martin, & Hickman, 2012).

In light of the divergence between HCV and HIV prevalence, research focus has shifted to investigation of the potential sources of this disparity. The characteristics of Hepatitis C make it much more difficult to control than HIV due to a number of factors including higher prevalence rates, higher mutation and replication rates, and higher concentration in blood than HIV (Franciscus, 2011). In injecting drug use terms, when a used needle is shared, the likelihood of HCV transmission is 150-800 times higher than the risk of HIV transmission

(Crofts, Aitken, & Kaldor, 1999). Considering the increased transmission efficiency of Hepatitis C, the role of sharing injecting paraphernalia as an auxiliary source of virus infection has received elevated levels of research attention. Research conducted in laboratory settings has demonstrated that the Hepatitis C virus can potentially be transmitted through paraphernalia sharing as contamination was evidenced on 67% of swabs, 40% of filters, 33% of water samples, and 25% of spoons, in a sample collected from injecting sites (Crofts, Caruana, Bowden, & Kerger, 2000). Although sharing of paraphernalia is considered to be an indirect form of sharing when compared with needle/syringe sharing, the relativity lower efficiency of virus transmission may be somewhat offset by the higher incidence with which sharing in this form occurs (Bennett, Velleman, Barter, & Bradbury, 2000).

   2.5.2. The injecting process, paraphernalia use and associated risks. Injecting drug use involves multiple processes and requires a range of equipment. Many commonly used drugs which are consumed by IDUs do not arrive in injectable forms. In order to prepare drugs which come in solid (e.g. crack cocaine, black tar heroin), powder (cocaine, white heroin) or tablet (e.g. benzodiazepines) form, a cooker is often used to mix these drugs with water and acidifiers to manufacture a solute, which may then be heated to create a solution with the appropriate consistency for injection. The 'cooking' process may require mixing with acidifiers to create a salt, which is then added to water to produce a solution. Research suggests that sharing of cookers is implicated in transmission of both Hepatitis C (Crofts et al., 2000) and HIV (Shah et al., 1996). Cookers appear to be the most prominently shared constituents of drug paraphernalia (Leonard et al., 2005; Thorpe et al., 2002; Needle et al,. 1998) and have also been observed to be re-used for longer periods than other drug paraphernalia (Clatts, Heimer & Abdala, 1999). Furthermore, cookers are often used communally, particularly when injecting occurs within a social network of IDUs (Taylor, Fleming, Rutherford, & Goldberg, 2004). Even amongst IDUs who use their own sterile needle/syringe, there is still the tendency to share a communal cooker (Hunter et al., 1995). Reports of sharing of water ranges from 9-75% (e.g. Leonard et al., 2005, Hunter et al., 1995, Koester, Booth, & Wiebel, 1990). Virus transmission risks are presented when water is shared as multiple IDUs may place previously used needles in to communal water or rinse equipment with communal water (Thorpe et al., 2002).

Once the solution has been "cooked", IDUs commonly use filters to remove impurities from drug solutions and to inhibit the transfer of insoluble particles in to the blood stream. Research suggests that sharing of filters is implicated in transmission of both HCV (Crofts et

al., 2000) and HIV (Shah et al., 1996). High frequencies of sharing of filters have been reported, ranging from 50-77% among IDUs (Huo, Bailey, Garfein, & Ouellet, 2005; Needle et al,. 1998). Anecdotal reports also suggest that IDUs may be under the misconception that filters retain significant amounts of the active drug compound, and therefore, are reluctant to filtrate, or are encouraged to re-use, share, or sell used filters (Bourgois & Schonberg, 2009).

Once prepared, the drug solution may oftentimes be divided among several IDUs. Equal sharing among parties may be achieved through various methods. Popular modes of distribution include "frontloading", whereby the needle attachment will be removed from one syringe and then transferred through this hole from the needle of another syringe, and "backloading", whereby the plunger will be removed from one syringe and then drugs will be inserted through the back of this syringe from the needle of another syringe. Considering that frontloading and backloading involve transferring the drug solution from one syringe through a needle to another syringe, there is the risk of also transferring blood-borne pathogens (Jose et al., 1993).

Injection will usually occur in the arm, hand, neck, groin, leg, or foot. A number of potential physical health consequences are presented by choice of injection site. Frequent injection in to the same site is associated with damage to the vascular structure due to blood clots which inflame the vein, and can cause veins to harden and narrow which eventually renders them unusable for injection (Maliphant & Scott, 2005). Although all injecting sites carry risks, the risk involved in injecting in to the groin or neck is considerably higher. Veins in these sites are larger and therefore any damage incurred may result in serious circulatory problems and an increased risk of life threatening infections such as endocarditis (Darke, Ross, & Kaye, 2001). Injection in to the groin is associated with higher risk of deep vein thrombosis, leg ulcers and vascular insufficiency. Furthermore, the close proximity of the femoral vein in the groin to the femoral artery and nerve also lead to increased morbidity and mortality risk (Woodburn & Murie, 1996). Injection can either be administered by the individual themselves or by another party. Receiving injections from another IDU is a common practice among recent initiates in to drug use (Crofts, Louie, Rosenthal, & Jolley, 1996), whereas established drug users are more likely to inject themselves (Cox & Lawless, 2000).

The geographical location of where injecting occurs, may also influence the level of risk. Injecting in public places as opposed to a private domain, has been found to be associated

with higher levels of risk including overdose, unsafe injecting practices and vascular damage, and may also mean the improper disposal of needles (Darke et al., 2001).

2.5.3. The social context of injecting risk behaviour. A number of authors (e.g. NACD, 2008; Ashton, 2003; Rhodes, 2002; Bennet et al., 2000) have noted that the social aspect of drug use adds a layer of complexity to understanding and influencing risk-taking behaviours. Bennet and colleagues (2000) state that the sequence of acquiring and injecting drugs involves a host of processes, and that the course of attaining money for drugs, purchasing drugs, obtaining injecting equipment, drug preparation, and injection will often require several people to collaborate within the chain of this procession. IDUs often operate in networks which have developed embedded social norms. Accordingly, sharing of needles and equipment may be partially tied to the implicit culture of such networks, where custom, etiquette and trust can be the primary determinants of behaviour (Rhodes, 2002). Thus, while the provision of sterile equipment and paraphernalia supplies the means, and health promotion offers an understanding, they do not directly address the ecological context in which drug use occurs. Modification of individual behaviour is therefore unlikely to influence the entire gamut of elements which shape injecting risk behaviour (Rhodes et al., 2005).

3. Methodology

3.1. Research Instrument

At the outset of the research project, a literature review was conducted to explore measurement options (e.g. Teesson et al., 2000) and examine assessment instruments used in previous studies relating to drug use (e.g. Gannon, McKeganey, & Hay, 2011). Using evidence from past research and insight provided by members of the Health Promotion staff, the research team identified four main domains which were to be investigated in the present study:

- Socio-demographic characteristics
- Substance use
- Injecting risk behaviour
- BBV status and treatment

Consequently, a multi-dimensional research instrument termed the 'Merchants Quay Health Promotion Unit Questionnaire' was developed, which was based on a number of widely used, reliable and valid instruments such as the Treatment Outcomes Profile (TOP; Marsden et al., 2008) and the Maudsley Addiction Profile (MAP; Marsden et al., 1997), along with additional items which were fashioned specifically for the present study. The questionnaire relied on self-report. Previous findings have indicated that self-report is a reliable and valid method of data collection within the domain of substance misuse and associated behaviours (Darke, 1998; Del Boca & Noll, 2002).

The 'Socio-demographic characteristics' section included gender, date of birth, nationality, county of residence and housing status. These items were included in the attempt to gain a profile of the client base currently attending the Health Promotion Unit at Merchants Quay Ireland and to juxtapose the present circumstances of clients with past research and anecdotal reports. Housing status was considered to be a particularly relevant factor as Merchants Quay Ireland provides services for both drug users and homeless persons. Therefore, it was anticipated that there may be significant overlap between the client bases of the two services. This section asked participants where they were currently residing (in the last 7 days) and presented common categories of housing status adapted from the *Counted In, 2008* (Homeless Agency, 2008) survey which provided a comprehensive analysis of homelessness in Dublin.

The 'Substance Use' section examined a number of variables regarding commonly used substances (heroin, methadone, benzodiazepines, alcohol, mephedrone, cocaine, crack, cannabis, amphetamines and steroids) including the average amount and price of substances used per day and the number of days substances were used in the past week and the past 4 weeks. The route of administration for each substance was also asked. Questions relating to methadone and benzodiazepine use included the option for prescription or illicit. Questions relating to benzodiazepine and steroid use included the option to state what types of these substances were being used. This section was adapted from the Treatment Outcomes Profile (TOP) which is an instrument designed by the National Treatment Agency for Substance Misuse (NTA) for monitoring recent substance use treatment and is utilised throughout the national drug treatment system in England.

The 'Injecting risk-behaviour' section presented questions relating to a range of behaviours which have been identified by past research as risk factors for the transmission of BBVs. Participants were firstly asked if they were currently injecting substances. If they were injecting substances, they were asked a range of questions relating to sharing of equipment and paraphernalia, frequency of injecting, main injecting site and social injecting environment.

The 'Blood-borne Viruses' section asked questions concerning Hepatitis B, Hepatitis C and HIV. Participants were asked whether they had ever been tested for each of the BBVs, the date of last testing, and if they had been tested, what the outcome of the test was. If the participant reported that they had tested positive, they were asked whether they were receiving treatment, and if not, what the reason for not receiving treatment was.

3.2. Pilot study

A one day pilot study was conducted in June 2012.The sample for the pilot study consisted of 44 participants presenting to the health promotion unit at Merchants Quay Ireland, 36 Males, 3 Females, 5 Missing Data (age range 21-55 years, M=35.02, SD=7.29).

The aim of the pilot study was to test all elements involved in the research process. As a result of the pilot phase, the questionnaire was amended in response to issues highlighted by workers engaged in data collection, and in reaction to participant answers. The layout of the questionnaire was adapted to allow data collectors more space to record participants replies, questions were reworded to minimise differential interpretations and additional options were

included in sections which involved "tick box" answers. Workers were provided with further one-to-one training in questionnaire administration, particularly with regard to the substance use section. In combination, the changes to the questionnaire and the additional training provided more consistent, reliable and accurate data collection.

The pilot phase also facilitated examination of the logistical concerns in conducting research within a busy health promotion unit. Time for completion for the questionnaire was approximately 5-10 minutes. Consequently, this periodically created a backlog in the health promotion unit. During the main phase of data collection, additional staff were assigned to the health promotion unit to resolve this issue. Furthermore, the pilot study afforded the research team the opportunity to explore and refine data management and analysis procedures.

3.3. Data Collection

The research was conducted on a one-to-one basis in the needle exchange and safer injecting departments of the health promotion unit in Merchants Quay Ireland. Data collection was conducted by the staff working within these departments who had undergone a comprehensive training programme. Participants were given an overview of the nature and purpose of the research and the content of the questionnaire. These details were outlined in an information sheet, which staff discussed with participants prior to requesting consent. If consent was given, the Merchants Quay Health Promotion Unit Questionnaire was then administered on paper. Health Promotion workers filled out the questionnaire based on the participants' responses. It was then documented on the internal database that the participant had completed the questionnaire so as to avoid repeated administrations.

3.4. Data Management

3.4.1. Data quality control. Data was collected during the opening hours of the health promotion unit. Thus, there were two collection periods each day; 09:45-13:00 and 13:45-16:30. The research team was on-site at all times and met with data collectors at regular intervals during each collection period. At the end of each collection period, the research team met with staff to examine completed questionnaires and address any difficulties.

3.4.2. Data protection. All data collected was anonymous, with participants' date of birth being the only potentially identifiable information. Hard copy versions of the completed questionnaires were stored in a file in a locked filling cabinet. Research databases were password protected with access limited to the lead researcher.

3.4.3. Data preparation. Questionnaires were examined at the end of each day to examine consistency and validity. Missing responses were identified and coded. The results presented herein are adjusted for these missing data. The internal database was also monitored to ensure that it had been recorded that participants had completed the questionnaire.

3.4.4. Data analysis. Data from completed questionnaires were entered in to a Microsoft Access database. Microsoft Access was chosen as a data entry tool as it allows users to build a template database similar in structure to the questionnaire and therefore, ease data entry and minimise the risk of data entry errors. After data entry was complete, appropriate statistical data analysis was conducted using SPSS.

3.5. Ethical Considerations

Due to the nature of the participants and the content of the questionnaire, a number of ethical issues presented. Although clients were all over the age of 18, they represented a vulnerable group. Health promotion workers were given training prior to starting the data collection process, which included being made aware of the nature and purpose of the study, coaching on questionnaire administration, how to collect information in a sensitive manner and the protocol for referral in to aftercare services. Workers were also supported during the data collection process to ensure resolution of any unanticipated ethical issues. Before the participants provided data, every attempt was made to ensure that they fully understood the basis of the study and were voluntarily willing to participate. Given that the questionnaire was administered while participants were availing of the needle exchange service, it was explicitly stated that there would be no negative consequences of non-participation and that the service would be available to clients regardless of whether they consented or declined. A number of steps were taken to ensure that adequate aftercare was offered to the participants. Clients who wished to get tested or treated for BBVs were directed to on-site services or

alternative services which Merchants Quay had linked with. An on-site counselling service was made available to participants in case any distress ensued from completing the questionnaire.

3.6. Limitations of the Study

Information collected in the present study was based on participants' self-reports. Although this method has been found to be a reliable and valid method of collecting data, there remains debate regarding the accuracy of self-report. Despite these concerns, self-report is a feature of the majority of research surrounding health and presents the most comprehensive form of gathering data regarding frequency, amount and pattern of drug use and associated variables (Bell, 1998). That being said, the findings for sharing of injecting equipment and paraphernalia in the present study were incongruous with results from previous research. It was felt that the context in which the data collection took place may have influenced participants' responses. Data were collected while participants were attending a service which provides sterile injecting equipment and education regarding the risks of sharing. Therefore, participants may have been reluctant to respond that they were participating in behaviours which were in direct conflict with the objectives of the service they were engaged with. Findings concerning BBVs should also be interpreted with caution as results were not based on serological testing. However, while self-reported BBV status is not a measure of true prevalence, it does provide a useful gauge of levels and trends (Hamers & Downs, 2004).

An additional issue which may have impacted accuracy of results was the nature of participants. Participants were current drug users and at the time of data collection may have been experiencing symptoms such as opiate withdrawal, weariness or low mood which may have affected ability to accurately recall patterns of behaviour. As suggested by a number of authors (e.g. Del Boca & Noll, 2002; Comiskey et al., 2009), the questionnaire was structured around specific time periods to reduce the potential influence of recall bias. No data from clients who were under the influence of drugs were included.

The study relied on members of Health Promotion Unit for data collection. Staff had varying levels of experience and skill in interacting with clients and structured interviewing. In the attempt to minimise this limitation, comprehensive training was provided for questionnaire administrators.

4. Results

4.1. Descriptive Statistics

Table 1 below shows the descriptive statistics for the total sample and the descriptive statistics for males and females. A total of 338 participants took part in the study. The age of participants ranged from 20 to 59 years ($M = 33.86, SD = 7.51$). The sample consisted of 290 males (85.80%) and 48 females (14.20%), showing a gender ratio of approximately 6:1. The age of male participants ranged from 20 to 59 years ($M = 34.09, SD = 7.13$).The age of female participants ranged from 21 to 47 years ($M = 32.48, SD = 6.76$).

Table 1: Descriptive statistics for the total sample, males and females

	Total Sample	Males	Females
Participants (N)	338	290	48
Mean (age)	33.86	34.09	32.48
Median (age)	33	33	33
Std. Deviation (age)	7.51	7.60	6.76
Range (age)	20-59	20-59	21-47

Table 2 below provides a breakdown of the age profile for the total sample, males and females. The highest proportion of participants (n=91; 27%) fell in to the age range from 30-34 years. This age range showed the highest numbers of both male (n=78; 27%) and female (n=13; 27%) participants.

Table 2: Age profile for the total sample, males and females

	Total Sample (N=335)		Males (n=287)		Females (n=48)	
	n	%	n	%	n	%
20-24 yrs	29	9	21	7	8	17
25-29 yrs	73	22	65	23	8	17
30-34 yrs	91	27	78	27	13	27
35-39 yrs	69	21	57	20	12	25
40-44 yrs	43	13	39	14	4	8
45+ yrs	30	9	27	9	3	6

*Missing Observations=3

4.2. Socio-demographic characteristics

4.2.1. Nationality. The participant group was made up of 19 different nationalities. Table 3 illustrates that a large majority of participants were Irish nationals (n=297). EU12 nationals were comprised of Estonian (n=1), Latvian (n=8), Lithuanian (n=4), Polish (n=4), Romanian (n=2) and Slovenian (n=1). Other nationalities included American (n=1), Brazilian (n=1), English (n=6), Georgian (n=2), Indian (n=1), Italian (n=1), Mauritian (n=1), Moldovan (n=1), Moroccan (n=1), Portuguese (n=1), Russian (n=3) and Scottish (n=1).

Table 3: Nationality

	n	%
Irish Nationals	297	88
EU12 Nationals	20	6
Other	20	6
Total	337	100

*Missing Observations=1

4.2.2. County of residence. Table 4 highlights that the majority of participants resided in Dublin (n=302). Counties of residence from the rest of Leinster included Carlow (n=1), Kildare (n=4), Louth (n=3), Meath (n=3), Offaly (n=2) and Wexford (n=5). Counties of residence from Munster included Cork (n=2), Limerick (n=1), Tipperary (n=2) and Waterford (n=1). Counties of residence from Connaught included Galway (n=1) and Roscommon (n=1). Donegal (n=2) was the only county of residence from Ulster reported.

Table 4: County of residence

	n	%
Dublin	302	91
Rest of Leinster	18	5
Munster	6	2
Connaght	2	1
Ulster	2	1
Total	330	100

*Missing Observations=8

4.2.3. Housing status. Table 5 illustrates the housing status of participants during the past 7 days. The largest category of housing status identified in the study was own/rented home, with approximately 47% of participants falling under this category (n=160). Just over a fifth of participants had resided with family/friends in the past week (n=74; 21%) and a

similar proportion had resided in Emergency Accommodation in the past week (n=67, 20%). Less than 5% of participants reported sleeping rough in the past week (n=15; 4%) with similar trends reported in the categories of Supported Temporary Accommodation (n=12; 4%) and long-term supported housing (n=11; 3%). One participant reported residing in a category which was not included in the questionnaire (long-term hostel). Two participants reported residing in more than one category during the past 7 days - Emergency Accommodation/Sleeping Rough (n=1) and staying with friends/family/Sleeping rough (n=1).

Table 5: Housing status over the past week

	n	%
Own/Rented home	160	47
Staying with friends/family	74	22
Emergency Accommodation	67	20
Sleeping Rough	15	4
Supported Temporary Accommodation	12	4
Long-term supported housing	11	3
Other	1	1

*Missing Observations=1

4.3. Substance Use

4.3.1. Substance use. Table 6 shows current substance use for the total sample. Heroin was the most prevalently used substance amongst the sample with approximately 86% of respondents reporting that they had used heroin in the past month (n=290). Prescribed methadone was the next most commonly used substance with just under half of participants reporting use of such within the past month (n=167; 49%). Approximately 34% of participants (n=109) reported using benzodiazepines in the past month, with 16% of participants reporting use of prescribed benzodiazepines (n=49) and 18% of participants reporting use of illicit benzodiazepines (n=56). Use of cannabis (n=82; 24%), and alcohol (n=74; 22%), was also prevalent within the study population. Steroids (n=25; 7%), cocaine (n=21; 6%), mephedrone (n=21; 6%), crack (n=20; 6%), other (n=13; 4%), illicit methadone (n=8; 2%) and amphetamines (n=4; 1%) were all used by less than 1 in 10 participants within the past month. See Appendix A for a more detailed examination of substance use in the past month.

Table 6: Substance use over the past month

Substances Used	Total	
	n	**%**
Heroin	290	86
Prescribed Methadone	167	49
Cannabis	82	24
Alcohol	74	22
Illicit Benzodiazepines	60	18
Prescribed Benzodiazepines	53	16
Steroids	25	7
Cocaine	21	6
Mephedrone	21	6
Crack	20	6
Other	13	4
Illicit Methadone	8	2
Amphetamines	4	1

4.3.2. Substance use by gender. Table 7 outlines current substance use for males and females. The data suggested few gender differences in use of heroin, cannabis, alcohol, cocaine, crack, or illicit methadone. Proportionally higher levels of prescribed methadone use were reported amongst females in comparison to males (73% v 46%). Similar gender trends were discovered regarding illicit and prescribed benzodiazepines with a higher proportion of females reporting use of such. For females, use of illicit benzodiazepines was higher than use of cannabis or alcohol which showed a difference in substance use tendencies when compared to the male sample. Comparable patterns were observed for females in relation to use of 'other' substances (primarily anti-depressants) and use of mephedrone. No females reported using steroids in the past month whereas 9% of males reported use. Likewise, no females reported current use of amphetamines while 1% of males reported use.

Table 7: Substance use by gender over the past month

Substances Used	Males (n=290)		Females (n=48)	
	n	%	n	%
Heroin	249	86	41	85
Prescribed Methadone	132	46	35	73
Cannabis	71	24	11	23
Alcohol	63	22	11	23
Illicit Benzodiazepines	48	17	12	25
Prescribed Benzodiazepines	42	14	11	23
Steroids	25	9	0	0
Cocaine	17	6	4	8
Mephedrone	16	6	5	10
Crack	16	6	4	8
Other	7	2	6	13
Illicit Methadone	7	2	1	2
Amphetamines	4	1	0	0

4.3.3. Poly-drug use. Table 8 depicts current the number of substances currently being used by participants. In the present study, poly-drug use was defined as using two or more substances concurrently, and includes both legal and illegal drugs. A large majority of participants were poly-substances users (n=252; 75%). Approximately 30% of the sample reported using two substances within the past month (n=102), 25% reported using three substances (n=85), 12% reported using four substances (n=40) and 6% reported using five substances (n=20). Less than 2% of participants reported use of more than 5 substances within the past month (n=5).

Table 8: Number of substances used over the past month

No. of Substances Used	n	%
1	86	25
2	102	30
3	85	25
4	40	12
5	20	6
6	4	1
7	1	>1
Total	338	100

4.3.4 Single substance use. As outlined above, one-quarter of the sample reported use of a single substance in the past month. Table 9 illustrates that the majority of participants, who used one substance during the past month, used heroin only (n=64; 78%). Steroids were the next most prevalent substance used by non-poly drug users (n=15; 17%).

Table 9: Single Substance Use over the past month

Substance Used	n	%
Heroin Only	67	78
Steroids Only	15	17
Other Only	2	2
Amphetamines Only	1	1
Methadone (px) Only	1	1
Total	86	100

4.3.5. Poly-drug combinations using two substances. As presented in Table 8, approximately 30% of participants reported current use of two drugs. Table 10 shows that the most frequent combination of poly-drug use involving two substances was heroin and methadone (n=49; 48%). Use of heroin in combination with cannabis (n=12; 13%), benzodiazepines (n=10; 10%) and alcohol (n=10; 10%) was also found to be prevalent. The proportion of use of any other combinations of two substances was lower than 5%.

Table 10: Poly-drug combinations using two substances

Substances Used	n	%
Heroin, Methadone	49	48
Heroin, Cannabis	13	13
Heroin, Benzos	10	10
Heroin, Alcohol	10	10

4.3.6. Poly-drug combinations using three substances. Table 8 highlighted that just over a quarter of participants reported using 3 substances in the past month. Table 11 indicates that concurrent use of a combination of heroin, methadone, and benzodiazepines (n=26; 30%) was the most prevalent form of poly-drug use in this category. Heroin and methadone were also commonly used in conjunction with cannabis (n=12; 13%), and alcohol (n=12; 13%). A variety of other combinations involving three substances were being used by participants, with the majority involving use of heroin and two other substances.

Table 11: Poly-drug combinations using 3 substances

Substances Used	n	%
Heroin, Methadone, Benzos	26	30
Heroin, Methadone, Cannabis	12	14
Heroin, Methadone, Alcohol	12	14
Heroin, Cannabis, Benzos	7	8
Heroin, Cannabis, Alcohol	6	7

4.3.7. Prescribed methadone and other drug use. Table 12 below highlights the use of prescribed methadone in conjunction with other substances. In total, just over half of the sample reported use of prescribed methadone in the past month (n=167; 49%). Only one participant reported use of prescribed methadone only, highlighting that almost all participants who used prescribed methadone were also using other substances. Almost 9 out of 10 users of prescribed methadone were also using heroin.

Table 12: Prescribed methadone and other drug use

	Total	
	n	%
Heroin	148	89
Prescribed Benzodiazepines	46	28
Cannabis	46	28
Alcohol	41	25
Illicit Benzodiazepines	35	21
Crack	16	10
Mephedrone	13	8
Other	7	4
Steroids	2	1
Amphetamines	1	1

Given the large proportion of participants found to be using heroin and methadone concurrently within the past month, a further analysis was conducted (see Appendix A, Table 29). Inspection of the data suggested that in comparison to those who used heroin as well as prescribed/illicit methadone, participants who used heroin and no methadone consumed higher average amounts of heroin per day, spent more money on heroin per day, and used heroin the most days in the past month.

4.4. Injecting Risk Behaviour

4.4.1. Frequency of injection. Just over 97% of participants reported that they were currently injecting substances (n=329). Those who were not currently injecting reported ingestion, smoking and snorting as their routes of drug administration. The amount of times that participants injected substances in the past week ranged from 0-70, with participants injecting an average of just over 10 times in the last week (M=10.19, SD=11.78). Table 13 displays participants' reported frequency of injection in the past week. The majority of participants (42%) reported injecting substances between 1-5 times in the past week.

Table 13: Frequency of injection over the past week

	n	%
0 times	23	7
1-5 times	132	42
6-15 times	99	31
16-25 times	28	9
26-35 times	22	7
More than 35 times	14	4
Total	318	100

*Missing Observations=5

4.4.2. Main injecting sites. Table 14 illustrates the main injecting sites currently used by participants. Approximately a quarter of the sample (n=81) reported currently using more than one main injecting site. The most prevalent injecting site reported was arms, with approximately 55% of participants using their arms for injecting (n=174). Almost a third of participants (n=98) reported injecting in either the groin or the neck.

Table 14: Main injecting sites over the past month

Injecting Site	n	%
Arms	174	55
Groin	91	29
Legs	28	9
Hands	17	5
Feet	14	4
Buttocks	13	4
Neck	7	2
Other	7	2

*Missing Observations=23

31

4.4.3. Sharing of injecting equipment and paraphernalia. Almost three-quarters of respondents reported that they had not shared injecting equipment or paraphernalia in the past month (n=232; 73%). Just over a quarter of respondents reported sharing at least one piece of injecting equipment in the past month. Table 15 illustrates that the most commonly shared elements were water, which was reportedly shared by approximately 13% of respondents, and tourniquets, which were reportedly shared by just over 12% of respondents.

Table 15: Sharing of injecting equipment and paraphernalia over the last month

Item shared	n	%
Water	43	13
Tourniquet	39	12
Syringe	33	10
Cooker	32	10
Foil	28	9
Filter	28	9
Frontloading	24	8
Needle	22	7
Backloading	17	5

4.4.4. Physical injecting environment. Figure 1 overleaf depicts the physical injecting environment of participants. Almost 86% of the sample reported that during the past week they had generally been injecting in a private domain (n=268) and just over 14% indicated that they had generally been injecting in a public area (n=44). 15 participants were not currently injecting and 11 participants did not provide a response.

Figure 1: Physical Injecting Environment
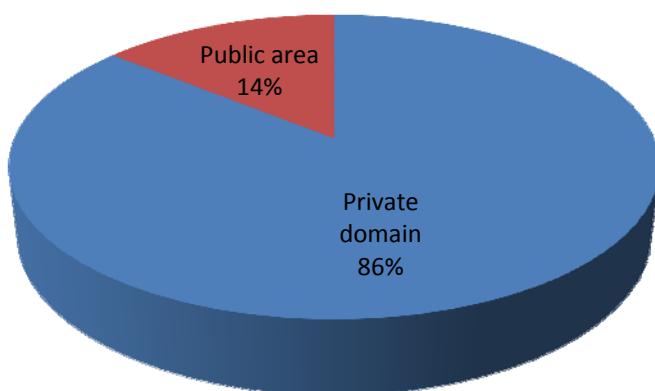
4.4.5. Social injecting environment. Figure 2 illustrates the social injecting environment of participants. Approximately 59% of the sample reported generally injecting on their own during the past week (n=184) and almost 41% reported generally injecting with other people during the past week (n=126). 15 participants were not currently injecting and 13 participants did not provide a response.

Figure 2: Social Injecting Environment
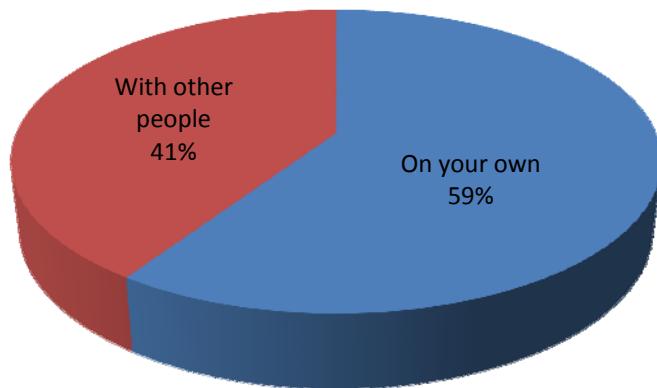
4.4.6. Administration of injection. Figure 3 shows that almost 88% reported being generally injected by themselves during the past week (n=274) and just over 12% reported being generally injected by another person/s during the past week (n=38). Fifteen participants were not currently injecting and eleven participants did not provide a response.

Figure 3: Administration of Injection
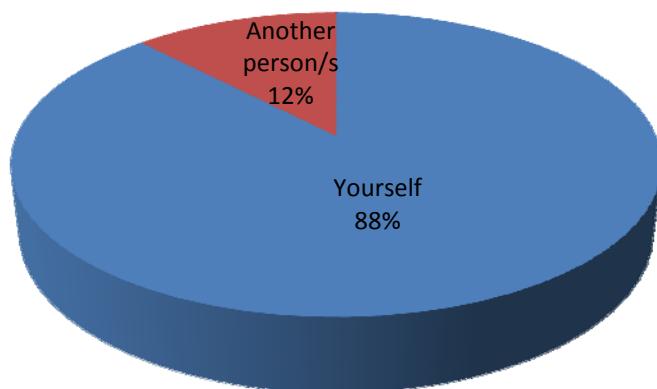
4.5. Blood-borne Viruses

4.5.1. HIV. Table 16 shows the data relating to testing for HIV. Approximately 78% of participants had been tested for HIV (n=264). Just over 20% had not been tested (n=69). Two participants did not know if they had been tested for HIV. Three participants declined to answer any questions relating to HIV.

Table 16: HIV testing

	n	%
Tested	264	78
Not Tested	69	20
Not known if tested	2	1
Declined to answer	3	1
Total	338	100

Table 17 presents the HIV test results of participants. Just over 8% of participants who had been tested for HIV had tested positive (n=22), with approximately 89% testing negative (n=234). Around 3% of participants did not know the result of their test (n=8).

Table 17: HIV test results

	n	%
Positive	22	8
Negative	234	89
Unknown	8	3
Total	264	100

For those who had been tested, length of time since last test ranged from 0-24 years (M=1.62, SD=2.69). However 41 participants could not provide an estimate of when they were last tested for HIV. Table 18 illustrates that 55% of participants who reported that they were negative for HIV had been tested within the past year.

Table 18: Length of time since last HIV testing for those who reported negative status

	n	%
Less than 6 months	91	46
6-12 months	18	9
1-2 years	45	23
2-3 years	19	10
More than 3 years	25	13
Total	198	100

Table 19 shows the treatment status of participants who had tested positive for HIV. Approximately 45% of those who reported being positive for HIV were receiving treatment and 9% were awaiting treatment. Around 46% were not receiving treatment. The reasons reported for not receiving treatment were 'not appropriate for treatment' (9%; n=2), 'declined treatment' (5%; n=1), 'service not offered' (5%; n=1) and other (14%; n=3) who reported that they were 'afraid to get treatment' (n=1) and 'treatment was not needed' (n=2). Two participants did not offer a reason for not receiving treatment.

Table 19: Treatment for HIV

	n	%
Receiving treatment	10	45
Declined treatment	1	5
Service not offered	1	5
Not appropriate for treatment	3	14
Awaiting treatment	2	9
Other	3	14
Unknown	2	9
Total	22	100

4.5.2. Hepatitis C. Table 20 presents the data regarding participants' testing for Hepatitis C. Approximately 82% of participants had been tested for Hepatitis C (n=274). Just over 15% of participants had not been tested (n=55). Six participants did not know if they had been tested. Three participants declined to answer any questions relating to Hepatitis C.

Table 20: Hepatitis C testing

	n	%
Tested	278	82
Not Tested	55	16
Not known if tested	2	1
Declined to answer	3	1
Total	338	100

Table 21 presents the Hepatitis C test results of participants. Approximately 45% of participants who had been tested for Hepatitis C had tested positive (n=125), with almost 51% testing negative (n=140). Around 4% of participants did not know the result of their test (n=12). For those who had been tested negative for HCV, length of time since last test ranged from 0-24 years (M=1.68, SD=3.16). However forty-four participants could not provide an estimate of when they were last tested for Hepatitis C.

Table 21: Hepatitis C test results

	n	%
Positive	125	45
Negative	140	50
Unknown	13	5
Total	278	100

Table 22: Length of time since last hepatitis C testing for those who reported negative status

	n	%
Less than 6 months	32	29
6-12 months	38	34
1-2 years	20	18
2-3 years	8	7
More than 3 years	14	12
Total	112	100

Table 23 shows the treatment status of participants who had tested positive for Hepatitis C. Eighteen of the participants who had tested positive for Hepatitis C were receiving treatment. One hundred and seven participants were not receiving treatment. The reasons reported for not receiving treatment were declined treatment (n=9), service not offered (n=16), not

appropriate for treatment (n=16), awaiting treatment (n=29), and other (n=21). The other reasons reported for not receiving treatment included 'virus dormant' (n=10), 'no contact with health service' (n=2), 'afraid to get treatment' (n=1), 'circumstances' (n=2), 'coming off methadone first' (n=1), 'did not go on treatment as wanted a child' (n=1), 'finished treatment (n=1), 'not clean' (n=1), 'did not present for treatment' (n=2). Sixteen participants did not offer a reason for not receiving treatment.

Table 23: Treatment for Hepatitis C

	n	%
Receiving treatment	18	14
Declined treatment	9	7
Service not offered	16	13
Not appropriate for treatment	16	13
Awaiting treatment	29	23
Other	21	17
Unknown	16	13
Total	125	100

4.5.3. Hepatitis B. Table 24 presents the data regarding participants' testing for Hepatitis B. Approximately 78% of participants had been tested for Hepatitis B (n=262). Almost 21% had not been tested (n=73) and less than 1% did not know if they had been tested (n=3). Three participants declined to answer any questions relating to Hepatitis B.

Table 24: Hepatitis B testing

	n	%
Tested	263	78
Not Tested	69	20
Not known if tested	3	1
Declined to answer	3	1
Total	338	100

Table 25 presents the Hepatitis B test results of participants. Almost 5% of participants who had been tested for Hepatitis B had tested positive (n=13), with approximately 92% testing negative (n=241). Around 3% of participants did not know the result of their test (n=9).

	n	%
Positive	12	5
Negative	241	92
Unknown	9	3
Total	262	100

For those who had been tested negative for HBV, length of time since last test ranged from 0-24 years (M=2.18, SD=3.80). However thirty-seven of these participants could not provide an estimate of when they were last tested for Hepatitis B.

Table 26: Length of time since last HVB testing for those who reported negative status

	n	%
Less than 6 months	41	20
6-12 months	65	32
1-2 years	45	22
2-3 years	21	10
More than 3 years	32	16
Total	204	100

Table 27 shows the treatment status of participants who had tested positive for Hepatitis B. 2 of the participants who had tested positive for Hepatitis B were receiving treatment. 10 participants were not receiving treatment. The reasons reported for not receiving treatment were declined treatment (n=2), service not offered (n=1), not appropriate for treatment (n=1), awaiting treatment (n=1), and other (n=2) who reported that treatment was not needed.

Table 27: Treatment for hepatitis B

	n	%
Receiving treatment	2	17
Declined treatment	2	17
Service not offered	1	8
Not appropriate for treatment	1	8
Awaiting treatment	4	33
Other	2	17
Total	12	100

4.5.4. Co-infection. Table 28 illustrates testing across combinations of infections and the prevalence of co-infection among participants. Overall 24 participants reported co-infection with more than one virus. The most prevalently reported co-infection was Hepatitis C/HIV (n=15) which accounted for approximately 6% of those who had been tested for both infections (n=262). Hep B/Hep C (n=5), which accounted for approximately 3% of those who had been tested for both infections (n=262), and Hep B/Hep C/HIV (n=1), which accounted for approximately 0.39% of those who had been tested for all three viruses (n=258), were the additional co-infections found. Figure 3 summarises the inter-relationships between infections among participants.

Table 28: Testing & co-infection status

	Tested		Positive Co-infection	
	n	%	n	%
Hep C/HIV	262	78	15	6
Hep B/Hep C	262	78	8	3
Hep B/Hep C/HIV	258	76	1	<1

Figure 4: Inter-relationships between infections
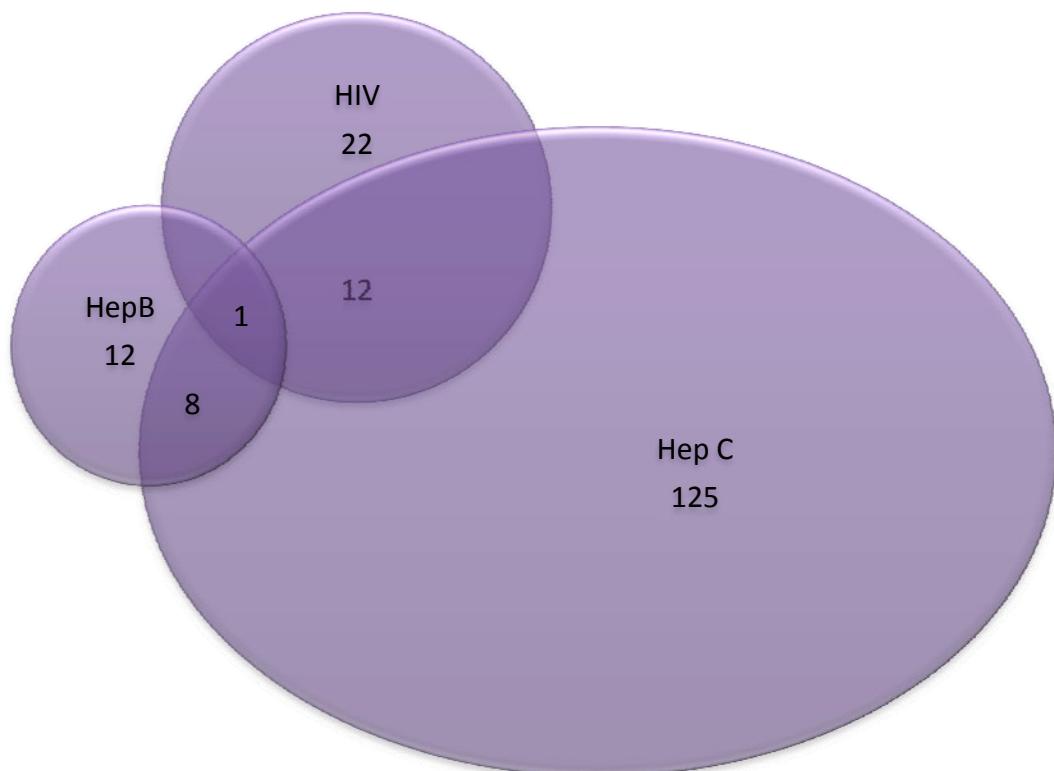
5. Discussion

The age findings in the present study echo a general trend identified across studies which have found that the population of Irish opiate users is ageing. The mean and median age found in the present study were relatively high in comparison to recent research conducted across a variety of drug treatment settings in an Irish context (Comiskey et al., 2009), and older research of attendees at a Dublin needle exchange (Johnson et al., 1994). This shift in the age profile is noteworthy as older drug injectors are likely to have increasing levels of health problems (Kelly et al., 2009), are more likely to be HIV positive (Smyth, Keenan, & O'Connor, 1998; Long et al, 2001) and Hepatitis B positive (Long et al., 2001; Allwright et al., 2000).

Research has consistently demonstrated differences in the gender distribution of injecting drug users, namely that IDUs are more likely to be male. Previous studies in the context of Merchants Quay have observed ratios of approximately 3:1 among new clients (Cox &Lawless, 2000). The male to female gender ratio found in the present study is notably higher than those found in European and national research. Female injecting drug users have been found to be more likely to engage in injecting risk behaviours (Montgomery et al., 2002) and previous research has identified a number of gender-specific issues in the realm drug services. Consequently, a gendered approach to drug services which places particular importance on care and support (Poole & Dell, 2005), provision of female counsellors (Painter, Riley-Buckley, & Whittington, 2000), support groups (EMCDDA, 2006), childcare facilities (Moran, 1999) and integrative service provision with greater collaboration and communication between agencies (Comiskey et al., 2009) has been suggested to enhance accessibility and utility for female service users.

Similar issues are evident in relation to migrants, and with the vastly increasing level of international migration, migrant health has become a significant global public health issue (Ghent, 2008). The majority of participants in the present study were Irish nationals. However, the sample consisted of nineteen different nationalities. The transcultural competence of health and social services is coming under increasing examination, with the growing diversity witnessed amongst service users presenting a number of challenges. The literature demonstrates that there are diverse and varied issues and barriers around service access and service use among migrants who use drugs services (Fountain, Bashford, &

Winters, 2003; Sangster, Shiner, Patel, & Sheikh, 2002), which should be addressed in service design.

Housing status has been identified as a significant variable within the domain of drug use (e.g. Lawless & Corr, 2005). Approximately a third of participants in the present study were residing in categories which were classified as homeless. Framing these findings within the European Typology on Homelessness and Housing Exclusion (ETHOS) utilised in *Counted In* (Homeless Agency, 2008), approximately 7% of participants would be considered houseless, and 24% would be considered roofless. Previous research has found high levels of sharing of injecting equipment and elevated prevalence of BBVs among homeless drug users (Corneil et al., 2006; Rhodes et al., 2006a; Cox & Lawless, 2000), and as such, this group represents a particularly at risk group.

Poly-drug use, including the combination of illicit drugs with alcohol, and sometimes, medicines and non-controlled substances, has become the dominant pattern of drug use in Europe (EMCDDA, 2011). This pattern was evident in the present study, with prevalence rates showing consistency with previous research in an Irish context (Bellerose, Carew, & Lyons, 2011; Comiskey et al., 2009). This accumulation of evidence suggests that the majority of problem drug users in Ireland are poly-drug users. Though poly-drug use has become the rule rather than the exception, the patterns of use across countries are markedly divergent (EMCDDA, 2009). The largest proportion of poly-drug users in the present study were currently using two substances, with the most commonly used combinations among this group being use of heroin/methadone, heroin/cannabis, heroin/benzodiazepines, and heroin/alcohol. Within these trends of poly-drug use noted, the high prevalence of prescribed methadone use in combination with heroin and the widespread use of opioids and benzodiazepines, are cause for particular concern as concomitant use of these substances increases the risk of fatal and non-fatal overdose (EMCDDA, 2009).

A further noteworthy feature of the present study was the prevalence of steroid users found among participants. Increasing participation in needle exchange programs among steroid users has been found internationally (Rich et al., 1999) and more recently, needle exchanges based in the UK have witnessed a dramatic rise in the numbers of steroid users presenting (Evans-Brown & McVeigh, 2008). Although there are reports of clients who are steroid injectors in almost two-thirds of needle exchange services in Ireland (Robinson et al., 2008), there has been little published data on this developing trend. Public health initiatives have the

propensity to overlook users of performance- and image-enhancing drugs (Larance, Degenhardt, Copeland, & Dillion, 2008). Given the furtive nature of use of such substances, users are reluctant to seek medical treatment (Dunn, 2002) and thus, the main agencies which are likely to maintain regular contact with this group are needle and syringe programmes (Larance et al., 2008). Though in general, rates of BBVs and injecting risk behaviour tend to be lower among steroid users than other groups of IDUs (Day et al., 2008; Aitken, Delalande & Stanton, 2002), they remain at significant risk of physical and psychological harm (Evans-Brown & McVeigh, 2008).

Inspection of the findings regarding the injecting behaviours, highlight high levels of unsafe practices such as use of only one main injection site and injecting in to either the groin or the neck. Frequent injection in to the same site is associated with damage to the vascular structure due to blood clots which inflame the vein, and can cause veins to harden and narrow which eventually renders them unusable for injection (Maliphant & Scott, 2005). Although all injecting sites carry risks, the risk involved in injecting in to the groin or neck is considerably higher. Veins in these sites are larger and therefore any damage incurred may result in serious circulatory problems and an increased risk of life threatening infections such as endocarditis (Darke et al., 2001). Injection in to the groin is associated with higher risk of deep vein thrombosis, leg ulcers and vascular insufficiency. The close proximity of the femoral vein in the groin to the femoral artery and nerve also lead to increased risk of morbidity and mortality (Woodburn & Murie, 1996).

Previous research within MQI found that only 5% of new clients reported injecting into these particularly dangerous sites (Cox & Lawless, 2000). A possible rationale for the disparity in findings is that over half the participants in the Cox and Lawless study had been injecting for less than a year. Darke and colleagues (2001) detail that the majority of injecting drug users usually start their injecting careers by injecting in to the crook of the arm, which moves to injection in the forearm, upper arm and hand within four years, progressing to injection in the neck feet and leg within 6 years, and finally to the groin, fingers and toes within 10 years. Thus, the injecting sites reported in the present study may be representative of a sample of IDUs who have had a longer injecting career. Research suggests that IDUs consider the groin to be a convenient injection site which is easy to use, quick and less painful with less risk of missing the vein. Qualitative narratives suggest that the primary reason for using the groin as an injection site is that there are no other 'convenient' sites left for injection (Maliphant and Scott, 2005).

Sharing of needles and syringes has been identified as the overt route of BBV transmission. There is also increasing recognition and investigation in to the role of sharing injecting paraphernalia as a further mode of transmission. The incidences of sharing reported represented substantially lower rates than the majority of previous research. There are a number of possible explanations for this inconsistency. Firstly, it may be indicative of the success of the health promotion unit in educating service users about the risks involved in sharing and providing the means for safer injecting. However the possibility that the context in which the data collection took place may have influenced responses should be considered. An additional factor is that a quantitative methodology may not be the most appropriate form of exploring sharing of equipment as injectors may not be clear on what constitutes 'sharing' and may not consider indirect sharing of paraphernalia as a form of sharing. Given the large variances in reports of frequency of sharing, the heterogeneity of drug using populations, differential access to services, and methodological research concerns, it is difficult to ascertain a definite portrait of the quantity of users who share paraphernalia. It is clear however that despite being in contact with a service which provides access to equipment and paraphernalia, and education surrounding the risks of sharing, a proportion of service users continue to engage in these risk behaviours.

While reductions in the prevalence of sharing of injecting equipment and HIV have been witnessed throughout the literature, it is important to note the role of social and structural contexts in shaping individual injecting risk behaviours (Rhodes, 2002). The proportion of those injecting with others, assisted injecting and injecting in public places reported in the present study represents a significant amount of injecting drug users who are at elevated risk of severe health consequences. Although injecting in the company of others reduces the risk of fatal overdose (Hagan et al., 2007), it is also linked to unsafe injecting practices (Taylor et al., 2004; Wodak & Crofts, 1996). Receiving an injection administered by another person is associated with non-fatal overdose and has been shown to predict elevated levels of sharing needles and syringes (Kerr et al., 2007; Kerr et al., 2005). Heightened risk of BBV transmission is also correlated with this behaviour as those who receive injections have been found to be twice as likely to contract HIV (O'Connell et al., 2005). Fairbairn and colleagues (2010) have documented several barriers to self-injection which include lack of injection-related knowledge and technique and inability to access veins due to long-term injecting. This highlights the importance of safer injecting education within harm reduction services whereby IDUs can acquire the proficiency for self-injection and the knowledge to minimise

vascular damage. Injecting in public places is also associated with a higher level of risk behaviour (e.g. Darke et al., 2001; Klee & Morris, 1995).

The challenges presented by the social and structural environment of injecting reinforce the significance of the pillars upon which the practice of harm reduction is founded. Taylor and colleagues (2004) re-emphasise the importance of educating IDUs around the risks involved in sharing, particularly with reference to indirect sharing, and the potential for BBV transmission at all stages of the injecting process. Providing sterile injecting paraphernalia is an important element in minimising the risk of harm. However, while supplying the means and the education may help to reduce individual injecting risk behaviour, without investigation and intervention in to contextual factors, further progress may be limited. An emerging strategy designed to combat such risks is the development of safer injection facilities (SIF) which provide amenities for medically supervised drug consumption. Such facilities are currently in operation in 62 cities internationally and although evidence broadly supports the efficacy of SIFs, they remain a controversial harm reduction approach (Hedrich, Kerr, & Dubois-Arber, 2010).

In discussion of the prevalence of BBVs, it should be noted that status was based on self-report, a proportion of the sample had not been tested previously, and the frequency of testing within the past year was low. Thus, the reported prevalence may differ from the true prevalence, and in all likelihood, represents a conservative estimate. The prevalence of HIV reported indicated a lower rate of infection as compared to previous results from studies conducted within Irish needle exchange (Johnson et al., 1994) and drug treatment services (O'Sullivan et al., 2004). The reported prevalence is almost an exact match with a study from Dorman and colleagues (1997) among a sample of Irish IDUs both in and out of treatment. The rates of HIV testing found suggest that access and uptake appears to have improved in comparison to findings from previous research (Cox & Lawless, 2000). However a relatively high proportion of the sample had not been tested previously. Frequency of testing remains a further concern. Considering the high risk of infection among IDUs, it is recommended that examination and testing is offered at least once every six to 12 months (ECMDDA, 2010). Lack of knowledge of HIV status is problematic for both personal and public health (WHO, 2010). On the personal level, awareness of positive HIV status affords individuals the opportunity to access appropriate treatment, care and support. Early diagnosis and timely treatment improves the prognosis of the infection and is associated with reduced morbidity

and mortality when compared to those who present later (Palella et al., 1998). In combination with early diagnosis, counselling may guide people to reduce risk taking behaviours and decrease the threat of HIV transmission to injecting and sexual partners (WHO, 2010; ECMDDA, 2010). It is therefore vital to address the deficiencies in access to, and barriers to the uptake of, HIV testing. Research surrounding barriers (Obermeyer, & Osborn, 2007; Downing et al., 2001) have identified client factors which include a lack of knowledge around risk and locations of testing sites, and a fear of the repercussions, and service-related factors such as a lack of convenient locations, insufficient communication around offering testing, and failure to provide appropriate models of service. Uptake of treatment for those who reported being positive for HIV in the present study also appears to be a problematic issue. Although IDUs report much higher levels of medical complaints then the general population, links with health care services are often fragmented (Saitz, Mulvey, & Samet, 1997). Models of service suggested to overcome the obstacles faced by IDUs in accessing HIV treatment include co-locating HIV primary care and substance dependence treatment programmes, and linking primary care to specialist clinics (WHO, 2006b).

The prevalence of Hepatitis C reported is relatively low in relation to previous studies conducted with IDUs attending drug treatment in Ireland (Smyth et al., 1998; Cullen, Bury, Barry, & O'Kelly, 2000; O'Sullivan, 2004). However, the prevalence is much elevated when compared to previous research in Merchants Quay Ireland (Cox & Lawless, 2001). Although similar problematic issues are apparent in access, uptake and frequency regarding testing for both HIV and Hepatitis C, Hep C does show a slightly higher rate of lifetime testing, and testing within the past year, when compared to HIV testing. This may be representative of the increasing recognition and response to the epidemic. Screening for Hepatitis C is currently offered in drug treatment programmes and prisons in Ireland. While this may reflect a positive step, the findings do suggest that there is still considerable work to be done.

A further concern is the rate of participants who reported being positive for Hepatitis C and were not receiving treatment. Studies in an Irish (Cullen et al., 2007) and international context (Strathdee et al., 2005; Doab, Treloar, & Dore, 2005) have demonstrated poor levels of Hepatitis management among IDUs. Research points to a large amount of uncertainty regarding understanding of Hepatitis C among IDUs, with a lack of effective communication of test results and diagnosis a particular concern (Rhodes, Davis, & Judd, 2004). Testing, management, and treatment for this group appear to be complex issues and are impacted by a

host of variables. Recent qualitative research from Swan and colleagues (2010) examined barriers to and facilitators of Hepatitis management in an Irish context, suggesting that perceptions surrounding Hepatitis C significantly influenced management of the virus. Among many IDUs, HCV was normalised in comparison to HIV, with participants perceiving Hepatitis C as a common and relatively benign infection. The absence of overt symptoms reinforces the perception that HCV does not significantly impact health, and consequently, reduces the perceived need for medical attention. In brief, Hepatitis C appears not to be a high priority for a group which face a plethora of more immediate health, welfare and social concerns (O'Brien et al., 2006). Among the most common reasons given by participants for not receiving treatment were that the service was not offered and that they were not appropriate for treatment. For entering treatment for Hepatitis C, guidelines recommend that a person has been abstinent from illicit substances and alcohol for six months (Swan et al., 2010) even though there is little evidence to indicate that treatment outcomes differ significantly between those who use drugs during treatment and those who do not (Hellard, Sacks-Davis, & Gold, 2009). Overall it would seem that the key to improving Hepatitis C management is in further educating at risk groups and developing an infrastructure which is non-judgemental, easy to access and provides continuity of care. Convenience seems to be an important factor in Hepatitis C management and IDUs themselves have suggested that a "one stop shop" where screening and treatment could be accessed would help minimise barriers (Swan et al., 2010).

The prevalence of Hepatitis B reported is within the lower ranges of previously observed rates in prior research in an Irish context (Smyth et al., 1998; Cullen et al., 2000; Fitzgerald et al., 2001; O'Sullivan et al., 2004). It has been suggested that the lower rate of Hepatitis B detected among Irish IDUs may be attributable to the small number of cases with chronic infection and the availability of a rapid vaccine regimen for the virus, which can be completed in 3 weeks (Long, 2006). In line with the trend found with HIV and Hepatitis C, testing frequency is a worry, although a possible reason for not getting tested could be that persons had been vaccinated.

There is little published data available regarding co-infection in Ireland (Long, 2006). In the present study, the prevalence of Hepatitis C/Hepatitis B co-infection was approximately 3% for those who had been tested for both viruses. In line with findings from the wider literature, the incidence of HIV and Hepatitis C co-infection was more prevalent than Hepatitis B/Hepatitis C co-infection within the current sample. The prevalence of HIV and

Hepatitis C co-infection among IDUs at a European level is particularly high and continues to rise (WHO, 2006). In the present study, almost 73% of those who were HIV positive were also Hepatitis C positive. Given the increasing prevalence of this form of co-infection and the associated treatment complications, the prospect of increased health consequences would appear likely.

6. Recommendations

Research represents a primary pillar of the National Drugs Strategy (Interim) 2009-2016, in which, the strategic aim of ensuring the availability of accurate, timely, relevant and comparable data on the extent and nature of problem substance use in Ireland, is emphasised. Contemporary research within the context of low threshold services and needle exchange programmes in Ireland is particularly sparse. Consequently, there is paucity of germane data available for evidence informed decision-making and policy formulation in this domain. The present study offers a contribution towards fulfilling national policy research objectives, and provides a foundation for the construction of an up to date evidence base in relation to Irish harm reduction services. Based on the research process and findings presented herein, a number of recommendations are proposed:

6.1. Policy Based Recommendations

- Sharing of injecting equipment and paraphernalia persists. The National Drugs Strategy (NDS) document Building on Experience (2001-2008) advocates that in order to reduce "the reported level of injecting drug misuse and the rates of sharing injecting equipment" (pp. 110) there should be "continued efforts to enhance harm reduction measures such as needle exchange facilities" (pp. 110) and "access for all injecting drug misusers to sterile injecting equipment" (pp. 124). In this regard, there is a need to ensure that needle exchange programmes are providing injecting equipment consistent with guidelines recommended in the international research (e.g. Strike et al., 2006) so as to optimise harm reduction. Where deficits are identified in the provision of injecting equipment, reasons for these gaps should be examined and communicated to Health Service Executive suppliers, in the effort to eliminate equipment related barriers in supporting safer injecting practices among injecting drug users.

- A major finding of the present study is the prevalence of blood-borne viruses (BBVs), coupled with insufficient levels of testing and low rates in uptake of treatment for Hepatitis C and HIV. Furthermore, the results indicate that frequency of testing is a concern. The evidence in previous studies suggests that convenience is an important factor for injecting drug users in management of BBVs and low-threshold services are ideally placed to attract clients which have not been previously screened. The

recommendation that screening is offered and promoted within harm reduction services, as advised by the National Hepatitis C strategy 2011-2014, the European Centre for Monitoring Disease and Drug Addiction (2010) and the World Health Organisation (2010), is therefore supported.

- The proportion of assisted injecting and injecting in public places reported in the present study represents a significant amount of injecting drug users who are at elevated risk of severe health consequences. An emerging strategy designed to combat such risks is the development of medically supervised injecting centres (MSIC). Such amenities are currently not available in Ireland and such a strategy is not endorsed through national policy. Reference to drug consumption rooms was made in the National Drugs Strategy (NDS) document Building on Experience 2001-2008 which stated 'the Review Group does not consider that the introduction of such forms of treatment is warranted at this time. However, the situation should be kept under review and the results of research, both national and international, should be monitored' (Section 4.13.3.). The National Drugs Strategy (Interim) 2009-2016 makes little elaboration on the issue. It is therefore advised that in line with the recommendation from the Strategic Response Group's 'A Better City for All' report (Connolly, 2012), further consideration of safer injecting facilities in an Irish context is warranted in future national policy deliberations.

6.2. Research Based Recommendations

- The present study provides additional evidence that the population of Irish opiate users is ageing. As the needs of older drug users tend to be more complex, future research should address if services are structured to cater for impacts which may accompany this shift in age profile.

- The gender ratio found in the present study supports previous findings which indicate that females may be under-represented in drug services. Future research should aim to explore the potential barriers for female drug users and investigate appropriate gender-specific approaches.

- As indicated by the present study, the level of substance use among the homeless population continues to present concern. As stated in the National Drugs Strategy (Interim) 2009-2016, gaps in the provision of treatment services for homeless drug users persist. Further research in the vein of Corr and Lawless (2005) is necessary to update research regarding meeting the needs of homeless drug users.

- The present study indicates a high prevalence of poly-drug use and highlights the current patterns of use. Future research should examine needs, impact, harm reduction interventions, and treatment and rehabilitation options in relation to poly-drug use.

- There has been little published data in Ireland regarding steroid use, or steroid users' engagement with services. The findings of the present study are consistent with international and Irish research which suggests that steroid users are becoming more prevalent in harm reduction services. As a marginalised group with divergent characteristics, there is the need to develop an evidence base which explores the profile of harm within this group, and to identify tailored approaches within the context of low threshold services.

- Findings for sharing of injecting equipment and paraphernalia in the present study were incongruous with results from previous research. Future research should further investigate rates of sharing and consider the appropriateness of conducting related research in the context of needle exchange services.

- Findings concerning BBVs in the present study were based on self-report. In order to ascertain a definitive prevalence, future research which incorporates serological testing is advisable.

- A significant concern presented by the current study is management of Hepatitis C in injecting drug users. As noted in the National Hepatitis C strategy 2011-2014, evaluation of different models of care is needed to address the range of barriers faced by injecting drug users so as the enhance treatment access, delivery, and adherence.

6.3. Practice Based Recommendations

- There are varied issues and barriers around service access and service use amongst female and migrant drug users. It is recommended that services make continued efforts to adopt a pro-active stance in regard to these groups.   Service providers should monitor the level of service use by under-represented groups (e.g. numbers, profile and needs of under-represented groups) to ensure that services are attracting members of these groups and meeting their needs. A gendered approach which recognises the needs unique to females is advocated. In the effort to address barriers faced by migrant drug users to accessing services, implementation of the recommendations from Corr (2004) are advised: translated materials could help breach the language barrier and increase knowledge and perceived accessibility of services; outreach could help interaction with underrepresented migrant groups; recruitment of staff from such backgrounds could help to attract and engage users from these communities; and more flexible and appropriate services could respond to unique needs more effectively.

- It is vital that services are familiar with the profile of poly-drug use among their client base and are able to identify individual harm reduction needs. The provision of continuous up-skilling for staff is necessary to offer appropriate harm reduction advice and to address the risk behaviours associated with different patterns of drug use. The same applies in emerging areas such as steroid use.

- Given the prevalence of BBVs found in the present study, as well as the concerns presented in relation to access to testing and uptake in treatment, it is recommended that in the case on-site BBV management options are not available; services should further develop collaborative relationships with appropriate external agencies. It is further advised that ongoing up-skilling with regard to BBV education, testing regimes, and treatment options, is provided for staff.

- A high proportion of high risk behaviours such as injecting in to the groin/neck and not rotating injecting sites were found in the present study. Thus, the findings highlight the importance of the role of safer injecting workshops and suggest that there is a need to ensure that every effort is being made to direct clients to such a

service. Services should encourage client participation in safer injecting workshops irrespective of whether clients are newly injecting or have longer injecting careers.

- Drug use does not exist in isolation. The complex of personal and structural problems faced by drug users, particularly those who are homeless, requires a multi-disciplinary approach to address their needs. Services should continue to strive to provide a case management approach that is client-centred. Such an approach requires greater collaboration and integration across the range of voluntary and government organisations involved in the provision of homeless, drug, and health services. Re-skilling of staff in providing a multi-disciplinary spectrum of care also requires increased interagency transfer of training knowledge.

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Appendix

Substance Use in Detail

      Heroin use. As illustrated in Table 29, approximately 86% of participants (n=291) reported using heroin in the past month. In total, participants who used heroin were found to consume an average of 2.35 bags per day (SD=1.75) and spent an average of €45.72 per day (SD=32.21). Heroin use in the last week ranged from 0-7 days, with heroin being used on an average of 4.66 days per week (*SD =2.62*). In the previous four week period, heroin use ranged from 1-28 days, with heroin being consumed on an average of approximately 19 out of 28 days (M=18.50, SD=10.22).

Table 29: Descriptive statistics for heroin use

	Total	Heroin/no methadone	Heroin/prescribed methadone	Heroin/illicit methadone
Participants	290	134	148	8
Percentage	86.09	39.64	43.79	2.36
Mean Age (SD)	34.18 (7.41)	33.59 (7.59)	34.89 (7.21)	31.13 (6.19)
Range (use per day)	0.5-10 bags	0.5-10 bags	0.5-10 bags	1-4 bags
Mean (use per day)	2.35 bags	2.76 bags	1.98 bags	1.95 bags
Std. Deviation (use per day)	1.75 bags	1.96 bags	1.4 bags	1.33 bags
Range (price per day)	10-200 €	10-200 €	10-125 €	20-50 €
Mean (price per day)	45.72 €	54.32 €	38.35 €	33.15 €
Std. Deviation (price per day)	32.21 €	37.90 €	24.20 €	16.38 €
Range (frequency last week)	0-7 days	0-7 days	0-7 days	2-7 days
Mean (frequency last week)	4.66 days	5.55 days	3.85 days	6 days
Std. Deviation (frequency last week)	2.62 days	2.33 days	2.67 days	1.66 days
Range (frequency last month)	1-28 days	1-28 days	1-28 days	2-28 days
Mean (frequency last month)	18.50 days	21.98 days	15.11 days	21.75 days
Std. Deviation (frequency last month)	10.22 days	8.92 days	10.33 days	8.09 days

Table 30 overleaf describes that the primary route of heroin administration was injection (n=245). Participants also reported using a combination of smoking/injecting (n=34) and smoking (n=6).

Table 30: Route of heroin administration

	Total	
	n	**%**
Injecting	245	84.48
Smoking	6	2.07
Injecting/Smoking	34	11.73
Unknown	5	1.72
Total	290	100

Methadone use. As illustrated in Table 31, over 51% of participants (n=175) reported using methadone in the past month. In total, participants who used methadone were found to consume an average of 71.04millilitres per day (SD=27.20). Methadone use in the last week ranged from 0-7 days, with the substance being used on an average of 6.78 days per week (*SD=1.11*). In the previous four week period, methadone use ranged from 2-28days, with methadone being consumed on an average of approximately 27 out of 28 days (M=26.95, SD=4.61).

Just under 50% of participants (n=167) reported using prescribed methadone in the past month. Participants who used prescribed methadone were found to consume an average of 72.72millilitres per day (SD=26.75). Prescribed methadone use in the last week ranged from 0-7 days, with the substance being used on an average of 6.90 days per week (*SD=0.74*). In the previous four week period, prescribed methadone use ranged from 2-28days, with methadone being consumed on an average of approximately 27 out of 28 days (M=27.46, SD=3.36).

Approximately 2% of participants (n=8) reported using methadone which had been bought on the street in the last month. Participants who used illicit methadone were found to consume an average of 46.25millilitres per day (SD=24.46) and spent an average of €13.38 per day. Illicit methadone use in the last week ranged from 0-7 days, with the substance being used on an average of 4 days per week (*SD=2.69*). In the previous four week period, illicit methadone use ranged from 2-28days, with methadone being consumed on an average of approximately 16 out of 28 days (M=16.25, SD=10.41).

Table 31: Descriptive statistics for methadone use

	Total	Prescribed Methadone	Illicit Methadone
Participants (n)	175	167	8
Percentage	51.78%	49.41%	2.37%
Mean Age (SD)	34.59 (7.14)	34.75 (7.14)	31.13 (6.19)
Range (use per day)	1-160 ml	1-160 ml	20-100 ml
Mean (use per day)	71.04	72.27 ml	46.25 ml
Std. Deviation (use per day)	27.20	26.75 ml	24.46 ml
Range (price per day)	N/A	N/A	2-20 €
Mean (price per day)	N/A	N/A	13.38 €
Std. Deviation (price per day)	N/A	N/A	7.05 €
Range (frequency last week)	0-7 days	0-7 days	0-7 days
Mean (frequency last week)	6.76 days	6.90 days	4 days
Std. Deviation (frequency last week)	1.11 days	0.74 days	2.69 days
Range (frequency last month)	2-28days	2-28 days	2-28 days
Mean (frequency last month)	26.95 days	27.46 days	16.25 days
Std. Deviation (frequency last month)	4.61 days	3.36 days	10.41 days

Cannabis use. As illustrated in Table 32, approximately 24% of participants (n=82) reported using cannabis in the past month. In total, participants who used cannabis were found to consume an average of 4.83 spliffs per day (SD=4.30). Cannabis use in the last week ranged from 0-7 days, with the substance being used on an average of 4.89 days per week (*SD=2.35*). In the previous four week period, cannabis use ranged from 1-28days, with cannabis being used on an average of approximately 19 out of 28 days (M=19.41, SD=9.44). The majority of participants could not give an estimation of the price of the cannabis used per day. All clients who used cannabis reported smoking as the route of administration.

Table 32: Descriptive statistics for cannabis use

	Total
Participants (n)	82
Percentage	24.26%
Mean Age (SD)	34.05 (7.71)
Range (use per day)	1-20 spliffs
Mean (use per day)	4.83 spliffs
Std. Deviation (use per day)	4.30 spliffs
Range (price per day)	Unknown
Mean (price per day)	Unknown
Std. Deviation (price per day)	Unknown
Range (frequency last week)	0-7 days
Mean (frequency last week)	4.89 days
Std. Deviation (frequency last week)	2.35 days
Range (frequency last month)	1-28 days
Mean (frequency last month)	19.41 days
Std. Deviation (frequency last month)	9.44 days

Alcohol use. As illustrated in Table 33 overleaf, approximately 22% of participants (n=74) reported using alcohol in the past month. Participants who used alcohol were found to consume an average of 13.97 units per day (SD=9.70) and spent an average of €16.56 per day (SD=14.75). Alcohol use ranged from 0-7 days in the last week, with alcohol being consumed on an average of 3.63 days per week (*SD*=2.54). In the previous four week period, alcohol use ranged from 1-28days, with alcohol being consumed on an average of approximately 14 out of 28 days (M=13.95, SD=10.08).

Table 33: Descriptive statistics for alcohol use

	Total
Participants (n)	74
Percentage	21.89%
Mean Age (SD)	35.29 (8.99)
Range (use)	1.44-48 units
Mean (use)	13.97 units
Std. Deviation (use)	9.70
Range (price)	1-100 €
Mean (price)	16.56 €
Std. Deviation (price)	14.75 €
Range (frequency last week)	0-7 days
Mean (frequency last week)	3.63 days
Std. Deviation (frequency last week)	2.54 days
Range (frequency last month)	1-28 days
Mean (frequency last month)	13.95 days
Std. Deviation (frequency last month)	10.08ays

Benzodiazepine use. As illustrated in Table 34, approximately 32% of participants (n=109) reported using benzodiazepines in the past month. In total, participants who used benzodiazepines were found to consume an average of 72.76milligrams per day (SD=99.40). Benzodiazepine use in the last week ranged from 0-7 days, with the substance being used on an average of 5.69 days per week (SD=3.23). In the previous four week period, benzodiazepine use ranged from 1-28days, with benzodiazepines being consumed on an average of approximately 22 out of 28 days (M=22.07, SD=9.24).

Just under 15% of participants (n=49) reported using prescribed benzodiazepines in the past month. Average consumption for participants who had obtained benzodiazepines through prescription amounted to 23.40 milligrams per day (SD=18.50). Prescribed benzodiazepines use in the last week ranged from 0-7 days, with the substance being used on an average of 6.71 days per week (SD=1.09). In the previous four week period, prescribed benzodiazepines use ranged from 8-28days, with benzodiazepines being consumed on an average of approximately 27 out of 28 days (M=26.56, SD=4.368).The types of benzodiazepines used by this group included Zimovane, Diazepam, D5, D10, Dalmane, and Valium.

Approximately 17% of participants (n=56) reported using benzodiazepines which had been bought on the street in the last month. Participants who used illicit benzodiazepines were found to consume an average of 101.73 milligrams per day (SD=113.54) and spent an average of €19.08 per day. Illicit benzodiazepine use in the last week ranged from 0-7 days, with the substance being used on an average of 4.38 days per week (*SD*=2.67). In the previous four week period, illicit benzodiazepine use ranged from 1-28days, with benzodiazepines being consumed on an average of approximately 18 out of 28 days (M=18.07, SD=10.37).The main types of illicit benzodiazepines used included D5, D10, Diazepam, Zimovane, Valium, and Dalmane

Approximately 1% of participants (n=4) reported using a combination of prescribed and illicit benzodiazepines in the last month. Participants who used illicit benzodiazepines were found to consume an average of 212.25 milligrams per day (SD=121.64) and spent an average of €28.50 per day. In this group, benzodiazepines were used every day in the past week and every day in the past 4 weeks. The types of benzodiazepines used by this group included D2, D5, D10, D20, D30, Diazepam and Xanax.

Table 34: Descriptive statistics for benzodiazepine use

	Total	Prescribed Benzodiazepines only	Illicit Benzodiazepines only	Prescribed & Illicit Benzodiazepines
Participants (n)	109	49	56	4
Percentage	32.25%	14.50%	16.57%	1.18%
Mean Age (SD)	33.89 (6.72)	34.51 (6.65)	33.51 (6.90)	31.5 (3.20)
Range (use per day)	2-450 mg	2-100 mg	5-450 mg	40-350 mg
Mean (use per day)	72.76 mg	23.40 mg	101.73 mg	212.25 mg
Std. Deviation (use per day)	99.40 mg	18.50 mg	113.54 mg	121.64 mg
Range (price per day)	N/A	N/A	0-60 €	7-45 €
Mean (price per day)	N/A	N/A	19.08 €	28.50 €
Std. Deviation (price per day)	N/A	N/A	18.35 €	13.68 €
Range (frequency last week)	0-7	2-7 days	0-7 days	7days
Mean (frequency last week)	5.69 days	6.71 days	4.38 days	7 days
Std. Deviation (frequency last week)	3.23 days	1.09 days	2.67 days	0 days
Range (frequency last month)	1-28days	8-28 days	1-28 days	28 days
Mean (frequency last month)	22.07 days	26.56 days	18.07 days	28 days
Std. Dev (frequency last month)	9.24 days	4.68 days	10.37 days	0 days

Steroid use. Approximately 7% of participants (n=25) reported using steroids in the past month. Mean age of steroid users was 28.84 years (SD= 7.14). All participants reported injecting as the route of administration. Participants who used steroids reported using a range of substances including anabolic steroids, Nandrolone, Deca Durbolin, Sustanon, Equipoise, Tri-trenabol, Testorone Propionate, Human Growth Hormones, Trebolone, Masteron propionate, GHRP6, HCG, and Melatonin injections. The majority of steroid users used at least two of these substances in combination.

Cocaine use. As illustrated in Table 35, just over 6% of participants (n=21) reported using cocaine in the past month. In total, participants who used cocaine were found to spend an average of €79.26 per day (SD=49.38). A reliable statistic for use of cocaine in terms of amounts could not be extrapolated as these data were reported differentially. Cocaine use in the last week ranged from 0-7 days, with the substance being used on an average of 2.22 days per week (*SD=2.32*). In the previous four week period, cocaine use ranged from 1-28days, with cocaine being used on an average of approximately 8 out of 28 days (M=8.15, SD=9.16). In terms of route of administration, 10 participants reported injecting, 4 participants reported snorting, and 1 participant reported smoking. Six participants did not report route of administration.

Table 35: Descriptive statistics for cocaine use

	Total
Participants (n)	21
Percentage	6.21%
Mean Age (SD)	34 (8.16)
Range (use per day)	Unknown
Mean (use per day)	Unknown
Std. Deviation (use per day)	Unknown
Range (price per day)	0-200 €
Mean (price per day)	79.26 €
Std. Deviation (price per day)	49.38 €
Range (frequency last week)	0-7 days
Mean (frequency last week)	2.2 days
Std. Deviation (frequency last week)	2.32 days
Range (frequency last month)	1-28 days
Mean (frequency last month)	8.15 days
Std. Deviation (frequency last month)	9.16 days

Mephedrone use. As illustrated in Table 36, just over 6% of participants (n=21) reported using mephedrone in the past month. In total, participants who used mephedrone were found to consume an average of 1.45 bags per day (SD=0.85). Mephedrone use in the last week ranged from 0-7 days, with the substance being used on an average of 2.29 days per week (*SD=2.16*)and spent an average of €36.42 per day (SD=25.09). In the previous four week period, mephedrone use ranged from 1-28days, with mephedrone being used on an average of approximately 8 out of 28 days (M=7.86, SD=7.97). Approximately 95% of participants (n=20) who used mephedrone reported injecting as the route of administration and 5% of participants (n=1) who used mephedrone reported smoking as the route of administration.

Table 36: Descriptive statistics for mephedrone use

	Total
Participants (n)	21
Percentage	6.21%
Mean Age (SD)	36.48 (8.58)
Range (use per day)	0.5-5 bags
Mean (use per day)	1.45 bags
Std. Deviation (use per day)	0.85 bags
Range (price per day)	0-80 €
Mean (price per day)	36.42 €
Std. Deviation (price per day)	25.09 €
Range (frequency last week)	0-7 days
Mean (frequency last week)	2.29 days
Std. Deviation (frequency last week)	2.16 days
Range (frequency last month)	1-28 days
Mean (frequency last month)	7.86 days
Std. Deviation (frequency last month)	7.97 days

Crack use. As illustrated in Table 37, just under 6% of participants (n=20) reported using crack in the past month. In total, participants who used crack were found to spend an average of €68.15 per day (SD=38.94). A reliable statistic for use of crack in terms of amounts could not be extrapolated as these data were reported differentially. Crack use in the last week ranged from 0-7 days, with the substance being used on an average of 2.75 days per week (*SD=2.68*). In the previous four week period, crack use ranged from 1-28days, with cocaine being used on an average of approximately 11 out of 28 days (M=11.4, SD=9.98).

Eighteen participants reported smoking as the route of administration and one participant reported injecting as the route of administration. One participant did not report their route of administration for crack.

Table 37: Descriptive statistics for crack use

	Total
Participants (n)	20
Percentage	5.92%
Mean Age (SD)	34.1 (6.3)
Range (use per day)	Unknown
Mean (use per day)	Unknown
Std. Deviation (use per day)	Unknown
Range (price per day)	25-150 €
Mean (price per day)	68.15 €
Std. Deviation (price per day)	38.94 €
Range (frequency last week)	0-7 days
Mean (frequency last week)	2.75 days
Std. Deviation (frequency last week)	2.68 days
Range (frequency last month)	1-28 days

Amphetamines use. Approximately 1% of participants (n=4) reported using amphetamines in the past month. Mean age of amphetamine users was 35.5 years (SD=9.76).

Other substance use. Approximately 4% of participants (n=14) reported using substances in the past month which were not listed on the questionnaire. Five participants reported using anti-depressants. Types of anti-depressants used included Zispin (n=4), Clonactil (n=1) and Mirap (n=1). Four participants had obtained anti-depressants on prescription and were found to consume an average of 30 milligrams per day (SD=12.24). All participants used prescription anti-depressants 7 days in the last week and 28 days in the last 4 weeks. One participant had obtained anti-depressants illicitly, paying €2 for 30 milligrams of Zispin and using the substance once in the past 4 weeks. Other types of substances used included Olanzapine (n=1), Ketamine (n=1), lidocaine (n=1), rohypnol (n=1) and MDPV (n=1). 1 participant had obtained and was using a substance which they had acquired through the internet but did not know what type of substance it was.

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