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Drug Treatment as HIV Prevention Among Women and Girls Who Inject Drugs From a Global Perspective: Progress, Gaps, and Future Directions

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Abstract

Although there have been significant reductions in the number of new HIV infections globally from 2009 to 2013, incidence remains unacceptably high for persons who use drugs. In many settings, women and girls who inject drugs (WWID) with HIV/AIDS experience poor treatment access, including evidence-based practices like antiretroviral therapy and drug treatment. Medication-assisted therapies (MAT) for substance use disorders are especially inaccessible, which in their absence, increases HIV transmission risk. Irrespective of setting or culture, drug treatment using MAT is not only effective but also cost-effective at reducing opioid use and linked injection and sexual risks. Data presented here for WWID address their access to MAT for opioid addiction and to treatments being developed that address the relationship, family, and vocational needs of this group. The most glaring finding is that globally, WWID frequently are excluded in surveys or studies with an impressive lack of disaggregated data by gender when surveying access to MAT—even in wealthy countries. Despite this, there have been some striking improvements in implementing drug treatment as prevention, notably in Iran and China. Still, real barriers remain for women and girls to accessing drug treatment, other harm reduction services, and antiretroviral therapy. Development and/or implementation of interventions that facilitate women and girls engaging in drug treatment that address their roles within society, work, and family/relationships, and outcome evaluation of these interventions are crucial.

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Keywords

HIV; AIDS; injection drug users; women who inject drugs; drug treatment; HIV risk behaviors; methadone; naltrexone; buprenorphine; extended-release naltrexone; antiretroviral therapy; Medication assisted therapy; MAT

INTRODUCTION

Impressive reductions in HIV incidence and mortality globally were witnessed from 2009 to 2013, mostly within sub-Saharan Africa.¹ However, reductions in HIV prevalence have not been as great for persons who inject drugs (PWID) or for specifically women who inject drugs (WWID).² An estimated 13% of PWID are living with HIV, with substantial variation between and within countries. HIV prevalence may be higher among WWID compared with their male counterparts in some high prevalence settings, although at the global level, evidence regarding this disparity is limited and inconsistent.^{3,4}

Evidence-based addiction treatment using medication-assisted therapies (MAT) is effective as both primary and secondary prevention among PWID with and without HIV by reducing drug use, associated unsafe injection procedures, and unprotected sexual transmission behaviors under the influence of drugs.⁵ MAT, however, must be adequately scaled by need. Where it has been introduced, there have been reductions in HIV transmission among PWID globally, but the impact of drug treatment as HIV prevention is weakest for WWID.²

This article evaluates the data available regarding women and girls globally who use or inject drugs and the impact of MAT use to treat drug addiction and prevent transmission of HIV infection among WWID.

DRUG TREATMENT AS HIV PREVENTION

The rationale underlying “drug treatment as HIV prevention” posits that MAT can reduce drug use, injection frequency, unsafe injection practices, and unsafe sexual behaviors linked to drug use to decrease transmission of blood-borne diseases.⁵ Several approved medications exist for the treatment of opioid dependence. In contrast, there are currently no approved medications to treat cocaine or methamphetamine dependence.⁶

Four medications are available to reduce opioid use and are in the form of *opioid agonists*: (1) methadone and (2) buprenorphine or buprenorphine/naloxone; and *opioid antagonists*: (3) oral naltrexone and (4) extended-release naltrexone (XR-NTX). With sustained adherence, opioid agonist treatments (OATs) reduce frequency of injection and relapse to opioid use while improving health and social functioning⁷ and prevent transmission of HIV.⁸ Oral naltrexone has not demonstrated efficacy in reducing HIV risk, primarily due to high rates of medication nonadherence.⁹ The ability of XR-NTX to reduce opioid relapse and HIV transmission is unclear; studies are currently on going among HIV-positive persons.¹⁰ Other forms of treatment for opioid addiction such as heroin-assisted treatment (diacetylmorphine with supervised self-administration) have some effectiveness for reducing

illicit heroin use for individuals who have failed first-line OAT, but no data are available to address whether this method prevents HIV transmission.¹¹

GLOBAL EXPERIENCE WITH DRUG TREATMENT AS HIV PREVENTION FOR WOMEN AND GIRLS

Access to OAT among PWID by country has been previously reported,¹² but data were not gender disaggregated (personal communication with Drs Mathers and Degenhardt). Limited data suggest that there has been little or no development of OAT specifically tailored for women and girls globally. Access to OAT for WWID is most constrained in the highest need countries. Globally, only 79 countries reported offering OAT in 2013, and two-thirds were only providing it to 40% or less of the opioid-dependent population.¹³ With considerable regional variation, however, most PWID have no access to OAT. The most common situation regarding access to OAT for women and girls is that the supply is sufficient to meet only a small fraction of demand.¹³

Specific Examples of MAT Uptake in Countries Where There Are High Prevalence Rates of PWID

Six countries account for nearly 50% of all PWID worldwide: China, Malaysia, Russia, Ukraine, United States, and Vietnam.¹⁴ The situation regarding WWID in each of these countries is summarized in Table 1. Additional regions of the world that reported data regarding WWID where authors have had significant experience were also examined briefly, including 2 countries in the Middle East region (Pakistan and Iran), Australia, 3 countries within sub-Saharan Africa (South Africa, Kenya, and Tanzania), and India, Indonesia, and Thailand (summarized in Table 2).

China

The proportion of WWID is not reported. Table 1 provides estimates of PWID in China. The estimated number of people living with HIV (PLH) in China is approximately 780,000, with 30% attributed to drug injection.¹⁵ In 2004, the Chinese government began rapidly scaling up MMT programs with 306,786 clients in MMT clinics by 2011.^{6,16} Over this period, 48,558 clients (15.8%) were female.¹⁷ A total of 18,193 (5.9%) MMT clients were diagnosed as HIV-infected, and the majority (75.5%) of clients was antiretroviral therapy (ART) naive. It is unclear what proportion of HIV-infected clients were women; women comprised 15.2% (n = 2087) of ART-naive HIV-infected MMT clients.¹⁷ The uptake of MMT and effect on harm reduction for women are not known.

Malaysia

By year-end 2011, there were 79,855 PLH, with 90% being men; however since 1990, the proportion of new HIV infections in women increased from 1% to 25%.¹⁸ In particular, the trend of female to male ratio has changed from 1:99 in 1990 to 1:4 as of end of year 2011.¹⁸ This change in female to male ratio was initially attributed to an increase in injecting-related transmission, but over time, there has been more HIV transmission to females secondary to unprotected sex. The risk itself is difficult to attribute to one factor as risk groups overlap, with female PWID bartering sex for drugs. Therefore, the change in female to male ratios of

HIV may in part be due to not only sharing of nonsterile injection drug equipment but also a combination of increased sexual risk among female sex workers (FSWs) who are partaking in unprotected sex with male partners, including men who inject drugs. This increase prompted the Ministry of Women, Family, and Community Development in Malaysia to establish a taskforce on women, girls, and HIV/AIDS. Malaysia developed a comprehensive harm reduction program that used needle syringe exchange programs (NSEP) and OAT, specifically methadone maintenance treatment (MMT) in 2006, but women-focused programs are unavailable. MMT is provided by government hospitals and private practitioners and was extended to the National Anti-Drug Agency service centers and prisons, altogether comprising 674 methadone centers. By year-end 2011, cumulatively, 44,428 of 190,000 estimated PWID nationally had been involved in MMT; however, the number of WWID who are receiving MMT is unknown. Malaysia's Ministry of Health estimates HIV prevalence among PWID to have decreased to 8.7% in 2011 and is attributed to MMT and NSEP introduction in 2006,¹⁸ yet studies using respondent-driven sampling suggest that it is actually double that.¹⁹ There are no reported gender-disaggregated data of MMT and NSEP uptake.

Russia

Russia has one of the largest populations of PWID in the world, an estimated 1.8 million people.²⁰ Between 16% and 19.4% of PWID are women,²¹ with 14.4% of them being HIV-infected.²² OATs are illegal in Russia,¹⁴ and opioid antagonist treatment is inadequately scaled. In 1 double-blind placebo-controlled randomized trial of XR-NTX among Russian opioid-dependent persons, XR-NTX increased time abstinent and reduced HIV risks compared with placebo,²³ but only 10% of trial participants were women. Although XR-NTX and NTX are available as the only forms of MAT in Russia, the number of WWID who are administered these medications is not known nor is the effect on opioid relapse or HIV prevention.

Ukraine

Ukraine has the highest HIV prevalence in Europe (1.6%) and the highest per capita number of PWID.²⁴ HIV prevalence among PWID ranges from 21.5% to 50% and differs regionally. There is evidence of a transitioning epidemic, with women accounting for 45% HIV infections in 2013.²⁵ Although only 27% of PWID are women, 45% of HIV-infected PWID are female.²⁶ Women become HIV infected earlier in their injection careers compared with men,²⁷ perhaps as women frequently are “second on the needle” after men.²⁸ WWID in Ukraine encounter higher risks compared with men (both injection and unprotected sex), despite having higher HIV knowledge than male counterparts.^{29,30} OAT coverage with buprenorphine and methadone in Ukraine remains low (<2%).^{14,31} Invocations of a ban against OAT occurs in Russian-controlled areas of Ukraine.³² XR-NTX is available but not widely used.

United States

An estimated 6.6 million adults in the United States (2.6% of the population) have ever injected drugs.³³ Women comprise around one-third of this group.³⁴ Opioids are the most commonly injected drug; 92% of women and 89% of men who inject drugs had injected

heroin in the past 12 months.³⁵ Availability of drug treatment in the United States is uneven, with many areas having poor MAT access even in criminal justice settings where PLH and PWID are concentrated.³⁶ OAT is available from clinics primarily dispensing methadone and office-based physicians certified to prescribe buprenorphine. XR-NTX was made available to any clinician to prescribe in 2011; however, no national data regarding uptake are reported. In a national sample of OAT programs in 2011, 43% of clients were female,³⁷ suggesting women are not underrepresented; however, overall coverage of OAT in the United States is considered moderate.²⁰

Drug treatment outcomes among opioid-dependent women within the United States show that women enter OAT programs earlier in their drug use history compared with men.^{38–40} National data on women's participation in non-OAT types of addiction treatments are not available.

One-third of all substance use treatment programs provide programs specifically for female clients and 58% offer “HIV or AIDS education, counseling, or support” services, but the intersection between these types of programs is not reported.⁴¹

Vietnam

Heroin injection is the main driver of HIV transmission in Vietnam. MMT was introduced in Vietnam in 2008 and as of year-end 2013, 18,000 people were enrolled. In a study of 403 WWID, one-third of those from Hanoi and two-thirds from Ho Chi Minh City had heard of MMT. Of these, the majority was somewhat or very interested in accessing this form of treatment.⁴² Specific gender-disaggregated data regarding treatment uptake and retention on MMT are not reported.

Middle East

The Middle East region has the fastest growing HIV epidemic globally.⁴³ The information that is known about WWID within Iran and Pakistan, 2 of the most populous countries of the Middle East, is discussed below and summarized in Table 2.

Iran—Iran shares a border with Afghanistan, a major producer of heroin, and has a long history of opium use. In 2014, Iran had a population of 77.45 million, with 1.2–2 million people reporting use of illicit substances and 90% self-reported opiate use.⁴⁴ Men represent the vast majority of opioid users with only 6% being women and only 2.6%–6% of clients at drug treatment centers are women.⁴⁵ In 2014, the numbers of women and men living with HIV were approximately 23,040 and 55,250, respectively⁴⁶ (<1% of the population) and are mainly among PWID.⁴⁷ Prevalence of HIV among women in Iran is estimated at 10.7%, with most acquiring HIV infection by unsafe heterosexual sex or sharing contaminated needles or syringes.⁴⁷

Despite limited international support, Iran is the only country in the Middle East region that has a stable system of OAT and harm reduction centers. At outpatient private and gender-mixed drug treatment clinics and drop-in centers, methadone and buprenorphine maintenance treatments along with psychological and social work services are widely available. In 2011, 480,921 men and women drug users received OAT.⁴⁷ Iran has provided

women-specific harm reduction and drop-in centers for more than a decade with services including OAT, midwifery services, free condoms, safe sex and injection education, NSEPs, free meals, HIV testing, and ART.⁴⁸ Additionally, inpatient and outpatient detoxification, psychiatric services, residential rehabilitation, therapeutic community, and self-help groups are widely available for women.^{49,50}

Pakistan—Women comprise approximately one-quarter of people who use drugs in Pakistan.⁵¹ Women who use drugs typically use tranquilizers, sedatives, and pharmaceutical stimulants, in contrast to men, who use cannabis and opioids.⁵¹ In 2012, there were an estimated 423,000 PWID, of whom 1.6% were female.⁵² HIV prevalence increased to 27.2% in 2011 among PWID and to 0.6% among FSWs, but data on HIV prevalence among WWID are not reported. Methadone is not available and buprenorphine is minimally available in hospitals and drug treatment settings, data are not disaggregated by gender however.

Australia

An estimated 0.25% of women in Australasia (includes Australia and New Zealand) injected drugs in 2010.^{53,54} HIV prevalence among PWID is around 2%, and 0.8% among WWID.⁵⁵ Low HIV prevalence among PWID is attributed to early and widespread implementation of harm reduction strategies including NSEP and OAT.⁵⁶ Women comprise approximately one-third of sentinel samples of PWID,⁵⁷ NSEP attendees,⁵⁵ and OAT clients.⁵⁸ Data from New South Wales, the most populous state and the state with the largest population of PWID, indicate that women first enter OAT at a younger age than men and are retained in treatment longer than men.⁵⁹ Furthermore, women who first initiated OAT in the community (as opposed to prison) had fewer treatment episodes compared with men. There were no sex differences in the number of treatment episodes among those who first initiated OAT in prison.⁵⁹ Earlier OAT entry and greater stability of treatment episodes suggest that women may particularly benefit from OAT in terms of HIV prevention.

Sub-Saharan Africa

Estimates of heroin injection in sub-Saharan Africa, where the HIV epidemic is already a generalized one, are lower compared with other regions globally.⁶⁰ In regions across sub-Saharan Africa, the south has proportionately more women who have opioid dependence compared with women in the central, east, and western regions,⁶⁰ with concomitant greater estimated disability life years for women in the south.

South Africa—Estimates of IDU in South Africa are higher than eastern, southern, and western Sub-Sahara Africa, and much lower than prevalence in countries in the Middle East and North African (MENA) region. Women account for 27% of all PWID in South Africa, and 19.4% of WWID are HIV infected.⁶¹ Methadone and buprenorphine are minimally available and only in private treatment clinics. No gender-disaggregated treatment data are available.

Kenya—Among the estimated 18,000 PWID in Kenya, 11% are women. HIV prevalence among PWID ranges from 18.3%⁶¹ to 44%,²⁰ but gender-disaggregated data are not

reported. OAT is newly available in Kenya but is restricted as there are barriers in the workforce (lack of providers), in policy, and lack of knowledge about addiction. No gender-disaggregated treatment data are available.

Tanzania—Although methadone remains illegal in most countries in sub-Saharan Africa, Tanzania launched a large technically illegal government-operated methadone program in 2013. HIV prevalence is 5.6% nationwide, 57.4% among PWID in Dar es Salaam, and 72% among female heroin injectors. One NSEP exists in Tanzania, and WWID are underrepresented in all harm reduction programs and are considered a “hard-to-reach” population.⁶²

India, Indonesia, and Thailand

The main drug of choice in these regions is opioids. There were 40,300 reported PWID in Thailand with an HIV prevalence rate of 21.9%,^{63,64} and 105,784 PWID in Indonesia with an HIV prevalence rate of 36%.^{64,65} In India, there were approximately 177,000–180,000 PWID with an HIV prevalence rate of 9.2%.⁶⁴ OAT and NSEPs are available in India, Indonesia, and Thailand but considered too low of coverage to meet the needs. In the global data holdings on PWID, only Indonesia have data reporting the number of WWID (11%), whereas the other countries do not disaggregate the numbers of PWID by gender and similarly they fail to report the number of women served by OAT, VCT, ART, and NSEPs,⁶⁴ as depicted in Table 2.

DISCUSSION

Gaps in the Literature

Concerning among the many countries are lack of standardized reporting, restrictions to nongeneralizable samples, and a lack of objective and standardized surveillance activities. Thus, it is impossible to accurately estimate the number of WWID, the proportion who are in MAT programs, and the impact of this treatment on HIV risk reduction and infection.

Evidence is irrefutable that OAT is effective for both primary and secondary HIV prevention and improves the health of those prescribed it.^{8,66} Nonetheless, even where volatile HIV epidemics among PWID exist, OAT may be banned or severely restricted so that it is suboptimally scaled to need. There is limited disaggregation of drug treatment data by HIV status and gender.

The combined effect of these failures is to undermine HIV prevention and treatment efforts to improve the health of PWID in general and WWID in particular. Even in high-income countries, there are few data sets on gender-specific provision of MAT and other HIV risk reduction services among people who use drugs. Women-centered treatment services that address the multiple and complex needs of WWID are present in only a few countries including Iran; however, specific evaluation of MAT uptake and effect on HIV prevention is not well known in this country. Such programs might guide awareness and implementation of similar programs in other countries where they are needed if more data are made available. For WWID, harms from discrimination and stigma are potent; these effects are exaggerated in countries and settings where gender power imbalances are perpetuated. A

serious gap exists in organizing and implementing women-focused MAT and other harm reduction services that recognize and emphasize the role of women in relationships and in caring for family members. Moreover, services that can be delivered to couples (eg, both members of the couple use injection drugs) may enhance positive outcomes in facilitating OAT entry and retention for both men and women as noted in Kazakhstan.^{67,68} As well, treatments tailored for FSWs who inject drugs produce significant reductions in injection and sexual transmission behaviors.⁶⁹ In many countries, multiple systems are in place to implement OAT and other harm reduction programs funded by combinations of NGOs, CBOs, and private practitioners when governments have been unsupportive. The overall state of access to harm reduction services, including MAT, for WWID is dismal. For the vast majority of countries, a rallying cry from civil societies and advocacy groups is sorely needed to move governments toward seriously addressing the needs of WWID.

FUTURE DIRECTIONS: SPECIFIC ACTIONS/RECOMMENDATIONS

What Needs to Be Performed Next to Improve Research on Drug Treatment as HIV Prevention for Women Who Use or Inject Drugs Globally?

- On a global level, governments, civil societies, and advocacy groups for PWID need to acknowledge the unacceptable status of harm reduction and treatment services for WWID.
- Recognition of societal stigma, gender inequalities, and marginalization that impact these women and commitment at the highest levels is urgently needed.
- Comprehensive surveillance data should include WWUD and specifically WWID to document prevalence of opioid dependence and MAT uptake as well as other forms of drug dependence such as stimulant use disorders.
- In particular, research and development of new drug treatments for stimulant use disorders including methamphetamine and cocaine are urgently needed.
- Development and/or implementation of interventions that facilitate women and girls engaging these treatments that address their roles within society, work, and family/relationships, as well as outcome evaluation of these interventions is crucial.
- There is a need to assess HIV risk behaviors related both to injection behaviors and to unprotected sexual contact when under the influence of drugs.
- A careful assessment of the continuum of care for WWID who are living with or at risk for HIV is required. This includes documentation of female drug users (both within and outside the MAT context) who are regularly HIV tested, HIV positive, prescribed and retained on ART, and who attain viral load suppression.
- Disaggregation of drug treatment data by gender, in high-, middle-, and low-income settings.

What Does It Take to Promote the Concept of Drug Treatment as Prevention Globally for Women and Girls Who Use Drugs?

A profound level of societal stigma toward PWID places them at or near the lowest rung in society. Among drug users generally, WWID are relegated to the lowest rung. Notable examples in Iran and China provide important insights for how to rapidly scale up and improve drug treatment as prevention. Nonetheless, real and glaring barriers to accessing drug treatment and other harm reduction services by women and girls remain widespread. In contexts where MAT as HIV prevention exists, there are champions in important policy-making posts who ensure that resources are appropriately targeted and allocated. It is still the case that even in communities of PWID, the needs of women and girls for MAT are de-emphasized compared with the needs of male drug users and sexual partners. Political will is the element that is most scarce and that is most necessary to change this situation.

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REFERENCES

1. UNAIDS. Global Report: UNAIDS Report on the Global AIDS Epidemic 2012. UNAIDS; Geneva, Switzerland: 2012.
2. [Accessed December 13, 2014] Gap Report. 2014. Available at: <http://www.unaids.org/en/resources/campaigns/2014/2014gapreport/gapreport>
3. Des Jarlais DC, Feelemyer JP, Modi SN, et al. Are females who inject drugs at higher risk for HIV infection than males who inject drugs: an international systematic review of high seroprevalence areas. *Drug Alcohol Depend.* 2012; 124:95–107. [PubMed: 22257753]
4. Larney S, Mathers BM, Poteat T, et al. Global epidemiology of HIV among women and girls who use and inject drugs: current knowledge and limitations of the data. *J Acquir Immune Defic Syndr.* 2015; 69(suppl 2):S100–S109. [PubMed: 25978476]
5. Gowing, L.; Farrell, MF.; Bornemann, R., et al. *Cochrane Database Syst Rev.* 2011. Oral substitution treatment of injecting opioid users for prevention of HIV infection; p. CD004145
6. Metzger DS, Zhang Y. Drug treatment as HIV prevention: expanding treatment options. *Curr HIV/AIDS Rep.* 2010; 7:220–225. [PubMed: 20803321]
7. World Health Organization. Guidelines for the Psychosocially Assisted Pharmacological Treatment of Opioid Dependence. World Health Organization; Geneva, Switzerland: 2009.
8. Gowing, L.; Farrell, M.; Bornemann, R., et al. *Cochrane Database Syst Rev.* 2008. Substitution treatment of injecting opioid users for prevention of HIV infection; p. CD004145
9. Minozzi, S.; Amato, L.; Vecchi, S., et al. *Cochrane database Syst Rev.* 2011. Oral naltrexone maintenance treatment for opioid dependence; p. CD001333
10. Di Paola A, Lincoln T, Skiest DJ, et al. Design and methods of a double blind randomized placebo-controlled trial of extended-release naltrexone for HIV-infected, opioid dependent prisoners and jail detainees who are transitioning to the community. *Contemp Clin Trials.* 2014; 39:256–268. [PubMed: 25240704]
11. Ferri, M.; Davoli, M.; Perucci, CA. *Cochrane Database Syst Rev.* 2005. Heroin maintenance for chronic heroin dependents; p. CD003410
12. Mathers BM, Degenhardt L, Ali H, et al. HIV prevention, treatment, and care services for people who inject drugs: a systematic review of global, regional, and national coverage. *Lancet.* 2010; 375:1014–1028. [PubMed: 20189638]

13. World Health Organization. Global Update on the Health Sector Response to HIV, 2014. World Health Organization; Geneva, Switzerland: 2014.
14. Degenhardt L, Mathers BM, Wirtz AL, et al. What has been achieved in HIV prevention, treatment and care for people who inject drugs, 2010–2012? A review of the six highest burden countries. *Int J Drug Policy*. 2014; 25:53–60. [PubMed: 24113623]
15. Ministry of Health of the People's Republic of China. Joint United Nations Program on HIV/AIDS. World Health Organization. 2011 Estimates for the HIV/AIDS Epidemic in China. Beijing, China: 2011.
16. Li J, Wang C, McGoogan JM, et al. Human resource development and capacity-building during China's rapid scale-up of methadone maintenance treatment services. *Bull World Health Organ*. 2013; 91:130–135. [PubMed: 23554525]
17. Liu E, Rou K, McGoogan JM, et al. Factors associated with mortality of HIV-positive clients receiving methadone maintenance treatment in China. *J Infect Dis*. 2013; 208:442–453. [PubMed: 23592864]
18. Malaysian Ministry of Health. Global AIDS response country progress report: January 2010 to December 2011. HIV/STI Section DCD. , editor. Malaysia Ministry of Health; Kuala Lumpur, Malaysia: 2012.
19. Bazazi AR, Zelenev A, Fu JJ, et al. High prevalence of non-fatal overdose among people who inject drugs in Malaysia: correlates of overdose and implications for overdose prevention from a cross-sectional study. *Int J Drug Policy*. 2014 pii:S0955-3959(14)00334-X.
20. Mathers BM, Degenhardt L, Phillips B, et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *Lancet*. 2008; 372:1733–1745. [PubMed: 18817968]
21. Aceijas C, Friedman SR, Cooper HL, et al. Estimates of injecting drug users at the national and local level in developing and transitional countries, and gender and age distribution. *Sex Transm Infect*. 2006; 82(suppl 3):iii10–iii17. [PubMed: 16735287]
22. Mendelevich, V.; Zohrabyan, V. UNAIDS. 2012. Access to Health Care Services for Women Who Inject Drugs.
23. Krupitsky E, Nunes EV, Ling W, et al. Injectable extended-release naltrexone for opioid dependence: a double-blind, placebo-controlled, multicentre randomised trial. *Lancet*. 2011; 377:1506–1513. [PubMed: 21529928]
24. UNAIDS. Geneva, Switzerland. Joint United Nations Programme on HIV/AIDS (UNAIDS); 2010. Global Report: UNAIDS Report on the Global AIDS Epidemic, 2010.
25. Balakireva, O.; Bondar, T.; Sereda, Y., et al. Behavior Monitoring and HIV Prevalence Among Injection Drug Users as a Component Second Generation Sentinel Surveillance (Based on Results of the 2011 Biobehavioral Survey). AIDS Alliance; Kyiv, Ukraine: 2012. Analytical Report.
26. Ministry of Health of Ukraine (MOH). Ukrainian centre of the control over socially dangerous diseases. disases Ioeai. , editor. Ministry of Health of Ukraine; Kyiv, Ukraine: 2014.
27. Friedman, S.; Curtis, R.; Neagus, A.; Des Jarlais, D. Social Networks, Drug Injector's Lives and HIV/AIDS. Kluwer Academic Publishers; New York, NY: 2002.
28. El-Bassel N, Terlikbaeva A, Pinkham S. HIV and women who use drugs: double neglect, double risk. *Lancet*. 2010; 376:312–314. [PubMed: 20650519]
29. Booth RE, Lehman WE, Brewster JT, et al. Gender differences in sex risk behaviors among Ukraine injection drug users. *J Acquir Immune Defic Syndr*. 2007; 46:112–117. [PubMed: 17667335]
30. Corsi KF, Dvoryak S, Garver-Apgar C, et al. Gender differences between predictors of HIV status among PWID in Ukraine. *Drug Alcohol Depend*. 2014; 138:103–108. [PubMed: 24613219]
31. Alistar SS, Owens DK, Brandeau ML. Effectiveness and cost effectiveness of expanding harm reduction and antiretroviral therapy in a mixed HIV epidemic: a modeling analysis for Ukraine. *PLoS Med*. 2011; 8:e1000423. [PubMed: 21390264]
32. Filippovych S. Impact of armed conflicts and warfare on opioid substitution treatment in Ukraine: responding to emergency needs. *Int J Drug Policy*. 2015; 26:3–5. [PubMed: 25483411]

33. Lansky A, Finlayson T, Johnson C, et al. Estimating the number of persons who inject drugs in the United States by meta-analysis to calculate national rates of HIV and hepatitis C virus infections. *PLoS One*. 2014; 9:e97596. [PubMed: 24840662]
34. Oster AM, Sternberg M, Nebenzahl S, et al. Prevalence of HIV, sexually transmitted infections, and viral hepatitis by urbanicity, among men who have sex with men, injection drug users, and heterosexuals in the United States. *Sex Transm Dis*. 2014; 41:272–279. [PubMed: 24622641]
35. Broz D, Wejnert C, Pham HT, et al. HIV infection and risk, prevention, and testing behaviors among injecting drug users—National HIV Behavioral Surveillance System, 20 U.S. cities, 2009. *MMWR Surveill Summ*. 2014; 63:1–56. [PubMed: 24990587]
36. Springer SA, Spaulding AC, Meyer JP, et al. Public health implications for adequate transitional care for HIV-infected prisoners: five essential components. *Clin Infect Dis*. 2011; 53:469–479. [PubMed: 21844030]
37. D'Annunzio T, Pollack HA, Jiang L, et al. HIV testing in the nation's opioid treatment programs, 2005–2011: the role of state regulations. *Health Serv Res*. 2014; 49:230–248. [PubMed: 23855724]
38. Rowan-Szal GA, Chatham LR, Joe GW, et al. Services provided during methadone treatment. A gender comparison. *J Subst Abuse Treat*. 2000; 19:7–14. [PubMed: 10867295]
39. Chatham LR, Hiller ML, Rowan-Szal GA, et al. Gender differences at admission and follow-up in a sample of methadone maintenance clients. *Subst Use Misuse*. 1999; 34:1137–1165. [PubMed: 10359226]
40. Hernandez-Avila CA, Rounsaville BJ, Kranzler HR. Opioid-, cannabis and alcohol-dependent women show more rapid progression to substance abuse treatment. *Drug Alcohol Depend*. 2004; 74:265–272. [PubMed: 15194204]
41. SAMHSA. Data on Substance Abuse Treatment Facilities. Substance Abuse and Mental Health Services Administration; Rockville, MD: 2013. National Survey of Substance Abuse Treatment Services (N-SSATS): 2012.
42. Available at: http://ni.unimelb.edu.au/__data/assets/pdf_file/0008/464966/Research_Brief_Number_2_Female_IDUsers_Vietnam.pdf
43. Joint United Nations Programme on HIV/AIDS (UNAIDS). The Gap Report. Geneva, Switzerland: 2014. Available at: http://www.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2014/unaids_gap_report_en.pdf [Accessed August 24, 2014]
44. Mokri A. Brief overview of the status of drug abuse in Iran. *Arch Iran Med*. 2002; 5:184–190.
45. Tavakoli M, Mohammadi L, Yarmohammadi M, et al. Status and trend of substance abuse and dependence among Iranian women. *J Rehabil*. 2014; 14:30–37.
46. Haghdoost, AA.; Sajadi, L.; Osooli, M., et al. [Accessed December 19, 2014] HIV bio-behavioral surveillance survey among female sex workers in I. R. Iran in 2010. 2012. Available at: <http://www.unaids.org/en/.../countryprogressreports/2014countries>
47. Iranian Ministry of Health and Medical Education. [Accessed November 18, 2014] AIDS Progress Report of Iran 2014. 2014. Available at: <http://www.unaids.org/en/.../countryprogressreports/2014countries>
48. Fahimfar N, Sedaghat A, Hatami H, et al. Counseling and harm reduction centers for vulnerable women to HIV/AIDS in Iran. *Iran J Public Health*. 2013; 42:98–104. [PubMed: 23865025]
49. Razzaghi, E.; Rahimi Movaghar, A.; Hosseni, M., et al. [Accessed January 23, 2014] Rapid situation assessment (RSA) of drug abuse in Iran (1998–1999). 2000. Available at: [es.unrol.org/files/RSA2000SUMMARY\[1\].pdf](http://es.unrol.org/files/RSA2000SUMMARY[1].pdf)
50. Alam-mehrjerdi Z, Noori R, Dolan K, Opioid use. treatment and harm reduction services: the first report from the Persian Gulf region. *J Subst Use*. 2014:1–7. DOI: 10.3109/14659891.2014.966344.
51. United Nations Office on Drugs and Crime. Drug use in Pakistan. United Nations Office on Drugs and Crime. , editor. 2013.
52. Global AIDS Report of Pakistan. [Accessed December 19, 2014] 2014. Available at: <http://www.unaids.org/en/.../countryprogressreports/2014countries>
53. Degenhardt L, Whiteford HA, Ferrari AJ, et al. Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010. *Lancet*. 2013; 382:1564–1574. [PubMed: 23993281]

54. Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*. 2012; 380:2224–2260. [PubMed: 23245609]
55. Australian Needle and Syringe Program National Data Report 2009–2013. The Kirby Institute, University of New South Wales; Dec 19. 2014 Available at: <https://kirby.unsw.edu.au/sites/default/files/hiv/resources/ANSPS-NDR-2009-2013-2.pdf>
56. Madden A, Wodak A. Australia's response to HIV among people who inject drugs. *AIDS Educ Prev*. 2014; 26:234–244. [PubMed: 24846486]
57. Stafford, J.; Burns, L. Findings from the Illicit Drug Reporting System (IDRS). Vol. Volume 109. Sydney, Australia: 2014. https://ndarc.med.unsw.edu.au/sites/default/files/ndarc/resources/National_IDRS_2013.pdf
58. Australian Institute of Health and Welfare. National Opioid Pharmacotherapy Statistics Annual Data Collection. Australian Institute of Health and Welfare; Canberra, Australia: 2014.
59. Gisev N, Degenhardt L, Larney S, et al. A comparative study of opioid substitution therapy utilisation among opioid-dependent men and women. *Drug Alcohol Rev*. 2014; 33:499–505. [PubMed: 24840554]
60. Degenhardt L, Charlson F, Mathers B, et al. The global epidemiology and burden of opioid dependence: results from the global burden of disease 2010 study. *Addiction*. 2014; 109:1320–1333. [PubMed: 24661272]
61. Pinkham S, Stoicescu C, Myers B. Developing effective health interventions for women who inject drugs: key areas and recommendations for program development and policy. *Adv Prev Med*. 2012:1–10.
62. Obasanjo, O. West Africa Commission on Drugs. 2014. Not Just in Transit: Drugs, The State and Society in West Africa.
63. Global HIV/AIDS Response: Epidemic Update and Health Sector Progress Towards Universal Access Progress Report 2011. World Health Organization; 2011.
64. Harm Reduction International. The Global State of Harm Reduction 2012: Towards an Integrated Response. Harm Reduction International; London, United Kingdom: 2012.
65. National AIDS Commission Indonesia. Country report on the follow-up to the declaration of commitment on HIV/AIDS. Publisher: National AIDS Commission Indonesia; Jakarta, Indonesia: 2008.
66. Safren SA, Wingood G, Altice FL. Strategies for primary HIV prevention that target behavioral change. *Clin Infect Dis*. 2007; 45(suppl 4):S300–S307. [PubMed: 18190303]
67. Pinkham S, Stoicescu C, Myers B. Developing effective health interventions for women who inject drugs: key areas and recommendations for program development and policy. *Adv Prev Med*. 2012; 2012:269123. [PubMed: 23198158]
68. El-Bassel N, Witte SS, Gilbert L, et al. The efficacy of a relationship-based HIV/STD prevention program for heterosexual couples. *Am J Public Health*. 2003; 93:963–969. [PubMed: 12773363]
69. Strathdee SA, Abramovitz D, Lozada R, et al. Reductions in HIV/STI incidence and sharing of injection equipment among female sex workers who inject drugs: results from a randomized controlled trial. *PLoS One*. 2013; 8:e65812. [PubMed: 23785451]

TABLE 1

Drug and HIV Treatment Services for WWID in the 6 Countries With Highest Rates of PWID Globally

Country	Overall PWID Prevalence (%)	Estimated Number of PWID	PWID Who Are Women (%)	HIV Prevalence Among WWID (%)	WWID With HIV Receiving ART (No.)	Type of MAT Provided	Percent of WWID Receiving MAT	HIV Risk Behavior Reduction Evaluation Among WWID in Drug Treatment
China	0.2*	2,350,000*	20 [†]	6.4 [‡]	126,448 [§]	MMT, BPN	NR	NR
Malaysia	1.33*	205,000*	2 ^{//}	27.8 [‡]	15,048 [§]	MMT, BPN	NR	Y
Russia	2.29 [¶]	1,825,000*	16 [#]	25.8 [‡]	125,623 [§]	NTX, XR-NTX	NR	NR
Ukraine	0.88–1.22 ^{¶¶}	290,000 ^{¶¶}	25 ^{**††}	22.4 ^{‡‡}	40,350 [§]	MMT, BPN, XR-NTX	NR	NR
United States	1.5%	3,400,000	13 ^{¶¶}	13 ^{§§}	29,70,6 ^{////}	MMT, BPN, XR-NTX, NTX	NR	Y
Vietnam	0.22 ^{¶¶¶}	134,500 ^{¶¶¶}	NR	NR	72,711 [§]	MMT	NR	NR

Data sources:

BPN, buprenorphine; MMT, methadone maintenance treatment; NR, not reported; NTX, naltrexone; XR-NTX, extended-release naltrexone; Y, yes.

* Beyrer et al. *Lancet*. 2010.

[†] *Global State Report* 2012.

[‡] UNAIDS data 2012.

[§] UNAIDS data, 2011.

^{//} Malaysian AIDS Council, http://www.mac.org.my/v3/?page_id=769.

[¶] UNODC, *World Drug Report*. 2014 re: 2012 data.

[#] Federal Research Methodological Centre on Prevention and Fight of AIDS. HIV Infection. Information Bulletin Nr. 36, p. 35, Moscow 2012.

** http://csis.org/files/publication/120314_Nieburg_InjectionDrugUkraine_web.pdf.

^{††} http://www.aidsalliance.org.ua/ru/library/our/monitoring_reports/pdf/idu.pdf.

^{‡‡} UNAIDS data 2013.

^{§§} National Center for HIV/AIDS, Viral Hepatitis & STD & TB Prevention. Division of HIV/AIDS Prevention. Centers for Disease Control (CDC). Epidemiology of HIV Infection Through 2012; http://www.cdc.gov/hiv/pdf/statistics_surveillance_epi-hiv-infection.pdf.

^{////} Centers For Disease Control. Vital Signs: HIV diagnosis, Care, and Treatment Among Persons Living with HIV United States, 2011. *MMWR* 2014;47; <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6347a5.htm>.

^{¶¶¶} Degenhardt et al. *Lancet*. 2014.

TABLE 2

Drug Treatment, HIV Testing and Treatment, and Harm Reduction Services in Sub-Sahara Africa, Middle East/North Africa, Australia, India, Indonesia, and Thailand Among WWID*

Country	PWID Who Are Women (%)	HIV Prevalence Among WWID (%)	OAT	VCT	ART	NSEP
Pakistan	1.6	6	P	LC	LC	Y
Iran	6	8.7	Y	Y	Y	Y
Afghanistan	NR	3.7	E	Y	Y	Y
Australia	33 [†]	0.8 [‡]	Y	Y	Y	Y
South Africa	27	19.4	Y	Y	Y	Y
Kenya	11	18–44	E	LC	Y	LC
Tanzania	NR	72	E	Y	Y	LC
Nigeria	NR	<10 [§]	E	LC	Y	LC
India	NR	13	Y	Y	Y	Y
Indonesia	11	57.1 [¶]	LC	LC	LC	LC
Thailand	NR	29.7	LC	LC	LC	LC

Data sources:

E, emerging; LC, low coverage; NR, not reported; OAT, opioid agonist treatment; P, pilot data only; VCT, volunteer HIV counseling and testing; Y, yes.

* Data from this table with the exception of the specific references given were either provided in the text of the manuscript or based on knowledge of the specific country where authors of this manuscript have conducted research.

[†] Degenhardt L, Whiteford H, Ferrari A, et al. Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010. *The Lancet*. 2013;382:1564–1574.

[‡] Australian Needle and Syringe Program National Data Report 2009–2013. The Kirby Institute, University of New South Wales; 2014. <https://kirby.unsw.edu.au/sites/default/files/hiv/resources/ANSPS-NDR-2009-2013-2.pdf>

[§] Eluwa GI, Strathdee SA, Adebayo SB, Ahonsi B, Adebajo SB. A profile on HIV prevalence and risk behaviors among injecting drug users in Nigeria: should we be alarmed? *Drug Alcohol Depend*. 2013;127:65–71.

^{||} UNAIDS, 2012.

[¶] UNAIDS, 2009.