

Operational study

‘Identifying criteria of effectiveness and comparative analysis of projects aimed at HIV prevention among high-risk groups by sub-grantees of the International HIV/AIDS Alliance in Ukraine’

Final report

Executive summary

Study executed by Alcohol and Drug Information Center (ADIC-Ukraine)

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Study overview

Study tasks

To overview effects of four components of project work with vulnerable groups:

1. Work with injection drug users
2. Work with female sex workers
3. Community center
4. Voluntary counseling and testing

Study blocks

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Introduction

An overall approach used in this study is based on the following assumption. Effectiveness assessment was based on impact and outcome level indicators.

Impact level results (risk of being infected, new cases, incidence, prevalence, and dynamic or all these indicators in time) were based on data from routine and sentinel surveillance, HIV-testing results from behavioral surveys.

Outcome level results (behaviors related to risks of HIV-infection) were based on behavioral surveys and surveys conducted by projects.

Output level indicators (client involvement and retention in projects) were not considered as measures of effectiveness, but as intermediary variables between process characteristics and outcome/impact measures.

Those process characteristics which were found to be associated with the effectiveness measures were considered for further recommendations as criteria for project evaluation.

Report structure

In sections 1-13 analytic results of the above-mentioned data are presented. In the executive summary results are summarized, confronted with the literature, recommendations and criteria for project evaluation are presented.

Executive summary structure

The text of executive summary is structured based on four components of HIV prevention projects aimed for evaluation:

- Prevention of HIV-infection among injection drug users,
- Prevention of HIV-infection among female sex workers,
- Voluntary counseling and testing,
- Community centers.

For each of these four components where appropriate information is presented in the following subsections:

- results of available data analysis,
- relevant literature,
- recommendations, and
- criteria proposed for projects evaluation.

Analysis and proposed criteria are based on the assumption that the provided interventions are characterized by specific features, some of which can be associated with higher intervention effectiveness expressed in terms of behavioral changes and diminished risk of acquiring HIV.

As many types of HIV prevention interventions aim to exert their influence through the modification of sexual and drug use risk behaviors, it is important to be able to determine if the interventions actually do modify the behaviors they purport to change. [¹]

Looking at the bulk of peer-reviewed publications and especially those eligible for inclusion in systematic reviews, the criteria for adequate outcome measures are related to measuring behavioral and biological outcomes, or specifying the following range of results: 'Outcome measures included: (i) changes in safe sex practices (abstinence, condom use, limitation of sexual partners, avoidance of casual sex), (ii) knowledge about HIV/AIDS transmission and prevention methods, (iii) perception of HIV/AIDS/STD risks, (iv) self-efficacy with regard to condom negotiation and refusal of sex, (v) uptake of voluntary counseling and testing (VCT), and (vi) reduction in incidence of HIV/AIDS/STDs.' [²]

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Injection drug users

Results of available data analysis

To analyze HIV epidemic among injection drug users and effectiveness of measures to control this epidemic, data from different sources were analyzed: routine surveillance data, sentinel surveillance data, surveys conducted by projects, behavioral surveys, SyrEx data.

Results with regard to impact indicators: the level of HIV epidemic among IDUs and its determinants

Surveillance data

According to the HIV epidemic spread in 1996-2006 among IDUs, territories within Ukraine were divided into groups with different time trends of HIV-prevalence. Though there are territories with long-term and newer epidemics, and some control measures are better visible with long established epidemics and well-built infrastructures for their control, yet we see some territories with young but well-controlled epidemics and territories with old but not controlled epidemics.

The **first group** of the territories is characterized by low correlation between year and HIV prevalence among IDUs. Approximating straight line is close to horizontal. These territories may be considered as ones in the plateau phase of the HIV-epidemic. Territories of this group have different levels of HIV prevalence among IDUs. Three territories (Luhansk oblast, Kharkiv oblast, and Chernivtsi oblast) have comparatively low HIV prevalence 4-7%. Four territories of southern part of Ukraine (AR Crimea, Sevastopol city, Odesa oblast, Mykolaiv oblast) have much higher prevalence of 12-17% with Mykolaiv oblast, where about 25% of IDUs are HIV-infected, leading this group

The second group and the third group show upward trend of the HIV-prevalence among IDUs.

The second group consists of three territories of eastern region (Zaporizhzhia oblast, Donetsk oblast, Dnipropetrovsk oblast), and Volyn oblast. These all have average speed of HIV spread among IDUs, and the average estimates for the whole country also fall into this group. Yearly growth of HIV-prevalence among IDUs is 2-10‰, on average 8‰. The calculated year of the epidemic initiation is likely to be the true one (1987-1990). Number of new cases of HIV among IDUs is within 10 per 100 existing HIV-positive IDUs per year. The actual HIV-prevalence level maybe rather low (like 3-5% in Zaporizhzhia oblast) or up to 18% in other territories listed above in this paragraph.

The third group is characterized by faster HIV spread among IDUs. It varies from 9 to 33‰ per year, 16‰ on average. Estimated year of HIV-epidemic initiation is between 1992 and 1999. This may be either really new local epidemic, as the figures of prevalence are close to zero at the beginning of 1996-2006 time span, or the exponential phase of an epidemic which started earlier. Based on estimates for 2000, per every 100 HIV-positive IDUs 12-17 new infected people appear per year in Kherson, Khmelnytskyi, Poltava, Cherkasy, Zhytomyr oblasts and Kyiv city. 22-24 new cases per 100 HIV positive appeared in 2000 in Kirovohrad and L'viv regions, and 67 per 100 appear in Ivano-Frankivsk. These territories are definitely characterized by poor control measures.

Sentinel data

Sentinel data among IDUs show that younger IDUs have higher risk of being infected, which can be caused by the additional risky practices in this age group. Among injection drug users, HIV-prevalence was significantly higher in Crimea, Zhytomir, Kiev, Mykolaiv, Odessa, Poltava

(based on comparison with Cherkassy as reference group). Significant increase of HIV-prevalence between 2005 and 2006 was observed in Vynnytsya, Volyn regions and Kiev city, significant decrease was observed in Mykolaiv region.

Behavioral surveys

Illnesses known in acquaintances

Analysis was based on data of 2002, 2004, and 2006 IDU behavioral surveys. Diseases of acquaintances in this analysis were used as proxies for the possible health problems in the respondents themselves.

The following associations were revealed.

For AIDS, tb and hepatitis it was found that in later surveys smaller proportions of IDUs reported having acquaintances with such health problems. This may reflect effective control measures. While no trend was seen for HIV in acquaintances, this can be attributed to effective treatment of those living with HIV.

For all health problems except tuberculosis, it was found that respondents in smaller settlements were less likely to report having acquaintances with HIV, AIDS or hepatitis. This may be accounted for by either better diagnostics in larger cities or by more concentrated narco-scene.

Students and people with university education are less likely to have acquaintances with HIV or AIDS, those unemployed and having 'other types of employments' are more likely to have acquaintances with AIDS, tuberculosis and hepatitis.

Longer duration of drug use is associated with higher risk of having friends with HIV, TB, Hep, but not AIDS.

Multiple use of same syringes and not processing them is expectably associated with higher risks, while even washing syringes with boiled water may have protective role against acquiring HIV.

Special attention should be paid to the fact that using disinfectants to process used syringes was associated with higher risk of AIDS among acquaintances. Different explanations of such associations are possible. First, having acquaintances diagnosed with AIDS may urge IDUs to process their syringes. Second, it is worth considering if some type of disinfectant increases IDUs vulnerability to develop AIDS.

Risks are clearly associated with sharing of syringes in general and number of those who participate in sharing. The highest risk per participant of sharing is found for hepatitis (28% odds per person), and somewhat lower for HIV/AIDS (12-14%). This seems quite reasonable from the point of view of viral biology.

Being registered in narcological dispensary is associated with higher risk of having acquaintances with HIV, AIDS, and hepatitis. Two explanations are most obvious: first, narcological dispensaries are the places where these problems get diagnosed; second, they are places of concentration of people with corresponding problems as well.

HIV-prevalence in IDUs

According to several sources of data, HIV-prevalence among IDUs is on the rise in Ukraine.

As found in repeated cross-sectional behavioral surveys of IDUs in 2001-2006, with region, gender, age, education, marital status, occupation and place of living controlled, prevalence in 2006 was significantly higher than in 2002 and 2004.

Unexpectedly, while with no significant differences in bivariate association, with other variables controlled, females have got higher figures than males.

Increased duration of injection drug use was on average associated with 1,059-fold higher risk of infection per year.

Age and education were not significantly associated with risk of infection.

HIV-status correlates were analyzed based on 2007 survey as well. Higher prevalence was found in Crimea, Mykolaiv (69%), Cherkassy (51%), lower prevalence in Kharkiv (6%), Kirovograd (7%), Lugansk (10%). Understandably, prevalence grows with age.

Higher prevalence was found in females. This finding is consistent with findings from other behavioral surveys presented above and is probably due to combined ways of transmission, which are more intensive in case of commercial sex.

Compared to other options of marital status, the highest prevalence is typical for those who are married but do not live together with a partner.

Education and employment: People with university education and students of universities have the lowest prevalence. Unemployed, housekeepers and disabled have the highest prevalence.

Several drug-taking correlates were found. The duration of injecting drugs is associated with prevalence. Age of the first injection is important: the risk is higher if the first injection happened before 18 years old. Those IDUs have higher prevalence who report using in last 30 days opiates, tranquilizers, and drug mixtures. Higher prevalence is observed in those IDUs who report to inject opiates, cannabioids, and drug mixtures in the last 30 days.

Higher risk of HIV infection was associated with several types of injecting practices: injection of a filled syringe, using common instruments during the last injection, use of common vessels for drug preparation, use of ready drug solution.

Syringe processing related risks included not processing syringes at all, and rinsing with tap water. Several options were associated with reduced risk: boiling decreases risk, bleach use decreases risk, and spirits use decreases risk

Several sex-related risks were found as well. Higher risk was found in those who do not remember the age of the first intercourse and those who do not remember if the condom was used during the last intercourse. The more commercial sex partners were reported the higher the risk. If condom was not used within the last intercourse, higher risk was associated with the following reasons: there was no condom available, condoms were considered too expensive, the respondent was intoxicated with alcohol.

Knowledge-related correlates: those who do not know or are not sure that HIV is transmitted through needles are more likely to be HIV infected.

Testing issues, associated with higher risk of HIV-infection:

- those who have no opportunity to get tested confidentially are more likely to be infected
- feel that the schedule of the testing facility is not convenient
- are not satisfied with the personnel attitude to them

HIV-incidence

Risks and protective factors of newly acquired HIV-infection was assessed based on the 2007 IDU survey data, which provided a group of respondents who reported earlier results of HIV-test and were tested in combination with the survey. This analysis allowed listing several risk factors, protective factors and effective interventions.

Risk factors of newly acquired HIV-infection

- opiates use

- injecting cannabioids
- getting syringes filled with drugs
- collecting ready (prepared by others) drug solution into the syringes
- having more than 4 commercial sexual partners

Protective factors

- knowledge that it is possible to avoid HIV if having sex with only one not infected partner
- knowledge that HIV may be transmitted from the infected mother to the baby while breastfeeding
- condom use

Interventions which could be effective in limiting HIV epidemic spread

- applying to NGOs involved in harm reduction projects
- peer counseling
- getting information with regard to STDs prevention
- getting information with regard to HIV prevention
- applying for help(trust) services
- distribution of condoms among IDUs is effective
- providing testing opportunities

Limitations of the analysis are due to small sample size and difficulties in controlling for the third variables.

Results with regard to risky behaviors among IDUs and their determinants

IDU survey by projects:

On average, projects which participated in the survey are likely to influence clients' misconceptions regarding the HIV ways of transmission and symptoms of infection. They also are likely to decrease the risk of sharing needles and syringes.

No impact of the projects on the integrated level was found on the extent of sexual risky behaviors.

Issues related to sexual way of HIV transmission and injection drug use in general are to a smaller extent addressed by the projects which took part in the survey.

The survey did not reveal any impact of project involvement on the average on using condoms among IDUs.

Clients of most of the projects did not show safer sex practices after being involved in the project compared to new clients. Only in three regions (Kirovograd, Rovno and Cherkassy) significant favorable difference among new and old clients was revealed

Behavioral surveys

It was found that a small percent of survey participants have already stopped injecting drugs. Compared to others, those people were more socially adjusted: people in full-time jobs and educational institutions, with complete secondary or higher education, in official marriage.

New, incident cases of injecting drug use are more typical in younger respondents, students and females, especially those living in Donetsk, Odessa, Rovno, Sumy, Kherson regions with Crimea as reference group. Trends in samples surveyed in Kiev and Cherkassy are more favourable: with smaller proportion of incident cases.

Injecting practices

IDUs are more likely to ***never share syringes*** if they are more educated, fully employed, living in cities. Older IDUs are more likely to never share syringes than younger ones. However, the larger the duration of drug use, the lower the percentage of those who do not share syringes.

Those who are registered in narcological dispensaries are more likely to share syringes.

Females are more likely to use ***new syringes*** for every injection than males. There is some age-associated trend with younger IDUs more likely using new syringes than older ones. Certain regions show better results than the others, like Volyn, Zaporizhya, Mykolaiv, Odessa, etc.

Syringe processing

Responses about not processing syringes are more likely in older IDUs, in those who recently started using drugs, who have incomplete university education.

Washing syringes with tap water is more likely in IDUs with longer duration of drug use, unemployed or partly employed, with primary education. This is less likely in students.

Washing syringes with boiled water is more likely in those who are older, and are not new IDUs, with primary education, unemployed or partly employed, living in villages.

Boiling syringes and needles is more likely in younger better educated IDUs. This type of response is increasing in time.

Washing syringes with soap or other means is more likely in those partly employed or unemployed.

Washing syringes with disinfectants is decreasing in time. It is more likely in men with secondary education.

Washing syringes with bleach is growing in time; it is more likely in those with incomplete university education and those partly employed or unemployed, in those with long term drug use.

Washing syringes with spirits increases in time as well. It is more likely in those who recently started using drugs, but not within one year.

Filled syringes use

Harm reduction projects may be effective tools in preventing filled syringes use; at the same time, just distribution of syringes for free does not solve the problems. Projects have to find other ways to address the issue. They have enough resources for that, as fully satisfied clients significantly less likely use filled syringes.

Condom use by IDUs

Condoms are more likely used by younger IDUs, those not in permanent partnerships, and those who were born elsewhere and came from other cities. No gender difference was found in IDUs with regard to condom use.

High risk groups of less frequent condom use:

- Males who use alcohol, especially daily, are less likely to use condoms
- The longer drugs are used, the less likely condoms are used
- For males: the earlier injecting started, the less likely is condom use

- Females who use drugs for narcosis less likely use condoms
- Combining drugs in males is associated with lower rates of condom use
- The more frequently male IDUs inject drugs, the less likely they use condoms.
- Those who visit psychiatric hospital are less likely to use condoms

Interventions

Condom distribution effectively increases condom use, equally for males and females. Those who get condoms for free are more likely to use them than those who purchase condoms.

Those females who visited venerologist within 3 months and those who were in STD diagnostic are more likely to use condoms.

Those who have ever applied to harm reduction NGOs are more likely to use condoms.

- Peer-to-peer counseling is associated with higher condom use
- Materials on STDs prevention are effective
- Materials on HIV prevention are effective
- All other materials and media materials are effective for condom use as well
- Knowledge generally is not associated with condom use. Only knowledge about way to infect babies is associated with higher condom use.

Main findings

- Overall HIV-prevalence among IDUs is growing. Yet there are regions with rather well controlled HIV epidemic among IDUs
- HIV-prevalence among female IDUs is higher than that among male IDUs
- Unemployed, partly employed, lower educated IDUs, those who started injecting when being underage, alcohol drinkers, those using drugs more frequently constitute groups of excess HIV risk
- Using filled syringes and collecting earlier prepared solutions for injecting became more important ways of HIV transmission than syringe sharing. Syringe exchange programs are not effective to block this way of transmission.
- The study again confirmed effectiveness of condom use and condom distribution programs in HIV-prevention among IDUs
- Condom distribution effectively increases condom use, equally for males and females. Those who get condoms for free are more likely to be using a condom during the last intercourse than those who purchase condoms.
- Commercial sex is an important risk factor of HIV-infection for IDUs
- Projects are more likely to succeed in reducing sharing practices and less likely to influence sexual risky behaviors and to enhance condom use.
- Several interventions and prevention programs were shown to be effective for HIV-prevention among IDUs: harm reduction projects, peer counseling, information with regard to STDs prevention, providing information with regard to HIV prevention, help (trust) services, distribution of condoms for free among IDUs, providing testing opportunities

Relevant literature

In the US, injecting drug use in the 1990s was considered to account for more than one-third of new AIDS cases, and for as many as three-quarters of new HIV infections [3]. Specific behaviors

associated with drug use that are *risk factors for HIV transmission* include shared use of drug injection equipment, and unprotected vaginal or anal sex with multiple sexual partners [4]. *Strategies for HIV risk reduction* among drug users include drug treatment, educational interventions, and HIV counseling and testing programs [5].

However, researchers found that there are more *extensive needs of drug users*, and the obstacles to risk reduction through health and social services since risk behaviors are influenced by social and economic circumstances. *Comprehensive interventions* may have a greater impact on HIV risk reduction than interventions that only address HIV risk behaviors. In addition, injection drug users, as compared to people who need to reduce their homo- or hetero-sexual risk behaviors, need to develop *skills in reducing two types of risk behaviors*, drug-related and sex-related. Drug users may thus need additional personal and coping skills to do that.[6]

Outreach-based interventions

Accumulated evidence from observational and quasi-experimental studies [7] strongly indicate that outreach-based interventions have been *effective in reaching out-of-treatment IDUs*, providing the means for behavior changes and inducing behavior change in the desired direction. The majority of the published evaluations showed that IDUs in a variety of places and time periods changed their baseline drug-related and sex-related risk behaviors following their participation in an outreach-based HIV risk reduction intervention. More specifically, the publications indicate that IDUs regularly reported significant follow-up *reductions in drug injection, multiperson reuse of syringes and needles, multiperson reuse of other injection equipment* (cookers, cotton, rinse water), and crack use. The studies also show significant intervention *effects in promoting entry into drug treatment and increasing needle disinfection*. Although drug users also significantly reduced sex-related risks and increased condom use, the majority still practiced unsafe sex. One quasi-experimental study found that reductions in injection risk led to significantly *reduced HIV seroincidence* among outreach participants. Few investigators looked at dosage effects, but two reports suggested that *the longer the exposure to outreach-based interventions, the greater the reductions in drug injection frequency*. The findings provide sound evidence that participation in outreach-based prevention programs can lead to *lower HIV incidence rates among program participants*.

Pooling data from multiple sites, the investigators found the *enhanced forms of outreach* had significantly greater impact on injection-related risk behaviour, but the absolute differences between enhanced and standard forms were very small. The results of these studies are consistent with the conclusions of the US National Institutes of Health Consensus Development Conference on HIV Prevention [8], which found outreach to be an effective approach to preventing HIV in IDU. [9]

Needle-exchange programmes

Needle-exchange programmes (NEPs) are potentially the key strategy for containing the spread of HIV infection among injecting drug users, but their implementation has been limited by uncertainty about their effectiveness. A convincing review, particularly in view of its world-wide coverage [10] used an ecological study design to compare changes over time in HIV seroprevalence in injecting drug users worldwide, for cities with and without NEPs. To conduct the analysis, the published reports of HIV seroprevalence in injecting drug users were identified, and the unpublished information on HIV seroprevalence for injecting drug users entering drug treatment in the USA between 1988 and 1993 was obtained from the Centers for Disease Control and Prevention. Details of the implementation of NEPs were obtained from published reports

and experts. For each of the 81 cities with HIV seroprevalence data from more than 1 year and NEP implementation details, the rate of change of seroprevalence was estimated by regression analysis. The average difference in this rate for cities with and without NEPs was calculated. On average, seroprevalence increased by 5.9% per year in the 52 cities without NEPs, and decreased by 5.8% per year in the 29 cities with NEPs. The average annual change in seroprevalence was 11% lower in cities with NEPs (95% CI -17.6 to -3.9, $p = 0.004$). A plausible explanation for this difference is that ***NEPs led to a reduction in HIV incidence among injecting drug users.***

In addition to considering biologic outcomes reviewed above, other researches focused on ***behavioral outcomes.*** [11] Seven of the 9 studies investigating the prevalence of needle and syringe sharing practices among IDUs found that ***NEPs were effective at reducing the number of IDUs sharing needles and syringes.*** One study found a non-significant difference in needle sharing between frequent and non-frequent attenders. However, there was a significant reduction in the number of women IDUs sharing needles and syringes. One study found that, among hepatitis B and hepatitis C susceptible IDUs, a significantly higher proportion of regular NEP users reported sharing syringes than IDUs who had never used the NEP.

Three of the 5 studies investigating the prevalence of sharing drug preparation equipment found that ***NEPs were effective at reducing the number of IDUs sharing drug preparation equipment.***

Two studies investigating the number of times a needle was used before being discarded. Both found that the ***number of times a needle was used decreased among NEP users.*** One study investigated ***the practice of passing on used needles or syringes to another user and found that the NEP was effective*** at reducing this practice.

Two of the 3 studies investigating the ***frequency of injection found that the frequency reduced in NEP users;*** the other study reported a significant increase in injection frequency.

Similarly to our results regarding differences in behaviors of HIV-positive and HIV-negative IDUs, one study reported higher rates of HIV infection in frequent attenders at NEPs than in non-frequent attenders. The other study reported that baseline ***HIV seroprevalence was significantly higher at enrolment for attenders than non-NEP attenders.*** Two studies indicated that NEP participation has no apparent protective effect against the hepatitis B virus.[12]

Drug abuse treatment as an HIV prevention strategy

Treatment programs, to the degree that they are effective, are believed to reduce the risk of HIV transmission by increasing abstinence from drug use and/or injection [13].

A review of drug abuse treatment as a means of preventing infection with HIV was published in 2000.[14] Thirty-three studies, with an aggregate of over seventeen thousand subjects, were published in peer-reviewed journals from 1988-1998. Research on the utility of drug abuse treatment as an HIV prevention strategy has focused primarily on methadone maintenance treatment (MMT) rather than other modalities such as residential or outpatient drug-free treatment. Recent research provides clear evidence that ***MMT reduces HIV risk behaviors, particularly needle-use, and strong evidence that MMT prevents HIV infection.*** There is less definitive evidence that MMT reduces needle-sharing and unsafe sexual behavior, or that other treatment modalities prevent HIV infection. Future research should take into account patient self-selection processes and investigate other treatment modalities for heroin and stimulant abuse to determine their effects on HIV risk behaviors and HIV infection.

Oral substitution treatment for injecting opioid users reduces drug-related behaviours with a high risk of HIV transmission, but has little effect on sex-related risk behaviours.^[15]

Results of intervention studies indicate that ***many drug users have reduced their drug-related risk behaviors, while a sizeable proportion continue to participate in high risk sexual behaviors.***^[16]

According to the studies conducted in Russia, among female injection drug users, up to 50% are thought to participate in commercial sex work ^[17, 18].

Interventions addressing sexual behaviour in drug users

In a review aimed to evaluate the evidence for the effectiveness of social and behavioural interventions to promote men's sexual and reproductive health, and to answer the question 'Which interventions are successful in reducing the transmission of sexually transmitted infections (STIs) including human immunodeficiency virus (HIV) in heterosexual men?' the results of studies conducted among Drug users receiving treatment, Injecting drug users out of treatment, Men in the workplace, Patients of sexually transmitted disease clinics, Students, etc were overviewed. It was concluded that no single intervention could be identified as being more effective than others in reducing the incidence of STI and HIV in heterosexual men.^[19]

The review which evaluated psychosocial HIV prevention interventions with respect to sexual behaviour in drug users ^[20] concluded that a limited number of interventions were effective in changing sexual risk behaviour. The authors' cautious conclusions reflect the limited evidence from a small number of studies. The review focuses specifically on the relation between intervention methods found to be effective and the underlying theory. The results show that a limited number of interventions were effective in changing sexual risk behavior among drug users. ***More successful programs featured several of the following elements: use of multiple theories and methods, inclusion of peers and rehearsal of skills.*** Moreover, the community-level interventions showed the importance of sustainability. The ***most successful intervention methods were modeling, skill building and social support enhancement.*** These methods are generally derived from the Social-Cognitive Theory or the Diffusion of Innovations Theory. Future HIV/AIDS interventions should build on the strengths discussed. Evaluations of interventions should be designed to facilitate comparison, using standardized and specific behavioral outcomes as well as standardized and preferably long-term follow-up levels, and should also evaluate the impact of programs at a psychosocial level to examine whether or not the theoretical methods on which a program was based were actually effective in changing the psychosocial factors targeted and why.

Condom use

The ***consistent use of condoms results in 80% reduction in HIV incidence.*** Consistent use is defined as using a condom for all acts of penetrative vaginal intercourse. Of the 4709 references that were initially identified, 14 were included in the final analysis. There were 13 cohorts of "always" users that yielded an homogeneous HIV incidence estimate of 1.14 [95% C.I.: .56, 2.04] per 100 person-years. There were 10 cohorts of "never" users that appeared to be heterogeneous. Because the studies used in this review did not report on the "correctness" of use, namely whether condoms were used correctly and perfectly for each and every act of intercourse, effectiveness and not efficacy is estimated. Also, this estimate refers in general to the male condom and not specifically to the latex condom, since studies also tended not to specify the type of condom that was used. Thus, ***condom effectiveness is similar to, although lower than, that for contraception.***^[21]

Studies to measure effectiveness of HIV-prevention interventions among IDUs in Eastern Europe and FSU

Countries of the former Soviet Union

The majority of the studies found are related to IDUs, reflecting the possibilities to implement harm reduction (HR) activities as they can be cost effective, even when IDU HIV prevalence and incidence is high. Moreover, increased and consistent allocation of resources to such projects could reduce the pace of the HIV epidemic in Eastern Europe.

A study conducted by Kumaranayake et al.^[22] in Belarus, demonstrates the above stated using economic evaluation methods. Similar conclusions were made by Otiashvili et al.^[23] in a study conducted among IDUs in Tbilisi, Georgia: “The results of the study suggest a visible potential benefit to drug users and communities that could be gained through the wide scale implementation of harm reduction programs in Georgia”.

Although the evidence indicates the effectiveness of such activities, there are other FSU barriers according to Tkatchenko-Schmidt et al.^[24] The authors stressed the importance of actions needed to achieve a successful scale-up in HR programs in Russia and countries with similar political context: (i) a strategic approach to HR advocacy, targeting neutral and indecisive stakeholders; (ii) more systematic evidence on HR effectiveness and cost-effectiveness in the local context; (iii) HR advocacy targeting law enforcement agencies and the Russian Church; and (iv) aligning best international HR practices with the objectives of local policy-makers, practitioners and service-users.

In fact, the coverage of needle and syringe programs (NSP) in Central, Eastern Europe and Central Asia is considered to have suboptimal levels of implementation according to Aceilas et al.^[25], the study presents data from 213 sites in 25 countries, indicating the need for strategies to increase coverage of NSP as “urgently required”. The authors also stress the need for research to better understand how NSP can contribute to better syringe coverage among IDUs.

Studies conducted in Ukraine

A recent study conducted among IDUs in Ukraine (Odessa)^[26] aimed to estimate the cost effectiveness of a harm reduction intervention and how the cost effectiveness changes if the intervention were scaled up to 60% as recommended by WHO/UNAIDS. The results show the HR in Odessa is cost-effective, but at the current coverage (between 20 – 38%) is unlikely to reduce IDU HIV prevalence in the short term (scaling up the intervention to reach 60% of IDUs remains cost-effective and reduces HIV prevalence by 4% over 5 years). More resources are needed to increase coverage and reduce HIV prevalence.

Analytical report “Monitoring of IDUs’ behavior as component of 2nd generation surveillance” Kiev, 2005, State institute for family and youth problems. Ukrainian institute for social research.

The research was conducted based on the analysis of survey data of 3542 IDUs carried out in 2004 in 14 regions of Ukraine in those settlements where there are harm reduction projects.

Among the main research goals, the following were mentioned:

- Securing data collecting in correspondence with the indicators from the list of ‘National indicators of effectiveness monitoring and evaluation of the measures which guarantee control over HIV/AIDS epidemic;

- Evaluation of the impact on the target groups of the prevention, curing, nursing and support programs.

The information about program effectiveness and impact evaluation is given in report chapter 6.6 and 4.4.

In the report conclusions (point 19, paragraph 1, page 59) it's said: *“Effectiveness of using preventive programs is confirmed by the fact that the number of cases of shared using syringes and needles has decreased by 1,5 times if compared with the year 2002. Thus, it's sensible to implement those preventive programs that are aimed at this aspect of injecting drug use”*.

This conclusion is apparently based on data from chapter 6.6, where it's mentioned (pg 36): *“half of IDUs use new syringes for every injection, which is almost 1,5 higher than several years ago. This result can be considered an important achievement of preventive programs implemented in the country”*. In table 6.6.8, data is given to show that 49,9% of respondents use new syringes for every injection. For comparison, perhaps (there's no direct link in text), data of the 2002 survey is used, which was conducted in 14 cities of Ukraine among 1997 IDUs. It's worth mentioning that sample was quite different, as 7 out of 14 regions where the survey was conducted in 2004 in 2002 were not included, - so there arises a question of propriety of comparison. In the report of the 2002 survey (Table 3.6.7, pg 41) it's mentioned that a new syringe for every injection was used by 43% respondents. Moreover, in the same table 3.6.7 the data of the 2001 survey is given, which provides that a new syringe was used by 54% of those respondents who gave an answer to this question. This data allow to cast doubt over the conclusion about fundamental decrease of case of joint usage of syringes and needles during the period, and, consequently, the conclusion about the effectiveness of the preventive programs.

An evidence for the same is provided in paragraph 3 of point 19 of the 2004 report (pg 59), which says *“It can be concluded that no dynamic changes in usage of syringes and needles that were previously used by another person is observed”*, which is a direct contradiction to the conclusions of paragraph 1 of the same p.19, cited above.

In chapter 4.4 an attempt is made to evaluate the impact of the preventive program on IDUs' level of knowledge and behavior by revealing the relation between the length of usage of these programs' services and practicing safer behavior. Judging from the answers to the question about using somebody else's syringe (picture 4.4.1), the situation changes for better: among those who use the program's services under one year, there are 16 % of such people, and 9% among those who use the program's services for 2-5 years. However, these differences may be caused by differences in duration and experience of drug use, as well as many other variables which were not controlled in this research. At the same time, portion of those IDUs who always use a new syringe for injections, hardly changes with the increase of duration of program services usage (picture 4.4.2). What for those who always uses a condom during a sexual intercourse (both for reward and with a stable partner), the portion of such respondents is even lower in long-term users of preventive programs than in those who uses the services for under a year (picture 4.4.4 and 4.4.5) At the same time, it is mentioned on page 31 that portion of IDUs who began practicing behavior that reduces the risk to get infected with HIV is 24% among those who are covered by preventive programs, and 16% among those who are not covered. From all these data it can be concluded that the coverage by the program itself is related to HIV prevention, while the duration of this coverage has almost no influence on the risky types of behavior. However, such a conclusion cannot be found in the report. Moreover, the research data don't allow to make conclusions about cause-and-effect relation.

In the report recommendations, unfortunately, nothing is said about which types of activity will be more effective, the attention is only drawn to the differences in IDUs' answers in different regions and the recommendations are given to strengthen certain types of activity in those regions where the correspondent indicator showed a bit lower level than in other regions.

In general, the report recommendations are reduced to the need to develop various types of activity without defining their relative priority basing on their relative effectiveness or cost-effectiveness, or other parameters.

“Effectiveness monitoring and evaluation of the project “HIV/AIDS prevention among young IDUs” (State Center for social services for youth, Kiev, 2002)

The report analyses the results of preventive work in 14 Ukrainian cities. The basis for effectiveness evaluation was the analysis of surveys among IDUs conducted in these cities by almost the same methodic in 2001 (in 7 cities) and 2002 (in 14 cities, including 9 cities where the survey was conducted among the clients of consultative points “Trust”)

In this report, a rather progressive methodic of social projects monitoring is described. Among the main goals of monitoring, ‘clarification of the main achievements and problems of project realization’ and ‘defining the ways of further project improvement and development’. According to the stated methodic, the final evaluation of the project should provide for the following:

- 1) Effectiveness analysis that gives answers to such questions as whether the set goals were reached, what were the obstacles, what positive consequences will the project realization have;
- 2) Cost-effectiveness analysis that helps the organizers to decide to what extent the gained advantage corresponds to the outlays for the program, or whether there are perhaps cheaper programs that give the same or greater benefit.

Unfortunately, no cost-effectiveness analysis was conducted in this report. What for the analysis of achievements and problems, it was conducted on the basis of questioning the executors of the project and people involved into the implementation. As a result, the achievements of the project were described chiefly as work report, while among the problems lack of financial, material, technical, qualified human resource were considered, as well as negative or passive attitude of the population and some authority bodies. Thus, positive aspects were described as a result of inner factors of the project itself, while the negative ones – as a result of outer factors, which are almost out of control of the project executors. This approach deprives opportunity to single out the portion of positive changes which was determined outright by the project activity, and doesn’t allow to reveal the mistakes during the project implementation.

Among the monitoring goals, the following were named:

1. Adequacy and effectiveness analysis of the separate directions of project realization.
2. Clarification of positive and negative consequences of project realization and its separate components.
3. Defining of main ways of further project improvement and development.

For the analysis of the project realization effectiveness, among others, it was supposed to get answers to the following questions:

- 1) What types of project activity were most successive and why?
- 2) What types of project activity don’t correspond the project goal and why?

Unfortunately, the whole effectiveness analysis reduced to the statement of effectiveness of the work of consultative points “Trust” in general. This was carried through on the basis of the mentioned IDUs’ surveys. Indeed, in most cities between 2001 and 2002, a positive dynamics among IDUs was observed for such indicators as usage of sterile syringes only, usage of condoms etc. Moreover, in 2002 among the clients of consultative points “Trust” the level of these indicators was slightly higher than among all IDUs, which stood for a basis for a conclusion that the work of these points was effective. However, direct comparison of clients of consultative points and other IDUs is incorrect, as: 1) the fact of appeal to the consultative point

witnesses a higher perception of health problems; 2) receiving free syringes, disinfectors, condoms fundamentally eases the choice in favor of their usage regardless enlightening activity. To show the effectiveness of the points' work a deeper analysis of the studied indicators is needed to find out whether the observed differences are trustworthy.

What for the analysis of separate types of activity, it based on the questioning clients about their contentment about separate types of services. In the same time, the most complicated and demanding the highest qualification services, such as juridical, medical and psychological help received the lowest marks. However, this hardly is an evidence to reduce the work of the point to giving away syringes, condoms and leaflets, but the effectiveness of these types of activity should be evaluated in different ways.

In general, the set questions on which types of activity are most effective, and which don't correspond the project goals, what were the positive and the negative consequences of the realization of separate project components, in fact were left without answers, In the report, there was no attempt to compare the effectiveness of the points' activity in 9 cities in order to define the most successive ones.

The recommended ways of further project improvement and development are in fact reduced to increase of financing the points "Trust" and broadening the range of their services. In the same time, it's not clear broadening of which services should be financed first, and which types of activity should be supported carefully in order not to come across negative consequences,

Effectiveness monitoring and evaluation of the project "HIV prevention among adolescents and youth of the South region of Ukraine" (State Center for social services for youth, Kiev, 2002)

The report analyses the results of preventive work in three cities: Odessa, Nikolayev and Sevastopol. The effectiveness evaluation bases on the analysis of two youth surveys, conducted in these cities using almost the same methodic in years 2001 and 2002. In this report, among other goals of monitoring and evaluation, the readiness to answer the following questions was expressed:

1. What were the obstacles during the project realization?
2. What types of project activity were most successive and why?
3. What types of project activity don't correspond the project goal and why?

Unfortunately, the third question was left without answer, and the answer to the first question reduced to lack of financial and technical resources.

Analyzing various types of project activity, the report authors especially emphasize the importance of preventive work with 'peer to peer' method. Yet the priority of this type of activity is only substantiated by the fact that most respondents positively treat this form of work, and by a well-known postulate that teenagers are more inclined to get information related to sexual behavior and HIV/AIDS from peers.

According the report results, the largest coverage of youth by the method 'peer to peer', especially regarding HIV/AIDS prevention, was reached in Odessa. In the meanwhile, the comparison of 2001 and 2002 surveys shows that during this period, according to a number of indicators (*opinion about whether you can get HIV-infected through saliva, urine, crockery, swimming pool, handshake; level of drug substances consumption; number of males who were in contact with several partners; reduce of the portion of young people who never had sexual relationship; portion of those who never uses condom during contacts with sexual partners*) in Sevastopol, and especially in Nikolayev, the dynamics is positive for HIV-prevention, while in Odessa it is, on the contrary, negative. And although it is understood that the mentioned indicators were influenced by many factors which the projects could not affect, it would be very

useful to compare the methods of work in Nikolayev and Odessa to try and understand which types of project activity could have an impact on the opposite dynamics in the studied indicators in these cities, which the report omitted. Objective results of monitoring rather bring to the conclusion about negative impact of the ‘peer to peer’ method, so there are no basis to consider this type of activity a more successful one. There are no evaluation of relative successfulness regarding the other types of activity.

Analyzing the two surveys the authors of the report obviously tried to interpret the dynamics of measured indicators as an evidence of effectiveness of the conducted projects. For example, in the conclusions on page 44 it goes: *“The number of right answers about the possibility of curing AIDS grew fundamentally, according to the results of the 2002 survey, which gives reason to talk about the impact of the project on youth”*. In the same time, on page 42 the authors relate the growth of positive answers to the statement *“AIDS is a disease that can be cured by modern means”* to some ‘dubious’ media articles. From the point of view of effectiveness, such growth of positive answers witnesses that certain project activity was ineffective. However, in the report, regardless the declared means, no effort is done to indicate the ineffective or less effective types of activity.

In the conclusion, the authors of the report define 15 various directions in work as priority, without evaluating their relative priority. In fact, the main conclusion reduces to the statement that all types of activity should be financed, and the more, the better.

HIV/AIDS epidemic monitoring. Resistance effectiveness evaluation (Social aspect). Kiev, 2004. “Intellectual prospective” foundation.

In 2002, the Center of Social Expertise of the Institute of Sociology, commissioned by Ministry of Health of Ukraine, conducted a research, which aimed to *“work out a program of effectiveness social monitoring and evaluation of preventive programs which relate to HIV/AIDS and TB”*.

The research authors claimed to have evaluated:

- *“Resulting effectiveness of prevention using parameters such as: level of awareness of the target groups; level of their perception of HIV/AIDS problems; prevalence of risky behavior models; changes in behavior of target groups.*
- *Process effectiveness of prevention using parameters such as: coverage of the target groups by preventive measures, recipients’ evaluation of the content and quality; expert evaluation of the effectiveness of realization of the main direction of National prevention program, other corresponding measures; evaluation of factors that put obstacles on the way of effective program realization”*.

For the means of the set goals the total of 860 respondents were questioned: 203 IDUs, 206 FSWs, 401 students of universities and professional colleges, and 50 experts in Donetsk, Dnepropetrovsk and Kherson.

In the chapter which considers “resulting effectiveness” univariate results of the conducted survey are expressed. In the same time, it’s hard to judge to which extent the mentioned levels of awareness, perception and behavior change are influenced by the conducted preventive programs, as there’re no data on dynamics of these levels, and no comparison of these level in different cities is done depending on which preventive measures are used in which city.

In the chapter which considers “process effectiveness”, the results of surveys of experts and target group representatives are analyzed.

The experts evaluated the priority level of the HIV/AIDS preventive programs, yet only in comparison with programs in other spheres, no evaluation of priority of elements of these programs was done. The general evaluation of preventive measures’ effectiveness was done by the means of analyzing the experts’ answers about regularity and sufficiency of these preventive

measures among certain groups of population. That work was considered the most effective which had the highest levels of regularity and sufficiency. As a result, the most effective form of work was considered the school lectures, however international research has no doubt that, although this work is the easiest and requires not many costs, its effectiveness (from the point of view of behavior changes in target group) tends to zero. In general, the measured indicators of regularity and sufficiency only mirror the level of material well-being of certain directions, and tell nothing about their effectiveness.

The evaluation of factors that create obstacle for effective program realization reduced to statement of lack of interdepartmental and interbranch coordination (given that no criteria of this 'sufficiency' of coordination was discussed), and lack of resources, especially financial and technical (given that no attempt is done to evaluate what is the best use of limited resources).

In the report, data about target group coverage by the preventive measures is given, yet it's not clear how representative this surveyed group is, in order to judge about the real coverage, and there's no criteria defined to know what coverage level is a sign of effectiveness. Opinion of target group representatives that their knowledge of HIV/AIDS increased after taking part in the measures is hardly a criterion of effectiveness as broadening of knowledge doesn't necessarily end up with changing behavior.

In the report conclusion it's said: "*Summing up the results of applying sociological instrumentation for process evaluation of HIV/AIDS prevention, it can be stated that there's success not only in evaluating the effectiveness of preventive programs in target groups and in separate directions, but also in defining problematic aspects of preventive activity which require fundamental improvement*". However, taking into account the above-mentioned, this statement appears to be baseless.

Further in the report there's a conclusion providing that preventive measures are most effective in children and youth, while "*effectiveness of preventive work on HIV/AIDS in vulnerable groups was unsatisfactory*". Understood strictly, this should mean that the customers of the report should decide to put up money only in work with children and youth, while the work with IDUs and FSWs should be stopped or completely changed, if this work is not enough effective. However, if we recall that effectiveness was measured by experts' subjective opinions about regularity and sufficiency of this work, it's clear that there's not basis for such a conclusion.

In general, the used methodic of effectiveness evaluation couldn't solve the set goals, and repeated use of this methodic is pointless.

Stimulant drug users

Psychostimulant injection drug use was shown to be associated with seroincidence in St.Petersburg, Russia^[27] and Vancouver ^[28]

Notably, Kozlov et al. ^[29] report that, in their study, injection drug users who used psychostimulants had a significantly greater number of sexual partners at baseline. Furthermore, over 30% of women and nearly 5% of men stated that they had sold sex for money or drugs in the 6 months before enrollment in the study.

Recommendations

- IDU population is heterogeneous, and every subgroup requires specific programs which can be effective in blocking specific ways of transmission. It may be worth to perform clustering IDU population with regard to specific patterns and risks, as well as potential ways of prevention. Diagnostics of the subgroup IDU belongs to should be an important step at the beginning of the interaction.

- The finding from at least two independent sources with regard to higher HIV-prevalence among female IDUs after control of confounders requires additional attention.
- Programs for IDUs should be focused not only on providing clean syringes, but on risks related to use of infected drug solutions and address sexual risks as well
- Special attention with regard to clean syringes is needed for those less educated, poorly employed, living in rural area, having long experience of drug use and registered by narcological services.

Criteria proposed for projects evaluation

1. Psychosocial interventions used in IDU HIV-prevention programs
2. Special focus on sex-related risk factors
3. Special focus on female IDUs with increased risks
4. Special focus on users of filled syringes and ready to use solutions

Female sex workers

Results of available data analysis

Data regarding FSWs were analyzed on the level of organization, sentinel data, in surveys conducted by the projects and in behavioral surveys.

Sentinel data

Sentinel data among FSW shows that drug use is a leading risk factor for FSW to get HIV-infection. Regions with higher prevalence of HIV-infection among FSWs are Volyn, Mykolaiv, Odessa, Poltava. Significant decrease in HIV-prevalence in this risk group was achieved in the same regions plus Kiev.

Surveys by projects

Old FSW clients of HR projects are more likely to get the messages that ‘it’s possible to avoid HIV having only one sexual partner’, that HIV is not transmitted by mosquitoes, glasses, dishes, toilets, swimming pools, sauna etc. Old clients are more likely to use condoms and to have been tested within the last 12 months.

For successful changes of risky behaviors among FSWs, collaboration with local police is crucial. Those registered with local police tend to be more likely getting tested, get the results and use condoms more regularly.

Knowledge checked through the survey does not influence the extent of protected sex. However, we can hypothesize that fear resulting from contacts with local police, their possible demands to get HIV tested and present the results of the test, possible threats to be arrested if the result is positive may be an argument for women involved in commercial sex to perform it protected and potentially to interact with the HR project workers.

HIV-infection risk factors in FSW – results of behavioral surveys

As among FSWs the strongest determinant of HIV status is related to drug use (70% of HIV-infection is attributable to injection drug use) it is recommended to pay more attention to identifying clients with combined problems accordingly and providing appropriate services for them emphasizing injection-related risks.

Harm reduction projects seemingly have impact on secondary prevention of HIV-spread from HIV-positive FSWs to their sexual partners, but not on primary prevention of HIV-infection among FSWs themselves.

Condom use is a significant predictor of HIV-status in only those FSW who do not use drugs. When condom use is taken into account, number of both commercial and non-commercial partners is not significant any more.

Time trends of responses related to condom use in FSW

Proportion of FSWs who reported using a condom during the last sexual contact consistently increased in time ($p < 0.05$).

Among those who used condoms, the proportion of those who did so because of the common decision with client increased in time as well ($p < 0.05$). Yet it’s worth mentioning that almost a half of all decisions are made by the respondent herself.

Among those who did not use condoms, proportion of those who did so because they had no condom at their disposal, decreased ($p < 0.05$). Proportion of those who consider condoms too

expensive decreased as well. Proportion of those not thinking about protection also decreased from 2.1% in 2004 to 0.2% in 2007.

Between 2006 and 2007, a proportion of those who did not use condoms because being intoxicated with alcohol or drugs, increased.

The proportion of those FSW who do not agree to have sex without a condom under any conditions increased from 33% to 44%.

A proportion of those who had always used condoms with clients during the last month increased and those who never used condoms decreased.

Proportion of those who always use condoms in oral sex increased in time. Proportion of those who always use condoms in vaginal sex and anal sex increased in time, but compared to vaginal sex (53-67%), proportion of those who always use condoms in oral sex (38-50%) and anal sex (47-59%) is much lower among those who practice these types of services. Among those who always practice vaginal sex with condom 29% practice oral sex and 16% anal sex without condoms.

Condom use in the last sexual contact with a client

Older FSWs are more likely to use condoms, but this association is accounted for by type of employment and education together. Pupils, students and unemployed are the youngest and those disabled, or involved in housekeeping are the oldest.

School pupils and those with irregular jobs report the least probable use of condoms. Those permanently employed, involved in housekeeping and others use condoms more frequently.

Compared to FSWs with primary education those with completed high school or completed university education are more likely to use condoms.

Marital status is significantly associated with condom use. Compared to married women (no matter living with a husband, or another partner) all others who were not officially married were less likely to use condoms.

Age of first commercial sexual contact was associated with the condom use: women with later first contact were more likely to use condoms. This variable is competing with marital status: women who report to be married (whether living with the husband or not) started commercial sex work later in their life than those not officially married.

Among other types of employment, students were most likely to report condom use during the last sexual contact.

Women who have one non-commercial partner have greater odds of using condoms than those who have more or less than one partner.

Those who have more partners have higher odds of using condoms.

Several types of interventions were found to be associated with increased condom use by FSW.

- receiving condoms for free from NGOs within the last year,
- getting condoms from pharmacies in the last month,
- getting condoms from NGOs in last month,
- having applied to dermatological dispensary or helpline services.

Relevant literature

In the developed world, commercial sex workers constitute an important high-risk group in the transmission of HIV infection. Among commercial sex workers, the ones who are most

vulnerable to HIV infection are those who work in the street. A study of 1,396 female sex workers in six US cities found an HIV seroprevalence of 12%, ranging from 0% to 47.5% [30]

Interventions to change behavior among commercial sex workers and their clients have been identified as a strategy to reduce HIV transmission. However, the settings in which commercial sex workers work, as well as the behavioral characteristics of these sex workers and their clients, may differ between the developed and developing world. Hence, the intervention strategies may also be different.

Behavioural interventions are being undertaken in various parts of developed world [31]. However, there has been no systematic review that has examined and summarized the effect of all these interventions. [32]

Aiming to conduct the abovementioned systematic review, authors of the protocol specified the types of interventions and outcome measures as follows.

Types of intervention

Behavioral interventions: Interventions aimed at changing individual behaviors only, without explicit or direct attempts to change the norms of the community or the target population as a whole.

Social interventions: Interventions designed to change not only individual behaviors, but also social norms or peer norms. These are strategies such as community mobilization, or structural and resource support, which are usually used to bring changes in social norms and/or peer norms.

Policy interventions: Interventions aimed at changing individual behavior or peer/social norms or structures, through administrative or legal decisions. Examples may include needle exchange programs, condom distribution in public settings, and mandatory HIV education in all schools of a district.

Types of outcome measures

Studies that reported any type of outcome measure related to HIV transmission would be included (knowledge, attitudes, intentions, self-reported sexual behavior, biological outcomes and so forth). These outcome measures include:

1. Condom use
2. Number of sexual partners
3. Increasing self-efficacy for protective behavior
4. Improving communication with partners regarding safer sexual practices.
5. Use of microbicides
6. Treatment of sexually transmitted infections and reproductive tract infections etc.
7. Needle sharing
8. Change in biological variables (HIV incidence, HIV prevalence, STD incidence, STD prevalence)

The rapid spread of HIV in poor countries has been attributed to several factors which include multiple sexual partners, unprotected sexual intercourse, presence of sexually transmitted infections (STIs), and lack of male circumcision [33]. Besides these individual risk factors, societal factors beyond the control of individuals are important in the transmission of HIV and other STIs, including the social vulnerability of women and young people and economic and political instability of the community.[34]

Throughout the world, where millions of women are given little education and even less employment opportunity, sex may be the only valuable commodity they have to sell. As a result, thousands of women support themselves and their children through commercial sex work. Thousands more barter or sell sex when they are at risk of hunger or homelessness. Some arrive from rural villages after indenturing themselves to promising factory or "entertainment" jobs that are later unveiled as being commercial sex jobs. Desperate economic need as well as customs such as bride dowries have even caused parents to sell their own daughters into brothels.

A full-time commercial sex worker may have 30 clients in a week (Bill 2005). Her customers are often truckers or migrant workers, men who are away from their homes for months at a time, eventually returning to wives and girlfriends. Through this chain of transmission, a single HIV-positive sex worker can infect several dozen men, women, and children in one year. And as HIV bleeds across the continent, demand for younger, "cleaner" girls has mushroomed, driving a market for child prostitution. Meanwhile the virus that causes AIDS seeps into younger networks of adolescents and their future spouses and children.

Despite the explosive spread of HIV and AIDS, there have been several successful interventions to reduce the heterosexual spread of HIV. The mainstays of these programs are *interventions to change behavior, improved access to condoms* to reduce the risk of infection and decrease vulnerability to HIV, and the *effective management of STIs*. In Nairobi, Kenya, behavior change programs increased the percentage of sex workers who reported always using a condom from less than 5% in 1985 to more than 85% in the mid-1990s and reduced the annual incidence of HIV from 47% to about 1% over the same period [35]. In Thailand and Cambodia, *programs promoting 100% use of condoms in brothels have successfully reduced HIV transmission in sex workers and their clients*, as well as in the general population [36]. Studies conducted in Indonesia and Malawi have reported that *behavioral interventions for commercial sex workers and their clients were found to be effective*. In contrast, treatment of STIs and behavioral interventions were found insufficient to reduce HIV-1 incidence in rural Uganda [37]. Similarly, making condoms available was found to be an effective strategy to increase condom use, whereas *use of health education material was ineffective* in Nicaragua [38]. In summary, various intervention strategies have been adopted to reduce HIV transmission among high-risk groups, including commercial sex workers and their clients in developing countries. However, no systematic review has been attempted so far to summarize the effect of behavioral interventions to reduce the transmission of HIV infection among commercial sex workers and their clients in developing countries. A Cochrane review will help to identify effective interventions and summarize the evidence. [39]

Fung et al.[40] measured the impact and cost effectiveness of the HIV intervention programme amongst commercial sex workers (CSW) in Ahmedabad, Gujarat, India. In 2003 the prevalence of HIV among CWS in this city reached 13%, in response a program was initiated involving outreach, peer education, condom distribution, and free STD clinics. A dynamic mathematical model was used with survey and intervention-specific data from Ahmedabad to estimate the HIV impact of the project. Financial and economic costs of the intervention were estimated from the provider's perspective for the same time period. The cost per HIV- infection averted was estimated. Projections suggest that the intervention averted 624 and 5,131 HIV cases among the CSWs and their clients, respectively. This equates to a 54% and 51% decrease in the HIV infections that would have occurred among the CSWs and clients without the intervention. In the absence of intervention, the model predicts that the HIV prevalence amongst the CSWs in 2003 would have been 26%, almost twice that with the intervention. Cost per HIV infection averted, excluding and including peer educator economic costs, was USD 59 and USD 98 respectively. This study demonstrated that targeted CSW interventions in India can be cost-effective, and highlights the importance of replicating this effort in other similar settings.

A study conducted in Johannesburg [⁴¹] aimed to estimate the cost-effectiveness of syndromic management, with and without periodic presumptive treatment (PPT), in averting sexually transmitted infections (STIs) and HIV in female sex workers. Financial and economic providers' costs were estimated. The study used a mathematical model, fitted to epidemiologic data, which projected the HIV and STIs averted by the intervention. The project averted (projected) 53 HIV infections in one year, decreasing the FSW HIV incidence in 3.1%. The authors concluded that targeted interventions can be cost-effective at all stages of HIV epidemics and suggests PPT could improve the cost-effectiveness of targeted STI interventions.

Recommendations

1. As in both sentinel surveillance and behavioral surveys it was found that drug use accounts for important part of HIV infection in FSWs, HIV prevention programs may benefit from distinguishing a group with combined risks (FSW-IDU) and providing targeted services for this group (see special subsection below)
2. As FSW were found to be more likely to apply for services with regard to secondary prevention, it is worth providing counseling services for them which will help to recognize and raise awareness of existing problems
3. Providing VCT for FSWs and probably counseling on STI may increase adherence of FSWs to HR projects.
4. As significant part of those who always practice vaginal sex with condom practice oral or anal sex without condoms, it is worth targeting information materials on these specific ways of HIV transmission, instead of those traditional interventions regarding mosquitoes, swimming pools, glasses and dishes etc.
5. Specific risk groups characterized by low rates of condom use requiring special attention are the youngest, not educated, not married, and unemployed.
6. It's worth interviewing FSWs on the types of condoms they consider appropriate for them and providing sufficient quantities of these condoms.
7. Based on literature data, it is worth to add to the behavioral surveys questions regarding use of microbicides and more details with regard to treatment of sexually transmitted infections and reproductive tract infections
8. Behavioral surveys of FSW would be more informative, if detailed questions about drug use were applied to this group as well

Criteria proposed for projects evaluation

1. Number (percentage) of FSW interviewed with regard to drug use
2. Availability of special programs developed for clients with combined problems (FSW-IDU)
3. Number of tests provided for FSW
4. Number of consultations provided by venerologists or other consultations on STI
5. Number of condoms provided to FSW on average
6. Availability of those types of condoms approved by FSW in the exchange stations and in pharmacies nearby
- 7.

Clients with combined risks – IDU+FSW

Results of available data analysis

In both sentinel surveillance and behavioral surveys of FSWs it was found that drug use accounts for important part of HIV infection in FSWs. In spite of this fact, drug-using FSWs are still treated as any FSWs.

On the other hand, analysis of IDU behavioral survey data has shown that participation in commercial sex is an important risk factor for IDUs to get infected. This also dictates necessity to consider separate needs of this target group.

Data on this group of clients in reports and accounting systems is not very reliable because many organizations do not report anything about this group, while many FSWs in SyrEx are reported to get syringes.

Data extracted from Syrex has shown the following. Among those clients who were marked as FSWs, 32% were also marked as IDUs. Among those clients who were marked as FSW and were not marked as IDU, only 52% have never received syringes from the projects. This means that among all FSW 1/3 is marked IDUs while it is quite possible that 2/3 of FSWs involved in the projects inject drugs.

While considering statistical distribution of numbers or syringes, among those who were FSWs and received syringes, cases were grouped around two syringes per visit and around six syringes per visit. The first group consists of 28% of FSW, who receive 1-4 syringes per visit, and the other group is 20% of clients who get more than 4 syringes per visit.

Possibly, some of these groups serve as secondary clients.

Based on the analysis of organization level data, the needs of FSW who also use drugs by means of injecting are more similar to the needs of IDUs than to the needs of other FSWs.

Analysis of behavioral surveys data has shown that risk of HIV infection in FSW is largely accounted for by concurrent drug use, and about 70% of all cases of HIV infection in this group may be attributed to injecting drugs. Providing condoms to this group is not able to ensure control of the epidemic, and targeted measures are needed.

Specific needs of this group are indirectly underlined by their higher involvement and retention in those NGOs which provide community centers services.

Relevant literature

Several reports mention high proportion of IDUs involved in commercial sex. According to the studies conducted in Russia, among female injection drug users, up to 50% are thought to participate in commercial sex work [⁴², ⁴³].

Report regarding behavioral survey of FSWs in Ukraine [⁴⁴] raises the issue of FSWs who use drugs as the issue of classification: who are they – IDUs or FSWs.

Recommendations

1. To keep track of specific needs of this group it may be recommended to NGOs who have not marked this group of clients yet, to do so.
2. Representatives of this target group could be interviewed about specific needs which possibly are not met by the proposed programs.
3. We hypothesize that separate help/exchange points may be desirable for this target group, as they may be interested not to disclose their specific status to their FSW-colleagues.

4. Assuming drug use an important way of HIV transmission among FSW, it's required to include questions related to drug taking practices in all the surveys targeted at FSW.

Criteria proposed for projects evaluation

- Development and providing of specific programs targeted to the needs of the group with combined problems.
- Numbers of clients in specific programs

Voluntary counseling and testing

Results of available data analysis

According to the analysis of budgets and project reports, for both IDUs and FSWs involvement, HIV testing services make harm reduction projects more attractive to potential clients.

Based on Syrex data and data about implementation of different project components, it was found that likelihood of clients' retention in the projects increases after several months of VCT implementation.

As was found from the behavioral surveys of IDUs, higher risk of HIV-infection was typical for those who have no opportunity to get tested confidentially, feel that the schedule of the testing facility is not convenient, are not satisfied with the personnel attitude to them.

Behavioral surveys of both IDUs and FSWs have shown that counseling and testing procedures had significant impact on risky behaviors, people who get to know about their positive HIV-status reported to less likely have sexual contacts, more likely applied to harm reduction projects, more likely used condoms etc., which is in line with the published research data.

Relevant literature

In a meta-analysis of 27 studies with 19,597 participants [45] it was found that HIV-positive participants and HIV- serodiscordant couples in the 27 studies examined reduced their frequency of unprotected intercourse and increased their condom use, relative to HIV-negative and untested participants, after receiving HIV counselling and testing. Furthermore, in two studies, HIV-positive participants exhibited reduced STD incidence relative to HIV-negative and untested participants. These findings indicate that ***HIV-CT is an effective secondary HIV prevention strategy***; that is, participants who learned that they were HIV-positive did reduce their sexual risk behaviour, thereby decreasing their risk of subsequent re-infection and their risk of infecting others. Participants who received a negative HIV test result however, did not modify their sexual risk behaviour any more than individuals who did not participate in counselling and testing. Therefore, ***HIV-CT does not appear to be an effective primary prevention strategy***.

Mass media interventions have immediate and overall effects in promotion of HIV testing. No long-term effects were seen. There was no significant impact of detecting seropositive status after mass media intervention for promoting HIV testing.[46]

A quasi-experimental trial among FSWs in China provided evidence that the brief VCT intervention, through appropriate cultural adaptation, can be efficacious in increasing condom use and reducing STD infection rate.[47]

Recommendations

1. VCT is an effective tool of client attraction and behavioral change, and deserves wider use in HR projects.
2. If resources were available, VCT would be effective if proposed to wider groups of population which will cause people with risky behaviors to apply for testing.
3. It would be helpful if Syrex contained data on clients' VCT participation.

Criteria proposed for projects evaluation

1. Number of clients who have been tested and got counseling.
2. Proportion of those who received the result and post-test counseling.

Community centers

Results of available data analysis

Community centers were found to be associated with better HIV-testing and better involvement and retention of clients with combined problems. However, these characteristics may be typical for the same organizations and be not causally linked to each other.

SyrEx data were used to check hypothesis whether after introduction of community centers clients started more likely to stay or become permanent clients, but the hypothesis could not be neither confirmed nor rejected.

Relevant literature

Unfortunately we could not find 'community centers' in the published research. Thus the presented here overview mostly refers to the anticipated functions of the community centers.

Community centers are expected to be places for more intensive behavioral intervention. Because of that we review here information regarding performance of psycho-social interventions among high risk groups.

New, more powerful interventions are needed to slow the spread of HIV in drug users. A report recently prepared for the US Office of Technology Assessment [⁴⁸] suggests that a social change approach to preventing HIV in IDU has much to add to individually oriented programmes. Community-level interventions are an important example of such an approach. Community interventions are designed to change the norms of entire communities or populations of individuals. [⁴⁹]

A review of 19 published studies [⁵⁰] of the effectiveness of individual counselling, HIV testing, group interventions, street outreach, and a 'social' intervention designed to change norms for safer behaviours found that participating in evaluation research may itself be a valuable intervention. Despite the large behavioural changes reported in most of the studies, a substantial proportion of subjects receiving interventions reported unacceptably high levels of risk behaviours. New, more potent interventions are needed, such as those designed to change the norms of entire communities of drug users concerning safer injection and safer sex.

Lindsay N, Zalata O and Coker R, consider HIV control in Ukraine a Public Health challenge and urge the use of efficient health promotion models. They support a collaborative network approach, considering that health promotion campaigns can be efficient, effective and build a cohesive multi-disciplinary response with a shared purpose that might be built upon and harnessed in future campaigns [⁵¹].

Psychosocial interventions

The interventions described here differ from drug treatment and needle exchange in that they attempted to alter behaviour by changing the attitudes and beliefs that support high-risk practices. [⁵²]

The four studies without design limitations had two characteristics in common: first, they evaluated more intensive and sustained interventions; and second, they were conducted with stable and better motivated subjects (the small number of studies involved, however, precludes

drawing any strong inferences concerning the reasons for the effectiveness of the interventions being evaluated).

Intense and sustained interventions had a demonstrably greater impact on behaviour than the comparison condition. Another factor that seemed to be associated with greater effectiveness was that participants in successful interventions appeared to be more stable and better motivated subgroups of users, whereas participants in the less successful interventions were a heterogeneous mix of users at different stages of behavioural change. The small number of studies involved, however, precludes firm conclusions being drawn from this pattern of findings. Should these findings be replicated, an implication would appear to be that interventions should be tailored to subgroups according to their level of stability and risk. Another implication would be that more attention needs to be devoted to the development of interventions for poorly motivated and unstable clients. [53]

Individual counseling

In the three studies that examined the effectiveness of individual counselling, Stephens et al. [54] compared subjects receiving 1 h of one-to-one health education with non-equivalent no-treatment controls; Baker et al. [55] randomized subjects to one of three conditions (six 60-90-min relapse prevention sessions, 1 h of motivational counselling, and a no-treatment control group); Gibson et al. [56] randomized subjects either to 50 min of preventive problem-solving or to educational brochures. Two of these studies (Stephens et al.; Baker et al.) found substantial injection-related risk reduction in an experimental group; however, in the study by Stephens et al., the use of non-equivalent controls raises the possibility of other explanations for the differences found between the experimental and control groups. In the study by Baker et al., subjects assigned to relapse prevention sessions reported substantially less injection-risk behaviour during the heaviest risk-taking month following randomization, but there were no differences between groups in terms of sexual practices. In the study by Gibson et al. there was sizeable injection-related and some sexual risk reduction in both the experimental and comparison groups. [57]

Recommendations

Overall conclusion regarding community centers evaluation is that there was no appropriate data available, which would allow evaluating effectiveness of these programs. Proper evaluation requires designing of special study with collecting relevant data.

Observations and recommendations with regard to data collection

Sentinel data

Sentinel data could be more valuable in case of more consistent data collection and data entering. Important demographic variables and data on risk behaviors should be collected to control for sample discrepancies caused by differences in level of risk. This could ensure more accurate use of sentinel data for estimates of HIV-prevalence by region and year.

Limitations of conclusions drawn from the project client surveys (IDU and FSW)

1. Both surveys have typical limitations of cross-sectional study design: while we intend to compare new and old clients and infer some conclusions about impact of the projects, these are not in fact the same people, and differences in their responses may be accounted for by other factors not controlled in the survey.
2. Absence of information about the age, education, social and economic characteristics of clients makes it impossible to control for them: for example certain projects may have more or less knowledgeable clients due to their age and education, and not because of the project's failure to address them.
3. Conclusions about potential impact of particular projects under review have limited power due to small size of a surveyed sample: clients who took part in the survey may have had different motivation compared to those who did not take part, and thus different results.
4. Those projects who use strategies of intensive involvement of new clients, and providing health related information and VCT services, may have a worse picture of comparison between old and new clients than those who provide all these services on a late stage.
5. Those projects which have surveyed only new clients have actually fallen out of the review.

Behavioral surveys

1. Behavioral survey in IDUs combined with HIV-testing was extremely useful for assessing risks and protective factors of recent HIV-infection. Similar surveys with other high risk groups, first of all FSWs, could be extremely useful as well.
2. More specific questions about the types of interventions provided by projects could be helpful to evaluate their effects.
3. To assess the dynamics and time trends of biological and behavioral outcomes, it would be helpful if sociological agencies encoded the data the same way (with coinciding names and types of variables used for same questions)
4. As it was already mentioned in other subsections, specific questions based on outcome measures used in published research would be helpful in further evaluation.

SyrEx

This database bears significant advantages related to possibilities to follow-up a huge cohort of representatives of high-risk groups who are in contact with project NGOs. To make more use of this database it would be desirable to more fully enter individual data, and to add services allowing to keep track of changes in risky behaviors and potential outcomes of interventions.

As the output of the database several more reports would be helpful, especially those which present individual data, and hopefully these reports will encourage NGOs to enter more data which in this case will be used.

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