HIV in people who use drugs 7

Time to act: a call for comprehensive responses to HIV in people who use drugs

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The published work on HIV in people who use drugs shows that the global burden of HIV infection in this group can be reduced. Concerted action by governments, multilateral organisations, health systems, and individuals could lead to enormous benefits for families, communities, and societies. We review the evidence and identify synergies between biomedical science, public health, and human rights. Cost-effective interventions, including needle and syringe exchange programmes, opioid substitution therapy, and expanded access to HIV treatment and care, are supported on public health and human rights grounds; however, only around 10% of people who use drugs worldwide are being reached, and far too many are imprisoned for minor offences or detained without trial. To change this situation will take commitment, advocacy, and political courage to advance the action agenda. Failure to do so will exacerbate the spread of HIV infection, undermine treatment programmes, and continue to expand prison populations with patients in need of care.

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This is the seventh in a **Series** of seven papers about HIV in people who use drugs

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Introduction

The war on drugs has failed. Policies of detention, forced treatment, and incarceration of people who use drugs have been unsuccessful. The global response to HIV/AIDS, however, in terms of research, scale-up of prevention, human rights of those affected, and access to antiretroviral treatment, is showing some remarkable success. But the response to the substantial component of the pandemic driven by substance use is one of the most frustrating aspects of the global HIV/AIDS crisis. Evidence has not played enough of a defining part in public health policy, and too many governments, criminal justice systems, and medical establishments discriminate against patients with drug dependency, restrict their rights, and use outmoded and discredited forms of treatment while limiting use of—or banning outright—evidence-based approaches.

The USA, the largest funder of HIV/AIDS treatment and research worldwide, maintained a ban on federal funding for needle and syringe programmes (NSPs) until 2009. Yet, there are few interventions for prevention of HIV infection that are simpler and less costly than are NSPs.[1,2] The effort to expand evidence-based treatment, specifically opioid substitution therapy (OST), to those addicted to heroin and other opioids, has floundered where it was, and is, needed most: in Russia, parts of central Asia, and the Commonwealth of Independent States.[3,4]

The reports in this Series draw from multidisciplinary published works promoting actions that individuals, communities, health-care systems, governments, and multilateral organisations can take to substantially reduce the global burden of HIV infection in people

Key messages

- Expansion of country-specific research and surveillance strategies is needed to give governments better and more strategic information about their drug-related epidemics.
- HIV epidemics in people who use drugs can be largely controlled and their harms mitigated with currently available strategies. What is needed is massive scale-up of combination prevention, treatment, and care. In opioid-driven epidemics, this approach includes an essential minimum package of safe injection programmes, opioid substitution therapy, and antiretroviral treatment.
- Universal access to evidence-based treatment for drug use is a fundamental right to health and an urgent public health priority.
- Effective and comprehensive national harm-reduction policies, programmes, and services are essential to countries meeting their legal obligation to realise the right to health. High-income countries need to provide more than essential services. Pilot programmes are no longer sufficient.
- The dangers of inaction in meeting the needs of people who use drugs include continuing spread of HIV infection in new populations and regions, increased complexity of HIV-1 epidemics at molecular levels, decreased access to opioids for pain management and palliative care, and the human, family, health, and social costs of mass incarceration and detention.
- Expanded action and advocacy by health professionals on behalf of people who use drugs are urgently needed in both health-care and criminal justice sectors. Health professionals should not be complicit in programmes and policies that have no evidence base or that violate human rights. The voice of people who use drugs themselves needs to be heard at all levels, from service delivery to policy decision making.
- Reform of justice systems is part of harm reduction: we call for decriminalisation of drug users, due legal processes, and access to health services for people who use drugs in all forms of prison and detention.

Panel 1: Portugal—humanitarianism and pragmatism

In 1999, the Portuguese Government approved the first national drug strategy, which included a comprehensive approach to reduction of supply and demand within a framework of decriminalisation of personal consumption of drugs.

João Castel-Branco Goulão was a member of the expert committee who presented those recommendations; a medical doctor, he is now the Chair of IDT (Institute for Drugs and Drug Addiction), the Portuguese National Coordinator on Drugs and, since the beginning of 2010, the Chair of the Management Board of the European Monitoring Centre for Drugs and Drug Addiction. Here, Castel-Branco Goulão talks about the history of treatment for drug use in Portugal.

"Until 1974, Portugal had a conservative, closed, and isolated society, with few contacts with social and cultural movements underway globally. After a military coup d'état (the Carnation Revolution) we became a semi-presidential constitutional republic, allowing democratic elections and citizens' contact with other realities.

Drug use and abuse became socially visible from the late 1970s. Associated with ideas of freedom, it spread among the large military contingents and thousands of citizens returning from newly independent colonies (Angola, Mozambique, and Guinea-Bissau). Experimentation was almost mandatory for young people, unprepared for this new reality. Heroin also became available and rapidly led to an epidemic of addiction and associated problems, including an emerging epidemic of HIV infection.

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Though Portugal continued to have one of the lowest levels of illicit drugs consumption in Europe, by the 1980s we were one of the highest prevalence countries for problematic drug use. Drugs and drug addiction became an enormous social, health, and political problem in Portuguese society. Prevention and treatment responses were started, both at public and non-governmental levels, but the phenomenon did not seem to slow down. Most addicts were afraid of entering programmes, as they feared referral to criminal justice.

In 1997, drug addiction was rated first among concerns of the Portuguese people. The government then convened an expert group to assess the problem and develop a new strategy. As a result, the first Portuguese national strategy on drugs and drug addiction was developed and approved in 1999. Our strategy was based on the principles of humanitarianism and pragmatism. It was designed as a balanced approach between supply and demand reduction measures, with concrete proposals for integrated responses on prevention, treatment, harm reduction, and re-integration into society, within a framework of decriminalisation of personal consumption of drugs. Drug addiction was henceforth considered as a disease, with drug addicts being viewed as patients and not as criminals.

Personal consumption and possession for consumption of drugs was decriminalised in 2000 and the law was enforced from July, 2001. It is a crime to possess drugs in a quantity greater than an average of 10 days' consumption. Below that limit (defined differently for each substance) possession or consumption is considered as an administrative offence. Special bodies (Drug Addiction Dissuasion Commissions) were created to apply administrative sanctions. In fact, they act as a 'second line' of preventive interventions, evaluating the personal circumstances of drug users referred by police and directing them to the appropriate responses (treatment or others).

10 years after that decision and the implementation of the integrated strategy, all data available show positive trends. Not only did Portugal not became a 'haven' for drug users and a drug tourism destination, but general population surveys showed a decrease in the prevalence of any drug use among young people (15–19 years old) from 10·8% in 2001 to 8·6% in 2007; a dramatic fall of the relative proportion of drug users in the incidence of HIV in Portugal, from 54% of the total in 2001 to 30% in 2007; and a consistent increase in the number of addicted people in treatment, from 32 000 in 2002 to 38 500 in 2008.

With this decriminalisation of personal drug use, and our integrated strategy, Portugal is having a leading role in tackling drug issues among other EU countries. Humanitarianism and pragmatism can work. Portugal did not require mass incarceration to achieve real results in decreasing drug consumption, addiction, and HIV infections."

who use drugs.[3–8] Encouragingly, there are synergies between biomedical science, public health, and human rights. The right things to do to limit spread of disease are also the right things to do to protect human rights. Cost-effective actions are also ethically justified—eg, provision of outpatient OST for drug-dependent patients, as opposed to incarceration or denying them access to antiretroviral treatment (ART) because of discriminatory policies and practices.[5,8] The evidence confirms that a massive global scale-up of proven interventions, including the combination of NSPs, OST, and ART, is needed.[4] High coverage of combined interventions sustained over time will be necessary to achieve lasting gains in prevention of HIV infection in people who use drugs.[4] These interventions need to be tailored to country-specific and outbreak-specific contexts to have a maximum impact, as shown by Strathdee and colleagues.[5] For many countries, this approach will require an invigorated country-specific research agenda to much better characterise HIV epidemics in people who use drugs (panel 1). The HIV response also needs to include universal access to

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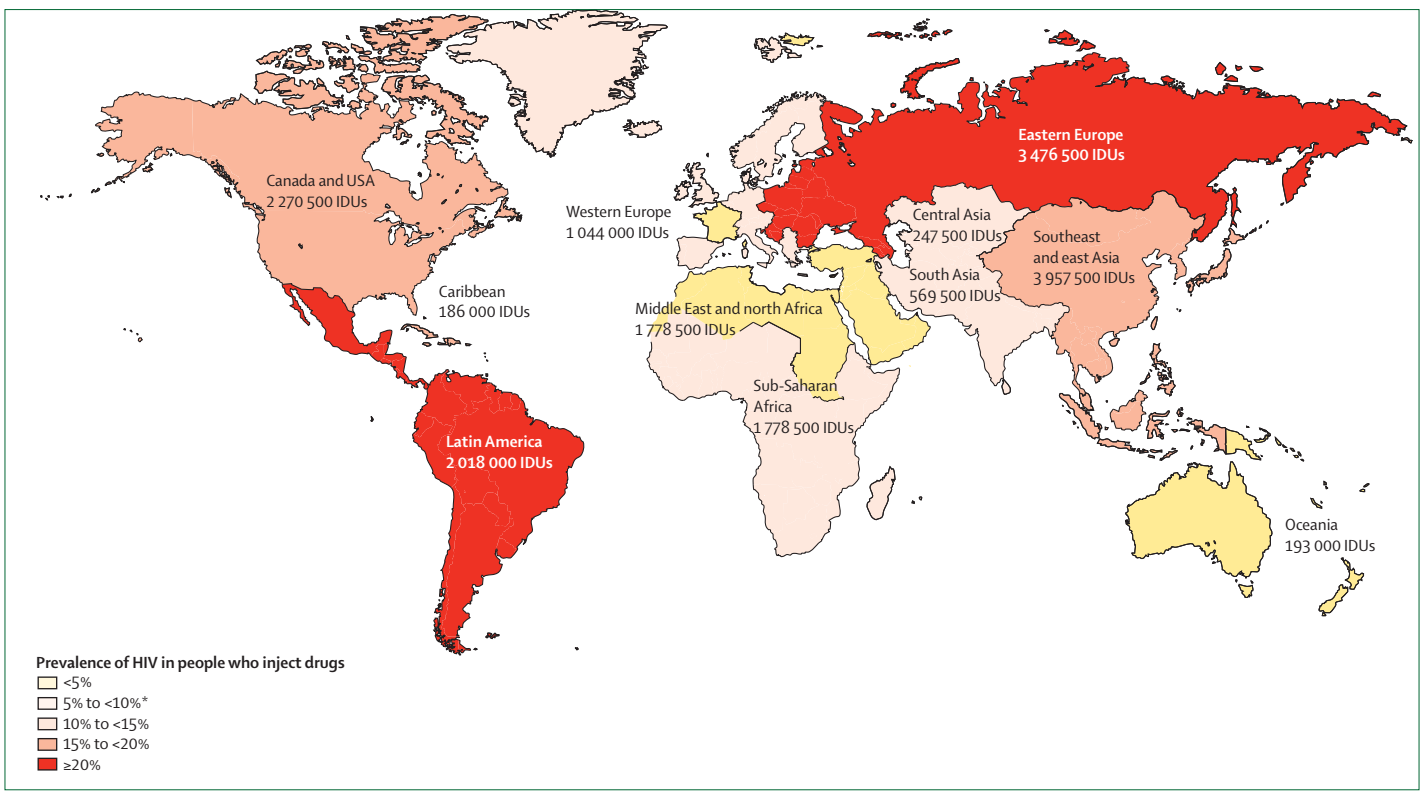

***Figure 1*: Estimated numbers of injecting drug users (IDUs) and regional prevalence of HIV infection in people who inject drugs, 2010**
*No countries have a prevalence of 5% to <10%.

evidence-based treatment for drug dependency.[3] This treatment is a fundamental component of the right to health and an urgent public health priority. And, as Jürgens and colleagues[8] point out, the right to health framework places a legal obligation on all countries to have and to implement effective and comprehensive harm-reduction programmes and policies.[9]

Commitment, advocacy, and political courage are needed to advance the action agenda described in this report. The evidence clearly shows that inaction will exacerbate the spread of HIV infection, undermine access to HIV prevention and ART programmes, continue to swell prison populations with patients in need of care, and result in abuses of human rights.

The scale and scope of the epidemic

The Reference Group to the UN on HIV and Injecting Drug Use estimated that worldwide around 15·9 million people (range 11·0–21·2 million) were injecting drug users (IDUs) in 2007.[10] Figure 1 shows 2010 data for global estimated numbers of people who inject drugs by region, and HIV prevalence in people who inject drugs. Injecting drug use and associated HIV and hepatitis C virus (HCV) infections have been reported in nearly all UN member states, and across all income levels. People who use but do not inject drugs represent a substantially larger population than do people who inject drugs, although estimates of non-injecting drug users vary according to which substances are included, how use is defined, and whether alcohol use is included. As reported by Colfax and colleagues,[7] sexual exposure risks for HIV and other sexually transmitted infections in these heterogeneous populations can be substantial, as they are in people who inject drugs.

Nevertheless, spread of HIV infection has been controlled among IDUs in many countries by the available package of interventions jointly recommended by WHO, UNAIDS, and the UN Office on Drugs and Crime (UNODC; panel 2). In IDU populations with good access to these services, HIV incidence has remained low and stable for years and even decades in contexts as diverse as Australia,[11] the UK, Brazil, Germany,[12] Hong Kong, France,[13] and several US cities.[14,15] The consistency of these experiences shows that public health efforts can fairly easily control outbreaks of HIV infection in people who use drugs. Yet in 2010, HIV transmission continues among IDUs in much of the world, and, indeed, is a major driver of HIV epidemics in eastern Europe, east, southeast, and central Asia, and the southern cone of South America.[10] Five countries in particular (China, Vietnam, Russia, Ukraine, and Malaysia) have what Wolfe and colleagues[3] call "megaepidemics" in people who inject drugs. Taken together, these countries account for an estimated

Panel 2:* Comprehensive approach for HIV prevention, treatment, and care for injecting drug users (IDUs)

- Needle and syringe programmes
- Opioid substitution therapy
- Voluntary HIV counselling and testing
- Antiretroviral treatment
- Prevention of sexually transmitted infections
- Condom programmes for IDUs and partners
- Targeted information, education, and communication
- Hepatitis diagnosis, treatment (hepatitis A, B, and C), and vaccination (hepatitis A and B)
- Prevention, diagnosis, and treatment of tuberculosis

*Adult male circumcision has been associated with decreased risk of male HIV acquisition from heterosexual exposures. Although not a part of the WHO/UN Office on Drugs and Crime/UNAIDS comprehensive approach for injecting drug use, this intervention might be relevant for male drug users who engage in heterosexual sex.

2·4 million cases of HIV infection and nearly half of all IDUs living with HIV infection worldwide.[3,10] HIV epidemics continue to expand in IDUs in central Asia, including in Afghanistan.[16,17] IDUs account for more than 60% of all HIV infections in Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Ukraine, Tajikistan, Uzbekistan, Iran, and Indonesia.[18] Coverage with the package of essential services for this population is inadequate with a global average of fewer than two needles per IDU per month, 8% of opioid users in opioid treatment, and 4% of IDUs with HIV infection receiving ART.[19] According to the Global Prevention Working Group Coverage, levels for IDUs are the lowest for any population at risk for HIV infection.[20]

Dangers of inaction

Continuing spread of HIV infection

In settings in which OST and NSPs are unavailable or illegal and drug-dependent people are treated as criminals, the consequences of inaction are high. First is the continuing spread of HIV infection. Secondary exposures for the sexual partners of drug users also need to be accounted for in this cost. In Russia, where OST is banned, transmission of HIV from predominantly male IDUs to female sex partners seems to account for a substantial component of the reported rise in HIV infections in women.[21] Some countries have taken bold steps to scale up OST, including China, Iran, Vietnam, and Kyrgyzstan.[19] But quality and not simply quantity is an important predictor of treatment success.[7] In many countries, substitution treatment programmes co-exist with networks of drug detention centres that are often forced detoxification sites and sometimes forced labour camps.[8] Drug detention centres have poor records in preventing drug use and high rates of recidivism. Additionally, drug detention centres can enhance HIV and related risks, violate human rights, and undermine the potential success of proven interventions.[19,22,23]

New outbreaks

Failure to respond to new and emerging outbreaks of HIV infection in people who use drugs has an enormous cost—now and in the future. Evidence from Kenya,[20] Malawi, Namibia, and Botswana,[24] from Libya, Tanzania, and Zanzibar,[25] and from South Africa,[10] suggest that Africans are increasingly injecting drugs and that associated spread of HIV infection is already underway. This finding is an emerging concern for unprepared health systems—African health-care systems and providers are already among the most overwhelmed in the world, and few systems have experience in prevention, treatment, and care for people who use drugs. Prompt action with a focus on training and capacity building will be needed to prevent the increase in injecting drug use from worsening Africa's high burden of AIDS. Injecting drug use will likely drive several of the emerging HIV epidemics in the Middle East and North African region, and other outbreaks in Muslim communities, as has occurred in Iran, Malaysia, Indonesia, and western China.[5]

Effects on Afghanistan, Pakistan, and Iran

Since the 1990s, global opium production has shifted from southeast Asia to Afghanistan, now the source of more than 90% of the world's illicit opioids.[26] Export of the equivalent of more than 6 000 000 kg of opium is predominantly via its neighbours, Iran, Pakistan, and central Asia.[27] Opium production in Afghanistan has increased substantially in recent decades, with the most pronounced expansion in the past decade (figure 2).

Although Europe remains the largest market for Afghan opium, a substantial portion of opioid exports are now appearing in China, central Asia, and Russia, and more recently in sub-Saharan Africa and the USA. These newer trafficking routes have not only acted as conduits of the trade but have also generated consumers of the drugs. Iran, through which an estimated 40% of the Afghan trade passes, now has an estimated 1 million users of opioids, with HIV prevalence between 15% and 23% in drug-treatment service attendees in Tehran.[29] During the past decade, central Asia has reported an average increase in cumulative HIV cases of 48% per year, mainly attributable to the spread of opioid use and the high proportion of unsafe injecting practices.[30] That so many young people in these predominately Muslim states have been affected is a tragedy, and suggests that there are still challenges in fully realising the potential of Islamic principles and teachings to provide strong cultural and religious support to effective harm reduction.[31]

Changes in molecular epidemiology

In settings in which spread of HIV infection among people who use drugs has not been controlled, the resulting epidemics have been marked by several unique molecular features. Spread of HIV infection among IDUs has been characterised by high rates of

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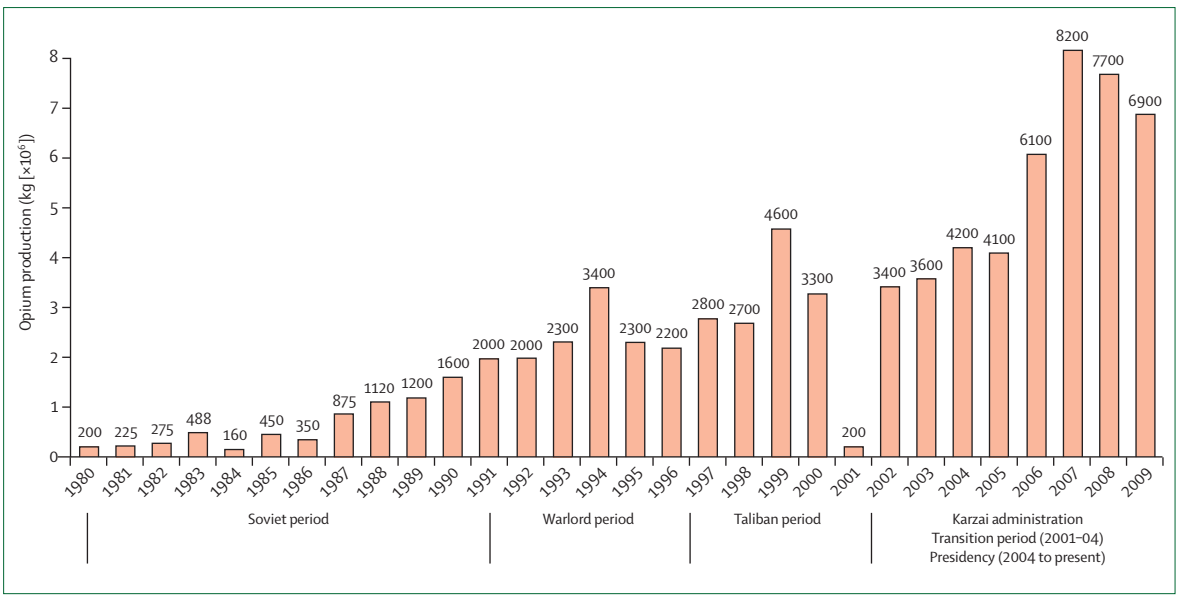

***Figure 2*: Opium production in Afghanistan 1980–2009**
Modified from data from the UN Office on Drugs and Crime World Drug Reports.[26,28]

recombination and dual infection, transnational spread, and in some settings, evidence of distinct viral variants in people who use drugs and their networks.[32,33] Greater genetic diversity of HIV-1 variants is a challenge to human immune systems, increases the likelihood of resistance to ART, and can complicate HIV vaccine development. Failures in primary and secondary prevention of HIV transmission in IDUs might allow for increasing genetic diversity through recombination, as has been proposed by Tee and colleagues[32] on the China–Burma border. The apparent inability of a prime-boost HIV vaccine to protect Thai vaccinees with a history of exposure to injecting drug use suggests that this might be more than a theoretical concern.[34]

The increasing genetic diversity of HIV-1 in IDUs through recombination and dual infection is almost certainly a function of reuse of non-sterile injecting equipment. This situation has been best exemplified by the complex outbreak involving IDUs in Burma, northeast India, and southwest China. Here, Tee and colleagues identified zones of "hyper-recombination" and the generation of novel recombinants CRF07_B/C and CRF08_B/C that have become the predominant forms of HIV across most of China, northeast India, and northern Burma.[17,32] Tovanabutra and colleagues[33,35] showed that variants that emerged in Thai IDUs soon spread to epidemiologically unlinked sexual transmission networks and led to increasing genetic diversity in the HIV epidemic in Thailand.[33,35]

Decreased access to opioids for pain, surgery, and palliative care

Failure to address unnecessary and treatable pain is a violation of human dignity. Lack of access to adequate pain relief undermines the right to health and to be free from cruel and degrading treatment.[36,37] Key to limiting access to opioids for pain relief are controlled substances laws and regulations that are focused on reducing potential abuse of these agents. In a 2009 report on access to pain treatment, Human Rights Watch identified several factors that restrict access: lack of knowledge among physicians, inadequate health-care systems for provision of pain medication, fears of addiction on the part of providers and governments, and antiquated laws and unduly strict regulations on importation and prescription of opioids.[38,39] Such restrictions in opioid regulatory frameworks are arguably another hidden cost of the war on drugs. WHO guidelines suggest that a balance be struck between making relief from pain a reality, and continuing to control narcotics and prevent diversion.[40] For far too many people worldwide, the current balance is biased towards drug control. The need for reform was recognised at the 54th session of the Commission on Narcotic Drugs in March, 2010, which resolved to examine barriers to adequate availability of narcotic drugs for medical purposes, given that international drug control conventions affirm the necessity of narcotic drugs in reduction of pain.[40]

Costs of incarceration

Criminal and legalistic approaches to substance use emphasise incarceration and punishment over treatment and prevention. These approaches have led to very high rates of incarceration in several settings, including in Russia, the USA, and several states in central Asia. Russian incarceration rates in 2007 were 670 per 100 000 population, roughly 1% of all adults, and second only to the USA, at 702 per

***Panel 3:* Punishment is not medical treatment**

"My name is Li Wei* and I am a citizen of China. I was addicted to heroin for several years before being sent to an involuntary treatment centre in my country. Since the day I was sent into the involuntary detoxification centre, I was never given any medicine to relieve my stress, not even a sleeping pill. I passed through the initial physical detoxification phase without water or food, as I was unable to swallow and the centre staff gave me no food or medicine that might help or provide nutrition. As soon as I was considered 'detoxified', the warden hurriedly arranged for me to labour at a locked factory.

I worked 16 hours a day, overstretched, and if I failed to complete my workload, I would be treated with violent beatings and all kinds of corporal punishment. Sometimes I would be ordered to kneel down, and I would be violently kicked in the chest until they were tired of kicking me. Sometimes in the dead of winter I would be told to strip naked and stand under a cold water tap, and to make it worse, two people would stand on either side blowing me with fans as the water poured over me. This sort of punishment would go on for at least a half hour at a time.

Under such conditions, I stuck it out to the end of the 1-year period of involuntary detoxification. By the time I walked out of the centre, my overall bodily health had fallen to an absurd low because of the long-term hard labour I endured. I could only walk about 100 metres, and then I had to stop and rest. Ordinarily after recovering the body should be far better than the past, but when I got out people were asking me if my drug addiction had worsened—I looked like a terminally ill patient, not somebody who had just completed his drug rehabilitation.

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It is dubbed 'rehabilitation through labour' but I never felt that I was rehabilitating; the only thing I felt was punishment, and I believe everyone else there felt the same. Since drug addiction is a disease, it should be given medical treatment. Yet if what I was given is medical treatment, I'd rather stay away from it forever.

Such treatment, in many countries, is reserved only for convicted criminals. Why is it still being used on drug users when medical science worldwide has agreed that drug addiction is a brain disease?

Speaking from my personal experience, I think education and employment opportunities can help facilitate the rehabilitation of addicted individuals. But forced hard labour is not rehabilitation. If hard labour and forced labour are used, drug users will always react to detoxification with fear and avoidance. If methadone can be brought into involuntary detoxification centres, I think the positive effect will be unexpectedly large.

I'd like to end with a call on my community friends: if you agree with me, please also speak out your feelings and needs, for your own sake, as well as for improving the conditions of all community members under such 'treatment'."

*Name changed for confidentiality.

100 000 population.[41] These levels have been referred to as mass incarceration, and have been associated with a wide range of negative consequences for those incarcerated and for their communities.

By use of data from 26 eastern European and central Asian countries, Stuckler and colleagues[41] calculated that each percentage point increase in incarceration rate (after controlling for tuberculosis infrastructure, HIV prevalence, and economic and demographic variables) was associated with an increase in population-level incidence of tuberculosis of 0·34% (population attributable risk, 95% CI 0·10–0·58; p<0·01). Net increases in incarceration accounted for roughly three-fifths of the average increase in tuberculosis incidence from 1991 to 2002. The investigators' conclusion was that a reduction in imprisonment would reduce regional general population risks for both tuberculosis and multidrug-resistant (MDR) tuberculosis.

The USA has also had an unprecedented increase in incarceration, with an estimated 500-fold increase between 1970 and 2007.[42] These rates are characterised by extreme racial disparities: in 2007, rates of incarceration were 412 per 100 000 in white people; 742 per 100 000 in Hispanic people, and 2290 per 100 000 in black people.[42] One in nine black men aged 25–29 years was in prison in that year—leading to a lifetime cumulative risk of prison for one in three black men if 2007 rates were sustained.[42] Much of this increase has been caused by harsh sentencing laws, particularly those affecting use of crack cocaine—more than 80% of people sentenced under these laws in the USA were black.[43] Notably, US data for substance use do not reflect these levels of racial disparity in terms of actual drug use. Khan and colleagues[44] investigated the relation between sexual risk behaviours and history of incarceration in adults sampled in the US National Survey of Family Growth. They found that reported illicit drug use was not associated with either ethnic origin or income level.

Incarceration poses particular risks for IDUs. Choopanya and colleagues[45] followed 1209 HIV-uninfected male IDUs in Bangkok, Thailand, in preparation for an HIV vaccine trial. They also followed participants who were subsequently arrested and detained. Rates of HIV infection were high, at 5·8 per 100 per year (95% CI 4·8–6·8), but the HIV incidence in men during incarceration rose substantially to 35 per 100 per year. The Thai prisons offered no OST and illicit drugs were widely available, but injecting equipment was not, an all too common situation in incarceration contexts

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worldwide. Many reports have also shown that incarceration is independently associated with risk of HIV infection in IDUs.[7,46]

Incarceration in the name of treatment has led to a wide range of concerns about arbitrary detention, unpaid labour, and limited access to ART in China, Thailand, Vietnam, Laos, and Cambodia.[47] In Vietnam and China, people who use drugs can be detained on administrative charges for open-ended periods, and reports are emerging of the exploitation of this population for slave labour.[47]

Incarceration has shown little effect on rates of substance use—but it has profoundly negative consequences on health, human rights, tuberculosis, and HIV. Drug-dependent patients should be treated, not incarcerated; for those who are incarcerated or detained, access to health services must be made available (panel 3).

Calls to action

Changing the risk environment

In the first report in this Series, Strathdee and colleagues[5] explored the risk environment for people who use drugs in three very different contexts: the cities of Odessa (Ukraine), Karachi (Pakistan), and Nairobi (Kenya). Their findings show that understanding risks of HIV infection in drug users must go beyond the individual and assess structural and environmental factors that shape individual risk practices and vulnerabilities to HIV infection. This broader risk environment framework includes micro-level and macro-level physical, social, economic, and policy factors that generate contexts of HIV risk or protection.[48] Strathdee and colleagues report that sexual transmission of HIV among IDUs, and from IDUs to non-IDUs, can differ substantially: risk of HIV transmission attributable to unprotected sex in IDUs was 15–45% in Odessa, but less than 10% in Karachi and Nairobi. A 60% reduction in the unmet need of OST, NSPs, and ART would reduce HIV incidence in Odessa, Karachi, and Nairobi by 41%, 43%, and 30%, respectively, from 2010 to 2015. Local HIV epidemics were sensitive to different types and levels of structural changes: elimination of laws prohibiting OST with concomitant scale-up of services to 80% coverage could prevent 14% of HIV infections in Nairobi, whereas mitigation of the expected transition of non-injecting to injecting drug use by 8–12% in Karachi could prevent 65–98% of incident HIV infections. In regions with rapidly growing epidemics (eg, Nairobi), the effectiveness of NSPs and OST seems to matter more than coverage alone.[5]

The extreme heterogeneity in global and local HIV epidemics in IDUs necessitates implementation of a targeted combination of interventions that address population-level determinants of HIV transmission and is informed by a comprehensive analysis of local risks operating at several levels of influence. Strathdee and colleagues'[5] work shows why structural HIV interventions need to be a key component of any combination approach; it also shows that an evidence-informed, rights-based approach to providing combination interventions that protect access to OST and HIV prevention and treatment in people who inject drugs can have substantial and measureable effects on local HIV epidemic trajectories.

Clinical care and co-infections

Altice and colleagues[6] reviewed the challenges in treatment and care for HIV-infected drug users. In too many settings, disparities in morbidity and mortality outcomes continue for drug users compared with others living with HIV. Altice and colleagues propose integrated multidisciplinary approaches to the range of medical and psychiatric comorbidities affecting this population, such as viral hepatitis, tuberculosis, bacterial infections, and mental illnesses beyond drug dependence. A cornerstone of good care for opioid-dependent patients is use of OST in what Altice and colleagues call medication-assisted therapy; OST used in conjunction with ART.[6] Medication-assisted therapy has been shown to increase adherence to ART, improve treatment outcomes for comorbidities, increase retention in care, and decrease HIV transmission-related behaviours, providing a secondary prevention benefit.[49–53] Combination of ART with OST has been associated with reductions in HIV-1 viral load.[53]

HIV/HCV co-infection remains a substantial treatment challenge. New and affordable hepatitis C-specific antiviral agents are an urgent research priority and, together with a sustained effort to increase the affordability of existing HCV treatment, are eagerly awaited by health providers and those living with co-infection.[6]

Some comorbidities associated with drug users will need more than clinical solutions. All patients living with HIV infection are at risk for tuberculosis. But drug users are at particularly high risk because of their increased likelihood of being in environments such as prisons, drug treatment centres, and detention centres where overcrowding, lack of ventilation, inadequate nutrition, and limited access to health care and antiretroviral drugs can substantially increase tuberculosis acquisition and transmission, and tuberculosis-related morbidity and mortality. Russia, China, and India have all reported major epidemics of MDR tuberculosis that are associated with people who use drugs, making expansion of quality tuberculosis treatment for these patients, and reduction in incarceration rates, public health priorities.

Access to treatment and care

Wolfe and colleagues[3] assessed access and barriers to essential services for people who use drugs. Like Strathdee and co-workers,[5] they urge for greater focus on systemic and structural, rather than individual, barriers to ART adherence, noting that the risk of treatment failure should be assessed in terms of provider attitudes, drug user registries, prohibitions on integration of OST with tuberculosis and HIV treatment, arbitrary detention for drug use, and other structural realities. The several barriers described by Wolfe and colleagues underscore

Panel 4: **Calls to action**

Governments

- Reduce legal, regulatory, and structural barriers to access to harm reduction, NSPs, OST, and ART for people who use drugs
- Ensure access to comprehensive and evidence-based prevention, treatment, and care services to people who use drugs in all forms of prison and detention
- Close compulsory drug detention centres and replace them with evidence-based and human-rights-based drug treatment services
- Reform laws and policies to decriminalise people who use drugs
- Expand drug treatment access and services to provide universal access to evidence-based drug treatment services
- Fulfil the right to health by taking harm-reduction programmes to scale, and provide effective protection against discrimination of people who use drugs in health-care settings
- Provide harm-reduction training for police officers (as well as judges and prosecutors) and incorporate harm reduction into law enforcement strategies, to end harassment, arbitrary detention, ill-treatment, and torture of people who use drugs

Ministries of health

- Substantially increase coverage rates of ART, OST, and NSPs in combination and sustain effective programmes over time
- Reduce barriers to access to care for people who use drugs, including stigma in health-care settings, uncoordinated medical treatment, implicit or explicit bans on treating people who actively use drugs, hidden or collateral fees, and multiple requirements for treatment initiation
- Integrate treatment and care for HIV, tuberculosis, and hepatitis C virus in patients with co-infections
- Undertake country-specific research and surveillance for strategic information about drug-related epidemics
- Support community-based and peer-supported models of treatment and care for people who use drugs
- Implement prevention programmes to reduce sexual transmission in people who inject drugs and from injecting drug users to non-injecting sexual partners and sexual partners who do not use drugs

Donors

- Address the current underfunding of the response to HIV in people who use drugs: the current level of 1% of prevention expenditures worldwide targeted at people who inject drugs needs to increase by 20 times, to 20% of global resources, in accordance with recommendations from UNAIDS[54,55]
- Increase support for the evidence-based comprehensive approach for HIV prevention, treatment, and care for people who inject drugs endorsed by WHO, UN Office on Drugs and Crime, and UNAIDS (panel 2)
- Adopt ethical guidelines for provision of lifesaving interventions in compulsory drug detention centres, while calling for closure of the centres

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their call for more attention to the positive health effects of human rights protections and criminal justice sector reforms, including legal aid, decriminalisation of people who use drugs, and alternatives to detention and institutionalisation, since these can be as crucial to HIV treatment as successful antiretroviral and substitution treatment. They extend the call for decriminalisation to other currently criminalised populations, including sex workers and men who have sex with men.[3]

Combination prevention for drug users

Degenhardt and colleagues[4] assessed the effects of a combined approach to prevention of HIV infection in people who use drugs. With a focus on HIV exposures related to opioid injection and sexual risk, they reviewed the global coverage data for a combination package of interventions, and then modelled scenarios of expanding prevention over the next 5 years and 20 years. The data for current coverage are an indictment of public health efforts to date: Degenhardt and colleagues estimated that only 5% of injections are covered by sterile equipment provided by a safe injection programme; NSPs, OST, and antiretroviral drugs, the essential basic package of services, reach 10% of people who need them; and only four in every 100 HIV-infected IDUs are receiving ART. In a hypothetical model, they estimated that higher coverage with harm reduction alone achieved, at the most, only about a 20% reduction in HIV incidence over time. However, a combination approach including antiretroviral drugs could achieve large reductions in HIV incidence,[4] a finding that was reported by Strathdee and colleagues[5] in local epidemic contexts. A resounding message is that combined interventions for prevention of HIV infection and expanded access to antiretroviral therapy for people who use drugs should be rapidly taken to scale.

The challenges of stimulants

The epidemiology of substance use is changing. In addition to crops yielding opioids, cocaine, and cannabis, there is an ever-increasing diversity of synthetic psychoactive agents, including amphetamine-group substances and club drugs such as ecstasy, ketamine, and gamma-hydroxybutyrate. These agents have largely affected HIV risks through sexual, rather than parenteral exposures. Some of these drugs can be used with erection-enhancing agents and alcohol in complex sexual exposure interactions. Colfax and colleagues[7] reviewed the existing evidence on this mixed class of amphetamine-group substances, and undertook a meta-analysis of the effectiveness of behavioural interventions to treat dependency on this group of drugs. The results are sobering. Despite the rising importance of amphetamine-group substances worldwide, remarkably little work has been done on this problem outside the USA, Australia, and a few other developed countries. What research has been done has shown modest effects of behavioural interventions for amphetamine use on sexual risk behaviour, and no effects on incidence of HIV infection. This situation needs to change, and quickly, if the link between stimulant use and sexual risk taking is to be broken.

The lack of any pharmacological approach to dependence on amphetamine-group substances, analogous to the lack of substitution therapy options for cocaine, remains a research challenge and an obstacle to medication-assisted ART for HIV-infected

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stimulant users. We need a methadone equivalent for stimulant dependency and we need innovative behavioural approaches to reducing sexual risks for HIV infection in people who use drugs, including intermittent users. Nevertheless, the implementation of evidence-based, culturally competent substance-use treatment and care, with HIV prevention and treatment for people at risk or infected with HIV, is clearly mandated for users of stimulants.

Human rights

In HIV/AIDS programmes and policies for people who use drugs, there are powerful associations between evidence-based and human-rights-based approaches. As Jürgens and colleagues[8] make clear, the data also show that approaches that violate the rights of people who use drugs are unacceptable in themselves and produce poor health outcomes. Strathdee and colleagues'[5] finding that reduction of police brutality could reduce incident HIV infections by 19% in Odessa, Ukraine, shows that human rights are more than moral or ethical imperatives—they are social determinants of HIV risk. Wolfe and colleagues[3] highlight yet another crucial rights and health interaction for drug users—the effects of stigma and discrimination on access to care and treatment. They report that in the five countries with the most substantial HIV burdens in people who use drugs in 2008, IDUs accounted for 67% of HIV cases but for only 25% of people receiving antiretroviral drugs. The structural reform that we are advocating would address barriers that systematically reduce any person's chance of receiving antiretroviral drugs on the basis of presumed mode of HIV acquisition.

Making changes happen

There is an ambitious but achievable agenda that could save the lives of people who use drugs, prevent HIV infections, reduce the social harms of substance use, protect human rights, and save money (panel 4). How will it be implemented and by whom?

Governments

Governments have crucial parts to play in addressing the structural factors that lead to either enabling or risk-enhancing environments. Policy and legislative barriers to the combination of effective measures to reduce risk and harm continue. One of many negative examples is the continuing policy opposition in Russia to methadone, buprenorphine, or other substitution therapy. As Wolfe and colleagues[3] have shown, many states need to end discrimination in access to ART for patients with a history of dependency. Decriminalisation for personal possession, as done in Portugal (panel 1) and in many other jurisdictions, should be debated as a way out of the costly and ineffective penalisation-based policies. Interdiction efforts and drug law enforcement will and should remain important components of any national drug programme but should be balanced with public health efforts. Law enforcement, public health, and treatment sectors could work much more closely to ensure that people who use drugs have maximum access to evidence-based treatments, and policing resources are used for crime control, not the management of dependent patients. The Vienna Declaration of 2010, described in a commentary by Wood and colleagues,[56] calls for a re-examination of the use of detention for drug dependency, a call we strongly endorse.

We appeal to all governments to pursue the goal of universal access to evidence-based treatment for drug use as a commitment to save lives, reduce drug demand, and respect human rights. A fall in supply and associated crime revenues will likely follow as has been shown in settings in which this approach has been used. Progress towards this goal could be measured in the years ahead and reviewed in 2015, when UN member states will

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Providers

- Act to reduce stigma and discrimination against drug-dependent patients in health-care settings
- Make medication-assisted therapy (ART supported by opioid substitution therapy for opioid-dependent patients) the standard of care
- Intensify case finding efforts for tuberculosis in people who use drugs
- For people with tuberculosis who use drugs, provide adherence support, directly observed treatment, and integrated health-care delivery to increase adherence and decrease morbidity and mortality
- Become advocates for patients with drug dependency within the health-care system, and within criminal justice systems
- Refrain from participation in programmes and policies that are not evidence-based or that violate human rights

Researchers

- Optimise combination approaches for prevention of HIV infection in people who use drugs, and investigate better strategies and approaches for treatment of HIV infection, drug dependence, and comorbidities
- Undertake cost-effectiveness studies on interventions with evidence for efficacy in reducing HIV transmission in people who use drugs
- Initiate a multidisciplinary research agenda on prevention and treatment of dependence on stimulants and amphetamine-group substances
- Develop amphetamine and cocaine substitution agents analogous to methadone and buprenorphine for opioid dependence
- Expand the pre-exposure prophylaxis research agenda in people who use drugs
- Ensure that studies of new prevention technologies, including HIV vaccines, include fully powered strata of people at risk via parenteral exposure
- Include people who use drugs in all research, recognising their expertise

People who use drugs

- Demand that the human rights and dignity of people who use drugs be promoted, protected, and fulfilled in all aspects of drug policy and HIV
- Organise and participate in every aspect of the HIV response for people who use drugs
- Advocate for scale-up of a combination of services including NSPs, OST, and ART
- Participate in the development of community-based and peer-led alternatives to detention and other forms of forced or compulsory drug treatment

NSPs=needle and syringe programmes. OST=opioid substitution therapy. ART=antiretroviral treatment. IDU=injecting drug user.

	Estimated number of people who inject drugs*	Estimated number of IDUs with HIV infection*†	Number of HIV-positive IDUs receiving ART per 100 estimated HIV-positive IDUs‡	Estimated proportion of all people with HIV who inject drugs/ proportion of all people receiving ART who are IDUs§ (ratio)¶	Number of OST clients per 100 IDUs‡‖	Needles-syringes distributed from NSPs per IDU per year‡	Number of drug users in detention
China	2 350 000	289 000 (143 000–557 000)	3	38·5/10·7 (28)	3	32 (1–84)	330 000
Malaysia	205 000	21 000 (18 000–25 000)	9	70/25 (36)	2**	9 (7–13)	50 305
Russia	1 825 000	678 000 (4000–1 751 000)	1	83/20–30 (24–36)	0	4 (3–5)	62 200–366 700††
Ukraine	325 000–425 000‡‡	94 000‡ (2000–244 000)	9	60·5/24 (40)	2	32 (23–43)	57 800§§
Vietnam	135 000	49 000 (3000–89 000)	4	44/6·3 (14)	1	189 (107–323)	Around 100 000¶¶
USA	1 857 000	308 000 (113–580 000)	NA	NA	13	22 (15–31)	19·5% of state prisoners (2005) and 53% of federal sentenced prisoners (2007)‖‖

IDU=injecting drug user. ART=antiretroviral treatment. NSPs=needle and syringe programmes. NA=not available. *These estimates are taken from Mathers et al.[10] Details of source estimates are reported in that paper. †Note that the number of HIV-positive IDUs is indicative only. It refers to the midpoint prevalence of HIV for IDUs in that country, applied to the mid-estimate of the number of people who inject drugs in that country. Uncertainty around both of these estimates exists; please see reference 10 for details. ‡These estimates are reported in Mathers et al.[19] Details of source estimates are reported in that paper. §These estimates are reported by Wolfe et al.[3] Details of source and nature of estimates are reported in that paper. ¶A ratio of 1·0 would signify that people with a history of injecting drug use had essentially equal access to ART as people with other risk exposures for HIV infection. The WHO Western European region has a combined ratio for 28 member states of 89. ‖Coverage of methadone or buprenorphine, or both. **Malaysia has an estimated 10 000 people receiving OST through private providers in 2009 and these people are not included in this public sector estimate. ††Estimates for Russia are based on mean incarceration rates per 100 000 in Stuckler et al (670 per 100 000 individuals)[41] and Dolan et al (532 per 100 000 individuals),[57] and the estimated proportion of incarcerated people with a history of drug use from Dolan et al,[57] which gave an estimated range of 8–43% of detainees. ‡‡The range estimate for Ukraine is from 2006 and is from the AIDS Alliance.[58] §§Estimates for Ukraine are based on incarceration rates from Dolan et al[57] and the US Department of State Ukraine country profile.[59] ¶¶The estimate for Vietnam is from the WHO 2009 report.[22] ‖‖The total US prison population was 2·293 million in 2007, rates of incarceration for drug offences vary by state and federal sentencing.[60–62]

Table: **Measures of the response to HIV in injecting drug users in six selected countries: an assessment matrix, 2008–10**[3,4,20]

again review the effectiveness of drug policy and the Millennium Development Goals (MDGs), including the health-related MDGs.[27]

Contributors to this Series propose use of an assessment matrix that includes measures of access to antiretroviral drugs, coverage of antiretroviral drugs, OST, and NSPs, and a measure of the number of drug users in administrative detention (table). This evaluation will be used to gauge the next 2 years of the global response to HIV infection in people who use drugs. We invite all interested parties to join us in this assessment and in refining the measures used. Other existing accountability measures include reporting against the indicators in follow-up to the 2001 UN General Assembly Special Session on AIDS, which in 2010 will include a record number of states (169 as of the end of March; personal communication, Hankins C, UNAIDS, Geneva, Switzerland). The WHO, UNODC, and UNAIDS technical guide for countries will be used to set targets for universal access to HIV prevention, treatment, and care for IDUs.[63]

Donors

Programmatic responses to HIV infection in drug users remain inadequate, as shown by current coverage estimates. Donor funding of effective, evidence-based HIV control efforts needs to substantially increase to meet these outstanding needs. The massive scale-up in access to and coverage of NSPs, OST, and antiretroviral drugs that we have called for will need both donor and government support—but the evidence suggests that large gains in prevention of HIV, epidemic control, and equally substantial reductions in the other human and social harms of substance use could be achieved. Additionally, donors need to examine the extent to which current support is directed at efforts that at best are ineffective and, at worst, are actively harmful. Human Rights Watch recently called for the immediate closure of all compulsory drug detention centres in China on the grounds that they have no demonstrated efficacy as drug treatment and are fraught with violations of Chinese and international human rights law.[47] We agree that forced detention without regard to due legal process is an unacceptable approach to drug treatment and call on donors to assist governments to rapidly develop alternatives that are effective, affordable, and humane. There is wide consensus that people who use drugs in detention are in need of effective drug treatment, interventions to prevent HIV infection, and diagnosis, treatment, and care of HIV infection and tuberculosis. Donors need to find the right balance in helping to meet the need for care while also addressing the underlying issues by supporting alternatives to detention for drug-dependent people. Additionally, donors should take action to redress abuses such as detention without due process, right of appeal, assessment of treatment, or legal representation. Detention with or without trial for those whose only crime is drug dependency is not an evidence-based or rights-affirming approach and donors should not fund it.

Service providers

Treatment and care of HIV-infected patients with histories of substance use requires providers to understand and address the range of medical and psychiatric comorbidities that can affect these patients, such as viral hepatitis, tuberculosis, bacterial infections, and mental illness. Training in medication-assisted therapy is a key component

of the provider's competence—with proper dosing, this therapy can enhance adherence to antiretroviral drugs and to other medications, decrease HIV risk behaviours, and reduce HIV-1 viral load.[6] But providers and their professional organisations need to do more than treat patients. They need to advocate for evidence-based management of drug-dependent patients and against punitive, forced, and detention-centred approaches to their care. A simple measure of access to antiretroviral drugs would be the comparison used by Wolfe and colleagues,[3] which was to assess the proportion of HIV infections attributable to substance use in the population, and the proportion of people on antiretroviral drugs with a history of drug use. These proportions should be equivalent. If substance users are under-represented in treatment populations, providers should push for expanded access as a matter of health and human rights. Expanded advocacy by providers for people who use drugs is needed not only in health care, but also in the criminal justice sector. Providers should no longer be complicit in programmes and policies that are not evidence-based or that violate human rights.

Researchers

The research agenda for HIV in people who use drugs is extensive and compelling. The body of work that has shown the effectiveness of harm-reduction efforts is substantial and has in some cases set a benchmark for other areas of the AIDS response. However, there remain neglected components of the global AIDS response as it relates to drug use. There is an urgent need for research on improving combination approaches for prevention of HIV infection in people who use drugs, and on advancing treatment for HIV infection, drug dependence, and comorbidities. A multidisciplinary agenda for research on prevention of and treatment for use of stimulants and amphetamine-group substances should also be put in place. As data from the pre-exposure prophylactic trial become available,[64] there might be a need to investigate pre-exposure prophylactic delivery for people who use drugs. Studies of new prevention technologies, including HIV vaccines, need to consistently include fully powered strata of people at risk via parenteral exposure; otherwise, the focus may fall on vaccines of uncertain effectiveness in the large populations where these risks predominate.[65]

People who use drugs

People who use drugs are often the most knowledgable and skilled people in reaching their peers, including those outside treatment and care.[66] They provide care and support to peers, and have successfully advocated for their rights and dignity.[67] Networks of people who use drugs need to be empowered, engaged, and seen as partners in addressing the epidemic. There is a human rights and a moral imperative to include affected people meaningfully in responses relevant to their lives. In many settings, people who use drugs are themselves the only ones actually delivering services—often at real personal risk. The emergence of the International Network of People Who Use Drugs (INPUD) is an example of how the community is becoming organised and mobilised: the network has recently joined the UNAIDS Programme Coordinating Board's Non-Governmental Organisation (NGO) Delegation.[68] INPUD has called for an end to the war on drugs: "The spread of HIV, hepatitis C, and the incarceration of hundreds of thousands of people are all a direct result of completely misguided policies driven by dogma. The International Network of People Who Use Drugs (INPUD) calls for an end to this war on our people and for a new period of peace and intelligent open debate".[68]

Conclusions

To realise the goals called for in this Series on HIV in people who use drugs, we need to go beyond public health approaches alone. If drug control sectors and law enforcement are not a part of new approaches, then harm-reduction programmes will be closed, substitution clinics will stay sparsely attended, and ART and preventive interventions will have a low uptake by drug users. But drug control sectors and law enforcement constitute one domain of global HIV management for which there is a remarkable record of success and a solid evidence base for comprehensive action. If we can implement evidence-based and rights-affirming policies that work and reject the punitive and abusive policies that are failing, HIV epidemics in people who use drugs can be controlled, those in need can be successfully treated, and social harms can be reduced.

Contributors

CB, KMS, AK, MK, MS, and SAS contributed equally to the literature search, review, and writing of the report.

Steering committee

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Conflicts of interest

MK has board membership with the International AIDS Vaccine Initiative and is employed by the Global Fund to Fight AIDS, Tuberculosis and Malaria. All other authors declare that they have no conflicts of interest.

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