

# Harm Reduction for HIV prevention

## Cluster 7 – HIV/AIDS

**Impact** → Reduction in new HIV infections (incidence) among people who inject drugs

**Outcome** → Reduction in risky behaviour (e.g. use of unclean injecting equipment)

### A Background

There is growing consensus that HIV among people who inject drugs (PWID) is spreading more rapidly than among any other risk group. Close to 16 million people globally engage in injecting drug use (IDU), of which 3-6.6 million people are thought to be infected with HIV (Horton & Das, 2010). IDU accounts for close to one third of all HIV infections outside sub-Saharan Africa, thus representing a major driving force of the global HIV epidemic (Horton & Das, 2010). Almost 80% of PWIDs live in developing and transitional countries, with the largest proportion in Asia (Hammet et al., 2008). Nonetheless, the focus on HIV among PWID represents one of the most neglected and thus greatest shortcomings of global HIV prevention efforts. HIV transmission following the use of HIV contaminated injecting equipment represents the second most common means through which HIV is spread. The risk of HIV transmission following the use of a syringe contaminated with HIV lies between 0.63-2.4% (1 in 125 injections) (Baggaley et al., 2006) and is thus substantially higher than the risk of sexual transmission of HIV among serodiscordant heterosexual couples (0.02-0.05%; 1 in 200-5000 sexual acts) (Boily et al., 2009). As IDU represents a major route of HIV transmission globally, it is essential that HIV prevention efforts are targeted towards PWIDs.

Harm reduction for HIV prevention refers to interventions and measures designed with the key outcome of **averting injection related HIV infections**. Besides sharing needles and syringes there are other factors that are associated with rapid transmissions of HIV/AIDS among PWIDs. These include poor knowledge about HIV/AIDS, restricted access to sterile needles and syringes, special situations that create rapid risk-partner change and high probability to have contact with recently infected persons.

Challenges for the implementation of effective and sustainable harm reduction approaches for HIV prevention are **strict drug policies** and the **legal situation** that inhibits high-quality interventions; lasting **discrimination** and **stigma** of PWIDs which result in staying away especially from treatment services; a lack of **harm reduction components** in vaccination or drug distribution programmes; the need to implement measures in **particular settings** like prisons and problems of sustainability of interventions without continuous financial support (Sarang et al. 2006). Furthermore, the variability in risk profiles and diverse risk behaviours represent a main challenge for prevention efforts coming out from both drug and sexual behaviours (Copenhaver et al. 2006).

### Key findings

Harm reduction aims to reduce the spread of HIV among PWIDs and from them to the general population. Needle syringe programs (NSP) are effective interventions that reduce the infection risk associated with unsafe injecting practices. However, only a modest link between NSP and a reduction in HIV incidence has been found. Oral substitution treatment (with methadone or buprenorphine) has shown to positively affect risk behaviours such as injecting drug use, needle sharing and multiple concurrent partnership with decreasing HIV transmission. There is less evidence on condom use. Most effective are multiple-component HIV prevention programs. Peer education programs are associated with increased HIV knowledge, reduced equipment sharing and increased condom use especially when both drug-related and sexual-related HIV risk behaviour is focused.

### B Definitions

Harm reduction refers to the policies, programmers and practices which can lessen the harms associated with the use of psychoactive drugs, accepting that many people around the world are unable or unwilling to stop using drugs (IHRA, 2010). Thus, the primary focus of harm reduction lies in **preventing the social, economic and health related harms** caused by drug use (such as HIV and Hepatitis infections), rather than focusing solely

<sup>1</sup> Relationship in which one partner is positive and the other negative

on the prevention and reduction of drug use itself. Focalizing a dignified and respectful treatment for PWIDs, harm reduction interventions require information that is correctly transferred, the compliance of behavioural aspects, drug abuse treatment and provision of condoms and sterile injection equipment (Des Jarlais & Semaan, 2008). There exist different harm reduction interventions which can be adapted to various contexts and types of drugs and which have been shown to be practical and cost-effective with a high impact on reducing adverse effects relating to drug consumption.

Examples of harm reduction interventions are:

- Needle syringe programmes (NSP)
- Oral substitution treatment (OST)
- Antiretroviral treatment (ART)
- Peer based interventions
- Other behavioural interventions (e.g. social marketing)
- Use of low dead space syringes (LDSSs)

Strategies which use a combination of different harm reduction interventions have been shown to be most effective at reducing HIV transmission among PWID (Degenhardt et al., 2010). Enabling PWID to access harm reduction services is an essential step towards achieving the human right to health and the right of protection from HIV within this high risk group. Nonetheless, harm reduction remains a highly politicised and socially sensitive issue, as PWID remain to be marginalized from society and social programs in most countries worldwide. Further the prevalence of drug use seems to be higher in countries with higher levels of inequalities and lower in countries with less inequality. Knowing this, measures that focus decreasing economic and social inequality could also reduce illicit drug use (Wodak, 2011).

## C Approaches

### C1 Needle Syringe Programs (NSP)

Needle syringe programs work on the principle of providing clean injecting equipment (needles and syringes), in order to decrease the frequency of injections with contaminated equipment and related risks of HIV infection. Various models of NSP exist, ranging from free provision of clean needles and syringes, exchange of used needles and syringes with clean equipment, to sale of clean injecting equipment (typically through pharmacies). These services can be either fixed points or outreach NSP or can take the form of peer distribution among PWID.

**A strong evidence base exists to support the effectiveness of NSP for increasing safe injection and thereby reducing the risks associated with unsafe injecting practices** (Tilson et al., 2007; Palmateer et al., 2010). Evidence based mainly on a large number of prospective studies and review papers shows that participation in multi-component HIV prevention programs that include

needle and syringe exchange is associated with a reduction in drug-related HIV risk behaviour. Such behaviour includes self-reported sharing of needles and syringes, safer injecting and disposal practices, and frequency of injection. Other components in those HIV prevention programs were outreach, risk reduction education, condom distribution, bleach distribution and education on needle disinfection, and referrals to substance abuse treatment and other health and social services. Few studies have measured HIV incidence directly with regards to needle sharing. Where such studies have been conducted, **only a modest link between NSP and a reduction in HIV incidence has been found** (Rhodes et al., 2006), which is likely a result of insufficient coverage and availability of clean injecting equipment. Further modelling shows that using a combination approach of prevention of high coverage NSP and opioid substitution therapy (see C2, below) could lead to a reduction in HIV incidence as high as 20% after five years (Degenhardt et al., 2010).

### C2 Oral substitution treatment (OST)

OST describes a form of oral treatment that is provided to opioid-dependant injecting drug users to prevent the associated risk of transmission of blood-borne viruses such as HIV and hepatitis.

A Cochrane systematic review conducted by Gowing et al. (2008) involving twenty eight studies to review the effectiveness of methadone maintenance treatment (MMT) in reducing HIV risk behaviour showed that **MMT significantly reduces the frequency of IDU overall, as well as the sharing of injecting equipment**. Further, the review shows that **MMT is associated with a reduced number of reported sexual partners and exchange of sex for drugs or money among PWID. MMT appears to have little effect on the frequency of condom use**. The review concludes that **MMT leads to a reduction in risk behaviours among PWID which in turn appears to result in reductions in HIV infections overall**. The authors thus advocate the use of MMT as an effective method of HIV prevention among PWID and the community at large. In addition to the raised points methadone maintenance induces societal benefits such as reduced crime rates and improved social functioning (Hammet et al., 2007).

There is strong evidence from Cochrane reviews to support the effectiveness of methadone (Mattick, 2009) and buprenorphine (Mattick, 2009a) for treating opioid dependence and the World Health Organisation (WHO) has listed these two substances as essential harm reduction drugs. **Pharmacotherapy for treating cocaine or amphetamine dependence has proven to be ineffective to date** (Minozzi et al., 2008). A Cochrane review further showed the use of oral naltrexone to be ineffective in treating heroin dependence (Minozzi et al., 2006).

### C3 Peer based interventions and other behavioural interventions

According to Medley et al. (2009) Peer education interventions are defined as the “*sharing of (HIV/AIDS) information in small groups or one to one by peer matched, either demographically or through risk behaviour, to the target population.*” Therefore to target peer groups and whole communities are central rather than individual approaches. People in such programs are characterized through similar life circumstances (age, health status, level of education etc.) (Maticka-Tyndale & Barnett, 2009). Generally peer based interventions and other behavioural interventions focus on increasing awareness, transmitting knowledge and inducing behaviour change (Medley et al., 2009). Meta analyses show that most behavioural risk reduction interventions include components such as HIV/AIDS education (90%), condom use skills (69%), self-management skills as well as both drug-related and sex-related risk reduction (Copenhaver et al. 2006).

Meta-analyses have shown that peer education programs are statistically significant associated with **increased HIV knowledge**, **reduced equipment sharing** among PWIDs and **increased condom use** (Medley et al., 2009). Increased HIV knowledge is the most frequently assessed outcome with a lot of positive changes reported (Maticka-Tyndale & Barnett, 2009). According to studies, peer based interventions and other behavioural interventions are probable effective concerning change of norms, skills, attitudes like condom use self-efficacy as well as increased social capital for the peer educator and decreasing STD symptoms. There is insufficient evidence on the effect of interventions on abstinence and the number of sexual partners. Changing sexual behaviour of youth that are already sexually active may thus be unlikely. Meta- analyses show that the interventions’ effects on condom use tended to decay over time (Copenhaver et al. 2006). The biological impact of interventions (e.g. the effects on IV incidence) remains unclear (Medley et al., 2009).

Crucial for intervention effectiveness and program success are the **selection and recruiting, training and supervision** of peer educators, (Medley et al., 2009), a thorough **needs assessment** for program design and **participation** of the target community. To ensure the sustainability of the program, it is important to aim at the **empowerment of the community**, to develop **independent structures** and procedures and to **include further organizations** (i.a. NGOs) (Maticka-Tyndale & Barnett, 2009). Success is more likely when targeting drug risk and sexual risk behaviours together, building on valid theories and methods for behavioural change such as the social-cognitive theory, the theory of diffusion of innovations or the trans-theoretical model of behaviour change (Des Jarlais & Semaan, 2008).

### C4 Low dead space syringes (LDSSs)

As the likelihood of HIV infection following exposure to an infected syringe is dependent on the amount of blood retained within the syringe, several studies have investigated the effects of using a high dead space syringes (HDSS) versus low dead space syringes (LDSS) on HIV transmission risks. While LDSS usually consist of a one piece syringe with a non-detachable needle, HDSS are made up of a detachable needle which is connected to the syringe barrel. Thus, the volume of liquid that is retained in a HDSS following use can be up to 100-fold the volume retained in a LDSS (Zule et al., 2010). Consequently, longer periods of survival of the HI-virus have been reported within HDSS versus LDSS (Abdala et al., 1999).

A systematic review commissioned by the WHO to examine the effectiveness of using LDSS versus HDSS to reduce HIV transmission in PWID which included two cross-sectional studies revealed a 71% (RR 0.29; 95% CI: 0.18–0.46) reduced likelihood of being HIV infected among PWID who used LDSS (WHO, 2012). However, due to the limited number as well as the low quality of included studies, WHO guidelines make only a conditional recommendation for the use of LDSS within NSPs. The investigation of technical solutions such as the use of LDSS over HDSS has been described as a potentially important intervention by the WHO and should be explored further in future research.

## D Methodology

A literature search for systematic reviews and controlled studies was performed covering the time period 1998–2012. The literature search was limited to PubMed and homepages of selected organizations such as WHO. The following search terms have been used for the PubMed search:((harm reduction) OR (needle exchange) OR (opiate substitution) OR (methadone)) AND (HIV OR AIDS) AND (review OR (meta-analysis) OR (practice guideline)).

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## G Abbreviations, terms

ART = Antiretroviral treatment;  
IDU = Injecting drug use;  
LDSSs = Low dead space syringes;  
NSP = Needle syringe programmes;  
OST = Oral substitution treatment;  
PWID = People who inject drugs;  
MMT = Methadone maintenance treatment.

Condom use; HIV prevention; HIV/AIDS; harm reduction; peer based interventions; safe injection equipment; needle sharing; risk behaviour; HIV knowledge, opioid dependence.

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