

## Public health and international drug policy



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### Executive summary

In September, 2015, the member states of the UN endorsed Sustainable Development Goals (SDGs) for 2030, which aspire to human-rights-centred approaches to ensuring the health and wellbeing of all people. The SDGs embody both the UN Charter values of rights and justice for all and the responsibility of states to rely on the best scientific evidence as they seek to better humankind. In April, 2016, these same states will consider control of illicit drugs, an area of social policy that has been fraught with controversy and thought of as inconsistent with human rights norms, and in which scientific evidence and public health approaches have arguably had too limited a role.

The previous UN General Assembly Special Session (UNGASS) on drugs in 1998—convened under the theme, “A drug-free world—we can do it!”—endorsed drug-control policies with the goal of prohibiting all use, possession, production, and trafficking of illicit drugs. This goal is enshrined in national laws in many countries. In pronouncing drugs a “grave threat to the health and wellbeing of all mankind”, the 1998 UNGASS echoed the foundational 1961 convention of the international drug-control regime, which justified eliminating the “evil” of drugs in the name of “the health and welfare of mankind”. But neither of these international agreements refers to the ways in which pursuing drug prohibition might affect public health. The war on drugs and zero-tolerance policies that grew out of the prohibitionist consensus are now being challenged on multiple fronts, including their health, human rights, and development impact.

The Johns Hopkins–*Lancet* Commission on Drug Policy and Health has sought to examine the emerging scientific evidence on public health issues arising from drug-control policy and to inform and encourage a central focus on public health evidence and outcomes in drug-policy debates, such as the important deliberations of the 2016 UNGASS on drugs. The Commission is concerned that drug policies are often coloured by ideas about drug use and dependence that are not scientifically grounded. The 1998 UNGASS declaration, for example, like the UN drug conventions and many national drug laws, does not distinguish between drug use and drug misuse. A 2015 report by the UN High Commissioner for Human Rights, by contrast, emphasised that drug use “is neither a medical condition, nor does it necessarily lead to drug dependence”. The idea that all drug use is dangerous and evil has led to enforcement-heavy policies and has made it difficult to see potentially dangerous drugs in

the same light as potentially dangerous foods, tobacco, and alcohol, for which the goal of social policy is to reduce potential harms.

### Health impact of drug policy based on prohibition

The pursuit of drug prohibition has generated a parallel economy run by criminal networks. Both these networks, which resort to violence to protect their markets, and the police and sometimes military or paramilitary forces that pursue them contribute to violence and insecurity in communities affected by drug transit and sales. In Mexico, the striking increase in homicides since the government decided to use military forces against drug traffickers in 2006 has been so great that it reduced life expectancy in the country.

Injection of drugs with contaminated equipment is a well known route of HIV exposure and viral hepatitis transmission. People who inject drugs are also at high risk of tuberculosis. The continued spread of unsafe injection-linked HIV contrasts with the progress that has been made in reducing sexual and vertical transmission of HIV in the past three decades. We found that repressive drug policing greatly contributes to the risk of HIV linked to injection. Policing could be a direct barrier to services such as needle and syringe programmes (NSP) and use of non-injected opioids to treat dependence among those who inject opioids, which is known as opioid substitution therapy (OST). Police seeking to boost arrest totals have targeted facilities that provide these services to find, harass, and detain large numbers of people who use drugs. Drug paraphernalia laws, which prohibit possession of injecting equipment, lead people who inject drugs to fear carrying syringes and force them to share equipment or dispose of it unsafely. Policing practices undertaken in the name of the public good have demonstrably worsened public health outcomes.

One of the greatest impacts of pursuit of drug prohibition identified by the Commission with respect to infectious disease is the excessive use of incarceration as a drug-control measure. Many national laws impose lengthy custodial sentences for minor, non-violent drug offences, and people who use drugs are over-represented in prison and pretrial detention. Drug use and drug injection occur in prisons, although their occurrence is often denied by officials. HIV and hepatitis C virus (HCV) transmission occurs among prisoners and detainees, and is often complicated by co-infection with tuberculosis (in many places multidrug-resistant tuberculosis). Too few countries offer prevention or treatment services despite international guidelines that

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urge comprehensive measures, including provision of injection equipment, for people in state custody.

New mathematical modelling undertaken by the Commission illustrates that incarceration and high risk of infection in the post-incarceration period can contribute importantly to national incidence of HCV infection among people who inject drugs, in a range of countries with varying levels of incarceration, average prison sentences, durations of injection, and OST coverage levels in prison and after release. For example, in Thailand, where people who inject drugs might be in prison for nearly half the time they spend injecting, an estimated 56% of incident HCV infection could occur in prison. In Scotland, where prison sentences are shorter for people who inject drugs and OST coverage is relatively high in prison, an estimated 5% of incident HCV infection occurs in prison, but as much as 21% could occur in the high-risk post-release period. These results underscore the importance of alternatives to prison for minor drug offences, ensuring access to OST in prison, and a seamless link from prison services to OST in the community.

The evidence also clearly demonstrates that enforcement of drug laws has been applied in a discriminatory way against racial and ethnic minorities in a number of countries. The USA is perhaps the best documented but not the only country with clear racial biases in policing, arrests, and sentencing. In the USA in 2014, African American men were more than five times more likely than white people to be incarcerated for drug offences in their lifetime, although there is no significant difference in rates of drug use among these populations. The impact of this bias on communities of people of colour is intergenerational and socially and economically devastating.

We also found substantial gender biases in current drug policies. Of women in prison and pretrial detention around the world, the proportion detained because of drug infractions is higher than that of men. Women involved in drug markets are often on the bottom rungs—eg, as couriers or drivers—and might not have information about major traffickers to trade as leverage with prosecutors. Gender and racial biases have pronounced overlap, resulting in an intersectional threat to women of colour and their children, families, and communities.

In both prison and the community, HIV, HCV, and tuberculosis programmes for people who use drugs—including testing, prevention, and treatment—are gravely underfunded, resulting in preventable death and disease. In several middle-income countries with large numbers of people who use drugs, drug-related HIV and tuberculosis programmes that were expanded with support from the Global Fund to Fight AIDS, Tuberculosis and Malaria have lost funding because of changes to the Global Fund's eligibility criteria. There is an unfortunate failure to emulate the example of western

European countries that have eliminated unsafe injection-linked HIV as a public health problem by sustainably scaling up prevention and care and enabling minor offenders to avert prison. Political resistance to harm-reduction measures dismisses strong evidence for their effectiveness and cost-effectiveness. Mathematical modelling shows that if OST, NSP, and antiretroviral therapy for HIV are all available, even if the coverage of each is less than 50%, their synergy can lead to effective prevention in a foreseeable future. People who use drugs are often not seen to be worthy of costly treatments, or they are thought not to be able to adhere to treatment regimens despite evidence to the contrary.

Lethal drug overdose is an important public health problem, particularly in light of rising consumption of heroin and prescription opioids in some parts of the world. Yet the Commission found that the pursuit of drug prohibition can contribute to overdose risks in numerous ways. Prohibition creates unregulated illegal markets in which it is impossible to control the presence of adulterants in street drugs, which add to overdose risk. Several studies also link aggressive policing to rushed injection and overdose risk. People with a history of drug use, who are over-represented in prison because of prohibitionist policies, are at extremely high risk of overdose when released from state custody. Lack of ready access to OST also contributes to injection of opioids, and bans on supervised injection sites cut off an intervention that has reduced overdose deaths very effectively. Restrictive drug policies also contribute to unnecessary controls on naloxone, a medicine that can reverse opioid overdose very effectively.

Although only a small proportion of people who use drugs will ever need treatment for drug dependence, that minority faces enormous barriers to humane and affordable treatment in many countries. There are often no national standards for quality of treatment for drug dependence and no regular monitoring of practices. In too many countries, beatings, forced labour, and denial of health care and adequate sanitation are offered in the name of treatment, including in compulsory detention centres that are more like prisons than treatment facilities. Where there are humane treatment options, often the people most in need of help cannot afford it. In many countries, there is no treatment designed particularly for women, although it is known that women's motivations for, and physiological reactions to, drug use differ from those of men.

The pursuit of the elimination of drugs has led to aggressive and harmful practices targeting people who grow crops used in the manufacture of drugs, especially coca leaf, opium poppy, and cannabis. Aerial spraying of coca fields in the Andes with the defoliant glyphosate (N-(phosphonomethyl)glycine) has been associated with respiratory and dermatological disorders and miscarriages. Forced displacement of poor rural families who have no secure land tenure exacerbates their poverty and

food insecurity and in some cases forces them to move their cultivation to more marginal land. Geographical isolation makes it difficult for state authorities to reach drug-crop cultivators in public health and education campaigns and it cuts cultivators off from basic health services. Alternative development programmes meant to offer other livelihood opportunities have poor records and have rarely been conceived, implemented, or evaluated with respect to their impact on people's health.

Research about drugs and drug policy has suffered from a lack of a diversified funding base and assumptions about drug use and drug pathologies on the part of the dominant funder, the US Government. At a time when drug-policy discussions are opening up around the world, there is an urgent need to bring the best of non-ideologically-driven health science, social science, and policy analysis to the study of drugs and the potential for policy reform.

#### Policy alternatives in real life

Concrete experiences from many countries that have modified or rejected prohibitionist approaches in their response to drugs can inform discussions of drug-policy reform. Countries such as Portugal and the Czech Republic decriminalised minor drug offences years ago, with significant financial savings, less incarceration, significant public health benefits, and no significant increase in drug use. Decriminalisation of minor offences along with scaling up low-threshold HIV prevention services enabled Portugal to control an explosive, unsafe injection-linked HIV epidemic, and probably prevented one from happening in the Czech Republic.

Where formal decriminalisation might not be an immediate possibility, scaling up of health services for people who use drugs can demonstrate the value to society of responding with support rather than punishment to people who commit minor drug infractions. A pioneering OST programme in Tanzania is encouraging communities and officials to consider non-criminal responses to heroin injection. In Switzerland and Vancouver, Canada, substantial improvements in access to comprehensive harm-reduction services, including supervised injection sites and heroin-assisted therapy (ie, prescription of heroin for therapeutic purposes under controlled conditions), have transformed the health picture for people who inject drugs. Vancouver's experience also illustrates the importance of meaningful participation of people who inject drugs in decision making on policies and programmes affecting their communities.

#### Conclusions and recommendations

Policies meant to prohibit or greatly suppress drugs present a paradox. They are portrayed and defended vigorously by many policy makers as necessary to preserve public health and safety, and yet the evidence suggests that they have contributed directly and indirectly to lethal violence, communicable-disease transmission, discrimination, forced displacement, unnecessary

physical pain, and the undermining of people's right to health. Some would argue that the threat of drugs to society might justify some level of abrogation of human rights for protection of collective security, as is provided for in human rights law in case of emergencies. International human rights standards dictate that, in such cases, societies still should choose the least harmful way to address the emergency and that emergency measures should be proportionate and designed specifically to meet transparently defined and realistic goals. The pursuit of drug prohibition meets none of these criteria.

Standard public health and scientific approaches that should be part of policy making on drugs have been rejected in the pursuit of prohibition. The idea of reducing the harm of many kinds of human behaviour is central to public policy in traffic safety, tobacco and alcohol regulation, food safety, safety in sports and recreation, and many other areas of human life where the behaviour in question is not prohibited. But explicitly seeking to reduce drug-related harms through policy and programmes and to balance prohibition with harm reduction is regularly resisted in drug control. The persistence of unsafe injection-linked transmission of HIV and HCV that could be stopped with proven, cost-effective measures remains one of the great failures of the global responses to these diseases.

Drug policy that is dismissive of extensive evidence of its own negative impact and of approaches that could improve health outcomes is bad for all concerned. Countries have failed to recognise and correct the health and human rights harms that pursuit of prohibition and drug suppression have caused, and, in doing so, neglect their legal responsibilities. They readily incarcerate people for minor offences but then neglect their duty to provide health services in custodial settings. They recognise uncontrolled illegal markets as the consequence of their policies, but do little to protect people from toxic, adulterated drugs that are inevitable in illegal markets or the violence of organised criminals, which is often made worse by policing. They waste public resources on policies that do not demonstrably impede the functioning of drug markets, and miss opportunities to invest public resources wisely in proven health services for people often too frightened to seek services.

To move towards the balanced policy that UN member states have called for, we offer the following recommendations:

- Decriminalise minor, non-violent drug offences—use, possession, and petty sale—and strengthen health and social-sector alternatives to criminal sanctions.
- Reduce the violence and other harms of drug policing, including phasing out the use of military forces in drug policing, better targeting of policing on the most violent armed criminals, allowing

possession of syringes, not targeting harm-reduction services to boost arrest totals, and eliminating racial and ethnic discrimination in policing.

- Ensure easy access to harm-reduction services for all who need them as a part of responding to drugs, in doing so recognising the effectiveness and cost-effectiveness of scaling up and sustaining these services. OST, NSP, supervised injection sites, and access to naloxone—brought to a scale adequate to meet demand—should all figure in health services and should include meaningful participation of people who use drugs in planning and implementation. Harm-reduction services are crucial in prison and pretrial detention and should be scaled up in these settings. The 2016 UNGASS should do better than the UN Commission on Narcotic Drugs (CND) in naming harm reduction explicitly and endorsing its centrality to drug policy.
- Prioritise people who use drugs in treatment for HIV, HCV infection, and tuberculosis, and ensure that services are adequate to enable access for all who need care. Ensure availability of humane and scientifically sound treatment for drug dependence, including scaled-up OST in the community and in prisons. Reject compulsory detention and abuse in the name of treatment.
- Ensure access to controlled drugs, establish intersectoral national authorities to determine levels of need, and give WHO the resources to assist the International Narcotics Control Board in using the best science to determine the level of need for controlled drugs in all countries.
- Reduce the negative impact of drug policy and law on women and their families, especially by minimising custodial sentences for women who commit non-violent offences and developing appropriate health and social support, including gender-appropriate treatment of drug dependence, for those who need it.
- Efforts to address drug-crop production need to take health into account. Aerial spraying of toxic herbicides should be stopped, and alternative development programmes should be part of integrated development strategies, developed and implemented in meaningful consultation with the people affected.
- A more diverse donor base is needed to fund the best new science on drug-policy experiences in a non-ideological way that, among other things, interrogates and moves beyond the excessive pathologising of drug use.
- UN governance of drug policy should be improved, which should include respecting WHO's authority to determine the dangerousness of drugs. Countries should be urged to include high-level health officials in their delegations to CND. Improved representation of health officials in national delegations to CND would, in turn, be a likely result of giving health authorities an important day-to-day role in multisectoral national drug-policy-making bodies.
- Health, development, and human rights indicators should be included in metrics to judge success of drug policy, and WHO and the UNDP should help to formulate them. The UNDP has already suggested that indicators such as access to treatment, frequency of overdose deaths, and access to social welfare programmes for people who use drugs would be useful indicators. All drug policies should also be monitored and assessed as to their impact on racial and ethnic minorities, women, children and young people, and people living in poverty.
- Move gradually toward regulated drug markets and apply the scientific method to their assessment. Although regulated legal drug markets are not politically possible in the short term in some places, the harms of criminal markets and other consequences of prohibition catalogued in this Commission will probably lead more countries (and more US states) to move gradually in that direction—a direction we endorse. As those decisions are taken, we urge governments and researchers to apply the scientific method and ensure independent, multidisciplinary, and rigorous assessment of regulated markets to draw lessons and inform improvements in regulatory practices, and to continue evaluating and improving.

We urge health professionals in all countries to inform themselves and join debates on drug policy at all levels. True to the stated goals of the international drug-control regime, it is possible to have drug policy that contributes to the health and wellbeing of humankind, but not without bringing to bear the evidence of the health sciences and the voices of health professionals.

### Introduction

“We must consider alternatives to criminalization and incarceration of people who use drugs and focus criminal justice efforts on those involved in supply. We should increase the focus on public health, prevention, treatment, and care, as well as on economic, social, and cultural strategies.”

*Ban Ki-moon, UN Secretary-General, on International Day Against Drug Abuse and Illicit Trafficking, June 26, 2015<sup>1</sup>*

In 2015, member states of the UN, in the presence of more than 150 heads of state, endorsed a set of Sustainable Development Goals (SDGs) that were formulated to embody the founding principles of the UN, including universal human rights and justice for all.<sup>2</sup> The SDG resolution commits member states to addressing climate change and other large issues in ways that are informed by the best scientific research. The SDGs are also based on a notion of human security that is not confined to traditional public order authorities, but in which health and social sectors play an important part.<sup>2</sup>

In April, 2016, the same member states in a UN General Assembly Special Session (UNGASS) will take on a social policy challenge that affects millions of lives—what the UN has called the “world drug problem”. As with the SDGs, addressing the use, production, and trafficking of drugs will challenge the UN to base its policies on the human rights norms that are the bedrock of the UN Charter and the best scientific evidence available. This challenge is significant, because policy responses to drugs negatively affect human lives and human rights and contradict evidence-based public health approaches. As noted by former UN Secretary-General Kofi Annan, “Drugs have destroyed many people, but wrong policies have destroyed many more”.<sup>3</sup>

A 2015 report<sup>4</sup> from the UN High Commissioner for Human Rights highlights some of the main ways in which drug-control policies cause violations of human rights. The High Commissioner concluded that drug policies, law, and law enforcement have resulted in arbitrary arrest, detention, and ill treatment of people who use drugs; unjust use of the death penalty for drug offences; cruel and inhumane treatment of people who use drugs in the guise of treatment; racial and ethnic discrimination in drug-law enforcement; denial of life-saving care and prevention interventions to people who use drugs; excessive use of incarceration as a response to minor drug infractions; denial of the cultural rights of indigenous peoples; and poor access to opioids and other controlled drugs for pain management and other clinical uses, among other human rights violations.

The last UNGASS on drugs in 1998, which was convened under the theme “a drug-free world—we can do it!”, endorsed drug-control policies on the basis of the idea of elimination or prohibition of all use, possession, production, and trafficking of illicit drugs.<sup>5</sup> This idea is embodied in national law in many countries. The 1998 UNGASS declaration pronounced drugs a “grave threat to the health and well-being of all mankind”.<sup>5</sup> In this pronouncement, it echoed the bedrock treaty of the global drug-control regime, the widely ratified 1961 Single Convention on Narcotic Drugs, which states in its preamble that drug control is motivated principally by concern for “the health and welfare of mankind”.<sup>6</sup> Neither of these international agreements, however, refers to the negative health consequences of pursuing drug prohibition. The time is long overdue for a review of the health impacts of these drug policies. The disconnect between drug-control policy and health outcomes is no longer tenable or credible.

The Johns Hopkins–*Lancet* Commission on Drug Policy and Health (panel 1) has sought to examine the scientific evidence for a broad range of public health issues arising from drug-control policy to inform a focus on public health as a central consideration in drug-policy discussions, such as the important deliberations of the 2016 UNGASS. The Commission is

### Panel 1: Introducing the Johns Hopkins–*Lancet* Commission on Drug Policy and Health

The Johns Hopkins–*Lancet* Commission, cochaired by Professor Adeeba Kamarulzaman of the University of Malaya and Professor Michel Kazatchkine, the UN Special Envoy for HIV/AIDS in Eastern Europe and Central Asia, is composed of 22 experts from a wide range of disciplines and professions in low-income, middle-income, and high-income countries. We have reviewed the global evidence base on the impacts of drug policy on health outcomes and done novel analysis, including mathematical modelling, to further enhance understanding of the complex and manifold interactions of drug policy with health, human rights, and wellbeing. The Center for Public Health and Human Rights at the Johns Hopkins Bloomberg School of Public Health served as the secretariat for the Commission, and scholars and fellows from the centre also served as commissioners or analysts, or both. We produced this report with the hope that it would enrich discussions at the time of the UN General Assembly Special Session on the world drug problem. We intend to continue our work after the meeting, and especially to continue to advocate for evidence-based and health-focused reform of drug policy.

motivated partly by a concern that drug policies are often founded on ideas about drug use and drug dependence that are not scientifically grounded. Like the Single Convention, the declaration from the 1998 UNGASS on drugs, for example, does not distinguish between drug use and drug misuse: all use is referred to as abuse.<sup>5</sup> Suggesting some evolution of thinking in the UN, if not among member states, the UN High Commissioner for Human Rights in his 2015 report, by contrast, emphasises that “drug use is neither a medical condition nor does it necessarily lead to drug dependence” or loss of dignity.<sup>4</sup> The authors of the UN Office on Drugs and Crime (UNODC) 2015 annual report concluded that, of an estimated 246 million people who used an illicit drug in the past year, 27 million (around 11%) experienced problem drug use, which was defined as drug dependence or drug-use disorders.<sup>7</sup> The idea that all drug use is dangerous and evil has made it difficult to see potentially dangerous drugs in the same light as potentially dangerous foods, tobacco, alcohol, and other substances for which the goal of social policy is to reduce harms. Harm reduction, an essential element of public health policy, has too often been lost in drug policy making amid a dominant discourse on the overwhelming evil of drugs.

We hope that our review and analysis of evidence on the health consequences of pursuing prohibition of drugs and drug use can inform rights-based policy change. Because language is important to drug policy discussions, we include as an appendix to this report a glossary of some policy-relevant terms.

See Online for appendix

### Setting the scene: an evolving international debate

The international drug-control system has its origins in decades-old legal instruments framed by politics more than science. From the time of the 1912 Hague Opium Convention, minimisation of the supply of some psychoactive drugs through policing has been the dominant strain in international drug law.<sup>8</sup> In the decades leading up to the 1961 Single Convention, international drug-control agreements largely sidestepped issues of demand and consumption.<sup>9</sup> The eventual solution in the 1961 Single Convention to reserve some quantity of psychoactive substances for medical and scientific use did not resolve the issue of social, cultural, and recreational use that was not obviously harmful but was not “medical or scientific”.<sup>9</sup>

In 1998, when the UN members states declared their commitment to a drug-free world, the UN estimated that 8 million people had used heroin in the previous year worldwide, about 13 million had used cocaine, about 30 million had used amphetamine-type substances (ATS), and more than 135 million were “abusers”—that is, users—of cannabis.<sup>10</sup> When countries came together after 10 years to review progress towards a drug-free world in 2008, the UN estimated that 12 million people used heroin, 16 million used cocaine, almost 34 million used ATS, and over 165 million used cannabis in the previous year.<sup>11</sup> The worldwide area used for opium poppy cultivation was estimated at about 238 000 hectares in 1998 and 235 700 hectares in 2008—a small decline.<sup>11</sup> Prohibition as a policy had clearly failed.

In the 2014 statement from the high-level segment of the UN’s drug policy body the Commission on Narcotic Drugs (CND), an important background document for the 2016 UNGASS, UN member states stressed the importance of drug policy that is consistent with human rights and acknowledged that “law enforcement measures alone” cannot achieve drug control.<sup>12</sup> In the lead-up to the 2016 UNGASS, UN agencies were asked to make statements about how drug-control policy intersects with their mandates and affects their work. These statements signal that high-level thinking in several UN agencies reflects some impatience with the pursuit of prohibition. The long list of human rights violations associated with drug-control measures led the High Commissioner for Human Rights to call for member states to consider “removing obstacles to the right to health, including by decriminalising the personal use and possession of drugs”.<sup>4</sup> The UNDP welcomed a change away from the dominant “prohibitionist, law enforcement-led and abstinence-based approach”.<sup>13</sup> The WHO executive board called for a stronger focus in drug policy on prevention of drug use and treatment and care of people who use drugs and on reducing the harms of drugs and drug use.<sup>14</sup>

Outside the UN, debates have also evolved, including in regional bodies such as the Organization of American States (OAS) and the European Union (EU). A 2013 OAS

report raised the idea that substantial departures from prohibition-based drug control might be the only way to reduce drug-related violence and criminality in the Americas.<sup>15</sup> The Global Commission on Drug Policy, which includes several former heads of state and other prominent figures, the Latin American Commission on Drugs and Democracy, headed by former Brazilian President Ferdinand Cardoso, and the West Africa Commission on Drugs, convened by former UN Secretary-General Kofi Annan, all called for an end to strict prohibition-oriented policies and for decriminalisation of minor drug infractions, among other recommendations.<sup>3,16,17</sup> The Global Commission on HIV and the Law, which was convened by the UNDP and also included former heads of state and other high-level officials, called on national authorities to “decriminalise the possession of drugs for personal use, in recognition that the net impact of such sanctions is often harmful to society” and to give priority to public health considerations in drug policy.<sup>18</sup> By contrast, the Association of Southeast Asian Nations (ASEAN) agreed on an objective of a “drug-free ASEAN” by 2015,<sup>19</sup> despite widespread criticism of the unrealistic nature of the goal.<sup>20</sup>

North America continues to have by far the highest rates of drug consumption and drug-related death and morbidity of any region in the world,<sup>7</sup> and drug policy in this region tends to influence global debates heavily. Between 2002 and 2013, heroin-related overdose deaths quadrupled in the USA,<sup>21</sup> and deaths associated with prescription opioid overdose quadrupled from 1999 to 2010.<sup>22</sup> Reactions to these trends have included calls for greater availability of naloxone (an opioid overdose antidote), increased access to treatment for opioid dependence,<sup>23</sup> and greater restriction of prescription of opioids.<sup>24</sup> Opioid overdose is a major contributor to an almost-unprecedented increase in mortality in middle-aged white people in the USA at a time when mortality in middle age has continued to fall in other populations.<sup>25</sup> Many pundits have commented that opioid dependence is attracting policy attention in the USA for the very reason that it is affecting white people in suburban and rural environments rather than only inner-city African Americans.<sup>26</sup> The policy challenge is to balance meeting the need to relieve pain and suffering with reasonable restrictions on controlled drugs without creating disparities—racial, economic, or otherwise—in care.

The world has also taken sharp notice of the cannabis-legalisation experiences of the US states of Washington, Colorado, Oregon, Alaska, and the District of Columbia in a country where opposition to drug legalisation has been deep, and of the nationwide cannabis-legalisation experiment in Uruguay.<sup>27</sup> The fiscal imperative of reducing incarceration and the fear of adulterants in cannabis obtained illegally have been part of the debates about the US policy changes.<sup>28</sup> Although changes in the legal status of cannabis do not signal changes in

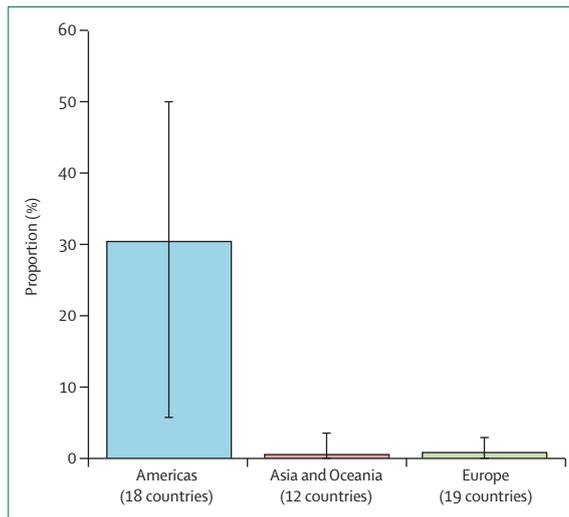
prohibition-oriented policies with respect to other drugs in the USA, concrete experiences with large-scale regulated cannabis markets provide an opportunity for rigorous assessments that will inform larger drug-policy debates.

### Violence and enforcement of drug prohibition

Since it published its first report on violence and health in 2002,<sup>29</sup> WHO has highlighted numerous forms of violence as health issues.<sup>30</sup> The Global Burden of Disease Study of 2013 showed that interpersonal violence, including all types of violent assault, rose about 18·4% as a cause of mortality globally from 1990 to 2013.<sup>31</sup> The region most affected was Latin America, where interpersonal violence was among the top five causes of death in 15 countries.<sup>31</sup> The 2014 WHO report on preventing violence discusses violence that is committed as a result of drug and alcohol use, but few investigators, including those at WHO, have investigated the violence resulting from drug policies.<sup>30</sup>

A great deal of drug-related violence is associated with the efforts of armed criminal groups to protect their illicit markets, often against armed police or military or paramilitary forces. Some experts have suggested that heavy crackdowns by drug police can lead to major increases in violence when disruption of a criminal network leads rival groups to intensify their efforts to capture the territory of the weakened group.<sup>32</sup> Mexico and Central and South America have borne an enormous burden of drug-related violence. In 2013, the OAS asserted that the transit of illegal drugs through the Americas leaves persistent violence in its wake, including “massacres, attacks by hired assassins, and cases of people being tortured to death”.<sup>15</sup> As the OAS noted, drug trafficking is so entwined with other criminal activity that to say that an extra-judicial killing is purely drug related is not always possible, but criminal networks dealing in drugs are plainly behind much of this carnage.<sup>15</sup> In its 2014 global analysis of homicides,<sup>33</sup> the UNODC noted that the 30% of homicides accounted for by “organized criminal groups and gangs” in the Americas, especially Central and South America, dwarf the corresponding percentages in other regions (figure 1).

In conventional wars, sexual violence is both a consequence of war and a weapon used to terrorise the enemy, and the war on drugs is no exception. The UNODC asserts that the organised criminal networks that dominate drug trafficking in Central America regularly use rape with impunity as they defend their territories and routes.<sup>34</sup> Women and girls who might be hired as low-level couriers or smugglers experience sexual assault with no recourse.<sup>34</sup> There are numerous well documented accounts of rape of girls and young women fleeing gang violence in Central America and the severe injuries and post-traumatic stress suffered.<sup>35</sup> Some observers credit drug-related violence with increases in



**Figure 1: Proportion of homicides involving gangs or organised criminal groups by region, 2011 (or latest year)**

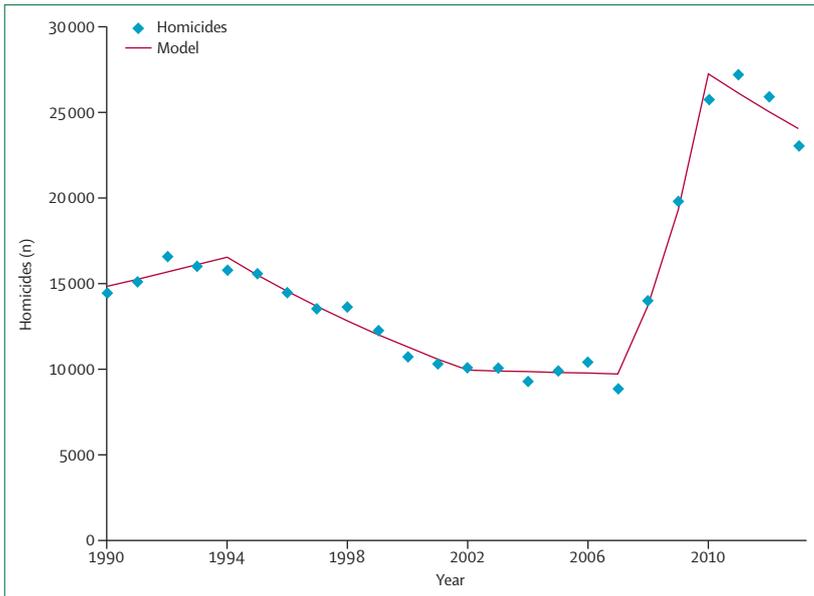
Data for crime trends come from the UN Office on Drugs and Crime. Error bars show the IQR.

femicide in Mexico and Central America, as brutal rape and killing of women are used to terrorise communities and rival gangs.<sup>36,37</sup>

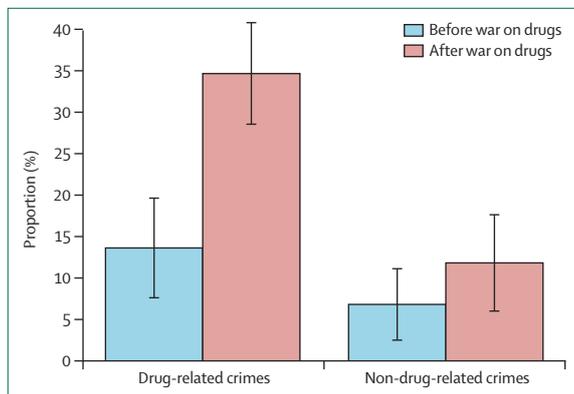
Intolerable levels of violence, insecurity, and corruption have led to mass displacement in Mexico and Central America, with displacement levels similar to those documented in war zones.<sup>38</sup> Displaced individuals, including children, are characterised by uncertain legal status and a dearth of services. By one estimate, about 2% of the population of Mexico, around 1·65 million people, were displaced because of violence or the risk of violence between 2006 and 2011.<sup>38</sup> In a London School of Economics publication<sup>39</sup> endorsed by five Nobel-Prize-winning economists and other experts, Atuesta refutes the idea that this migration is largely economic and not drug related, showing that most people leaving violence-ravaged communities in Mexico generally move to lower salaries and sometimes no employment opportunities at all.

### Homicide in Mexico

The fateful decision of Felipe Calderón’s Government in Mexico in 2006 to use its military in civilian areas to fight drug traffickers ushered in an epidemic of violence in many parts of the country that also spilled over into Central America.<sup>15</sup> The increase in homicides in Mexico since 2006 is virtually unprecedented in a country not formally at war. It was so great in some parts of the country that it contributed to a reduction in the country’s projected life expectancy.<sup>40</sup> Another analysis showed that, in the period 2008–10 in the state of Chihuahua—one of the states most heavily affected by drug violence—about 5 years of life expectancy was lost for men.<sup>41</sup> In July, 2015, the Mexican Government reported that, from 2007 to 2014, there were 164 345 homicides in the country, with a



**Figure 2: Number of homicides in Mexico, 1990-2013**  
 Data are from the Mexican National Institute of Statistics and Geography (INEGI), 2014.<sup>42</sup> 1990-93 APC=2.71; 1994-2001 APC=-6.16\*; 2002-06 APC=-0.45; 2007-10 APC=40.98\*; 2011-13 APC=-4.07. APC=average percentage change. \*APC differed significantly from 0 (p<0.05).



**Figure 3: Proportion of people incarcerated for drug-related offences and non-drug-related offences who were interrogated by the military before and after the war on drugs in Mexico**  
 These data came from a sample of prisoners in Mexico from eight federal prisons. The data were collected by researchers at Centro de Investigación y Docencia Económicas.<sup>46</sup> Error bars represent 95% CIs.

substantial increase after 2006. Figure 2 shows a joint-point analysis<sup>33</sup> done for this Commission with government data.<sup>42</sup> The increase in homicides after 2006 is highly significant and notable, especially after a long downward trend in homicides. No other country in Latin America—and few elsewhere in the world—have had such a rapid increase in mortality in so short a time.<sup>44</sup>

Not all of this increase in homicides can be attributed to drug-related violence, but much of it can be. One estimate suggested that drug-war-related deaths pushed the national homicide rate up by 11 per 100 000, resulting in an overall rate of over 80 per 100 000 in heavily affected

locations.<sup>45</sup> 11 homicides per 100 000 is 2.5 times the total homicide rate in the USA in 2014.<sup>45</sup> Other observers suggest that the contribution of the drug war to overall mortality is readily quantifiable because drug-gang homicides bear tangible signatures, such as the use of identifiable weapons, torture, beheading and other dismemberment, group executions, and mass graves.<sup>44</sup> Although homicides have fallen somewhat since 2012, by some estimates homicides perpetrated by organised crime continued to increase to 2014.<sup>44</sup>

Drug-related violence in Mexico is not limited to killings and other armed incidents on the street. The Commission noted violence by state actors in the treatment of people in Mexico incarcerated for drug-related crimes. We did analysis with a probability sample of people who were in prison for drug crimes (n=479) in Mexico during 2002-12—ie, before and after the military campaign against drugs—from eight federal prisons.<sup>46</sup> About half the detainees (n=241) reported having been beaten or tortured at some time during their imprisonment. Of these 241 detainees, experiencing an act of torture or abuse was 1.57 times more likely after the war on drugs than before (p=0.0001). Being interrogated by the military in prison was also more likely after the military became involved in the war on drugs (p<0.0001; figure 3). Interrogation by the military, in turn, was significantly associated with reports of torture or abuse. In multivariate analysis controlling for sex, number of times interrogated, and geographical location, people who were detained after 2006 were 3.63 times more likely to have been interrogated by the military while detained than were those detained before 2006 (p<0.0001). As Madrazo has noted, a deleterious outcome of the Mexican drug war is the government's acquisition of special security powers that undermine fundamental principles of the country's constitution and human rights responsibilities.<sup>47</sup>

The costs, including health costs, of violence on citizens are vast and profound. Execution-style killings are clearly meant to terrorise the population. Living in fear of extreme violence is disruptive to the normal functioning of health and social services, education, and civic participation. The penetration of all aspects of society by drug-trafficking organisations in Mexico, Colombia, and several Central American countries can corrupt everything from elections and local services to sports teams and other recreation.<sup>48</sup>

Cannabis has been estimated to account for about US\$2 billion per year of the revenue of Mexican drug cartels, almost as much as the estimated \$2.4 billion from cocaine.<sup>49</sup> It is not possible to know how the legalisation of cannabis in the USA, if it were to spread beyond a few states, would affect drug trafficking in Mexico and Central America. Some observers think that even the modest legalisation enacted so far has cut into Mexican cartels' trade and perhaps limited their capacity to disrupt security.<sup>50</sup>

Mexico is far from alone in registering high rates of homicide linked to enforcement of drug prohibition. Colombia's case is distinct from Mexico's in that anti-drug efforts were superimposed on a lethal internal war, but homicides spiked when counter-narcotics activities were most intense.<sup>48</sup> Mejía and Restrepo estimate that about 25% of the homicide rate in Colombia is explained by the thriving cocaine markets and the war on drugs in the country (figure 4). In other words, were it not for the large increase in the size of cocaine markets, Colombia would have had a homicide rate in 2008 of about 27 per 100 000 population instead of the observed 37 per 100 000 population.<sup>51</sup> Mejía and Restrepo characterise these profound problems of homicide and other violence, corruption, and forced displacement as a package outsourced from the major drug-consuming countries, mainly the USA, to producer and transit countries.<sup>48</sup> That is, in return for some foreign assistance for counter-narcotics activities, the USA in particular keeps the worst of the heavy burden of violence, insecurity, and displacement outside its borders (panel 2). But, as these authors note, this exported pillar of the drug war is beginning to be questioned in earnest by some governments in Latin America, as shown by statements criticising the status quo in drug policy by the then-presidents of Mexico, Colombia, and Guatemala in the UN General Assembly in 2012, which led to the UNGASS on drugs being moved from 2019 to 2016.<sup>52</sup>

### HIV, hepatitis C virus infection, and harm reduction: neglect of proven solutions

At a time when gains in reduction of sexual transmission of HIV are evident worldwide, HIV transmission linked to injection of drugs with unsterile equipment continues to drive incidence in many regions, including eastern Europe and central Asia (EECA) and much of Asia, despite the availability of proven interventions to stop it.<sup>53,54</sup> The prevalence of HIV infection among people who inject drugs is many times higher than that in the general population in many countries (figure 5).<sup>55</sup> Outside sub-Saharan Africa, an estimated 30% of HIV transmission is linked to unsafe injection.<sup>55</sup> Drug injection is a more important determinant of HIV transmission in EECA than in any other region.<sup>56</sup> Although the incidence of HIV infection declined by 35% globally from 2000 to 2014, new infections increased by 30% during that period in EECA, where unsafe drug injection accounts for over 65% of cumulated cases.<sup>56</sup>

WHO estimates that about two-thirds of people who inject drugs in the world are living with hepatitis C virus (HCV) infection, a much higher proportion than the estimated 13% living with HIV.<sup>57</sup> WHO notes that EECA, sub-Saharan Africa and east Asia are particularly affected,<sup>57</sup> although data are not regularly kept in some countries. In high-income and upper-middle-income countries generally, a high proportion of new HCV infections are among people who inject drugs.<sup>57</sup> A landmark US study

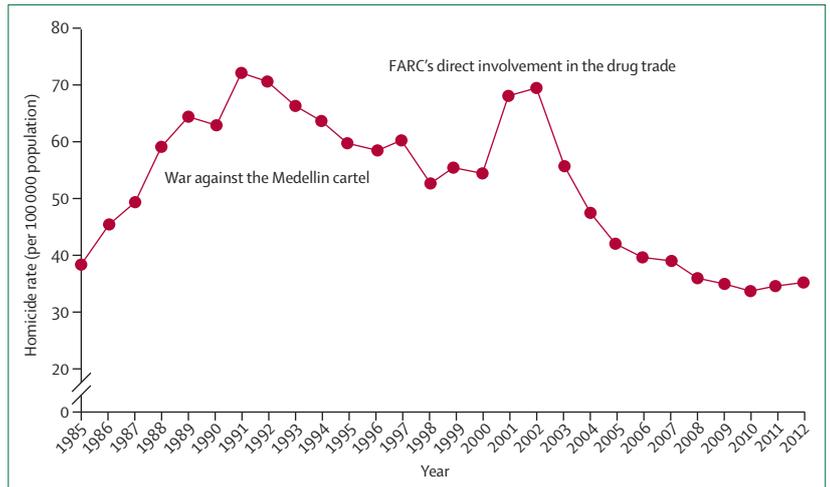


Figure 4: Homicide rate in Colombia, 1985–2012

Key periods of intensive counter-narcotics activities are highlighted. Reproduced from Mejía and Restrepo, 2014, by permission of the London School of Economics IDEAS.<sup>48</sup> FARC=Revolutionary Armed Forces of Colombia.

### Panel 2: Exporting drug-related violence—a thought experiment

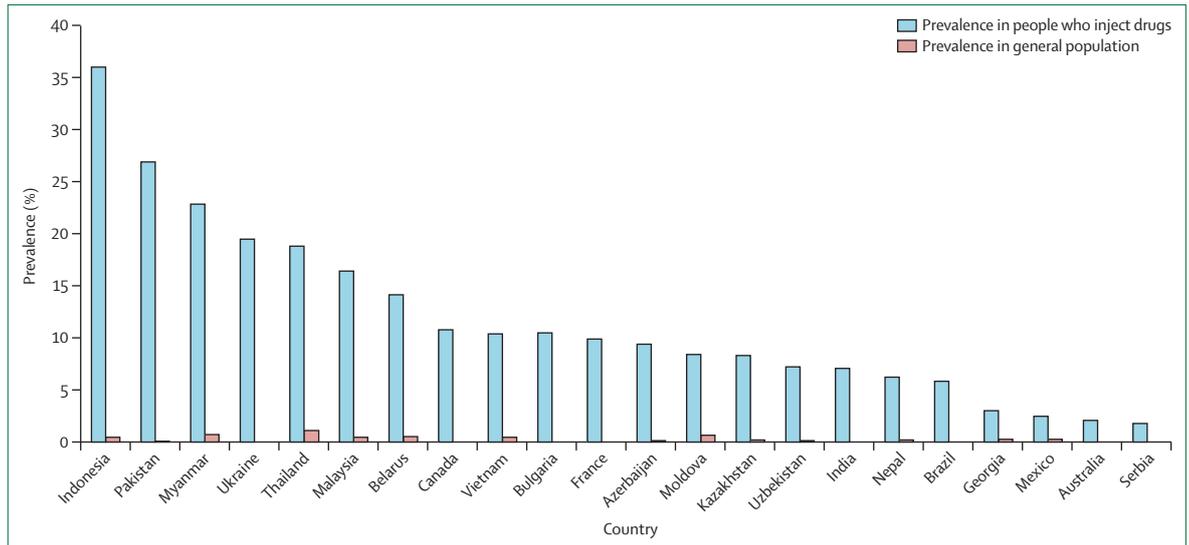
To illustrate the exportation of violence from the situation in Mexico and Central America, consider the following scenario. Suppose that cocaine consumption in the USA disappears and is displaced to Canada, but cocaine continues to pass through the USA. Because of its international treaty obligations, the USA is obliged to do everything in its power to keep cocaine from passing through its borders to Canadian cities. Canada shares some of the cost of this effort, but the result of fighting the cocaine cartels is that the homicide rate in Seattle spikes from its current level of about five homicides per 100 000 population to over 100 per 100 000 population to keep cocaine from reaching Vancouver. Similar violence seizes other border cities, and a massive wave of internal displacement in the northern USA challenges social services and stability of governance. Even if the Canadian Government shared the costs to the tune of billions of dollars per year, how long would such a situation be tolerated?

Source: Mejía and Restrepo, 2014.<sup>48</sup>

showed that over half of people who inject drugs were infected with HCV during their first year of injecting.<sup>58</sup> An estimated 20–30% of people living with HIV are co-infected with HCV, but the frequency of co-infection among people who inject drugs is estimated at 90%.<sup>59</sup>

An extensive body of research has demonstrated that effective tools are available for prevention of HIV and HCV infection among people who use drugs by injection and other means. Rigorous reviews of this research have informed strong recommendations by WHO, UNAIDS, and the UNODC for comprehensive services for people who use drugs,<sup>60</sup> which include these elements:

- needle and syringe programmes (NSPs), including other injection equipment
- opioid substitution therapy (OST) and other drug-dependence treatment
- HIV testing and counselling
- antiretroviral therapy (ART)



**Figure 5: Prevalence of HIV infection among people who inject drugs and in the general population**  
 Countries with more than 30 000 people who inject drugs are shown. Data for people who inject drugs are from 2009–14, those for the general population are from 2014. Source: UNAIDS Gap Report, 2014.<sup>55</sup>

- prevention and treatment of sexually transmitted infections
- condom programmes for people who use drugs and their sexual partners
- targeted information, education, and communication for people who use drugs and their sexual partners
- vaccination, diagnosis, and treatment of viral hepatitis
- prevention, diagnosis, and treatment of tuberculosis.

**NSPs**

Programmes that provide sterile injection equipment to people who inject drugs—often in the form of exchange programmes in which used equipment is traded for sterile equipment—are a crucial part of prevention services and decreasing circulation time of contaminated syringes. WHO found that NSPs, particularly low-threshold (easy-access) exchange programmes, effectively reduced HIV transmission and were not associated with increased injection frequency or initiation of new injection in people not already injecting drugs.<sup>61</sup> A meta-analysis<sup>62</sup> suggested that NSPs were associated with a reduction in HIV transmission of about 58%, although there were caveats about the quality of some studies and the difficulty of disentangling the effects of NSPs from those of other services.<sup>62</sup>

As the high prevalence of HCV infection among people who inject drugs indicates, HCV is transmitted more efficiently than is HIV through unsafe injection. Evidence from controlled trials for the effectiveness of NSPs in HCV prevention is more equivocal than that for HIV.<sup>63</sup> Part of the challenge is that some people new to drug injection will be infected with HCV even before they begin to take advantage of NSP services. NSPs are most

effective at preventing HCV infection when coverage is very high and they can reach people from a time close to when they first inject.<sup>64</sup>

**OST**

Throughout the Commission, we repeatedly refer to the opioid agonists methadone and buprenorphine, which are the oral drugs most commonly used in drug-assisted treatment of opioid dependence, which is referred to as OST. OST has a dual role as treatment for opioid dependence, in which it can help to stabilise lives with all of the attendant benefits, and as prevention of HIV and HCV infection because, when effective, it eliminates injection. Arguably, no form of treatment of any drug dependence has as vast a scientific evidence base or as long a successful clinical experience as does OST.<sup>65</sup> In both its treatment and harm-reduction roles, OST faces drug-policy impediments because the drugs used are heavily regulated in most countries. Countries do not always allocate adequate quantities of these oral opioid drugs for OST, and doctors in some countries are reluctant to prescribe them for fear of prosecution if there is diversion of these drugs to non-medical use.

A 2012 meta-analysis<sup>65</sup> of studies from Europe, North America, and Asia concluded that oral OST, and methadone maintenance in particular, reduces risk of HIV transmission among people who inject opioids by about 54%. The authors of a 2014 review of reviews concluded that the evidence is strong for the impact of OST on HIV prevention, particularly when doses of opioid agonists are adequate.<sup>63</sup> Observational studies from the USA, the UK, Canada, and Australia showed that OST use was associated with substantially reduced risk of acquisition of HCV among people who inject

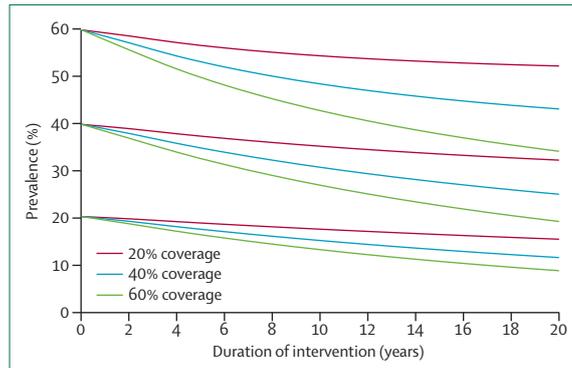
drugs,<sup>64,66–68</sup> with data from the Netherlands and the UK also showing that combined OST with NSPs further reduces the risk of acquisition of HCV.<sup>64,69,70</sup> A model analysis based on data from the UK illustrates that if enough people can get access to OST and to sufficient sterile injection equipment for virtually every injection, transmission of HCV infection could decline substantially (figure 6).<sup>71</sup>

Despite the very large body of evidence for the effectiveness and cost-effectiveness of opioid agonist therapy, some countries insist that generating new research in their settings is necessary before scaling up OST. For these and other reasons, OST has remained in perpetual pilot mode in several countries.<sup>72</sup>

Access to OST in western Europe is a positive contrast to most other regions: several western European countries have almost eliminated HIV transmission from unsafe injection as a public health concern by scaling up NSPs and OST in addition to treatment for HIV.<sup>73</sup> Unlike their counterparts in western Europe, EECA countries generally have inadequate coverage, quality, and accessibility of NSP and limited or no access to OST.<sup>74,75</sup>

Gains have been made in harm-reduction policy and practice in some Asian countries with large populations of people who use drugs. In China, Malaysia, and Vietnam, zero tolerance of harm reduction has given way to government-supported OST and sometimes NSPs.<sup>54</sup> China was estimated in 2015 to have been serving about 200 000 OST patients,<sup>56</sup> but this figure still represents only a small proportion of people who might benefit, and the problems of high dropout rates and low dosages remain challenging.<sup>54</sup> According to a 2015 estimate, Vietnam was reaching 32 000 OST patients in 44 provinces (the country has an estimated 130 000 people who inject drugs).<sup>76</sup> Although coverage might be relatively low, the existence and continued growth of these programmes are important achievements.

Although it is advantageous with respect to HIV prevention that coverage levels for these measures be as high as possible, an important body of research demonstrates that if OST, NSPs, and HIV treatment are all present then their synergistic effects can compensate for partial coverage. Figure 7 illustrates this point with data from Dushanbe, Tajikistan. In that case, if needle exchange and ART alone are available, for a 50% decrease in incidence of HIV infection over 10 years, coverage of both programmes needs to be about 30%.<sup>77</sup> But if ART, NSPs, and OST are all available, a 50% decline in incidence over the same period can be achieved with 20% coverage of these interventions.<sup>77</sup> Similar results have been reported in other settings.<sup>53,78</sup> Therefore partial coverage of OST, NSPs, and ART can provide effective prevention if it is not possible to attain very high ART coverage, which might be especially challenging where people who use drugs are criminalised.



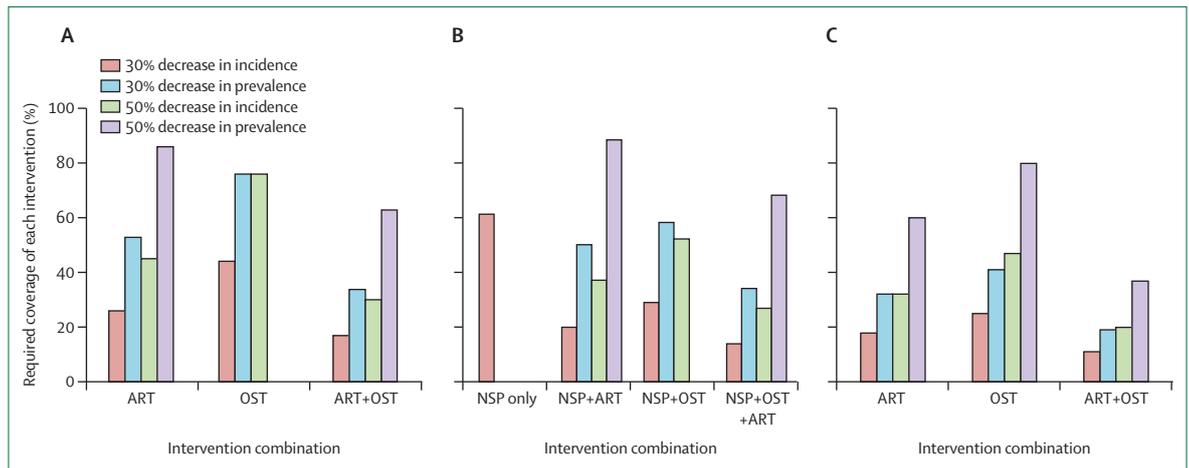
**Figure 6: Impact on prevalence of HCV infection over time of scaling up OST and high-coverage (100%) NSPs from 0% to 20%, 40%, or 60% coverage for three epidemic scenarios with a baseline chronic prevalence of HCV infection of 20%, 40%, or 60%**

Over time, prevalence of HCV infection (20%, 40%, or 60% at time zero) decreases when OST and 100% NSPs (defined as obtaining one or more sterile syringes from an NSP for each injection reported per month) are scaled up, with greater impact achieved for greater coverage of OST and 100% NSP and for greater prevalence of HCV infection at baseline. Reproduced from Vickerman et al, 2012,<sup>71</sup> by permission of John Wiley & Sons. HCV=hepatitis C virus. OST=opioid substitution therapy. NSPs=needle and syringe programmes.

#### HIV and HCV infection treatment

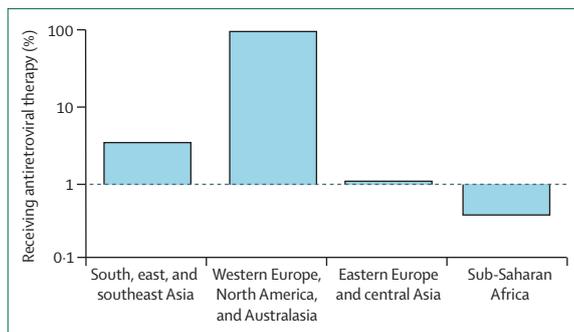
HIV testing with a link to treatment is important for all people. For people who use drugs as for other populations, ART can suppress viraemia and lower transmission risks. ART coverage for people who use drugs is high in western Europe, North America, and Australasia, but it was not always so. In the early years of ART availability, people living with HIV who used drugs had to battle scientifically unfounded ideas that excluded them from treatment programmes. One such idea was that the lives of people who use drugs are too chaotic to allow them to adhere to daily multi-pill treatment regimens,<sup>79</sup> although research had shown that people who use drugs can adhere to ART and achieve viral suppression.<sup>80</sup> It took more research in several settings and the experience of successfully expanded treatment programmes for people who use drugs to dispel these ideas.<sup>81</sup>

Studies from various settings have shown that agonist treatment for opioid dependence improves adherence to ART adherence among people who use drugs.<sup>81</sup> In Vancouver, Canada, several longitudinal studies showed not only that OST continuation improved ART adherence over time,<sup>82</sup> but also the converse—ie, that OST discontinuation significantly increased the risk of ART non-adherence<sup>83</sup>—and that OST patients with higher opioid agonist doses had the strongest adherence to ART.<sup>84</sup> In China, the understanding of the importance of the OST–ART link led to an effort to integrate ART services in methadone clinics.<sup>85</sup> Although practical challenges were encountered, the effort showed an appreciation for the value of integrating these areas of care. In Ukraine, patients with access to integrated and colocated ART and OST services had greater access to ART than did those receiving OST in non-integrated facilities.<sup>86</sup>



**Figure 7: Required scale-up of ART, NSPs, and OST to achieve 30% or 50% decrease in incidence or prevalence of HIV among people who inject drugs over 10 years in Tallinn, Estonia (A), St Petersburg, Russia (B), and Dushanbe, Tajikistan (C)**

NSP coverage in Tallinn and Dushanbe was already at high coverage at baseline and so was not scaled up. Adapted from Vickerman et al, 2014, by permission of Elsevier.<sup>77</sup> ART=antiretroviral therapy. NSP=needle and syringe programme. OST=opioid substitution therapy.



**Figure 8: Proportion of injection drug users living with HIV who receive antiretroviral therapy, by region**

Data on the y-axis are on a log scale. No data are available for Latin America and the Caribbean, or for the Middle East and north Africa. Adapted with permission from UNAIDS, 2014.<sup>55</sup>

In places where there is a lot of HIV transmission linked to unsafe injection, denying treatment to HIV-positive people who use drugs ensures that they and their injection and sex partners will be at risk of HIV and violates the rights of all concerned. Nonetheless, people who use drugs seem to be systematically excluded from ART in many parts of the world. A 2014 review of HIV services in the countries with the largest number of people who inject drugs estimated that in both China and Malaysia, less than 5% of people who use drugs who were living with HIV had access to treatment, and in Russia about 1% had access to treatment.<sup>54</sup> Access to HIV testing and ART is poor in ECA, due at least in some places to fear of police harassment or arrest and systematic exclusion of people who use drugs from treatment programmes.<sup>87</sup> UNAIDS' 2014 report on gaps in the global HIV response summarises the crisis of inaccessibility of ART for people who inject drugs and notes that, in

Africa, less than 1% of people living with HIV who inject drugs receive ART (figure 8).<sup>55</sup>

People who use drugs in many parts of the world have no access to screening for, and treatment of, HCV infection. Unlike HIV, HCV infection can be cured and cleared from the body. Interferon-based therapies as the treatment of choice are giving way to direct-acting antivirals (DAA), which have been marketed since 2013. The cost of the DAAs, however, is orders of magnitude greater than that of interferon-based therapy.<sup>88</sup> There is an urgent need for measures to reduce the price of the new generation of hepatitis C medicines and to ensure that people who use drugs can benefit from these treatments. In this regard, there could be many applicable lessons from the well documented efforts that succeeded in bringing down the prices of HIV medicines.<sup>89</sup>

For people who use drugs, cost is far from the only barrier to being able to benefit from DAA therapies (figure 9). Policy making on HCV treatment is replaying several misinformed tropes from the HIV past, including the idea that people who use drugs—or even those with any history of drug use—do not adhere well to treatment and are not worthy of expensive care.<sup>91</sup> This non-adherence myth was disproven with respect to HIV treatment, which usually requires a lifetime regimen of several drugs, and it has been researched and equally disproven with respect to HCV infection therapies, which are much shorter in duration.<sup>91</sup> Requiring abstinence from drugs or alcohol before initiating treatment for HCV infection—a condition already established in many US states—is not scientifically justified and excludes underserved and needy people from care.<sup>91</sup> It has also been suggested that active drug users are poor candidates for HCV treatment because they are likely to be reinfected, but several

studies disprove this assertion.<sup>91,92</sup> None of these claims should stand in the way of comprehensive prevention and treatment of HCV infection for people who inject drugs. WHO, along with many professional liver and infectious disease associations, urges screening for, and treatment of, HCV infection in people who use drugs, as a public health priority.<sup>91,92</sup> Modelling analyses have indicated that treatment of HCV infection in people who inject drugs could be an effective and cost-effective means of HCV prevention,<sup>93,94</sup> and that combination prevention strategies incorporating OST, NSPs, and infection treatment could greatly reduce incidence and prevalence among people who inject drugs in a range of settings.<sup>95</sup>

### Condom programmes, supervised injection, and pre-exposure prophylaxis

Unsafe injection-linked transmission of HIV sometimes overshadows sexual transmission in programme priorities for people who use drugs, but both are essential. UN reports and research in many settings have for years highlighted the importance of condom programmes for all men who have sex with men (MSM), and particularly those who use drugs either to enhance sexual pleasure, lower sexual inhibitions, escape or cope with situations of discrimination, persecution, or uncertainty about sexuality, or for other reasons.<sup>96,97</sup> Many studies have demonstrated a link between drug use at the time of sexual activity (so-called sexualised drug use) and lower condom use, resulting in a high prevalence of HIV and other sexually transmitted infections and lower incidence of condom use.<sup>97-99</sup> But more work is needed in many settings to understand the complex motivations for sexual decision making that would inform effective condom-promotion programmes.<sup>100</sup>

The UN recommendations do not include several interventions that have evidence to justify their contributions to an HIV or HCV infection response. Supervised injection sites are an example. In several European countries, Australia, and Canada, there are legally sanctioned indoor locations where people can inject (and sometimes smoke and inhale) illicit drugs under medical supervision, obtain clean equipment, be referred to OST, and receive HIV and overdose-prevention education. The harm-reduction intent of these facilities is not only to reduce HIV transmission but also to prevent mortality and other adverse outcomes of overdose and reduce unsafe disposal of syringes.<sup>73</sup> A meta-analysis showed a 69% reduction in syringe sharing resulting from use of supervised injection sites.<sup>101</sup> In the case of Insite, the supervised injection facility in Vancouver, Canada, a conservative estimate indicates that, on the sole grounds of HIV cases averted, Insite more than pays for itself, and savings are even greater when behavioural change leading to use of sterile syringes outside Insite is taken into account.<sup>102</sup>

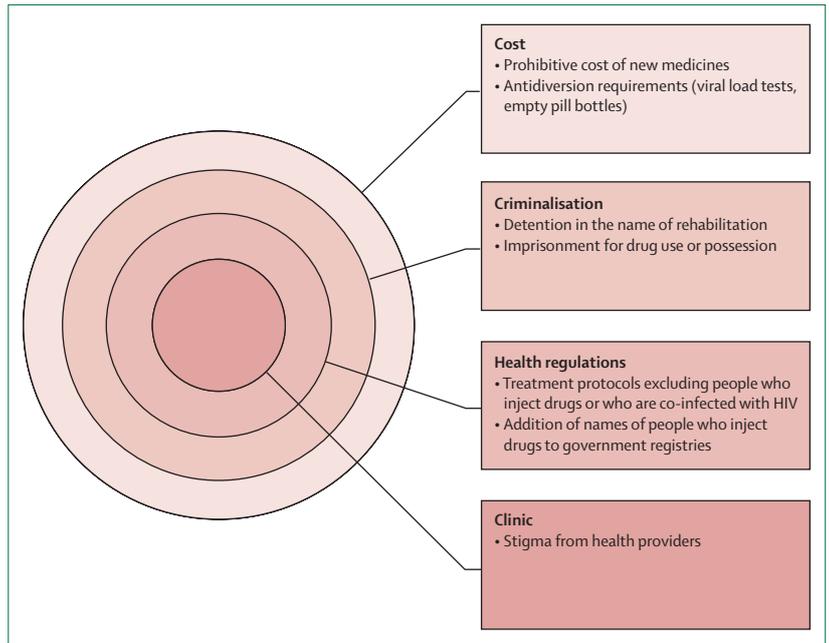


Figure 9: Barriers to treatment for hepatitis C virus infection for people who inject drugs  
Reproduced from Wolfe et al, 2015,<sup>90</sup> by permission of Elsevier.

As noted by Coffin and colleagues,<sup>103</sup> research about pre-exposure prophylaxis with tenofovir, an important new HIV prevention measure, has often excluded people who use drugs. Nonetheless, an important Bangkok-based trial<sup>104</sup> among people who use drugs demonstrated an HIV prevention effect for both men and women who inject drugs.

### The cost of neglecting harm-reduction and prevention measures

Preventable outbreaks of HIV in recent years have constituted graphic real-life demonstration of the value of ready access to harm-reduction services and the cost of impeding access to them. EECA bear a heavy burden from the neglect of harm-reduction measures. Harsh anti-drug policies and moral judgments against people who use drugs contribute to making health services for this population a low political priority.<sup>87</sup> In the first decade of its work, financial support from the Global Fund to Fight AIDS, Tuberculosis and Malaria helped to overcome these difficult political environments and supported the expansion of harm-reduction services, especially NSPs and OST, in several EECA countries and in east and southeast Asia.<sup>105</sup> However, with changes in Global Fund policy that have eliminated or reduced funding for middle-income countries, some of these services have been cut (panel 3).<sup>106</sup>

In 2010–12, of the 27 EU member states (plus Norway, Iceland, and Turkey), Romania and Greece were estimated to account for a third of all the incidence of HIV infection among people who inject drugs, the two countries together having seen a 20-times increase in

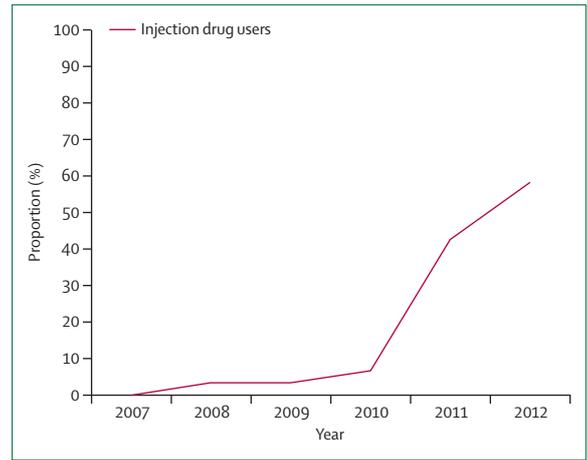
**Panel 3: Funding crisis for HIV-related harm reduction**

In pure fiscal terms, preventing HIV through harm-reduction measures should be an easy sell. Cost-effectiveness is high, and start-up costs for these services are low. But harm reduction continues to be resisted as a funding priority in too many countries. Support from the Global Fund to Fight AIDS, Tuberculosis and Malaria in its first decade, however, inspired some countries that had not previously scaled up needle and syringe programmes and opioid substitution programmes to do so, particularly in eastern Europe and central Asia.<sup>105</sup> The Global Fund encouraged the inclusion of HIV prevention services for people who inject drugs and other so-called key populations in country proposals.<sup>106</sup>

In the first ten funding rounds of the Global Fund, plus a special transitional funding period, US\$620 million in grant support went to programmes for people who inject drugs in 55 countries, an unprecedented wave of life-saving support for a politically unpopular population.<sup>106</sup> When the official country proposal to the Global Fund in Thailand, for example, excluded programmes for people who use drugs despite a high prevalence of HIV infection in that population, the Global Fund made a special grant to non-governmental organisations that were able to bring services directly to the community.<sup>107</sup>

In 2013, the Global Fund unveiled a new funding model that, unlike its previous processes, assigned ceiling amounts to countries and substantially limited funding to most middle-income countries, even those with severe injection-linked epidemics where it was unlikely that governments would pick up the costs of the newly scaled-up programmes that had previously been funded by the Global Fund.<sup>108</sup> Romania lost funding at a key moment (see main text), Serbia's harm-reduction programmes are operating on a shoestring,<sup>109</sup> programmes in Ukraine—a country with over 350 000 possessions with the intent to deliver—are gravely threatened,<sup>108</sup> and Vietnam might have a similar fate.<sup>106</sup> Thailand is no longer eligible for support. Civil society organisations continue to advocate for governments to provide the funding no longer available from the Global Fund,<sup>110</sup> but it is clear that, when it comes to politics, drug-related harm reduction will remain a hard sell in many places.

new diagnoses linked to drug injection.<sup>111</sup> In Romania, the reduction in external support for harm-reduction services coincided with the availability of relatively inexpensive amphetamine-type legal highs—new psychoactive substances (NPS) not yet under legal control. Some people who previously injected heroin shifted their consumption to these new stimulants. But heroin is injected two or three times a day, whereas these stimulants are injected six to ten times daily.<sup>111</sup> NPS use was found to be more associated with syringe sharing and high-risk sexual practices than was heroin use. The number of people injecting drugs is estimated to have risen from about 17 000 in 2008, to about 20 000 in 2011 (with riskier and more frequent injection<sup>112</sup>), and harm-reduction services were largely curtailed in 2010. Non-governmental organisations ran effective NSPs and OST services that kept the frequency of HIV infections low until then, but funding from the Global Fund was lost when Romania joined the EU.<sup>106</sup> The striking rise in HIV cases is shown in figure 10, which represents cases at a major hospital in Bucharest that practitioners think mirrors the national situation. Among the newly infected people who inject drugs,



**Figure 10: Proportion of people who inject drugs in Romania who are infected with HIV, 2007–13**

Source: Oprea C, Victor Babes Hospital, personal communication.

about 20% were estimated to be injecting heroin, 20% NPS, and 20% a combination of the two (Oprea C, Victor Babes Hospital, personal communication). As UNAIDS has noted, HIV outbreaks among people who inject drugs tend to grow extremely quickly.<sup>54</sup>

In Greece, even before the severe economic recession of 2008–09, harm-reduction services for people who use drugs were provided at a low level of coverage.<sup>113</sup> The recession was associated with impoverishment and large increases in homelessness among people who inject drugs, which separated some people even more from existing services, and funding to existing NSPs was cut substantially.<sup>114</sup> After years of fewer than 20 new cases of HIV transmission among people who inject drugs in the country, in 2011 the number of new cases of HIV linked to injection was 260, and in 2012 it jumped to 522.<sup>113</sup> With assistance from the EU, Greece scaled up low-threshold harm-reduction services, including in cities that had not had them previously, and existing services got support to distribute low-dead-space syringes (ie, syringes that are designed so that after injection not much of the injected liquid remains in the syringe; they are thus important to prevent disease transmission because the motivation to reuse the syringe is reduced), which reduce the risk of HIV transmission.<sup>115</sup>

For most of the period since HIV emerged as a public health problem, the US Government banned the use of federal funds for NSPs, although some states and municipalities supported them.<sup>116</sup> In January, 2016, the US Congress lifted that ban for all NSP costs other than needles and syringes—a move seen by many as a response to an increasingly visible opioid injection problem even outside major urban areas.<sup>117</sup> In 2015, a rural county in Indiana experienced a substantial increase in HCV infection followed by a linked outbreak of HIV cases linked to injection of oxycodone, a synthetic opioid.<sup>118</sup> 135 people were infected with HIV

in a short time in a district that previously had reported very few cases. Almost half the new infections were among women, and they spanned a wide age range because injection took place in multigenerational groups.<sup>118</sup> Indiana did not permit NSPs before the outbreak: non-medical use of syringes was a felony punishable by up to 3 years in prison.<sup>116</sup> The Governor of Indiana changed the state's policy to allow NSPs for a year on the basis of a public health emergency.<sup>116</sup> Similar outbreaks of HCV infection among people who inject drugs have been reported across this region, including in Kentucky and West Virginia—all states with few or no NSPs and poor access to OST.<sup>116</sup>

For policy makers interested in hard data for the value of comprehensive HIV and HCV prevention, the cost savings associated with these services are considerable. The Australian Government, for example, which has invested substantially in harm reduction from the early years of HIV, estimated that for every dollar spent on NSPs, more than \$4 was gained in short-term savings on health-care costs. For every dollar spent on NSPs, about \$12 was gained in 10 year savings on health-care costs, and about \$27 was gained if productivity increases as a result of averted disease are included.<sup>119</sup> A World Bank study in Malaysia, where about two-thirds of HIV transmission is related to unsafe injection, showed that, in the long term, NSPs, even at a low rate of coverage, would give a more than threefold return on investment.<sup>120</sup> Other studies have shown that NSPs can also help to refer people to treatment for HIV and drug dependence and other services.<sup>121,122</sup> A 2015 review<sup>121</sup> suggests that the low cost of these programmes and the high cost of the HIV suffering and treatment that can be averted means that NSPs are “one of the most cost-effective interventions ever funded”.

WHO, the UNODC, and UNAIDS have asserted both the effectiveness and cost-effectiveness of OST with respect to HIV, noting that for every dollar spent on it, a return of \$4–7 could be expected from crime reduction alone, and a return of about \$12 if health-care savings are included.<sup>123</sup> Although OST is more expensive per person than are NSPs, Wilson and colleagues assert in their review<sup>121</sup> that OST is highly cost effective, not only in HIV prevention terms but also because of health savings linked to less relapse, reduced incarceration, and a wide range of quality-of-life improvements.

## Impact of law enforcement on services for HIV and HCV infection

### Law on the books

Evidence from a number of countries indicates that drug law, policy, and law-enforcement practices can be barriers to provision and use of harm-reduction and other HIV-prevention services. These barriers take many forms, some related to the letter of the law in force in a country—ie, the “law on the books”—but many more related to the way in which law is enforced in practice, or what Burris calls the “law on the street”.<sup>124</sup>

In some cases, there are legal prohibitions against, or poor legal grounding for, harm-reduction services for people who inject drugs. The case of Russia is extreme: OST is prohibited by law even though opioid injection is widespread, and NSPs have been allowed only sporadically and are generally not supported by the state.<sup>125</sup> In many jurisdictions, NSPs are banned by law or effectively blocked by policy, including zoning restrictions.<sup>74</sup> The official estimate of Russians living with HIV rose to 907 000 by the end of 2014, up almost 7% from 2013 figures, and up from 500 000 in 2010.<sup>126</sup> More than 57% of new cases were attributed to unsafe drug injection.

Although OST might not be banned outright or explicitly, in some countries methadone and buprenorphine, the medicines used most often in OST, might not be registered or authorised for this indication.<sup>74</sup> This problem persists despite the inclusion of methadone and buprenorphine on the WHO Model List of Essential Medicines and strong support from WHO for OST. There are many other ways in which drug-control laws or regulations limit the use or usefulness of OST, including arbitrary restrictions on numbers of patients, arbitrary limitation of dosages and duration of treatment, prohibition of take-home doses, requirements for periods of drug or alcohol abstinence or trying other types of treatment as a prerequisite to starting OST, restrictions on the neighbourhoods or geographical zones where OST services can be offered, lack of integration with accessible community health services so that people have to make special trips for OST, and lack of access to OST in prison and pretrial detention.<sup>74,127</sup> In several countries there is good access to OST in the community, but none in prison or other detention.<sup>74</sup>

As with OST, NSPs even when not banned outright can be undermined by various laws and policies. According to a 2014 estimate by Harm Reduction International, significant drug injection is reported in 158 countries, but only 90 have functioning NSPs, most of which have very low coverage.<sup>74</sup> Laws, policies, or local ordinances can limit NSPs to remote or unpleasant neighbourhoods, the hours of operation or permitted geographical coverage, the number of needles or syringes that can be exchanged (or require one-to-one exchange in every transaction—ie, the patient needs to return one used syringe for every clean syringe they want), the age of NSP participants, and the provision of clean injection equipment in prison and pretrial detention (which can also be banned outright).<sup>74</sup> In the USA, the 50 states have a dizzying array of laws and regulations about needle exchange. In some jurisdictions, local health authorities have to declare emergencies periodically to continue to justify NSPs; some states simply ban these services.<sup>74</sup>

In many countries, drug paraphernalia laws undermine NSPs and often prohibit the possession of syringes. In the Global-Fund-supported project known as CHAMPION (2008–13), which was meant to help to

For the Model List of Essential Medicines visit <http://www.who.int/medicines/publications/essentialmedicines/en/>

address the high prevalence of HIV infection among people who inject drugs in Thailand, evaluators reported that an important impediment to scaling up NSPs was that people who inject drugs feared carrying syringes,<sup>128</sup> because being caught with syringes could lead to arrest, detention, forced drug treatment, and obligatory urine testing. In some countries health workers are required or strongly encouraged to register people who use drugs, and registries are turned over to the police (appendix).

#### “Law on the street”

In some places, there is no legal prohibition of possession of drug paraphernalia, but police nonetheless use possession of injection equipment as grounds for stop-and-search, arrest, and detention. For example, among nearly 600 Russians living with HIV surveyed in 2014, over 50% reported having been arrested for possessing a syringe (or having a syringe planted on them by the police), although possession of a syringe is not against the law in Russia.<sup>125</sup> Those reporting such arrests were more likely to have shared needles with others and to have overdosed than were those not arrested.<sup>125</sup> This quantitative study corroborates qualitative accounts suggesting that repressive policing in Russia in many ways raises the risk of HIV and discourages seeking out and using the few HIV prevention services that exist.<sup>129</sup> In other countries where syringe possession is legal, police routinely seize injection equipment that they find, further undermining protection of health.<sup>73</sup> Police presence was associated with unsafe rushed injection among people who inject drugs in Bangkok, Thailand, in a multivariate analysis,<sup>130</sup> and a small sample of people who inject drugs in Hai Phong, Vietnam, reported greater likelihood of needle sharing and other risky practices when police were present or their presence was feared.<sup>131</sup>

The performance of drug police in many countries is judged by the number of arrests that they make, and people who use drugs are likely to be easier to find than major drug traffickers, so they can help to bolster arrest totals. It is perhaps for this reason that police target facilities providing health and harm-reduction services to people who use drugs.<sup>132</sup> A 2015 study of more than 500 methadone patients by non-governmental service providers in New York showed that 38% of the patients reported being stopped and searched by police outside the clinics where they received methadone, and 70% reported witnessing someone else being searched in these locations.<sup>133</sup> In some countries, extortion of bribes from people who use drugs might be an important source of income for poorly paid police.<sup>134</sup>

Crackdowns and other intensive policing, often targeting low-income people, minorities, or marginalised people, can undermine harm reduction and add to drug-related risk. During a crackdown on drug use known as Operation 24/7 in Vancouver in

2003, researchers noted a significant decline in access to sterile injection equipment as police actions drove people who inject drugs away from the only NSP open at night.<sup>135</sup> During police crackdowns in Australia, people who used drugs reportedly switched from inhalation or smoking of substances to injection, which is much riskier, partly because during crackdowns drugs became scarcer and injection could be accomplished with lower quantities of drugs, more quickly, and less visibly than smoking.<sup>136</sup> Other studies have shown that crackdowns lead to rushed injections, more vascular accidents, and the likelihood that steps such as disinfecting the injection site will be skipped.<sup>137</sup> In Malaysia, rushing an injection because of police presence was linked to risk of overdose.<sup>138</sup>

#### Tuberculosis, drug use, and drug policy

According to WHO, tuberculosis is the most important cause of death among people living with HIV: it causes one in four deaths.<sup>139</sup> People living with HIV have a 30-times higher risk of tuberculosis infection than do HIV-negative people.<sup>139</sup> But WHO emphasises that people who use drugs are at very high risk of both infection with *Mycobacterium tuberculosis* and active tuberculosis even if they do not have HIV. The risk of tuberculosis was linked independently to drug injection—and even to non-injection drug use—well before HIV was in the picture.<sup>140</sup>

WHO estimates that people who both live with HIV and inject drugs are two to six times more likely to contract tuberculosis than people who live with HIV who do not inject drugs.<sup>141</sup> But the role of drug use in the epidemiology of tuberculosis is complex and, as noted by Deiss and colleagues,<sup>142</sup> the existing research does not always distinguish drug injection from other drug use. Many elements of the risk environment of at least some people who use drugs—homelessness or sub-standard housing, heavy alcohol and tobacco use, and incarceration, for example—are risk factors for tuberculosis. Some studies suggest that people who use drugs present later than do other people to seek testing or care for tuberculosis.<sup>142</sup> Deiss and colleagues<sup>142</sup> also raise the possibility that use of opioids could inhibit the cough reflex and thus mask symptoms of tuberculosis that might otherwise lead to seeking care.

Multidrug-resistant (MDR) tuberculosis has threatened to undermine progress in tuberculosis control in many parts of the world.<sup>143</sup> The region with the highest documented proportion of MDR tuberculosis among tuberculosis cases is EECA, which is also home to major unsafe-injection-linked HIV and HCV infection epidemics.<sup>139</sup> Remarkably, although HIV and HCV co-infection is high in the region, HIV–tuberculosis co-infection is reportedly low, but experts warn that the combination of sparse harm-reduction services, low ART coverage among people who use drugs, high rates of incarceration of people who use drugs, non-integrated

vertical health services, and substandard housing and social support means that a perfect storm of HIV and MDR tuberculosis co-infection could be brewing.<sup>144</sup>

WHO recommends that people who use drugs be included systematically in anti-tuberculosis efforts and especially that HIV, HCV infection, and tuberculosis services be integrated and low threshold for people who use drugs.<sup>141</sup> The reality, however, is that recommended services remain out of reach for many people who use drugs worldwide. Identification of acid-fast tuberculous bacilli by microscopy and molecular DNA detection using GeneXpert systems are recommended for diagnosis of tuberculosis,<sup>141</sup> but in central Asia, for example, diagnosis is still mostly based on chest radiography,<sup>144</sup> even though radiographic results are compromised by the presence of HIV.<sup>141</sup>

WHO has compiled detailed guidance for integrated treatment of tuberculosis and HIV and tuberculosis and HCV infection, including ensuring sustained access to ART for all who need it.<sup>145</sup> The exclusion of people who use drugs from ART, which persists in many parts of the world, undermines the effectiveness of tuberculosis and HCV infection treatment. The importance of integrated and sustained care cannot be overstated. Deiss and colleagues<sup>142</sup> report cases in which tuberculosis treatment was integrated with treatment for drug dependence but was discontinued after people left drug treatment. The non-governmental organisation Partners in Health addressed the challenge of keeping people who use drugs in sustained care for MDR tuberculosis in a programme called Sputnik in Tomsk, Russia, through a strategy of intensive accompaniment of patients.<sup>146</sup> Trained teams of nurses, drivers, and others worked with patients to ensure delivery of treatment in places and circumstances that the patient could maintain to minimise missed appointments. Family, friends, and neighbours were helped to understand the importance of treatment and to provide support to patients.<sup>146</sup> Over 70% of high-risk patients completed treatment. The cost compared to hospitalisation was small. A study in Malaysia demonstrated that screening and care for tuberculosis in drug rehabilitation centres and facilities offering OST was a very effective targeting strategy.<sup>147</sup>

Tuberculosis and drug-use experts at WHO, writing in 2013 in the *WHO Bulletin*, asserted that it was urgent to address the undermining role of “punitive drug policies and laws in fueling the tuberculosis epidemic among people who use drugs”.<sup>148</sup> Not only do punitive laws drive people who use drugs away from health services, they might also contribute to stigma or disrespectful treatment in health services.<sup>148</sup> For these reasons, in its 2014 guidance on HIV services for key populations, including people who use drugs, WHO recommended decriminalisation of drug use and training and protections for health workers to reduce fear of treating people who inject drugs.<sup>149</sup>

## Drug-related incarceration and health

### Use of incarceration in drug control

In 2014, the UNODC estimated that people convicted of drug crimes make up about 21% of incarcerated people worldwide. Possession of drugs for individual use was the most frequently reported crime globally (figure 11).<sup>32</sup> On the basis of data from 2011 annual country reports, the UNODC estimated that drug-possession offences constituted 83% of drug offences reported worldwide.<sup>32</sup> Although not all of the crimes reported by the police result in incarceration, mandatory prison sentences are attached to possession of even a small amount of drugs in many countries. In some countries that have decriminalised drug use, possession for individual use remains an offence, or the amount defined for non-criminalised individual use is so low that possession is effectively a crime.<sup>150</sup>

UNAIDS estimates that in places where drug use and small-scale drug possession are criminal offences, most people who use drugs could wind up in the custody of the state at some time in their lives.<sup>55</sup> In central Asia, one estimate suggests that more than 50% of people who inject drugs have been arrested at least once.<sup>75</sup> Although there have been some reform efforts, many countries have drug laws that impose extended custodial sentences on people convicted of non-violent offences including drug use, possession of amounts of drugs intended only for individual use, and sale of very small amounts of drugs.<sup>74</sup> The over-representation of people who use drugs in prison and the lack of essential care and support for them while they are in state custody are among the most devastating health legacies of pursuing drug prohibition. There is, moreover, no evidence that incarceration is an effective deterrent for drug use either in prison or afterwards.<sup>151</sup> Indeed, the

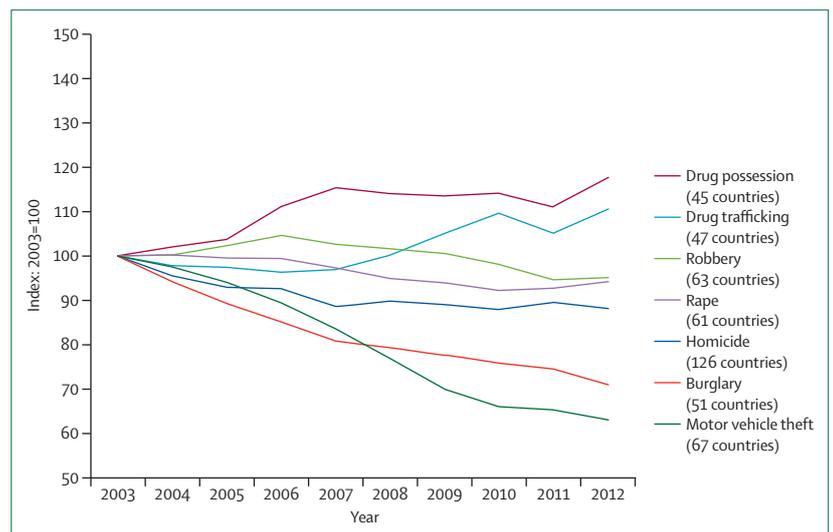
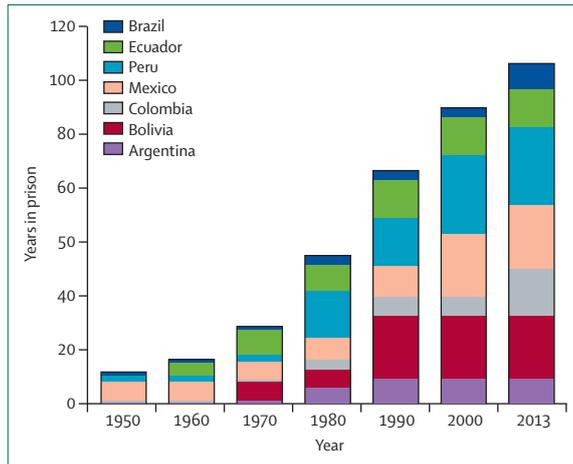


Figure 11: Global trends in crimes reported by police, 2003–12

Trends are calculated as weighted crime rates per 100 000 population relative to the base year (2003). Reproduced from the *World Crime Trends, 2014*, by permission of the UN Office on Drugs and Crime.<sup>32</sup>



**Figure 12: Highest minimum penalty for drug offences in selected Latin American countries**  
Based on data from the Colectivo de Estudios de Drogas y Derecho, 2013.<sup>154</sup>

	Proportion imprisoned for drug offences overall	Proportion of women imprisoned for drug offences
Argentina	33%	68.2%
Australia	12%	17%
Bolivia	45%	..
Brazil	24.8%	53.9%
Canada (federal)	26.3%	..
Canada (provincial)	15.7%	..
Colombia	17%	45%
Ecuador	33.5%	77%
Ireland	19.6%	..
Italy	38.8%	..
Latvia	14.3%	68%
Mexico*	57%	80%
New Zealand	10%	..
Peru	23.8%	68.4%
Russia	20%	..
Thailand	68%	..
USA (federal)	49%	59.4%
USA (states)	16.8%	25.1%

In the USA, about 86% of prisoners for all offences are imprisoned in the state system. Sources: Penal Reform International, 2015,<sup>155</sup> Giacomello, 2014,<sup>156</sup> Organization of American States–Inter-American Commission of Women, 2014,<sup>157</sup> Carson, 2015,<sup>158</sup> and Perez Correa and Azeola, 2012.<sup>46</sup> \*Based on a 2012 study of eight prisons.<sup>46</sup>

**Table 1: Incarceration for drug offences as percentage of all incarceration in selected countries**

Vancouver Injection Drug User Study (VIDUS),<sup>152</sup> a long-running cohort study, found that recent incarceration was negatively associated with cessation of injection.

Several studies show that criminal prosecution of minor use and possession infractions does not have the deterrent effect with respect to drug use, possession, or minor

crimes that supporters of these sanctions claim. A classic study<sup>153</sup> comparing cannabis use in San Francisco, USA, and Amsterdam, Netherlands—cities with very different approaches to cannabis regulation—showed that the partial decriminalisation of cannabis in Amsterdam was not associated with increased use or possession, and the rigorous criminalisation in San Francisco was not associated with reductions in use or possession.

The OAS, in its landmark 2013 report on drugs and drug policy in the Americas, lamented the large rise in prison populations linked especially to prosecution of minor offences because the people charged with these are less likely than major traffickers to be able to afford legal assistance in attaining “access to justice”.<sup>15</sup> This increase, at least in some Latin American countries, is a detrimental outcome of steady increases in legislated penalties for drug offences since the 1950s (figure 12; appendix).<sup>154</sup>

Table 1 shows the most recent information for selected countries about the proportion of people incarcerated for drug offences among all incarcerated people. UNODC data for the prominence of possession offences and the data informing table 1 do not distinguish the proportion of drug-related offenders who are incarcerated for minor, non-violent offences from those incarcerated for more serious drug offences. But, as noted by Penal Reform International in a 2015 report,<sup>157</sup> mandatory prison sentences are attached to possession of even a small amount of drugs in many countries (panel 4).

**Racial discrimination in drug-related mass incarceration**

The USA has the highest rate of incarceration in the world at about 707 people per 100 000 population, about 50% higher than that in Russia, and more than five times higher than that in China.<sup>166</sup> Drug-related offences account for a substantial proportion of this incarceration (table 1). Aggressive prosecution of drug offences along with mandatory minimum sentences for some infractions helped to make drug-related mass incarceration a major engine for growth in US state and federal prison populations beginning in the 1980s (figure 13).<sup>167</sup>

The racially disparate application of drug-related imprisonment in the USA is a prominent feature of mass incarceration. People of colour, particularly African Americans, have been disproportionately affected by drug-related mass incarceration. In 2011, among men aged 30–34 years, one in 13 African Americans were in prison compared with one in 36 Hispanic Americans and one in 90 white Americans, even though prevalence of drug use is similar in the three populations.<sup>168</sup> The Sentencing Project, a non-governmental organisation focused on criminal justice, calculated in 2014 that African American men had a 32% probability of being in prison or other state custody at some time in their lives, compared with 17% for Hispanic men and 6% for white men.<sup>169</sup> Figure 14 shows the racial disparity in drug-related incarceration at the federal and state level in 2013.<sup>170</sup>

This pattern reflects documented racial disparities at all stages of US law enforcement, from stop-and-search policies and arrest to sentencing and incarceration. Beginning in the late 1990s, New York City attempted to clamp down on cannabis infractions, resulting eventually in nearly a half million arrests by 2013—of young people for the most part—for minor cannabis infractions.<sup>171</sup> There was consistent evidence that marijuana use was higher among white populations than among African Americans or Hispanic Americans. In the decade beginning in 2004, African Americans comprised 25% of the population of the city but accounted for 54% of cannabis arrests; Hispanic Americans made up 27% of the population but accounted for 33% of arrests.<sup>171</sup> Arrests for drug-related infractions among teenagers across the USA from 1980 to 2012—mostly for cannabis—show a similar racial disparity (figure 15).<sup>173</sup>

The striking racial disparity in arrest and incarceration in the USA parallels racially disparate patterns of HIV, and some investigators conclude that the two are closely related. Although African Americans comprise 14% of the US population, about 40% of new HIV cases and about half of AIDS cases in the US occur in them.<sup>174</sup> Various studies show that a history of incarceration is associated with incidence and prevalence of HIV infection among African American men and women.<sup>173–175</sup>

Racial and ethnic minorities are over-represented in prison and in arrest figures in countries other than the USA, including Aboriginal people in Canada and Australia and people of African origin in Brazil, but the contribution of drug-related arrests and convictions to these patterns is not clear.<sup>176</sup> In Canada, Aboriginal people accounted for 3% of the adult population but 20% of adults sentenced to prison in 2013–14.<sup>177</sup> Afro-Brazilians reportedly receive longer sentences for all categories of crime than do Brazilians of non-African origin, and they are disproportionately targeted in drug policing and crackdowns.<sup>178</sup>

In October, 2015, the US Government announced that it would release 6000 federal prisoners incarcerated for minor drug offences, who are meant to be the first tranche in a release of a possible 46 000 federal prisoners of the 100 000 convicted of federal drug offences.<sup>179</sup> This unprecedented release is occasioned by a decision by the executive branch to reduce federal mandatory minimum sentences for minor drug offences and make the reduction retroactive.<sup>179</sup> Most people serving prison sentences for drug offences are in state (ie, not federal) prisons, which are not affected by this change.<sup>170</sup>

#### Drug-related incarceration of women

Table 1 illustrates a striking gender disparity in drug-related imprisonment. Although in any given market there are likely to be many more men than women involved in use, possession, and sale of drugs, a higher proportion of women than men are imprisoned because

#### Panel 4: The death penalty for drug offences

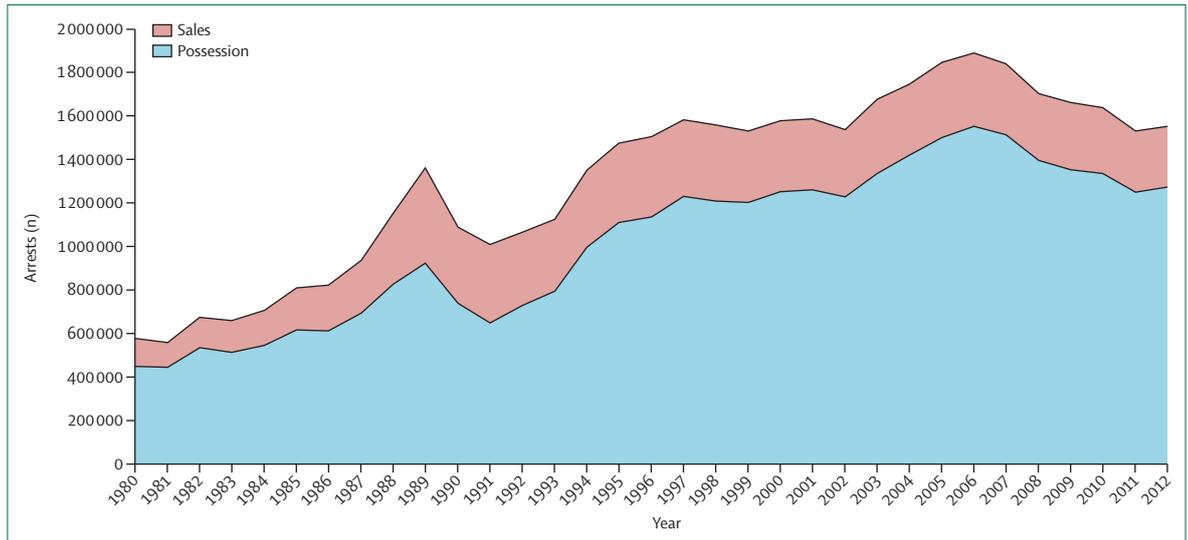
June 26 is designated by the UN as the International Day Against Drug Abuse and Illicit Trafficking. The date has been marked in some countries by holding public executions of drug offenders.<sup>159</sup> 32 countries have laws on the books that impose capital penalties for drug offences.<sup>160</sup> But most drug-related use of the death penalty is by a smaller number of countries, including China, Iran, Singapore, Saudi Arabia, Indonesia, and Thailand.<sup>160</sup>

Advocacy for the abolition of the death penalty has succeeded globally in general, and many countries have removed it from their statute books in the past 50 years. But during the same period, several countries included definition of capital crimes in their drug laws.<sup>160</sup> The Single Convention of 1961 might have influenced some countries—the commentary accompanying it suggests that capital punishment for drug offences is an appropriate sanction.<sup>161</sup> The 1988 UN drug convention, which has a strong emphasis on criminal penalties for drug trafficking, might also be an influence.<sup>162</sup> But in the past 10 years, UN human rights experts and the UN Office on Drugs and Crime have denounced the use of capital punishment for drug offences as a violation of international human rights norms.<sup>163</sup>

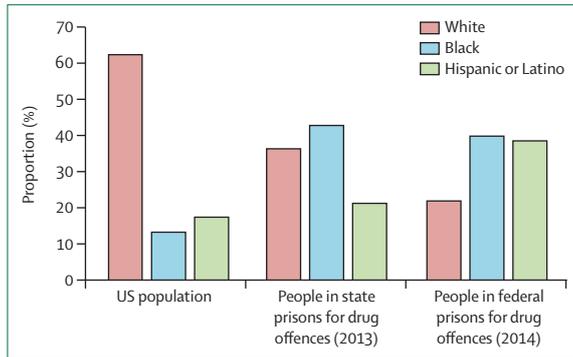
Some countries have applied the death penalty very publicly to foreign nationals in an attempt to discourage international trafficking—eg, Indonesia's execution of Australian, Nigerian, and Brazilian nationals for drug offences in July, 2015.<sup>164</sup> But there is no evidence that drug-related executions have a deterrent effect on drug trafficking or other offences.<sup>160</sup> In Iran, where in 2011 more than 70% of state-sponsored executions were for drug offences, the then-head of the Iranian High Council for Human Rights observed that the executions did not seem to make a dent in the level of trafficking in the country.<sup>165</sup>

of drug-related convictions in nearly all countries for which data are available.<sup>155</sup> The unanimously endorsed UN Bangkok Rules urge governments to find alternatives to incarceration for women convicted of non-violent offences—the vast majority of incarcerated women—and to ensure protections from violence and other human rights abuses for those who are in state custody.<sup>180</sup> But these rules seem rarely to be implemented.

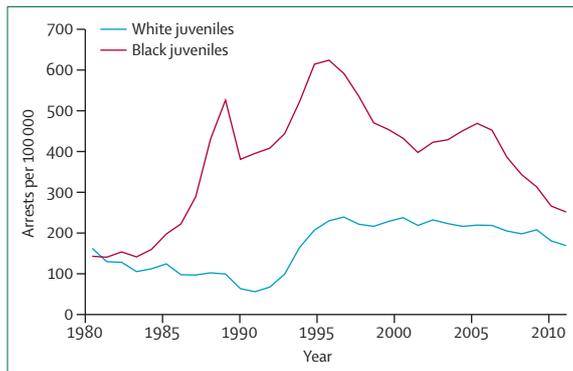
Giacomello asserts that a large proportion of women convicted for small-scale sale and other non-violent offences in Latin America are uneducated women living in poverty who had few opportunities to earn licit income.<sup>156</sup> A report<sup>157</sup> by the OAS and the Inter-American Commission of Women echoes this view, estimating that most women imprisoned for drug-related offences in the Americas are engaged in so-called micro-trafficking, but can be sentenced for long periods under harsh anti-trafficking statutes. The report also notes that in many countries in the Americas, many women are convicted for bringing drugs into a prison or pretrial detention facility for a spouse or family member and that women's low level in the drug-market power chain means that they have little leverage in plea bargaining or sentence reduction.<sup>157</sup> In Mexico, researchers at Centro de Investigación y Docencia Económicas found that nearly all of the women imprisoned for drug-related crimes in 2012 were first-time offenders, and 92% were convicted of non-violent offences.<sup>46</sup> Of women accused of drug infractions in Argentina in 2013, almost 30% had been detained without trial for 1–2 years and about 12% for more than 2 years.<sup>157</sup>



**Figure 13: Drug arrests in the USA, 1980-2012**  
Data are from Snyder and Mulako-Wangota, 2014.<sup>167</sup>



**Figure 14: Drug-related incarceration by race in the USA, 2013-14**  
Data are from Carson, 2014.<sup>170</sup>



**Figure 15: Juvenile arrest rates by race for drug offences in the USA, 1980-2012**  
Data are from Snyder, 2012.<sup>172</sup>

Overall in Europe and central Asia, about a quarter of women in state custody are convicted drug offenders.<sup>181</sup> In the USA, there was a doubling of drug-related arrests of women (mostly for possession), from about 400 per

100 000 population in 1990 to a peak of about 800 per 100 000 in 2006, after which the rate declined somewhat.<sup>172</sup> Women who use drugs in prison are also at risk of HIV from sexual violence or unprotected coercive sex, as well as from drug use.<sup>182</sup> As much as HIV services, including access to condoms, and drug-dependence services are inadequate in men's prisons, they are worse in women's prisons.<sup>182</sup> Incarceration of women has increased in many countries in the past 20 years, but women still comprise a small proportion of the prison population in most countries, and developing specialised HIV, HCV infection, or tuberculosis programmes for them is rarely a political, public health, or budgetary priority.<sup>182</sup>

Detention of children and young people and the effect on children of parents' incarceration are too little studied (appendix). Pretrial detention of children and adults for drug offences also poses health risks (appendix).

#### Impact on families and communities

The over-reliance on incarceration as a response to drug use could have a profound effect on the wellbeing of relatives and partners of people imprisoned for drug offences. Many studies document that incarceration of a family member imposes unique forms of financial strain, psychological distress, and logistic hardship on the family and is associated with deleterious health outcomes.<sup>183-193</sup> Caring for a family member who uses drugs has its own challenges,<sup>194</sup> but incarceration can generate further difficulties by increasing geographical distance between people who use drugs and their families, erecting barriers to communication, and subjecting family members to correctional surveillance and regulations when they maintain contact with their

incarcerated loved one.<sup>195–197</sup> Parole and probation conditions can sometimes be incompatible with the resources that family members have to offer (eg, housing outside of a district of parole, or in government-subsidised housing).<sup>198</sup> In the USA, the impact of all of these factors falls disproportionately on people of colour (appendix).

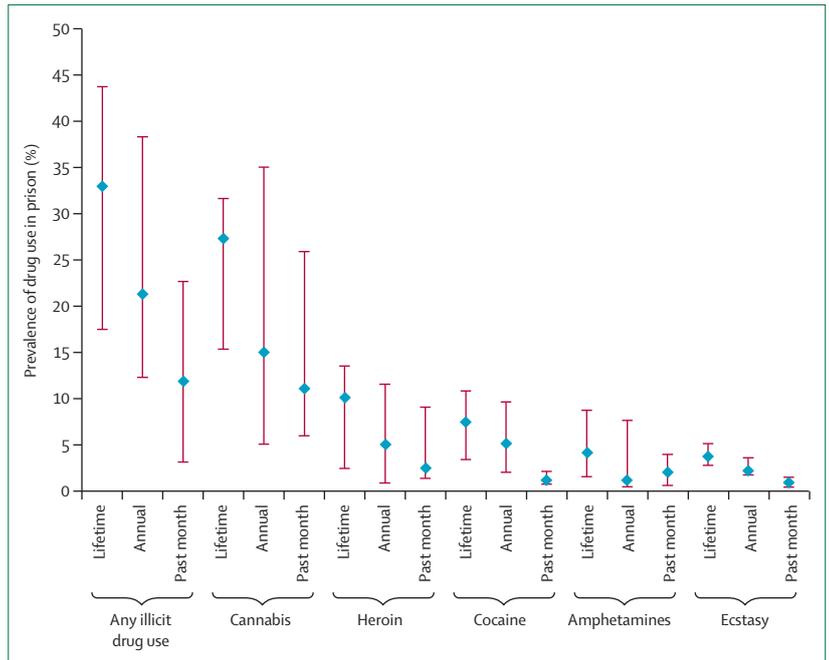
A 2014 survey<sup>46</sup> of people visiting family members in Mexican prisons indicated similar kinds of challenges in that setting. Of the visitors, who were mostly women, more than 50% said that because of the imprisonment of a spouse or family member they had had to get a job or an additional job. By contrast 41% said that they had lost a job, more than 18% said that they had had to move house, and almost 40% said the imprisonment had impeded their ability to care for their children or grandchildren. Spouses of incarcerated people in this study were also disproportionately affected by a range of health problems, including high blood pressure and depression.<sup>46</sup>

### Infectious disease and drug-related incarceration

Prisons and pretrial detention facilities worldwide are high-risk environments for infectious disease transmission. UN agencies estimate that the prevalence of HIV infection, other sexually transmitted infections, HCV and hepatitis B virus infections, and tuberculosis is two to ten times higher in prisons than in the community.<sup>55</sup> Co-infection of these diseases is also likely in prison. In Argentina, for example, people living with tuberculosis who had a history of incarceration were six times more likely to have HIV and 18 times more likely to have HCV infection than were the general population.<sup>74</sup> Because most people in prison and pretrial detention return to the community, how infectious disease is handled within prisons has ramifications for the whole population.

As UNAIDS notes, excessive criminalisation of drug-related offences is one factor that contributes both to prison overcrowding and to the over-representation in prisons of people who are likely to have been exposed to HIV and, in the case of people who inject drugs, HCV infection and tuberculosis.<sup>55</sup> People who use drugs are likely to be over-represented in prisons, particularly in countries where laws allow for lengthy custodial sentences for minor drug use, possession, and sale, and many of those people are imprisoned repeatedly.<sup>199</sup> These factors figure in WHO's 2014 recommendation to decriminalise drug use—and thus reduce incarceration of people who use drugs—as a crucial step towards enabling optimum HIV prevention, treatment, and care.<sup>149</sup>

Drug injection takes place in prison, even when very restrictive measures are in place. More than 90% of men surveyed in a 2015 study<sup>200</sup> in Indonesia said that they shared injection equipment while injecting drugs in prison, and 78% said that they shared equipment with ten or more other prisoners. The UNODC in 2015



**Figure 16: Lifetime, annual, and past-month prevalence of drug use in prison**  
Reproduced from the *World Drug Report, 2015*,<sup>7</sup> by permission of the UN Office on Drugs and Crime. Error bars represent the IQR.

summarised reports from 43 UN member states that had estimated or surveyed lifetime, annual, and past-month drug use while in prison by people in custody (figure 16).<sup>7</sup> In a study<sup>201</sup> of drug use in prison in the EU, reported rates of ever having injected drugs in prisons in the countries providing data were in the range of 15–30%. Some people who used drugs before being imprisoned will discontinue or reduce use in prison or change their method of use, whereas others will seek to maintain drug use, including drug injection; some people will begin to use drugs while in prison.<sup>202</sup> In addition to drug-related risk, people who use drugs in prison face HIV risks associated with unprotected sex, sexual violence, and unsafe tattooing. The risk of sexual transmission of HIV can persist after prison if incarceration destabilises existing sexual relationships.<sup>174</sup>

Numerous studies have shown transmission of HIV and HCV infection in prison linked to drug injection, and others have demonstrated high prevalence of HIV and HCV infection among formerly incarcerated people compared with that in other populations.<sup>199</sup> In one study,<sup>199</sup> it was estimated that about 10% of adults in the Russian penitentiary system inject drugs, with two-thirds of these people sharing syringes.<sup>199</sup>

### HIV in prison

A recent comprehensive accounting of prevalence of HIV infection in prisons worldwide is not available. In its 2014 report on gaps in the global HIV response, UNAIDS noted results for selected countries: compared

with that in the general adult population, prevalence among adult prisoners is 15 times higher in Ukraine, 10 times higher in Argentina, and 2.4 times higher in both South Africa and the USA.<sup>55</sup> In 2007, prevalence in prisons was at least twice that in the general population in 11 sub-Saharan African countries.<sup>203</sup> Data for HIV transmission in prison are rarer. An assessment of attributable risks among people who inject drugs in a long-term study in Vancouver showed that 21% of the HIV infections in this population were probably acquired in prison.<sup>204</sup>

**Prevalence and transmission of HCV infection in prison**

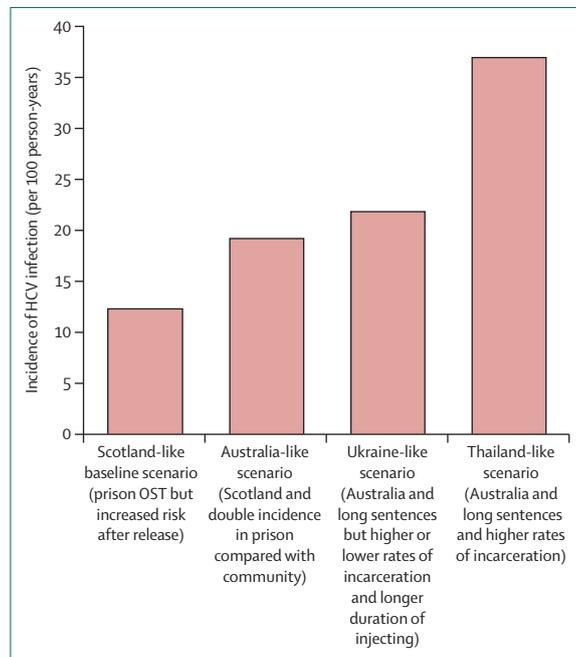
People living with HCV infection are also over-represented in prison in many countries. On the basis of data from 39 countries, a 2013 review<sup>205</sup> showed an average 26% positivity to HCV antibody among people in prison and about 65% among prisoners with a history of drug injection. Overall prevalence in this analysis was 32% in women and 24% in men.<sup>205</sup> Several of the reviewed studies included evidence of HCV transmission in prisons. Prevalence in prisons could be high even when harm-reduction services are available in the

community. In Australia, for example, the prevalence of HCV infection among people entering prison in 2010 was 22% and among those with a history of drug injection 51%.<sup>206</sup> Phylogenetic and spatial analysis in Australia located a number of clusters of in-prison HCV transmission and suggested high transmission risk when people moved between prisons or from prison to the community.<sup>207</sup>

We sought to investigate through mathematical modelling the contribution of incarceration to HCV transmission among people who inject drugs in several countries. Given the high incarceration rate among people who inject drugs<sup>208–211</sup> and the association between HCV infection or high-risk behaviour and a history of incarceration,<sup>210,212–221</sup> it is unsurprising that incarceration could play an important part in driving transmission of HCV in this population.

According to our results, interventions that aim to reduce transmission risk in prison (such as OST and possibly treatment of HCV infection)<sup>222</sup> or after release could substantially reduce the incidence of HCV infection among people who inject drugs (figures 17, 18). Our modelling explored the role of incarceration in transmission of HCV infection among people who inject drugs in four illustrative scenarios (similar to Scotland, Australia, Ukraine, and Thailand), which were chosen to mimic important incarceration characteristics of varied global settings. Our model was calibrated to a Scotland-like scenario, where moderate levels of incarceration (61% of people who inject drugs ever incarcerated, 12.7% in the past 6 months) and short sentence lengths (average 7 months)<sup>69,217,223</sup> mean that people who inject drugs spend 16% of their injecting career in state custody (1.1 years). Despite lower incidence of HCV infection among incarcerated people who inject drugs than among those in the community in Scotland<sup>223</sup> (probably a result of high levels of coverage for prison OST—57%—among incarcerated people who inject drugs),<sup>69,223</sup> modelling suggests that incarceration still has a negative impact on the overall epidemic because of the increased risk of HCV acquisition among recently released people who inject drugs (three times greater in first 6 months after release compared with the risk in other people who inject drugs in the community).<sup>217</sup> Indeed, prison contributes only 5% of incident infections, whereas 21% of all incident infections occur in the period of increased risk after release. Because of the heightened incidence after release, the incidence of HCV infection among people who inject drugs in our Scotland-like scenario could be 47% lower if this increased risk after release was not present with OST maintained (figure 18), but only 20% lower if incarceration had no effect on transmission during or after prison.

Although Australia has similar incarceration rates and durations to those of Scotland, a lower level of prison OST (19% of people who inject drugs receive



**Figure 17: Modelled overall endemic incidence of HCV infection among people who inject drugs resulting from various effects of incarceration in several illustrative global settings**

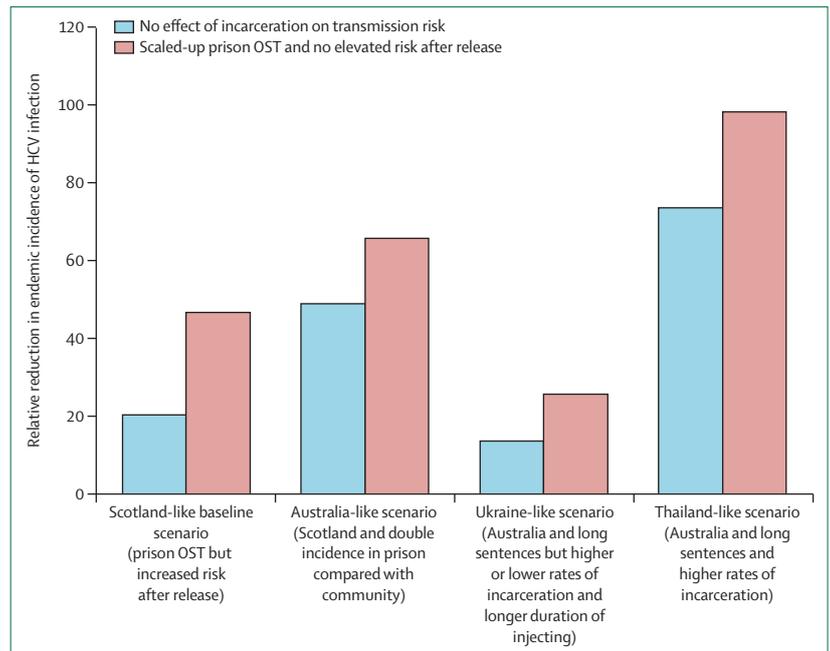
The figure shows the large degree to which the overall incidence of HCV infection in different settings can be very different depending on different assumptions surrounding the level of risk in prison and incarceration dynamics. Specifically, the incidence in the Scottish scenario could be increased substantially if there was higher incidence in prison (as in Australia), longer sentence lengths (as in Ukraine) and higher rates of reincarceration (as in Thailand). Source: Vickerman P, University of Bristol, personal communication (see appendix for further information). OST=opioid substitution therapy. HCV=hepatitis C virus.

OST in prison)<sup>224</sup> correlates with higher incidence of HCV infection among incarcerated people who inject drugs,<sup>68,225</sup> such that 22% of incident infections could occur in prison. In a setting such as Australia, modelling indicates that incidence among people who inject drugs could possibly be 49% lower if incarceration had no effect on transmission and 66% lower with high coverage of prison OST and no increased risk after release (figure 18). By comparison, in a setting with similar incarceration dynamics to those of Ukraine, where people who inject drugs receive longer sentences on average (14 months) than do those in Scotland or Australia and inject for much longer (25 years on average compared with 7 years in Scotland), the lower proportion of people recently or ever incarcerated (52% of people who inject drugs ever incarcerated, 9.7% in the past 6 months) results in them spending a similar proportion of their time injecting in prison (18% of time injecting or 4.4 years) as in Scotland and Australia. Here, possibly because of longer durations of injecting, the overall contribution of prison to the epidemic among people who inject drugs could be far less than that in the other two settings if the pattern of transmission risk in and out of prison were similar. Our model projects that incidence of HCV infection among people who inject drugs could only be 14% lower if incarceration had no effect on transmission, and 26% lower if there was higher coverage of prison OST and no increased risk after release.

Finally, in a setting with similar incarceration patterns to those of Thailand, the combination of high incarceration rates (80% of people who inject drugs ever incarcerated, 17% in the past 3 months) and long prison sentences (12 months on average)<sup>226,227</sup> means that people who inject drugs are likely to be incarcerated for a substantial proportion of their time injecting (estimated at 46%) and to experience numerous periods of increased transmission after release. For this Thailand-like scenario, the model estimates 56% of incident infections could occur in prison; incidence could be 74% lower if incarceration had no effect on transmission, and 98% lower with high coverage of prison OST and no increased risk after release (figure 18). This analysis, although illustrative, highlights that incarceration could contribute substantially to transmission of HCV infection among people who inject drugs and supports a growing body of evidence that interventions to reduce infection risk in prison and after release (such as OST and possibly treatment of HCV infection)<sup>222</sup> could result in substantial benefits to the community and reduction in transmission.

### Tuberculosis in prison

Tuberculosis in prison and other closed settings has long been a public health concern, but risks increase in the presence of drug injection in closed settings. Overcrowding, poor sanitation, inadequate ventilation,



**Figure 18: Modelled relative reduction in overall endemic incidence of HCV infection among people who use drugs for four illustrative global settings**

Transmission of HCV infection could decrease by 12–60% if incarceration had no effect on transmission risk (ie, transmission risk in and after prison is the same as that among never-incarcerated people who inject drugs), and by 30–90% if prison OST was scaled up (as already occurs in Scotland) and there was no increased risk after prison release. Source: Vickerman P, University of Bristol, personal communication (see appendix for further information). HCV=hepatitis C virus. OST=opioid substitution therapy.

the high prevalence of HIV infection, and the insufficiency of basic services all contribute to transmission of tuberculosis in prison.<sup>228</sup> The large representation in prisons in many countries of people with HIV, people who inject drugs, people living in poverty, and formerly incarcerated people means that many people in custodial settings have been exposed to tuberculosis before they are incarcerated.<sup>141</sup> Biadglegne and colleagues<sup>228</sup> in 2015 reported that sub-Saharan Africa and EECA were the regions of greatest concern for transmission of tuberculosis in prison, although data from Africa were sparse. Central Asia has the highest estimated prevalence of tuberculosis and MDR tuberculosis of any region.<sup>144</sup> A widely cited study by Stuckler and colleagues estimated that, in EECA from 1991 to 2002, increases in the rate of incarceration accounted for about 60% of the increase in tuberculosis in the general population.<sup>229</sup> In the WHO European Region, which includes eastern Europe, it was estimated in 2010 that the relative risk for tuberculosis in prison was 145 times higher than that in the community.<sup>230</sup> WHO cites the estimate that, worldwide, about one in 11 cases of tuberculosis transmission in high-income countries, and about one in 16 in low-income and middle-income countries, occurs in prison.<sup>141</sup>

Containing MDR tuberculosis is crucial to national responses. Both MDR and extensively-drug-resistant

tuberculosis have been reported in prisons at high levels in some cases.<sup>143</sup> A 2015 review<sup>228</sup> of MDR tuberculosis in prison showed that, for example, about 19% of all cases of tuberculosis in Thai prisons were classified as MDR disease, 13–55% of cases in Russia, 52% of those in Azerbaijan, and almost 10% of those in Zambia. In a study in Russia, 11% of patients with tuberculosis tested in the prison had extensively-drug-resistant disease.<sup>228</sup>

Infectious disease in prisons is a heavy burden in EECA. Prisoners in central Asia are estimated to have the highest prevalence of HCV infection of any region.<sup>231</sup> Ukraine, with the next-highest prison population in eastern Europe after Russia, reported a prevalence of HIV infection among prisoners of 14.5% in 2008 and 13.6% in 2011,<sup>231</sup> compared with a prevalence in the general population in that period of 1.2%.<sup>232</sup> Russia has a prison population of about 800 000 annually—the second highest in the world after the USA—of whom about 20% are estimated to have been convicted of drug offences.<sup>233</sup> Russia has not participated in reporting data for HIV in prisons as part of the Dublin Declaration process, but HIV outbreaks have occurred in Russian prisons in the past 15 years.<sup>199</sup> In 2002, the 36 000 people living with HIV in Russian prisons at the time were estimated to account for about 20% of all HIV cases in the fast-growing epidemic in the country.<sup>202</sup>

### Prison services for infectious diseases and drug dependence

It is an international norm that people in prison and other custodial settings have a right to health services at the level of those offered in the community in their jurisdictions.<sup>234</sup> When it comes to HIV, HCV infection, and tuberculosis services, that norm is far from being respected. The UNODC and WHO recommend a comprehensive package of measures for HIV prevention, care, and support for incarcerated people, including NSPs and OST.<sup>235</sup> These measures are also important for

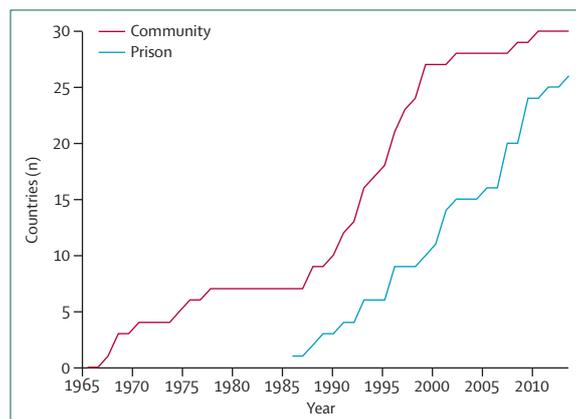
HCV infection prevention and care. Making these measures a reality, however, is proving challenging.

### Access to HIV and HCV prevention and care in prison

OST has been shown in many countries to be very effective in custodial settings where people can be directly observed taking medicine and can be followed up if they have problems with dosage.<sup>202</sup> But, according to a 2014 estimate by Harm Reduction International, of the 80 countries where OST is available in the community, only 43 provide the services in at least one prison.<sup>74</sup> In all of east and southeast Asia, only Malaysia and Indonesia provide OST in prison.<sup>74</sup> Even in the EU, which has high coverage in the community, OST in prison lags behind that in the general population (figure 19), although it is offered in prison in most EU countries.<sup>236</sup> Eight countries in western, central, and eastern Europe allow people in prison to benefit from OST only if they were already patients before incarceration.<sup>231</sup> In central Asia, where the need for prevention services for HIV and HCV infection is so great, only Kyrgyzstan has OST and NSPs in prison.<sup>74</sup> OST is generally absent from US prisons but is available in most Canadian prisons.<sup>74</sup> Resistance to OST in prisons is motivated partly by the belief, also found outside corrections systems, that any drug treatment in prison should be abstinence based. As was noted by authorities in Scotland in the 1990s, however, it is as unrealistic to aspire to a drug-free prison as it is to aspire to a drug-free society.<sup>202</sup>

As noted by Kopak, the failure to provide effective treatment and care to people with problematic drug use in the enormous US prison population perpetuates crime when people are released and returned to their previous circumstances.<sup>237</sup> In the EU, the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) judged in 2013 that the availability of drug-treatment programmes tailored especially to people in prison was “extensive”.<sup>73</sup> Most EU countries report various treatment options for drug dependence in prison, including low-intensity counselling, therapeutic community-type interventions, detoxification by several methods, abstinence-based Narcotics Anonymous, and group sessions, in addition to OST.<sup>236</sup>

Provision of sterile injection equipment in prison is even rarer than OST, and has been established and sustained in prisons in only eight countries, mostly in western Europe.<sup>236</sup> Several countries in eastern Europe had prison NSPs but were unable to sustain the programmes, which are always politically challenging.<sup>74</sup> In a few countries, prison staff have resisted these programmes, and advocates for the programmes have faced the argument that providing injecting equipment encourages drug use. But in the case of Germany, when closure of NSPs in prisons was proposed, prison workers protested because they felt that the programme protected them from injuries with contaminated needles and protected the prison population.<sup>202</sup>



**Figure 19: European Union countries where opioid substitution therapy is offered in the community and in prisons, 1965–2010**  
 Reproduced with permission from the European Monitoring Centre for Drugs and Drug Addiction.<sup>236</sup>

Diagnosis and treatment services for HCV infection are scarce in prisons in many countries. Diagnosis of HCV infection is not a good investment if treatment cannot be provided, and the cost of HCV medicines and the need to ensure treatment over a long period have probably impeded treatment as a priority in prisons, especially in western Europe where some drug sentences are quite short.<sup>236</sup> In the USA between 2000 and 2012, only 12 of 50 state prison systems did any systematic testing for HCV antibodies.<sup>237</sup> The much shorter duration of DAA therapies could make them more attractive in prisons, and a UK-based cost-effectiveness analysis suggests that testing for HCV infection and subsequent treatment with short-course DAA therapy is cost-effective.<sup>222</sup> One middle-income country that has made a breakthrough is Georgia, which struck a deal with Gilead for concessionary pricing on its DAA, sofosbuvir, and decided to include free treatment for people in prison who need it.<sup>238</sup>

HIV and HCV services other than these harm-reduction measures are equally important and frequently lacking in prisons and pretrial detention settings. Availability of voluntary HIV testing at any time during incarceration is recommended by WHO and the UNODC,<sup>235</sup> and some jurisdictions routinely offer HIV tests to people entering prisons.<sup>74</sup> Nonetheless, UNAIDS reports have consistently shown that people in prison have poor access to HIV testing and treatment.<sup>55</sup> Research from North America has shown that optimum outcomes from ART can be achieved in prisons,<sup>239</sup> but a large body of work from a range of settings shows that, among people who inject drugs, incarceration is often strongly associated with poor access and adherence to ART, premature discontinuation of ART, and low rates of viral suppression.<sup>240–243</sup> Problems with ensuring access to ART and related care within North America seem to occur throughout the incarceration process (eg, in detention, during transfers, at discharge), and low access and adherence seem to be shaped by high rates of HIV-related stigma and concerns about breaches of privacy within prison systems (appendix).<sup>240,244</sup>

WHO's 2007 global review of prison HIV services found virtually no ART in prisons in countries with large populations of people who inject drugs outside developed countries.<sup>245</sup> Reviews in 2010 and 2014 of ART availability in prisons in the five countries outside the USA with the most people who inject drugs—ie, Russia, China, Malaysia, Vietnam, and Ukraine—indicated very scarce ART overall for people who inject drugs in the community and virtually none at scale in prisons.<sup>54,81</sup> Indonesia, a country with many people who inject drugs in prison, has provided ART to prisoners incarcerated for drug offences. A 2015 study of randomly sampled prisoners showed that prisoners living with HIV who had a history of drug use were more likely to be receiving ART than those without a history of drug use, partly because they had been incarcerated for longer periods than had other prisoners.<sup>149</sup>

Work from a range of settings, including Zambia,<sup>247</sup> Namibia,<sup>248</sup> India,<sup>249</sup> Argentina,<sup>250</sup> Brazil,<sup>251</sup> and Thailand,<sup>252</sup> shows low rates of engagement in HIV care, which often reflects structural and social barriers, including suboptimum health systems, privacy concerns, and violence. Whether for people who use drugs or others, WHO has recommended that ART in prison be given in a way that ensures confidentiality of the prisoner's HIV status and that treatment efforts take care to provide continuity of treatment for prisoners who are transferred or released.<sup>152</sup>

### Access to tuberculosis prevention and care in prison

Prisons are an extremely high-risk environment for tuberculosis, but prison tuberculosis services remain inadequate in many countries, making the disease a risk of incarceration. WHO and the UNODC recommend a range of measures to control tuberculosis in prison: active case finding, including systematic offering of tuberculosis tests to all people in custody and monitoring of respiratory symptoms; case reporting to a central health authority; isoniazid preventive therapy for people living with HIV in prison, even in the absence of a positive tuberculosis test; treatment of tuberculosis and reliable linking to care in the community if the course of treatment is of longer duration than the custodial sentence; improvements in ventilation and sanitation; provision of information about the disease to people in custody; and offering of HIV testing to people testing positive for tuberculosis.<sup>235,253</sup>

Testing for tuberculosis does not take place systematically in many prisons.<sup>141</sup> Among the many barriers to tuberculosis services is the fact that prison health services are often not managed by health ministries, which could compromise the quality and coverage of care in prisons and impede continuity of care between prison and the community.<sup>230</sup> Loss to follow-up of people receiving treatment in prison is also a major challenge. An estimated 60–70% of prisoners testing positive for tuberculosis in eastern Europe are not referred to any care in the community upon release.<sup>260</sup> Dara and colleagues<sup>254</sup> also note that prisons in many countries have not invested in laboratory capacity to use the GeneXpert assay that WHO recommends for diagnosis, but rather rely on less accurate techniques. Collaboration between tuberculosis and HIV authorities and integration of interventions in the two areas is crucial for tuberculosis control in prisons but lacking in many places.<sup>253</sup>

### Service provision

Capacity to address HIV, HCV infection, and tuberculosis in prisons with the best drugs and diagnostic tools available in the community is obviously dependent on financial resources. The Global Fund has been an important source of funding for HIV and tuberculosis interventions in prisons, enabling previously unavailable services to be expanded, especially in EECA and

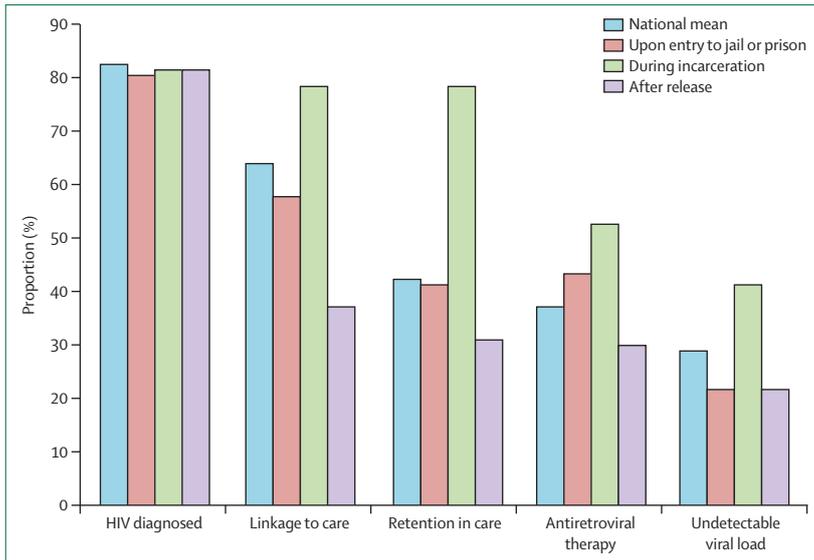


Figure 20: HIV care cascade for people in prison in the USA and Canada  
 Reproduced from Iroh et al,<sup>256</sup> 2015, by permission of Sheridan Press.

sub-Saharan Africa.<sup>255</sup> But many EECA countries have already become or soon will be ineligible for Global Fund support,<sup>106</sup> and whether governments or other donors will fund these services remains to be seen.

Even where services are available to people in state custody, delivery in a patient-centred way is a particular challenge because of the coercive nature of incarceration. Another central challenge is ensuring continuity of care upon release. Previously work in northern California by Comfort and colleagues (unpublished) illustrates that a lack of discharge planning and coordination of services practically ensures the disruption of care. Many of the 60 people living with HIV interviewed in their in-depth qualitative study described being released from county jail around midnight. Although it was standard practice to provide a 30-day supply of drugs at release, if people were discharged when the jail pharmacy was closed, they left with no drugs at all. Furthermore, participants characterised leaving jail in the middle of the night as generally destabilising for them, especially when public transportation was not running. The feeling of being sent back out onto the streets without even the most basic means of re-entering the community encouraged people to immediately seek comfort in familiar activities, such as drug use, rather than wait for daylight to take the uncomfortable steps of seeking services on their own.

The importance of continuity of care is illustrated quantitatively with data from the USA and Canada reported by Iroh and colleagues (figure 20).<sup>256</sup> These authors conclude that testing and treatment can be achieved for people in prison, even at higher rates than those in the general population, but that without attention to links to care after release, treatment interruptions are probable and could have serious health consequences.<sup>256</sup> The authors of a Pan American Health

Organization report<sup>257</sup> about HIV services in the Caribbean also conclude that, for the large prison populations in that region, providing HIV services in prison is less challenging than is making reliable links to care in the community for people leaving prison.

### Drug policy and death from overdose

Drug overdose should be an urgent priority in drug policy and harm-reduction efforts. Overdose can be immediately lethal and can also leave people with debilitating morbidity and injury, including from cerebral hypoxia. The authors of a 2013 systematic global review<sup>258</sup> concluded that overdose was a leading cause of mortality in people who inject drugs in all regions.<sup>258</sup> In 2014, WHO estimated that about 69 000 people worldwide died annually from opioid overdose,<sup>259</sup> but that estimate might not have captured the substantial increase in opioid overdose deaths especially in North America since 2010. In the EU, drug overdoses account for 3.4% of deaths among people aged 15–39 years.<sup>73</sup>

Data for overdoses are not systematically reported in many countries, but survey data from several countries indicate that non-fatal overdoses are not rare events among people who inject drugs. For example, 75% of a sample of about 600 people who inject drugs in Saint Petersburg, Russia, said that they had overdosed at least once.<sup>125</sup> Among about 900 men who injected drugs in Vietnam who were followed up for 2 years, overdose was the second-highest cause of death after AIDS.<sup>260</sup> In Bangkok, Thailand, among more than 2400 HIV-negative people who injected drugs who were followed up for an average of 4 years, overdose was the leading cause of death, far above traffic accidents.<sup>261</sup>

In 2014, WHO issued its first guidance on community management of opioid overdose, underscoring evidence accumulated over four decades for the effectiveness of naloxone in averting death from opioid overdose.<sup>265</sup> Naloxone (n-allylnoroxymorphone) is an opioid antagonist that can reverse the clinical manifestations of overdose essentially by displacing other opioids from the brain's opioid receptors.<sup>265</sup> Naloxone can be administered without highly specialised training, and it has no record of being diverted to non-medical use. Naloxone administration by police, emergency medical teams, and organisations providing services to people who use drugs has been documented to have averted many thousands of deaths.<sup>259</sup>

According to the medical literature, there are numerous ways in which pursuit of drug prohibition can exacerbate overdose and the risk of death from overdose: barriers to access to OST and other treatment for opioid dependence; lack of control over strength, toxicity, and adulterants of street drugs; policing that increases overdose risk; overdose vulnerability linked to incarceration or abstinence-based detoxification, or both; bans on supervised injection sites; lack of use of anti-tampering packaging and other measures for controlled

medicines; and barriers to access to availability and use of naloxone.

Overdose risk has been linked to lack of access to treatment for dependence on opioids, including in people using prescription opioids.<sup>259</sup> Van Amsterdam and van den Brink<sup>262</sup> conclude that the lower use of prescription opioids in the Netherlands—and thus the lower risk of overdose associated with that use—is because more than 75% of people who need OST have easy access to it, compared with about 30% in the USA. Undoubtedly, over-prescription of opioids in the USA plays a part in the bleak overdose picture—a problem that has to be addressed without curtailing access to opioid drugs for legitimate use.<sup>21</sup> The long history in France of OST dominated by buprenorphine and more recent experience in New York, USA, suggest that buprenorphine might be particularly useful for overdose prevention in some populations.<sup>263,264</sup> Well documented experience in Glasgow in the early 1990s suggested that treatment for opioid dependence dominated by buprenorphine kept overdose rates low.<sup>265</sup>

Vulnerability to overdose is very high when people are released from abstinence-based detoxification and residential programmes or if they are abruptly dropped from drug-assisted maintenance therapies.<sup>259</sup> In this regard, the practice of institutions such as some drug-treatment courts to force people to abandon OST after an arbitrary period without reference to medical need could contribute to overdose risk.<sup>266</sup>

In the past 20 years or so, heroin sold on the street in North America and Europe has been found to contain anthrax, fentanyl, and benzodiazepenes in addition to more benign additives such as caffeine and sugar.<sup>267</sup> Fentanyl marketed as heroin has also been associated with lethal overdoses in some countries.<sup>268</sup> Part of the advantage of prescribed and medically administered heroin as treatment for opioid dependence in Switzerland, Germany, and several other countries, for example, is the health authority's ability to control and know the dosage and purity of the heroin prescribed. Countries that pursue the goal of drug prohibition might object to heroin-assisted therapy (HAT) as feeding rather than eliminating an addiction.<sup>269</sup>

Policing and police crackdowns can add to the risk of overdose. When police pressure leads to injecting hurriedly without testing the strength of drugs, overdose risk increases.<sup>137</sup> Crackdowns that cause people to inject in remote locations far from emergency services could also increase overdose risk. In countries where drug use is criminalised, people who overdose might not seek emergency help if it comes in the form of police with the authority to arrest them. A study in New York City, USA, showed a strong correlation between police activity and overdose deaths, which the authors suggested was due to the reluctance of people who injected drugs to seek help for fear of arrest.<sup>270</sup> Lunze and colleagues similarly found in Saint Petersburg,

Russia, that the rate of drug arrests as a proxy for intensity of policing was associated with non-fatal overdose among people who inject drugs.<sup>125</sup>

Several studies show that the period soon after release from prison is a time of very high overdose risk.<sup>259</sup> In the first 2 weeks after their release from prison, men were 29 times more likely to die (specifically from drug-related causes) and women were 69 times more likely to die than were their counterparts in the general population.<sup>271</sup> Tackling this problem requires concerted effort to ensure that people are linked to services, including access to naloxone and OST, as soon as they are released.<sup>259</sup>

The EMCDDA notes that supervised injection sites in eight European countries have been important in reducing overdose deaths.<sup>272</sup> Supervised injection sites enable people to inject in the presence of health professionals who can provide assistance in the case of overdose. Between 2004 and 2010, for example, staff at a site in Vancouver, Canada, witnessed 778 overdoses among users, but there were no deaths.<sup>273</sup> A 2011 study<sup>274</sup> showed that overdose deaths declined by 35% in the area around Vancouver's supervised injection site within 2 years. In addition to their health benefits, there is no evidence that supervised injection sites are linked to initiation of new drug use, more frequent injection, or a rise in crime.<sup>272,275–277</sup>

Pharmaceutical technology has made possible a range of formulations of, and packaging for, prescription drugs (especially opioids) that are designed to reduce the possibility of non-medical use and overdose. Examples include formulations that are resistant to crushing, chewing, smoking, dissolving, and injection, extended-release formulations, addition of naloxone or other aversive ingredients to the formulation, and formulations that chemically isolate the active form of the opioid.<sup>278,279</sup> In Florida, USA, a policy change requiring the use of a tamper-resistant formulation of the widely used opioid oxycodone was associated with a significant decline in overdose.<sup>280</sup> Some other studies had more equivocal results, and some experts caution that tamper-resistant formulations can create a false sense of security and contribute to overprescription of opioids.<sup>281,282</sup>

Advocates for improved health services for people who use drugs have long asserted that naloxone should be widely available, even without a prescription. But naloxone remains out of reach in many places because of tight legal and regulatory restrictions. Part of the challenge in some jurisdictions is that physicians fear legal liability in prescribing naloxone, just as people who witness an overdose and are in a position to assist might fear legal liability in administering naloxone if something goes wrong.<sup>283</sup> Bystanders who have used drugs might also be reluctant to contact the police or medical emergency personnel for fear of being arrested themselves.<sup>284</sup>

In many countries, people who inject drugs fear health services but might frequent pharmacies for injection equipment and other supplies. For this reason, Hammett

and colleagues<sup>285</sup> investigated possibilities for naloxone provision in pharmacies in Russia, Vietnam, China, Canada, Mexico, and the USA. They found various legal barriers and practices. Even where naloxone can be prescribed by any physician, it was unlikely to be stocked in pharmacies but rather supplied directly to emergency personnel under so-called standing orders.<sup>285</sup> In Russia, where the need is great, naloxone could be supplied to and administered only in health facilities at the time of this study. Similarly, in China only health facilities could receive and use naloxone.<sup>285</sup> Media reports indicate that a programme in Ontario, Canada, to improve availability of naloxone, including the purchase of 1800 doses, was stopped in 2013 because of unspecified regulatory problems.<sup>286</sup>

Since these studies, there have been some positive changes in the USA. As of July, 2015, in response to an increasingly visible overdose problem, 31 of the 50 states, plus the District of Columbia, have passed Good Samaritan laws, which enable people to provide assistance in the case of overdose, including using naloxone, without legal liability for the outcomes.<sup>283</sup> 40 states have made it easier for physicians to prescribe naloxone for use in response to overdoses without legal repercussions. Additionally, as of 2015, 14 US states have authorised over-the-counter—ie, non-prescription—sale of naloxone in some pharmacies to some first responders or family members.<sup>287</sup> In 2015, a bill was introduced in the US Congress that would enable federal support for greatly expanded access to naloxone.<sup>288</sup>

### Treating drug dependence: need for standards Compulsory detention

A small minority of people who use drugs develop dependence. But in many parts of the world, people who use drugs are assumed to be using problematically or to be criminals, and compelling them to undergo drug treatment is a widespread practice. In addition to the vast use of incarceration through criminal justice systems in the pursuit of drug prohibition, in some countries there is large-scale extra-judicial detention of drug offenders, allegedly in the name of treatment or rehabilitation. In China, Cambodia, Vietnam, Laos, Malaysia, Thailand, and Indonesia, compulsory treatment centres hold thousands of people who are detained generally without due process, for the most part without valid assessments of whether they are drug-dependent, without access to scientifically sound treatment of any kind; the treatment sometimes consists of forced labour and cruel and demeaning punishment.<sup>289,290</sup> In March, 2012, 12 UN bodies denounced these centres on public health and human rights grounds and called for their closure,<sup>291</sup> but most continue to operate. Human Rights Watch did ground-breaking research from 2008 to 2013, documenting heinous human rights abuses in these centres, including many forms of forced labour, torture, beating, humiliation, degradation, and denial of basic

health care and adequate sanitation and food (appendix).<sup>289</sup>

Compulsory drug-detention centres are extreme in the scale and nature of abuses committed in the name of treatment, but there are many other examples of abusive and scientifically unsound practices brought to bear to address drug dependence. In many countries, treatment of drug dependence is one of the most unregulated and unmonitored of all health services, and is left often to private actors not required to adhere to standards of quality and clinical soundness.<sup>292</sup> There is no systematic monitoring of drug treatment practices by the UN or regional multilateral bodies. Although the UN has produced general recommended standards and position papers,<sup>293</sup> there are no agreed quality-control standards approved by UN member states.

A few researchers have reported cruel and inhumane practices in private-sector drug treatment operations in countries in Asia, eastern Europe, Latin America, and North America.<sup>292</sup> There are reports of coercion to enter treatment, with or without the help of local police. In Russia, there are cases of family members colluding with treatment facilities effectively to abduct people and deliver them to treatment centres. In Guatemala, church-affiliated centres organise so-called hunting parties, sometimes made up of current patients, to take people who are inebriated into treatment without informed consent.<sup>294</sup> O'Neill's in-depth studies<sup>294</sup> of centres in Guatemala document cases of people living in squalid conditions, being mocked, derided, beaten, tied up, and left to scream for help, and sometimes not even understanding how they arrived at the facility.

Some private treatment facilities lock people up and even chain them to beds or trees without offering them any means of challenging or appealing involuntary commitment. The danger of chaining people to their beds in drug rehabilitation facilities was graphically illustrated in Moscow, Russia, in 2006, and twice in Lima, Peru, in 2012, when fires struck the facilities, and patients were killed because they could not flee.<sup>295</sup> Both Human Rights Watch<sup>296</sup> and the UN Special Rapporteur on torture<sup>297</sup> documented horrific conditions in so-called prayer camps in Ghana in which people were chained to beds and trees, held sometimes for over a year, and required to fast and to undergo exorcisms. In Nigeria, young people report abusive behaviour by the police, in some cases when they are taken to facilities that are meant to offer health services (appendix).

### Access to treatment and drug policy

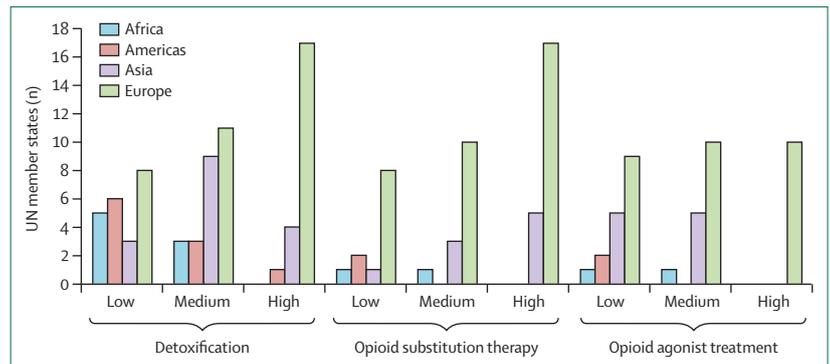
Lack of or curtailed availability of OST with methadone, buprenorphine, or other opioids is a public health concern not only because OST reduces injection and thus risk of HIV but also because of its effectiveness and cost-effectiveness for treating opioid dependence.<sup>123</sup> OST is backed by more than 50 years of extensive practice and an enormous body of research, including several

meta-analyses and large reviews in many settings.<sup>298,299</sup> Decades of research have helped to inform consensus on treatment standards and good practice. In the EU, for example, nearly all countries have OST minimum standards and quality-of-care guidelines, although they often do not have such guidance for treating non-opioid dependence.<sup>300</sup> National guidelines cover elements of care such as dosage levels, criteria for judging whether take-home doses can be given and for how long, use of urinalysis as part of treatment, certification of health professionals as OST specialists, the need to give priority in care to pregnant women, and, in some countries, elements of integrating OST into general practice and primary care facilities.

With regard to dose, there are many controlled studies and research reviews indicating that higher doses of methadone in OST programmes are associated with better retention in, and outcomes of, treatment and lower likelihood of use of illicit drugs.<sup>301–305</sup> Nonetheless, on the basis of its monitoring of national policies and practices, WHO has had to remind national authorities that adequate doses in OST are essential practice despite drug-control concerns, and that lowering doses of methadone as a punishment for drug use or breaking programme rules is not acceptable, even in prison.<sup>123,306</sup> Switzerland's remarkable experience with one of the historically most rapid expansions of OST in history (discussed in further detail later) exemplifies how reforming drug policy to be more centred on health outcomes and less centred on policing can facilitate the establishment of best practices in OST.<sup>307</sup>

In several European countries and Canada, OST is complemented by HAT, usually for the few people with long-time use for whom other medication-assisted therapies have not had the desired results.<sup>269</sup> HAT programmes are well received in Germany and Switzerland, for example, where it is recognised that, like methadone therapy, they enable people to stabilise their cravings without having to rely on street drugs of unknown quality and toxicity from illicit dealers.<sup>308</sup> The HAT trial in Montreal and Vancouver, Canada, despite excellent results, was discontinued by the Conservative-led Government in 2013 with the pronouncement that HAT was “in direct opposition to the government's anti-drug policy”.<sup>309</sup> A 2014 court decision, however, allowed patients already receiving HAT to continue doing so.<sup>310</sup>

A substantial body of research, mostly from developed countries, includes several meta-analyses and large assessments of drug-dependence treatment investigating these factors.<sup>311</sup> There are many methodological challenges in this work: measurement of the costs associated with drug-related crime and productivity losses is not always straightforward, accounting for relapse is tricky, and good data are not available for some of these elements in many countries.<sup>311</sup> Nonetheless, studies indicate that the costs of crime



**Figure 21: Extent of drug dependence services by region, 2013**

Low refers to coverage <20%, medium to coverage of between 20% and 40%, and high to coverage >40%. Reproduced from the *World Drug Report, 2015*,<sup>7</sup> by permission of the UN Office on Drugs and Crime.

reduction alone more than offset the costs of treatment—in some cases several times over.<sup>312,313</sup> Two studies<sup>314,315</sup> from China calculated high returns from OST based largely on the economic benefit of averting HIV transmission.

Options for treatment of dependence on many types of psychoactive drugs are very limited and remain a challenge for addiction science. Research on new treatments for dependence on stimulants, including ATS and cocaine, has been called for by health professionals for some time, particularly drug-assisted treatments that would be analogous to OST for opioids.<sup>316</sup> Some studies suggest that drug-dependence treatment is most effective when combined with support for stable housing, food assistance, employment assistance, and other social services.<sup>311</sup> The poor track record of some forms of treatment without attention to these social services suggests that public funding priorities should include social services linked to treatment.<sup>317</sup>

There remain many gaps in access to, and affordability of, care for people who need it. In its annual report, the UNODC regularly documents drug seizures and drug-crop production but only for the first time in 2015 reported information from UN member states about availability of treatment for drug dependence. The information from countries reflects the existence of services only and includes a rough estimate of the level of coverage (low, medium, high)—nothing is included about quality.<sup>7</sup> Even so, as shown for psychosocial treatment methods in figure 21, the data reveal wide regional disparity in availability of services. Cognitive-behavioural therapy, for example, is frequently recommended to treat dependence on stimulants for which a consensus recommendation for drug-assisted therapies is not available. But it is virtually unavailable in Africa, and much less available in Asia and the Americas than it is in Europe. According to a 2013 estimate, 80% of the people needing treatment for substance misuse live in low-income and middle-income countries, but the proportion of those receiving care in those countries is more like 20%.<sup>318</sup>

Drug dependence can be impoverishing, and treatment of it can be expensive. Subsidised treatment slots can be scarce and waiting lists long, even in countries with well developed health systems, such as those in western Europe and Canada.<sup>309,319</sup> In the USA, realisation of the promise of the Affordable Care Act to expand health insurance coverage for drug-dependence-related services for millions of people unable to afford them has been hampered by lack of human resources to expand care and lack of integration of these services with other federally qualified health services.<sup>320</sup>

### Women and drug-dependence treatment

In many countries, women are particularly disadvantaged by the lack of access to good-quality, affordable treatment for drug dependence that is tailored to their situations and needs. Policy discussions about women's access to treatment for drug dependence surface most readily in some places with respect to pregnant women and concerns about the wellbeing of their babies—referred to as innocent victims. But women's concern about retaining custody of their children could be what stands in the way of their seeking treatment. In EECA, for example, women in some countries would be justified in fearing that the act of seeking treatment would brand them as users in official drug registries, which could trigger loss of child custody in some circumstances.<sup>321</sup> In other countries, even where there are no formal drug registries, drug use can figure prominently in child custody decisions by state authorities, because women who use drugs are likely to be thought of as unfit parents.<sup>322,323</sup> A 2004 UNODC report<sup>324</sup> noted that there were still some places where, by law, women who use drugs could be incarcerated for their entire pregnancy and sometimes longer. Any such factors, including stigma on the part of health service providers, can inhibit women's seeking of treatment services.

Pregnant women who use drugs are often confronted with concerns about their newborn babies that are not scientifically sound. An example is the demonisation, assisted by mass media, of women who used crack cocaine in the USA in the 1980s and 1990s, who were accused of producing a generation of mentally deficient so-called crack babies.<sup>325</sup> Long-term longitudinal studies demonstrated that exposure to crack during pregnancy did not significantly affect cognitive outcomes of children in later life and that other factors associated with poverty were probably more important determinants.<sup>326</sup> Myths and exaggerations have also persisted about opioid dependence among neonates, including about infants born to women who use OST, despite research showing that neonatal abstinence syndrome related to opioids can be cured and does not have long-term effects on children.<sup>327</sup> In protestation against widespread media reports in 2013 about "opiate-addicted babies" born to patients using OST, 40 prominent physicians and scientists from Europe and the USA asserted that

"demonizing pregnant women creates an environment where punishment rather than support is the predominant response, and will inevitably serve to discourage women from seeking care".<sup>328</sup>

Health experts lament the lack of drug-treatment services tailored to women's needs.<sup>184,321</sup> Drug-treatment services are rarely integrated with reproductive health, paediatric, and other services that women seek.<sup>329</sup> Child care might not be available in drug clinics, or children might not be allowed on the premises. A UN-convened group of experts did a global review<sup>329</sup> in 2010 and concluded that treatment programmes for women rarely account for the differences between men and women in the speed with which they may develop drug dependence, their responses to varied forms of treatment, and the psychological comorbidities with which they present. These experts concluded that women in drug treatment are more likely to have anxiety, depression, suicidal thoughts, and deep guilt than are their male counterparts, and much more likely to be the main caregivers to dependent children.<sup>329</sup>

Numerous countries have established special drug-treatment courts, which are generally meant to offer court-supervised drug treatment as an alternative to incarceration for some categories of drug offences. Emerging evidence raises concerns about some of these models, and many drug courts and other treatment providers use drug testing, not always in rights-based ways (appendix).

### Drug-control policy: access to controlled drugs

The Single Convention on Narcotic Drugs of 1961 had the dual purpose of ensuring that controlled substances, including opioids, were available for medical and scientific purposes and preventing their misuse and diversion. However, after more than 50 years under this regime, around 75% of the world's population—roughly 5.5 billion people—do not have safe and adequate access to controlled drugs for the management of pain, including postoperative pain and the severe pain associated with cancer, burns, fractures, and other causes.<sup>330</sup> For example, 92% of morphine use is in countries that account for 17% of the world's population, mostly in developed countries.<sup>330</sup> Inequity of access to controlled drugs for pain management and other clinical uses is now a public health and human rights crisis.

WHO explicitly highlights the role of drug-control policy as a barrier to access to licit controlled medicines: "the drug control conventions that established the dual obligation of ensuring adequate availability of controlled medications and of preventing their misuse have existed for almost 50 years. Yet the obligation to prevent abuse of controlled substances has received far more attention than the obligation to ensure their adequate availability for medical and scientific purposes, and this has resulted in countries adopting laws and regulations that

consistently and severely impede accessibility of controlled medicines.<sup>331</sup>

WHO notes that national drug legislation often “includes provisions stricter than the international drug control conventions require”,<sup>331</sup> and urges countries to “examine their drug control legislation and policies for the presence of overly restrictive provisions that affect delivery of appropriate medical care involving controlled medicines” and make needed reforms.<sup>331</sup> WHO also enjoins countries to ensure that drug-related decisions that are “medical in nature should be taken by health professionals”.<sup>331</sup>

There are numerous ways in which drug-control policy and regulations exceed the measures recommended in the UN drug conventions and contribute to impeding access to and use of controlled drugs (panel 5).<sup>331,332</sup>

Inappropriate regulatory language emphasising “abuse” or “misuse” to describe long-term use of controlled drugs can affect attitudes and stigmatise these medicines and their use.<sup>331</sup> Some national drug laws and regulations refer to controlled drugs as “poisons” or “dangerous drugs”.<sup>332</sup> WHO warns against laws that suggest incorrectly that “a patient requiring increasing doses of an opioid for pain relief because of pharmacological tolerance due to prolonged treatment” is drug-dependent.<sup>331</sup> Poor knowledge of addiction medicine in the medical community can lead to propagation of such misunderstandings. In India, for example, the law includes a definition of an opioid addict but does not include distinct definitions for a patient receiving prescribed opioid medicines or a drug-dependent person who is undergoing treatment, leading to stigmatising characterisations.<sup>334</sup>

Striking a balance in national policy between maintaining adequate access to, and availability of, controlled drugs and retaining strong measures to prevent diversion or misuse is an important goal. Among the measures that countries should take to strike this balance, international bodies, including WHO<sup>331</sup> and the Global Commission on Drug Policy,<sup>335</sup> recommend establishing a national authority for controlled drugs that enables health-care and law-enforcement interests to be represented equally in policy making and procedures. Such a set-up ensures that laws and regulations recognise that controlled drugs are essential for a wide range of medical disorders and guarantee people’s right to have access to them, that health professionals are competent on the latest science of use of controlled drugs, monitoring to recognise and define points of high risk for misuse and diversion within the distribution system, and refinement of policies to address these specific points without undermining access to, or availability of, controlled drugs.

Balanced policy on controlled drugs has been difficult to achieve in many countries in all regions of the world. India, for example, is a major producer and exporter of opium destined for medical and scientific use.<sup>336</sup>

#### Panel 5: Impediments to accessing and use of controlled drugs as a result of drug-control policy and regulations

- Requirements for hospitals and pharmacies to get special licences or permissions to procure and stock controlled drugs rather than allowing them to do so under the institution’s general licences
- Requirements for special authorisations, licences, or training for physicians, nurses, and pharmacists seeking to stock and dispense controlled drugs, rather than permitting these actions through general licensing requirements
- Restriction on movement of consignments of controlled drug from one part of a country to another
- Disproportionately harsh criminal sanctions and withdrawal of the licences of physicians or pharmacists (or insurers) for minor and unintentional deviations from mandated procedures
- Unconditional denial of controlled drugs to anyone with a history suggestive of drug use or dependence
- Limitations on prescriptions that restrict the duration of their validity, the amount of medicine that can be prescribed, or the possibility for its renewal, or requirements for prescriptions to be in duplicate or triplicate or on special forms, as well as unclear definitions of excessive prescribing
- Requirements of bureaucratic processes for determination by multiple agencies of an individual’s eligibility to receive controlled drugs, rather than leaving such decisions to the discretion of the clinical team
- Non-confidentiality of information on registered users of controlled drugs, which can be used to deny services, drivers’ licences, some categories of employment, insurance, and even child custody to people receiving controlled drugs
- Limitations on insurance coverage for opioids and home-based palliative care

Source: WHO, 2011,<sup>331</sup> Pain & Policy Studies Group, 2014.<sup>337</sup>

Ironically, 97% of patients in pain in the country do not have access to opioid analgesics.<sup>337</sup> The chief barrier was the Narcotic Drugs and Psychotropic Substances Act of 1985, which required hospitals and pharmacies to procure and maintain five or six time-bound licences from distinct state-level bureaucratic agencies to allow them to prescribe, stock, and dispense controlled drugs.<sup>338</sup> Punitive consequences were very severe for even minor clerical errors. This policy led most institutions to refrain from stocking and dispensing opioids to avoid the legal complexities and punitive consequences.<sup>338</sup> For decades, health-care professionals went through their training programmes without gaining skills in using opioids as part of treatment; opioids were not stocked or used even in medical schools. Consumption fell by 97% in the first decade of enactment of the law.<sup>338</sup>

But changes are underway in India. A civil society alliance, driven by the health and humanitarian need, helped to spearhead a 2014 amendment to the Narcotic Drugs and Psychotropic Substances Act, which reoriented the law, incorporating simplified procedures for improving access to, and availability of, opioids.<sup>336</sup> The reformed policy also incorporates processes supporting OST as drug-assisted treatment for managing drug dependence, expanding possibilities beyond abstinence-based treatment.<sup>336</sup> Such reforms, along with country-

wide efforts on training of health-care professionals in the use of opioids based on WHO guidelines, is expected to counteract historical demonisation of opioids and opioid users. Nonetheless, practices cannot change overnight. Sustained advocacy and reorientation of training and research is called for.<sup>336</sup>

### Assessing the public health risk and clinical value of controlled substances

The challenge of ensuring adequate access to controlled drugs is related closely to the way in which international and national authorities assess the degree of danger or potential harm associated with specific substances. For the international regime, article 3 of the Single Convention on Narcotic Drugs explicitly confers on WHO the responsibility to judge whether substances are dangerous and in need of strict control.<sup>6</sup> The 1971 Convention on Psychotropic Substances emphasises in article 2 that the CND should regard WHO's assessments on drugs to be "determinative as to medical and scientific matters".<sup>339</sup>

Like many national laws, the international drug treaties establish a scheduling or ranking of drugs by their degree of risk. Schedule IV substances in the 1961 Single Convention are judged to be the most risky, and are defined as substances deemed by WHO to be "particularly liable to abuse and to produce ill effects...not offset by substantial therapeutic advantages".<sup>6</sup> Cannabis and cannabis resin, for example, are in schedule IV. (The numbering of the schedule classifications in the 1961 Single Convention is somewhat counterintuitive. Schedule I also classifies substances as liable to abuse without offsetting therapeutic value, but schedule IV emphasises that some schedule I substances are particularly dangerous. Schedule III includes substances judged to be less liable to abuse. The scheduling system of the 1971 Convention on Psychotropic Substances is more straightforward, with schedule I being the most restrictive and schedule IV the least.)

Widely cited articles in 2007 and 2010 reported on exercises in which drug-dependence specialists in the UK ranked drugs by their potential to cause physical harm to the user, their potential to induce dependence, and their harms to families and communities.<sup>340,341</sup> The authors compared the ranking of these experts with the scheduling of drugs in the drug conventions. For example, the experts deemed cannabis, lysergic acid diethylamide (LSD), and  $\gamma$ -hydroxybutyrate (GHB) to be less harmful than many substances, although they are classified as most dangerous in the conventions. Alcohol, which was deemed more dangerous than many controlled substances, is obviously not scheduled in the conventions. A later assessment by addiction experts from across the EU resulted in a similar ranking.<sup>342</sup>

In the international drug conventions, WHO is mandated to oversee the application of the latest scientific

evidence to the classification of the potential harms of psychoactive substances, but its conclusions are not always the last word on these issues (appendix).

### Research challenges in drug policy

A large body of research has helped to advance many aspects of the drug-policy debate. OST, for example, has benefited from decades of clinical research in numerous settings to the point where good practices are well documented and can be adopted and adapted readily. The benefits and cost-effectiveness of NSPs and programmes to address opioid overdose are also supported by a strong research base that should inspire scaling up these programmes to reduce the needless morbidity and mortality of millions of people because of the absence of these services.

The same is not true of empirical research on larger drug-policy decision making, including social science research on alternatives to traditional prohibition-oriented policy. In view of the rapid pace of cannabis legalisation in Uruguay and the USA, it would arguably have been useful to have the chance to test measures such as restriction of various forms of advertising, pricing, and taxation strategies, and cannabis-club approaches (they take different forms, but usually cannabis clubs are small groups of people who are allowed to grow and trade cannabis only among themselves; their product does not enter a general market) versus general population-based legalisation.<sup>27</sup> More social science research would also be useful to follow experiments in less harmful policing of drugs.<sup>134</sup>

Hall notes that research on drug-market regulation that would draw lessons from alcohol and tobacco regulation, for example, has not been a priority of major research funders, especially compared with more abundant funding for neurological and clinical harms of drug use.<sup>343</sup> The effectiveness of treating drug dependence depends on correct diagnosis of dependence and other disorders, which remains a matter of controversy in many respects and a subject of considerable research. Academic debates abound on the physiological and psychological basis for assessing drug-use disorders. A central debate, highlighted in a 2015 exchange in *The Lancet Psychiatry*,<sup>343</sup> is around the so-called brain-disease model of drug dependence (appendix).

Cannabis has been at the centre of discussions about drug-policy reform in North and South America and western Europe, and medical uses of cannabis are of great interest to researchers. Cannabinoids have been approved for medical use in numerous jurisdictions and have been the object of enough research to warrant systematic reviews and meta-analyses.<sup>344,345</sup> The 2015 review<sup>344</sup> by Whiting and colleagues supports the use of some cannabinoids to address neuropathic pain and spasms. So far, evidence is somewhat less plentiful for medical uses of the cannabis plant. Both Deshpande and colleagues in a

2015 review<sup>345</sup> and Madras in an analysis<sup>346</sup> for the WHO Expert Committee on Drug Dependence concluded that, although there are many reports of benefits from medical cannabis users, more controlled studies are needed. The Expert Committee on Drug Dependence undertook to collect more evidence on medical use of cannabis and cannabis resin for a future comprehensive review.<sup>347</sup>

There is also a need for research into the health impact of different patterns of recreational use of cannabis, which should be greatly facilitated by the availability of legal cannabis in more and more locations.<sup>348</sup> At least in the USA, however, obstacles remain to the expansion of this research.<sup>349</sup> Restrictions impede research into both the health effects of medical and recreational cannabis use and the important drug-policy question of whether cannabis availability influences the use of other legal and illegal drugs. At a time of enormous policy-level concern about dependence on prescription opioids, for example, a few ecological studies suggest that greater access to cannabis could reduce use of opioids for pain relief.<sup>350,351</sup> This is a question that richly merits controlled studies with human participants.

In 2002, the UN established a Reference Group on HIV and Injecting Drug Use that both advised the UN system on programmes and policies related to HIV among people who inject drugs and was involved in generating independent research on HIV and drug use.<sup>352</sup> Some of the work cited in this Commission came from this group,<sup>329</sup> which also generated other thematic works on metamfetamine use and HIV and prescription opioid use and HIV,<sup>353,354</sup> and global reports on patterns of HIV transmission and prevalence among people who inject drugs and HIV services for possession with the intent to deliver.<sup>355-357</sup> In our view, the Reference Group served an important research function, particularly in helping to keep independent, high-quality research on drug use and health in the public sphere. It no longer meets as an independent body, but we believe that its job is not done, and it, or something like it, would be very valuable to reconstitute.

In some countries, there is a dearth of data for fundamental elements, such as the extent and nature of drug consumption. Nigeria is doing one of Africa's first population-based surveys of drug use, with support from the European Development Fund.<sup>358</sup> The survey is meant, among other things, to serve as a baseline for measuring progress of the improved services for people who use drugs that are also planned. Elsewhere, respected scholars who have endeavoured to bring the best new research to drug policy decision making have sometimes been attacked for their efforts (appendix).

## Drug crops, drug policy, and health

### Production flourishes despite risks

People become involved in drug markets for many reasons, but poverty and exclusion from mainstream economic opportunities are important factors in many

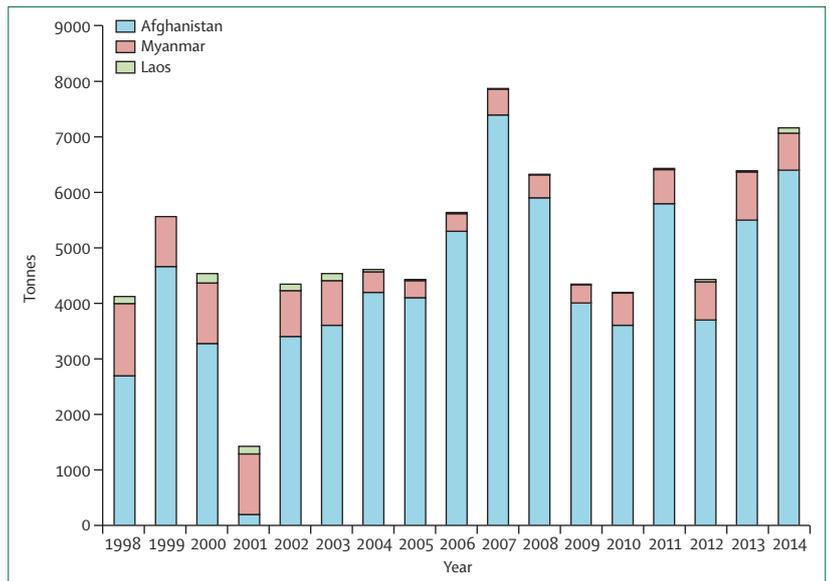


Figure 22: Estimated production of opium poppies for illicit markets

Data are from the UN Office on Drugs and Crime's southeast Asia opium survey, 2014.<sup>360</sup>

cases. Nonetheless, drug policies are rarely assessed in terms of how they affect people living in poverty or human development more broadly.<sup>13</sup> In this report, we highlight the situation of people whose livelihood depends on growing crops used to make psychoactive drugs as an example of neglected health and human security issues at the intersection between drug control and development (appendix).

Enforcement of prohibition-oriented drug policy means not only policing use, possession, and sale but also terminating the supply of these drugs at their sources. Historically, the obligations of international drug control have rested heavily on countries in South America and southeast and southwest Asia to curb supply of coca leaf, opium poppy, and cannabis, rather than on consumer countries to reduce demand.<sup>359</sup> The Single Convention on Narcotic Drugs of 1961 prohibits the cultivation of coca leaf, opium poppy, and cannabis for anything other than scientific or medical purposes.<sup>6</sup> The focus on eradication of these crops, including through the militarised means implied in the term drug war, persists, despite the strong growth of synthetic drug manufacture and use, which now dominates drug supply and consumption.<sup>359</sup>

Despite aggressive prohibition, these crops nonetheless are widely grown. Cultivator communities are typically located in regions or countries where basic state services are deficient and where there is an absence of health services and infrastructure. In 1998, the UNODC estimated that around 4 million people were in households deriving income from cultivation of coca leaf and opium poppy (without attempting an estimate for cannabis),<sup>8</sup> and there is little reason to suppose that the numbers today are smaller. Decades of investment in initiatives to eradicate

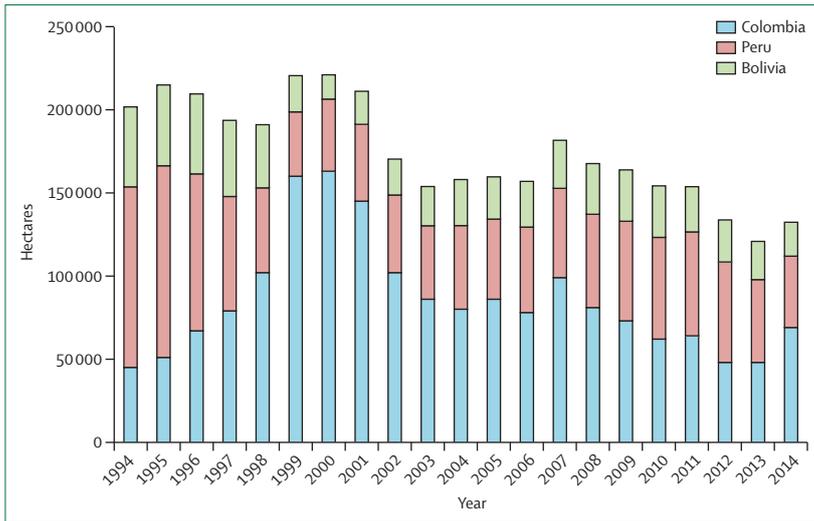


Figure 23: Coca bush cultivation in the Andes, 1994–2014  
Data are from the UN Office on Drugs and Crime’s crop monitoring reports.<sup>368–370</sup>

these crops have failed to make a sustained dent in global production. Figure 22 shows estimated production of opium poppy destined for non-medical use from the countries that account for most production.<sup>360</sup> In Afghanistan, the main producer, production of opium poppies in 2012–13 was 2.5 times that in 2000.<sup>361</sup>

Motivations for relying on drug crops for household income differ, but the decision to grow drug crops is generally highly rational. Opium and coca are non-perishable, robust crops that are well suited to the poor agricultural conditions in which farmers in coca, poppy, and cannabis-growing areas often find themselves.<sup>362,363</sup> Extensive cannabis cultivation in the Rif region of northern Morocco, for example, provides a livelihood for hundreds of thousands of people where the mountainous and arid terrain would permit few other crops to thrive and transporting perishable goods would be difficult.<sup>364</sup> Drug crops have high value for the amount of labour they require, and the market for these crops is, despite illegality, relatively reliable.<sup>362</sup>

Another important factor that could influence the decision to grow drug crops is insecurity of land tenure or lack of access to land. Coca bush, for example, produces four to six crops per year after only 6–8 months of growth of new bushes.<sup>365</sup> By contrast, coffee and some fruits require a longer growth period before there is revenue. Opium poppy yields returns after a short growing period and requires few inputs. In Afghanistan, according to Mansfield and Pain,<sup>366</sup> poppy growing has at times enabled poor farmers to arrange land tenancy or sharecropping that would be impossible without the effective credit-worthiness that comes with poppy-growing.

In the Andes, rural households have persisted in coca production despite herculean efforts to cut them off from this source of livelihood. Forcible eradication of coca—through burning, use of chemical herbicides, or manual

deracination—has been part of drug-supply reduction strategies for decades.<sup>48</sup> It has been encouraged by massive infusions of US funds particularly to support aerial spraying of enormous areas of the Andes with herbicides. Under Plan Colombia (2000–12), an average of 128 000 hectares per year in Colombia alone were subjected to aerial spraying of glyphosate (better known under its Monsanto brand name, Roundup).<sup>367</sup> Despite enormous investments in the aerial spraying programme in Colombia, impact assessments show that this is a very ineffective and costly intervention. Mejía and coauthors<sup>363</sup> report that to eliminate a hectare of coca crops, 30 hectares need to be sprayed, at a cost of about \$80 000 per hectare eliminated (the market value of coca leaf in one hectare is about \$400).

Coca production patterns since the 1990s show the so-called balloon effect (figure 23). That is, as eradication efforts intensified in one place, cultivation moved elsewhere. For example, under Plan Colombia, more than \$1.2 billion per year in the period 2006–11—more than 1% of the gross domestic product of Colombia—was spent on aggressive eradication of coca in Colombia.<sup>48</sup> As coca production declined in Colombia after 2006, it increased in Peru and Bolivia as producers moved (and in some cases moved back) to those locations, and cocaine-processing facilities also moved to neighbouring countries.<sup>48</sup> In its 2014 survey of coca production, the UNODC noted that, in addition to simply moving, coca producers have found various means of combating aerial spraying, including interspersing and rotating their coca bushes with other crops to avoid detection, planting in remote areas less likely to be detected, washing the leaves, putting molasses or other substances on the leaves to counter the herbicide, and isolating the leafy part of the plant from the herbicide.<sup>360,371</sup>

Growing drug crops could be rural households’ strategy to confront many forms of marginalisation—lack of secure land tenure, lack of access to credit, poor transportation infrastructure, hostile agronomic conditions, and lack of other opportunities in the mainstream economy. The mentality of drug prohibition, however, is to dismiss this complexity of people’s decision making and see drug crop producers simply as profit-motivated criminals.

### Health impact of crop eradication

The health impacts of crop eradication have been little studied. Although the USA provided lots of assistance for the mobilisation of the needed aircraft, contractors, and herbicide supplies, rigorous and independent assessment of the health and social effects of aerial spraying were not a priority of Plan Colombia. In 2005, the drug-policy arm of OAS, the Comisión Interamericana para el Control del Abuso de Drogas (CICAD) or Inter-American Drug Abuse Control Commission, investigated the health and environmental effects of glyphosate spraying in Colombia. It concluded

that there were no significant risks to human health from the aerial spraying and that spraying was much safer than the alternatives of burning coca in farm fields or manual deracination of the plants.<sup>372</sup> The study was widely criticised by civil society groups, which noted that, by this time the Colombian Government had received thousands of complaints of health problems associated with spraying, which were not taken into account by the CICAD researchers.<sup>373</sup>

Numerous complaints of health problems associated with aerial spraying were made to human rights bodies and other authorities over the years.<sup>374</sup> In 2008, Ecuador filed a case with the International Court of Justice alleging that Ecuadorians living near the border with Colombia were suffering ill effects of glyphosate spraying, including “burning, itching eyes, skin sores, intestinal bleeding and even death”, with children especially affected.<sup>375</sup> Ecuador requested that Colombia limit its spraying to at least 10 km away from the border. The case was settled in 2013 before the International Court of Justice was to hold final hearings on the matter. Colombia reportedly provided compensation for damages to people and livestock, and agreed to a buffer zone of no spraying near the border.<sup>376</sup>

In 2015, the International Agency for Research on Cancer of WHO reviewed animal and human studies and classified glyphosate as “probably carcinogenic to humans”,<sup>377</sup> a classification that is used “when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals”.<sup>378</sup> Investigators at the University of Los Andes researched a large dataset capturing millions of individual records of medical consultations of people affected by unannounced incidents of spraying in the heart of the period of intensive spraying from 2003 to 2007.<sup>367</sup> These data included multiple observations for given individuals, providing something of a control for individual characteristics such as baseline health. The

authors also had daily data for the level of spraying in all the municipalities in Colombia.

Exposure to aerial spraying was significantly associated in this large sample with increased incidence of dermatological and respiratory symptoms in the 15 days after exposure to the herbicide.<sup>367</sup> It was also highly significantly related to incidence of miscarriage (table 2), with an estimated one SD increase in aerial spraying associated with a 10–15% increase in miscarriages among women exposed to the herbicide during pregnancy. The relation between spraying and miscarriages was somewhat stronger in low-income communities, but also highly significant in higher-income municipalities.<sup>367</sup> The effects of aerial spraying on miscarriages are greater in municipalities with spraying between 2003 and 2007, and for the non-migrant sample of women exposed to aerial spraying compared with the overall sample.

Signalling an end to more than 20 years of the practice, in May, 2015 the Colombian Government decided to stop using aerial fumigation of coca fields.<sup>379</sup> The decision came on the heels of the International Agency for Research on Cancer report on glyphosate and also followed a recommendation to cease glyphosate spraying by the Colombian Minister of Health. With respect to coca eradication and other forcible crop-eradication programmes, the effects of exposure to herbicides are far from the only health concern. Farm households in the Andes have complained that aerial spraying and some other eradication activities have affected food crops or food from animal husbandry, on which they are also dependent for income or direct consumption.<sup>376</sup> Contamination of water sources has also been a complaint.

Crop eradication activities have forced poor rural households to be displaced, often to more marginal and hostile environments, at times with deadly consequences. In her extensive review<sup>359</sup> of the history of forced

	Overall (all municipalities in Colombia)		Municipalities with positive levels of aerial spraying		Non-migrants (overall)		Non-migrants (municipalities with positive levels of aerial spraying)	
	1	2	3	4	5	6	7	8
Aerial spraying (9 months)	0.12139* (0.04243)	0.11890* (0.04041)	0.15007* (0.04163)	0.15158* (0.03721)	0.16774* (0.05838)	0.18433* (0.04964)	0.17707* (0.05003)	0.19434* (0.0414)
Proportion of municipality with coca crops	..	0.91870 (0.82469)	..	3.50893† (1.37864)	..	6.83612* (2.53821)	..	7.18591* (2.58495)
Observations (n)	3352570	3352570	3352570	3352570	3163568	3163568	3163568	3163568
r <sup>2</sup>	0.025	0.025	0.027	0.0311	0.027	0.027	0.032	0.032
Individuals (n)	780558	780558	780558	780558	742616	742616	742616	742616

Even-numbered columns include as one of the controls in the estimations the proportion of the municipality with coca crops, whereas odd-numbered columns do not. This control is important to include to avoid confusing the effect of aerial spraying on health outcomes with the effect of coca cultivation on health outcomes. The inclusion of coca cultivation as a control does not change the results. All regressions include the following controls: age, age squared, health regime, municipal tax income, population, area in km<sup>2</sup>, rurality index, municipal spending on education and health, year and month dummy. The fact that 9 months is included in parentheses because it refers to the amount of aerial spraying during the 9 months before birth is used in the model. Standard errors are in parentheses. Reproduced from Camacho and Mejia, 2015,<sup>369</sup> by permission of the authors. \*p<0.01. †p<0.05.

Table 2: Miscarriages among people exposed to aerial herbicide spraying in Colombia

**Panel 6: Environmental damage and drug prohibition**

The pursuit of eradication of drugs and drug crops causes environmental damage with health consequences. Salisbury and Fagan reported displacement of coca farming as a result of eradication activities into areas protected for flora and fauna conservation in Peru near the border with Brazil.<sup>380</sup> They conclude that coca cultivation in Peru was environmentally sound before intensive eradication activities and was associated with little deforestation and a clustering of coca bushes, which in some cases helped to anchor the soil. With coca eradication—mostly manual eradication in the area studied—farmers have been displaced to more remote areas, with devastating consequences for biodiversity in the Peruvian Amazon.<sup>380</sup> Salisbury and Fagan also note the involvement of drug traffickers in logging and other potentially ecologically damaging activities.

From 2000 to 2014, some of the most rapid and extensive deforestation in the world took place in Honduras and Guatemala. McSweeney and colleagues<sup>381</sup> attribute this deforestation partly to the clearing of forest land by drug-trafficking organisations for roads and landing strips and for large ranches owned by traffickers.<sup>381</sup> Additionally, people enjoying the profits of illicit drug markets have invested in forest-clearing activities, such as cattle ranching and palm oil production, often at the expense of the forest-based activities of Indigenous peoples.<sup>381</sup> Deforestation in Central America since 2000 has closely tracked the movement of cocaine through Honduras, for example (figure 24).

eradication programmes, Buxton notes that about 260 000 households (more than 1 million people) were forcibly displaced and faced starvation and lethal epidemics of infectious disease during opium eradication campaigns in Myanmar in the mid-2000s; that 65 000 people were forcibly displaced in Laos as part of so-called zero-opium campaigns in 2003–04, resulting in mass poverty, with men exploited as labourers in neighbouring Thailand and many young women turning to the sex trade for survival; and that, in Bolivia, crop-eradication programmes in the early 2000s threw 50 000 households into dire poverty and malnutrition, with only about 25% receiving any form of assistance.

Displacement compounds socioeconomic and cultural differences in diet, nutrition, health habits, and housing, and can exacerbate or cause psychological problems associated with vulnerability and forced relocation, such as post-traumatic stress disorder.<sup>359</sup> In addition to large-scale displacement and the associated disruption and poverty, people who grow crops linked to drug production often face violence as a fact of life. Drug traffickers purchasing coca for the manufacture of cocaine or opium for heroin production for illicit markets sometimes enforce the obligations of crop producers through violence. As Mejía notes, since contracts in illegal markets are not enforced with the help of the courts or the rule of law, traffickers take it upon themselves to use violent means.<sup>371</sup> Although in some cases in the Andes drug-trafficking organisations provide infrastructure—even schools and health centres—to communities relying on drug-crop cultivation for survival, sometimes the interaction with drug traffickers is in the form of death threats and lethal gun battles.<sup>380</sup>

UN Women, in its pre-UNGASS reflection, concluded that crop eradication in the Andes destroys food crops

that are the domain of women and enable women to have some economic autonomy in the household (panel 6).<sup>379</sup> The German bilateral development organisation Gesellschaft für Internationale Zusammenarbeit noted that women's roles in ensuring food security in households involved with drug crops are not taken into account either in eradication programmes or when alternative livelihoods are offered to households, which generally are directed at men.<sup>382</sup> In Africa, rural households depend on cannabis as a cash crop in numerous countries. Cannabis is often interplanted with food crops, and cannabis-eradication campaigns that burn farm fields indiscriminately have threatened food security of farmers in some of the world's poorest nations.<sup>381</sup> Klantschnig characterises cannabis eradication in Nigeria as the most violent and repressive part of government drug-control operations, with the violence linked especially to invasion of rural communities and destruction of farmland.<sup>381</sup>

In the Andes, one of the most important health consequences of crop eradication could be the horrific violence occurring in Mexico and Central America. As Mejía and Restrepo note, in the face of intensive coca-eradication activities in Colombia, major drug-trafficking organisations moved their bases of operation from Colombia to Mexico and Central America, where they have been part of the deadly violence in that region.<sup>48</sup>

Some forced-eradication programmes are judged by experts to be highly cost ineffective, even without accounting for their impact on health. Mejía estimates that the marginal cost of eliminating the amount of coca needed to produce 1 kg of cocaine is about \$240 000.<sup>371</sup> In announcing the end to US support of poppy eradication in Afghanistan, then US envoy Richard Holbrooke cited an estimate that destroying a hectare of poppies cost \$44 000.<sup>383</sup> Holbrooke noted “The United States [and its allies] are not going to go around assisting or participating in the destruction of poppy fields anymore. The United States has wasted hundreds of millions of dollars doing this.... All we did was alienate poppy farmers who were poor farmers, who were growing the best cash crop they could grow in a market where they couldn't get other things to market, and we were driving people into the hands of the Taliban.”<sup>383</sup>

**A better way for drug policy? Learning from selected experiences**

**Rejection of criminalisation of minor offences and scaling up of health services**

The public health harms of the pursuit of drug prohibition have led some cities and countries to rethink approaches to drug control. Their experiences with respect to many of the health problems described in previous sections are largely replicable and show the path to drug policies that support health and development and do not undermine human rights.

Portugal's transition from decades of isolating authoritarian rule to democratic governance in the mid-1970s brought enormous social change. Opening its doors to the world brought Portugal a new place in international relations but also a flow of illicit drugs for which it was ill prepared. By the 1980s, Portuguese people thought that drugs were their most pressing social problem.<sup>384</sup> HIV infection linked to injection drug use was rapidly proliferating, drug dependence was an important public health problem, and more aggressive policing did not seem to deter drug use.

In 1998, a multisectoral expert committee was convened by the Portuguese Government to address the drug problem. Its proposed solution, eventually written into a 2000 law that came into force in 2001, was to remove criminal sanctions from individual use and possession of all drugs.<sup>385</sup> Individual use was defined liberally as the quantity needed for 10 days' use. Individual drug infractions were still illegal but only under administrative law: they could not be punished by a prison sentence and were not attached to a criminal record. Larger-scale offences, such as trafficking and sale of large amounts of drugs, retained penal sanctions.<sup>384</sup> People engaging in minor infractions are invited, but not required, to meet with what are called dissuasion committees—groups of health and social-sector practitioners who offer people the chance to be referred to services voluntarily and try to determine if there is problematic drug use to be addressed. HIV prevention services, including OST for people using opioids and NSPs, were scaled up substantially, as were services offering treatment for drug dependence other than OST.<sup>384</sup>

The results of this experience can be judged by numerous outcomes, but for one of the main harms being addressed—ie, unsafe injection-linked HIV transmission—the experience can be said to have succeeded. New HIV transmission among people who inject drugs declined from almost 800 cases in 2003 to less than 100 in 2012 (figure 25). Injection as a mode of drug use has also fallen since 2001, as has other problematic drug use.<sup>386</sup> However, independent researchers studying the Portuguese experience note that, with respect to health benefits, it is difficult to disentangle the impact of the actual decriminalisation from that of the large scale-up of health and social services (Goulão J, Portuguese national drug coordinator, personal communication). Critics of the Portuguese policy decision feared that drug use would increase overall. As of the 2011 compilation of figures by the EU's monitoring body, cannabis use had not increased in the previous year (figure 26), and Portugal's total drug use is one of the lowest in the EU; the ranking of Portugal with respect to use of amphetamines in the past year is similarly low compared with that in other countries.<sup>387</sup>

Faced with an extensive open scene of heroin injection and a rapidly growing drug-related HIV epidemic in the late 1980s, the Swiss public regarded drugs as a major

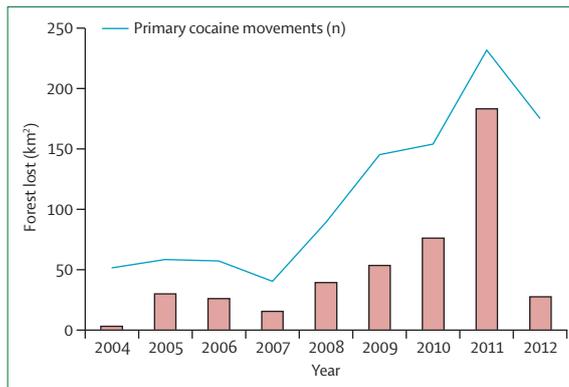


Figure 24: Deforestation in Honduras and major trafficking of cocaine, 2004–12. Reproduced from McSweeney et al, 2014,<sup>381</sup> by permission of AAAS.

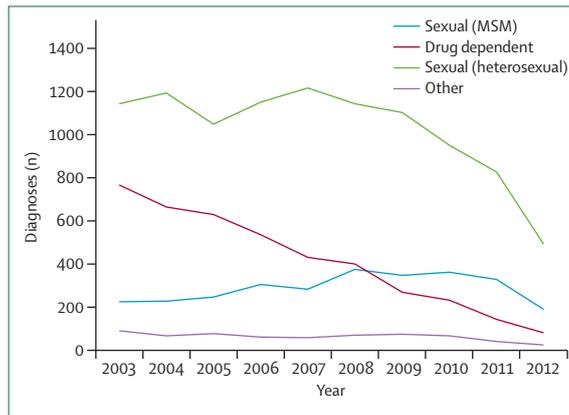
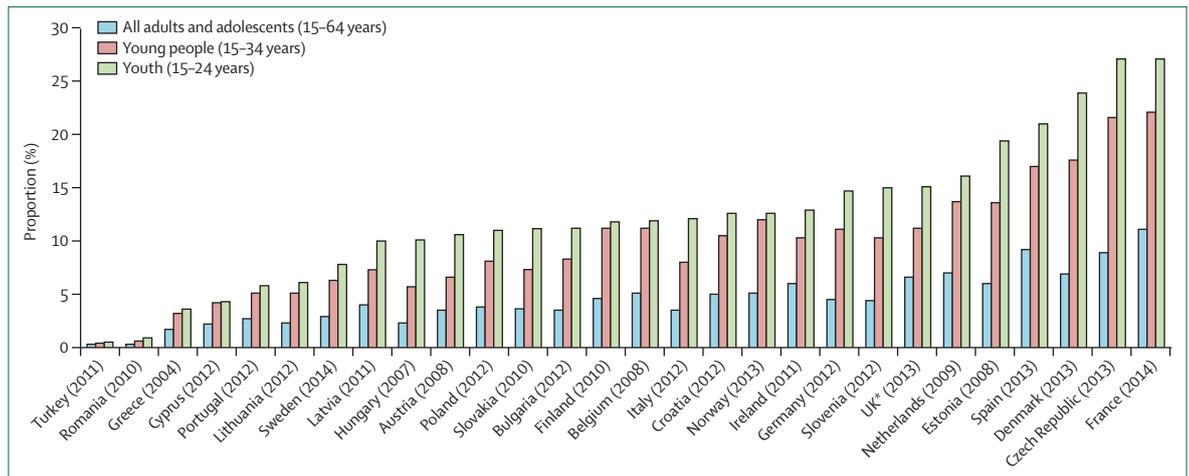


Figure 25: Incidence of HIV infection in Portugal by mode of transmission, 2003–12

Source: Goulão J, national drug coordinator, personal communication. Drug dependent refers to transmission via shared needles. MSM=men who have sex with men.

social scourge. In Switzerland, the police attempted geographical confinement of people who injected drugs, most notably corralling them into a public park in Zurich that became known as the needle park.<sup>388</sup> Needle exchange was not permitted in Switzerland at the time, and methadone was heavily regulated, with each case requiring special clearance by the health authorities.<sup>388</sup> The benefits of lowering the threshold of services for people who injected drugs—especially NSPs and OST—were soon made clear to policy makers, and Switzerland accomplished one of the most effective scale-ups of HIV prevention services in history.<sup>389</sup> The country went on to pioneer supervised injection sites in its largest cities, which quickly helped to reduce both overdose deaths and public injecting, and medical administration of heroin (ie, HAT) for the few opioid-dependent people for whom other treatments did not produce the desired result.

Like in Portugal, a precipitous decline in the incidence of HIV infection linked to drug injection was noted, and



**Figure 26: Cannabis use in the previous 12 months by adults and adolescents in the European Union, Norway, and Turkey, by age group**  
 The year in parentheses after each country is the year from which the data are drawn. Data are from the European Monitoring Centre for Drugs and Drug Addiction.<sup>387</sup>  
 \*Data are for England and Wales only.

the decrease was sustained for a long period.<sup>390</sup> The HAT programme in Switzerland was established over the objections of the International Narcotics Control Board and with openness by the Swiss authorities to assessments by independent researchers.<sup>389,391</sup> Assessments of the Swiss HAT experience have consistently shown good results in reduction of illicit drug use, crime, and mortality linked to the programme,<sup>392,393</sup> and these findings were later replicated in other settings.<sup>394</sup> In referendums, the Swiss public endorsed OST, NSPs, and HAT as part of a major harm-reduction pillar in national drug policy, but rejected decriminalisation of drugs.<sup>389</sup> In 2013, Switzerland decriminalised minor cannabis offences, making them administrative infractions.<sup>395</sup>

The Czech Republic in the late 1980s emerged from a long period of Soviet occupation at a time when HIV and drug injection were on the rise across Europe. The Czech experience is especially notable because visionary health professionals helped to lead the country to invest in low-threshold HIV prevention services before an injection-linked HIV epidemic could take hold, thus sustainably averting the runaway epidemics that occurred elsewhere in Europe.<sup>396</sup> In the early post-Soviet period, the Czech (then Czechoslovak) authorities sought a legal regime that would keep minor drug infractions out of the penal code. The drug law of the newly independent country established possession of drugs for individual use as an administrative rather than criminal infraction.<sup>497</sup> Drug use became a major political issue in cities in the 1990s. In 1998, the Czech Republic changed its approach and criminalised penalties for all drug offences involving a quantity of drugs that was not clearly specified. Remarkably, the Government commissioned academic researchers to study the impact of the new law. Led by Tomáš Zábanský (one of the Commission authors), the study team found that the new criminal penalties did not reduce problematic drug use or

the availability of drugs, as their supporters had claimed they would do, and that the policing and incarceration needed to enforce the law was very costly.<sup>397</sup> After long debate, the 1998 law was replaced in 2010 by a law that decriminalised use and possession below clearly defined cutoff amounts for all drugs. The Czech experience is also remarkable in that the national drug policy coordinators in the post-Soviet period have all had front-line health or social service experience with people who use drugs.<sup>398</sup>

Decriminalisation of, or at least removal of custodial penalties for, minor drug offences is more the rule than the exception in western Europe. A 2015 review<sup>399</sup> showed that EU countries have instituted a range of practices at the time of arrest or with respect to prosecution and sentencing that have effectively reduced criminal sanctions for minor drug offences. Most countries have recognised that a large part of non-violent drug-related crime is committed by a few people with problematic use who should be identified and directed to help for the health and social problems at the root of their infractions, and most countries have explicit procedures to remove such people from criminal proceedings.<sup>399</sup> Additionally, EU countries have the highest coverage of OST and needle exchange of any region, and most countries have high coverage of ART for people who inject drugs. These factors have together led to a situation in which HIV transmission by means of injection with contaminated equipment, although not eliminated, is no longer a substantial contributor to HIV epidemics on a population scale (figure 27).<sup>73</sup> The Netherlands' drug-policy experience also has unique harm-reduction aspects, which are described in the appendix.

#### Expanding public health action against HIV in Vancouver, Canada

In the mid-1990s, Vancouver, Canada, had an epidemic of HIV infection among people who inject drugs living in the city's Downtown Eastside (DTES) area. With an

annual incidence of 18.6 per 100 person-years in 1996–97,<sup>400</sup> the epidemic was characterised as the most rapid spread of HIV infection outside sub-Saharan Africa.<sup>401</sup> Drug-use patterns had shifted with the increased availability of powder cocaine, which was often injected ten or more times daily by local people who inject drugs.<sup>402</sup> Although a local NSP was in operation, it was constrained by restrictive rules and limited hours of operation.<sup>401</sup> Furthermore, efforts to deinstitutionalise people living with mental illness resulted in lots of vulnerable individuals arriving in the DTES with little support.<sup>401</sup> Lastly, the dense network of single-room occupancy hotels fostered the creation of risky indoor injecting environments.<sup>400</sup>

Faced with dual epidemics of HIV infection and overdose, in 1997 the local health board declared a public health emergency in the DTES.<sup>401</sup> During the next 15 years, various interventions were implemented to address the HIV epidemic. Responsibility for the delivery of methadone shifted from the federal to the provincial government, resulting in a large increase in the number of individuals receiving methadone in the DTES.<sup>403</sup> In view of the growing body of research revealing the limitations of the local NSP,<sup>404</sup> the local health authority revised its policies and instituted a decentralised NSP, removed limits on the number of syringes that could be obtained, did away with the one-for-one exchange rule, and expanded hours of operation.<sup>404</sup> All local health clinics soon implemented NSPs and, importantly, people who inject drugs increasingly became involved in the delivery of NSP services. These peer-run NSPs, including fixed and outreach services, effectively reached the people who inject drugs at highest risk of acquiring HIV.<sup>405</sup> An assessment of these changes to NSP policies revealed large declines in syringe borrowing and lending and the incidence of HIV infection with time.<sup>404</sup>

An important third development was the widespread delivery of ART and related support for local people who inject drugs. Although many jurisdictions have excluded people who inject drugs from ART programmes or restricted access to former injection drugs users, in Vancouver, all people living with HIV who inject drugs, irrespective of whether they were actively using drugs, were offered ART. Analyses have shown large increases in access to ART among people who inject drugs over time, and large declines in the median HIV RNA viral load within this population.<sup>406</sup> A landmark study<sup>406</sup> in 2009 showed that these reductions in community viral load were strongly associated with declining incidence of HIV infection among local people who inject drugs.<sup>406</sup>

Another important development was the implementation of two supervised injection sites in Vancouver where people could inject pre-obtained illicit drugs under the supervision of nurses. The sites include a large standalone facility that accommodates an average

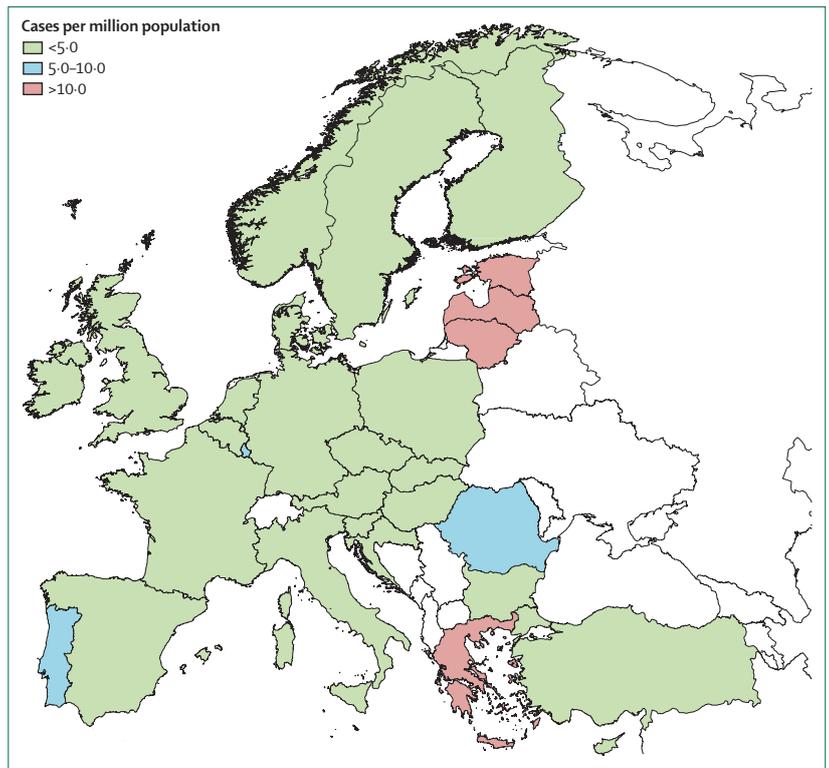


Figure 27: Newly diagnosed cases of HIV related to injection drug use in the European Union, Norway, and Turkey, 2013

Data are from the European Monitoring Centre for Drugs and Drug Addiction.<sup>73</sup>

of 800 injections per day, and a smaller programme within a large integrated day programme and residence for people living with HIV. The larger programme, Insite, reduced syringe sharing among people who inject drugs,<sup>407</sup> and modelling studies suggest that the site is reducing incidence of HIV infection.<sup>408</sup> The programme has remained controversial; however, in 2011, the Supreme Court Justices of Canada ruled 9 to 0 in favour of the continued operation of Insite, noting that the site had been proven to save lives without any negative impacts on the government's public health and safety objectives.<sup>409</sup>

Although the response to the HIV epidemic among people who inject drugs in Vancouver evolved slowly, the impact has been impressive. The epidemic was successfully reversed through a comprehensive combination prevention approach involving harm reduction and treatment for addiction and HIV. In addition to large decreases in syringe borrowing and lending, the annual incidence of HIV infection fell from 18.6 per 100 person-years in 1996–97 to less than 0.38 per 100 person-years since 2008.<sup>403</sup> The Vancouver epidemic should serve as a reminder that HIV epidemics among people who inject drugs can be reversed through comprehensive combination prevention approaches, provided that the necessary political will exists.

## Reducing drug-related harm

### Sub-Saharan Africa

Even without fundamental change to drug laws and in the face of political and economic constraints, some countries have found ways to strengthen health-sector approaches that are a departure from policing-centred drug policy. An estimated 500 000 people use opioids in east Africa, and in Tanzania alone an estimated 30 000 people inject opioids.<sup>304</sup> Prevalence of HIV infection among people who inject drugs in Tanzania is estimated to be 42–50% and is plainly an important challenge for the national HIV response.<sup>410</sup> In 2011, the first large-scale OST programme using methadone was rolled out, beginning with a site at Muhimbili National Hospital in Dar es Salaam. Now there are four sites and an enrolment of about 2500. The methadone programme has had good success in retaining people in treatment, with lessons learned along the way about the importance of keeping methadone doses adequately high.<sup>304</sup> The programme has also had excellent results in linking methadone patients living with HIV to sustained ART.<sup>410</sup> Active tuberculosis case finding was also done among methadone patients, with links to care.<sup>411</sup> As noted by Guise and others, the fact that service users did not have to be registered as drug users with the police was a great advantage, and police in general have not interfered with this programme.<sup>72</sup>

The Tanzania experience bodes well for other sub-Saharan African countries. In late 2014, Senegal announced the first government-supported methadone programme in west Africa, a region where opioid use is not as well documented as it is in east Africa but certainly is substantial.<sup>412</sup> The Senegal programme promises an integrated approach to drug-related and HIV treatment, care, and support.

### Reduction of harms in prison

Combined harm-reduction and HIV-treatment measures in prison have proven very effective in various settings. Spain's experience illustrates the synergistic impact of combined interventions. The frank recognition in Spain of extensive drug use within prison walls led to the establishment of both OST and NSPs in the prison service.<sup>413</sup> ART was provided in prison. The substantial fall in the incidence of HIV infection in Spanish prisons from about seven per 1000 in 2000, to almost none per 1000 in 2012 attests to the effectiveness of this combination of interventions.<sup>413</sup>

Moldova, unusually for its region, began offering sterile injection equipment in prisons in 1999. The Moldova prison NSP model relies on trained focal points among the prisoners for distribution of equipment, thus enabling prisoners to get syringes and other equipment without having to ask prison authorities.<sup>414</sup> ART is also provided. In 2014, Moldova began providing naloxone in prison. Prevalence of HIV infection in Moldovan prisons where these services are available declined from 4·2% in 2007, to 1·9% in 2012;

prevalence of HCV infection fell from 21% to 8·6% during the same period.<sup>415</sup>

### Reduction of overdose harms

Low-income and middle-income countries and countries with harsh drug laws can also make progress in the elimination of overdose deaths. In Russia, Tajikistan, and Kazakhstan, for example, hundreds of opioid overdoses were reversed, partly by people who use drugs who were trained in the use of naloxone.<sup>416</sup> On the basis of data from Russia, a modelling exercise showed that if even 20% of people who overdosed could be reached with naloxone, overdose deaths would decline by more than 13% in 5 years at a cost of \$94 per quality-adjusted life-year gained.<sup>417</sup>

In western Europe, overdose programmes are beginning to target the high-risk population of people leaving prison and entering the community. Scotland is the first country to have a nationwide programme that distributes naloxone to people at the end of a prison sentence.<sup>418</sup> Programmes run by people who use drugs had shown the feasibility of this intervention for years before the Medicines Act of 2005 removed legal penalties against people who use naloxone to save a life.<sup>419</sup> The Scottish Government's 2014 assessment of the first 3 years of the programme estimated that over 500 overdose deaths had been averted, and 90% of people who participated, including people who use drugs, said that the programme helped them to better understand the causes of overdose.<sup>419</sup> An innovative experience with naloxone for recently released prisoners in the politically challenging environment of a US state is described in the appendix.

Harm reduction can also take the form of discouraging the most dangerous modes of consuming drugs. An innovative programme in Germany aimed to persuade people injecting opioids to switch to inhaling instead.<sup>420</sup> People using some of Germany's 24 supervised injection sites were the target population because drug smoking and inhalation are also allowed in the sites; participants were provided with good-quality foil for inhalation.<sup>420</sup> Although the follow-up was not very long, this pilot effort showed that more than half of people approached reported using the foil provided to smoke rather than inject between visits to the site, with older people reporting higher inhalation (some noted that they needed to give their veins a rest).<sup>420</sup> There are 400 000 dispensing points for sterile injecting equipment in Germany. The researchers involved with the smoking promotion recommended that smoking equipment be made available along with injection equipment.<sup>420</sup>

### Elimination of the harms of compulsory treatment

Some countries might be moving away from detention of people who use drugs in squalid facilities and using brutal punishment and forced labour in the name of

treatment. Beginning in 2011, Malaysia began implementing a plan to convert 18 of its 28 compulsory treatment centres into so-called cure and care clinics offering voluntary inpatient and outpatient treatment for drug dependence, including OST.<sup>421</sup> These clinics use existing health infrastructure, and the drug law has not changed. As of early 2015, 36 000 people who use drugs had used these new services.<sup>421</sup> Early results indicate that among people who used both metamfetamine and opioids, use declined after treatment.<sup>420</sup> The results of a qualitative study suggested that patients appreciated the range of services offered in the new services, including the stabilising effect of OST, psychosocial support from staff and peers, and links to other health services.<sup>422</sup>

In Vietnam, compulsory rehabilitation centres existed for both people who use drugs and sex workers, but in 2012 it was decided to discontinue detention of sex workers in these centres.<sup>422</sup> The centres for drug users still exist, but a law was passed that in theory enables people in these centres the right to appeal their situation and bring complaints to court with legal representation; how this provision will be used remains to be seen.<sup>423</sup> In late 2012, UNAIDS announced that pledges had been secured from nine countries in east and southeast Asia to reduce populations in compulsory treatment centres and decrease the number of centres.<sup>424</sup>

### Reduction of harms in drug-crop production

In 2006, Bolivia elected Evo Morales, a former coca farmer, as president. The Morales Government led Bolivia to reclaim its commitment to protecting traditional uses of coca leaf. Coca leaf has a long history of traditional and cultural use in the Andes as a mild stimulant: it is chewed and also used in tea. According to rural households, it relieves hunger, some stomach ailments, and dizziness.<sup>425</sup> The 1961 Single Convention on Narcotic Drugs (article 49) explicitly states that governments that are ratifying parties to the convention “may at the time of signature, ratification or accession reserve the right to permit temporarily in ... its territories ... coca leaf chewing”, subject to several restrictions that are specified in the article, but otherwise coca leaf is scheduled as a dangerous narcotic.<sup>6</sup>

Under Morales, Bolivia, which ratified the 1961 Single Convention under a previous military government, did not want temporary leave to allow coca chewing but rather sought to make a permanent reservation for traditional uses of coca leaf as a mild stimulant. In a nearly unprecedented move, Bolivia withdrew its ratification of the convention and sought permission to reaccede with a formal reservation for traditional uses of coca leaf.<sup>426</sup> Under the terms of the Single Convention, Bolivia’s reaccession would have been blocked if 61 ratifying parties to the Convention objected. Only 15 countries objected,<sup>426</sup> and Bolivia made its point—coca and cocaine are not the same.

Licit uses of coca leaf also led Bolivia to establish an innovative kind of alternative livelihood for coca growers. With firm recognition of the need for a legal market for coca leaf, the Bolivian Government established a scheme by which some coca farmers are permitted to grow coca for licit use over a fixed area of land—one *cato* (around 1600 m<sup>2</sup>).<sup>427</sup> Coca grown in greater quantities could be subject to eradication. As noted by Ledebur and Youngers,<sup>427</sup> the programme has been a success partly because strong growers’ unions or federations are on the scene helping to oversee the programme, which they have found to be in their interest.<sup>427</sup> Introduction of the *cato* zones has resulted in significant reductions in the growth of coca for illicit markets—much more than those that resulted from forced-eradication efforts.<sup>427</sup> There has been a concomitant reduction in reported violence in the *cato* communities as well. The Bolivia example is a rare case of meaningful participation of drug-crop farmers in the planning and implementation of programmes meant to benefit them.

### Conclusions and recommendations

Policies meant to prohibit or greatly suppress drugs present an apparent paradox. They are portrayed by policy makers to be necessary to preserve public health and safety, and yet they directly and indirectly contribute to lethal violence, disease, discrimination, forced displacement, injustice, and the undermining of people’s right to health. The framers of international human rights law foresaw that there would be times, especially in the face of security threats, when some individual rights would have to be abrogated in favour of preserving collective safety and wellbeing.<sup>428</sup> There is international consensus that if policies that abrogate rights are necessary for the greater good, those policies should pursue a legitimate and transparently defined goal and be proportionate to that goal, must be the least rights-restrictive and the least harmful possible to achieve the stated goal, should include adequate remedies for people whose rights are violated, and should not interfere with the democratic functioning of society.<sup>429</sup>

In our view, policies pursuing drug prohibition or severe suppression do not meet these criteria, even if one accepts that drugs in and of themselves somehow present a serious security threat. Policies that pursue drug prohibition or heavy suppression do not represent the least harmful way to address drugs, the aim they pursue is not well defined or realistic, their interventions are not proportionate to the problem, they destabilise democratic societies, and people harmed by them often have no recourse to remedies to mitigate those harms. The scourge of drugs and the harms of drug use are exaggerated to justify these measures. These policies also contradict the spirit of the 2030 SDGs and the bedrock human rights norms of the community of nations.

Some experts have argued that the benefits of prohibition are underappreciated. Proponents of prohibition have noted that, although the results in terms

of drug supply and demand reduction have left something to be desired, consumption, supply, and related harms would be even more plentiful without the interdiction and criminalisation of use associated with prohibition—a difficult argument to refute (or confirm). The UNODC has asserted that without elements of prohibition, drug use could be as widespread as alcohol use, with disastrous consequences.<sup>430</sup> Caulkins' thoughtful analysis suggests that no proponent of prohibition should ever have expected complete eradication of drug markets, but that driving drug activity underground has benefits for some individuals and society, especially reductions in drug dependence that are the result of very high drug prices in illicit markets and other barriers to obtaining drugs.<sup>431</sup> We appreciate efforts such as his to bring empirical rigour to this question, but on the basis of the evidence identified and analysed by the Commission, we conclude that the harms of prohibition far outweigh the benefits.

The violence associated both with illicit drug markets and with policing, including policing by military and paramilitary forces, is a deeply traumatic violation of the right to health. The cost of incarceration of enormous numbers of people—men, women, and children—for minor, non-violent offences weighs heavily on societies. The misuse of the important social tool of the criminal justice system to discriminate against racial and ethnic minorities is unacceptable. The cost of infectious diseases that have been made more common, more severe, and more difficult to address by law-enforcement practices and incarceration is completely preventable illness and death. Overdose deaths, which are also preventable, affect some of society's most marginalised people. The eradication of crops used in the manufacture of drugs is harmful to whole communities and families and to the environment. And there is the untold suffering of millions whose pain cannot be relieved by effective analgesics because of fears of diversion of drugs to illicit use.

Standard public health and scientific approaches that should be part of policy making on drugs are dismissed in the pursuit of drug prohibition and suppression. The idea of reducing the harm of many kinds of human behaviour is central to public policy in traffic safety, tobacco and alcohol regulation, food safety, safety in sports and recreation, and many other aspects of human life when the behaviour in question is not prohibited. But explicitly seeking to reduce drug-related harms through policy and programmes is regularly resisted in drug control. The idea that all drug use is misuse and that therefore only immediate abstinence is acceptable seems to impede making harm reduction a drug-policy priority.

The persistence of unsafe injection-linked HIV transmission that could be stopped with proven, cost-effective measures is one of the great failures of the global HIV response. People who use drugs, even if they do not immediately stop using drugs, can make good decisions to protect themselves and those around them. To deny them the chance to do so by failing to offer

harm-reduction services dehumanises them, violates their rights, undermines the public's health, causes needless death, suffering, and disease, and costs society money. We agree with the conclusion of the UNAIDS–*Lancet* Commission that too many countries are letting people who inject drugs die rather than remove the barriers, including drug law and policy, that stand in the way of life-saving services.<sup>432</sup>

Countries have failed to recognise and correct the health and human rights harms that pursuit of prohibition and drug suppression have caused, and in so doing neglect their legal responsibilities. They readily incarcerate people for minor offences but then neglect their responsibility to provide health services in custodial settings that are the equivalent of those in the community. They recognise uncontrolled illegal markets as the consequence of their policies, but do little to protect people from toxic, adulterated drugs that are inevitable in illegal markets or the trauma and violence of organised criminals, which are often made worse by repressive policing. They waste public resources on policies that do not demonstrably eliminate drugs or impede the functioning of drug markets, and they miss opportunities to invest public resources wisely in proven cost-effective health services for people often too frightened to seek services.

Calls for balanced drug policy as in the 2009 UN political declaration on drugs have not been heeded. Even the western European countries that have decriminalised (formally or less formally) drug use and minor possession and sale, scaled up comprehensive harm-reduction services, and ensured access to ART for people who use drugs have not completely rejected prohibition. Drugs are still illegal in these countries. But, in our view, these examples still represent a noteworthy rejection of traditional prohibition, not least because they bring public health goals and policies to the centre of drug control. They are not the end of the reform story, but provide the world with an alternative that should continue to be rigorously assessed in terms of public health and human rights effects.

We urge the member states participating in the April 2016 UNGASS to bring public health evidence into the debates as they strive to formulate policy directions that are consistent with the principles of the UN Charter, the spirit of the 2030 SDGs, and the human rights norms to which nearly all UN member states are committed, including the right to health. The UNGASS will do itself credit by helping the world move away from a war on drugs that is inevitably a war on people who use drugs. Towards this end, we offer the following recommendations:

**Decriminalise minor drug offences—use, possession, and petty sale:** The long experiences in Portugal, the Czech Republic, and other countries with decriminalisation of minor drug offences demonstrate the benefits of treating minor infractions without recourse to criminal sanctions. These benefits include offerings of health and social support to people who might need them, reduction of

incarceration of men, women, and young people and all the associated harms, and elimination of the wastefulness of the police's pursuit of minor offenders. Decriminalisation of minor offences also makes harder the use of drug laws as a weapon against racial or ethnic minorities or politically unfavoured groups. Decriminalisation should always be accompanied by measures to ensure the capacity of health and social services to address drug-related harms or problematic drug use as needed.

**Reduce the violence and other harms of drug policing:** Military and paramilitary forces are likely to exacerbate violence in the pursuit of drug traffickers, and their participation should be phased out as much as possible. Police should also desist from practices that directly cause health harms, including seizure of injection equipment and all practices that disrupt access to essential services. There should be measures to monitor and prevent sexual violence linked to drug markets and to ensure care and support for survivors. Paraphernalia laws should be modified so that possession of sterile injection equipment is not a crime, and possession of syringes with trace amount of drugs is not considered drug possession.

**Make harm reduction measures a central pillar of health systems and drug policy:** Consistent with the fundamental principles of public health, reduction of the health harms of drugs and drug-control measures should be a high priority for policy makers. As for tobacco, alcohol, and many other behaviour-related policies in most countries, drug policy should include measures to reduce drug-related harm that are not linked to a goal of abstinence that is unrealistic for some people. The deadly harms of HCV infection are preventable, but not without scale-up of a full range of services for people who inject drugs. Fiscal sense, good public health practice, and compliance with human rights obligations are essential elements of a strong harm-reduction pillar of drug policy. The 2016 UNGASS should do better than previous UN gatherings and call harm reduction by its name, with a strong endorsement for its centrality in drug policy.

**Invest in treatment for HIV, HCV infection, tuberculosis, and drug dependence:** Use of involuntary detention, beating, other physical abuse, and forced labour in the name of treatment of drug dependence has to be stopped. Underinvestment in proven treatment for opioid addiction should be rectified. Unscientific ideas that OST is another form of addiction should be countered in medical training, by health professionals and their associations, and by policy makers interested in cost-effective and efficacious policy. Research into other humane forms of drug-dependence treatment is urgently needed and should not be stopped by over-cautious anti-diversion measures. WHO in collaboration with the UNODC should be given the resources to monitor the quality of drug-dependence treatment programmes on a regular basis and to signal to governments programmes that are not scientifically sound and could cause harm.

Treatment of HIV, HCV infection, and tuberculosis needs to prioritise people who use drugs. People in prison and pretrial detention should be included in treatment programmes. Health professionals should counter myths about the lack of capacity of people who use drugs to adhere to treatment. The advocacy and resulting measures that helped to bring down the prices of early generations of HIV medicines are urgently needed to enable people who use drugs to benefit from the new class of HCV drugs.

**Ensure access to controlled drugs:** Action is urgently needed to ensure that decisions about the procurement and use of controlled drugs are made by health professionals without inappropriate constraints linked to over-cautious drug-control measures. Countries in which most patients needing pain medications and other controlled drugs are not getting them should urgently review their drug-control laws and policies against WHO guidelines and International Narcotics Control Board recommendations, and weigh the costs of drug control against the rights and needs of patients. At the international level, WHO's role in determining the health dangers of drugs, specified in the drug conventions, needs to be reinforced. Overriding WHO's expertise in this area should not be done lightly or because of ideological attachment to punitive policies.

**Formulate policies that do not harm women:** Alternatives to incarceration for women who have committed minor drug infractions benefit families and communities and should be a high priority. For the minority of drug-using women who are drug-dependent, there should be appropriate health and social support, including treatment programmes that take account of gender-based differences in initiation of, and motivation for, drug use. Protection of women and children from violence in law enforcement and supply-reduction efforts should be a policy priority and an indicator of the success of drug policy.

**Integrate health concerns into supply-chain efforts:** Provision of alternatives to people who produce coca, opium poppies, or cannabis or to people who produce metamfetamine or other synthetic drugs should be part of integrated development of anti-poverty measures in which the people affected have a meaningful role in decisions about what constitutes an alternative livelihood and not separate areas of development in which drug-control goals are valued more than development or welfare goals. Cultivators should be meaningfully engaged as stakeholders in supply policies.

**Improve UN governance of drug policy:** WHO should be allowed to do the job it was established to do in international law with regard to assessments of the science of potential harms of drugs. The International Narcotics Control Board should not oppose WHO expert views on the dangerousness of drugs, and the CND should not overrule public health expertise without compelling evidence of the benefit of doing so. It is high time for health and social-sector authorities to be equal

partners in national drug policy-making bodies in all countries and in CND delegations. Global and regional multilateral drug policy-making bodies and supporting technical agencies should include public health expert bodies in all aspects of their work.

**Include health, human rights, and development in metrics to judge success of drug policy:** If drug policy is meant to protect the health and wellbeing of populations, then health outcomes should be part of the measurement of drug policy's success (or lack thereof). WHO and the UNDP should help to formulate health and human development metrics of drug policy. As the UNDP suggested in its paper<sup>13</sup> in the lead-up to the 2016 UNGASS on drugs, indicators such as access to treatment, rate of overdose deaths, and access to social welfare programmes for people who use drugs can feasibly be measures and would say more about policies than does the number of arrests.<sup>13</sup> All drug policies should also be studied as to their impact on racial and ethnic minorities, women, children and young people, and people living in poverty.

**Better and broader research on drugs and drug policy:** Bilateral development assistance agencies, private foundations concerned about health, and other donors should broaden their support for rigorous evaluation of drug policy experiences and experiments. The best social science and policy analysis methods should be brought to bear in an objective and non-ideological way to understand the impact of drug-policy change on the public's health and wellbeing. Research about drug dependence should be guided by the best science, allow people who use drugs to have a meaningful voice, and interrogate the excessive pathologisation of drug use. We also urge the UN and the UNODC in particular, to reconstitute the UN's independent Reference Group on HIV and Injecting Drug Use or a similar group on health and drug use to contribute to high-quality, policy-relevant research on drug use and health.

**Scientific approach to regulatory experiments:** A regulated legal market for any previously illicit drug in the USA and Uruguay seemed very unlikely before 2008. Regulated legal markets for drugs that have long been harshly criminalised are clearly not politically possible in the short term in many countries. But we believe that the weight of evidence for the health and other harms of criminal markets and other consequences of prohibition catalogued in this Commission is likely to lead more countries (and more US states) to move gradually towards regulated drug markets—a direction we endorse. Regulation of the harms of human activity is the essence of public health, as with tobacco and alcohol. As these decisions are taken, we urge governments and researchers to apply the scientific method and ensure independent and rigorous assessment of regulated markets to draw lessons from and inform improvements in regulatory practices, and then to assess and improve again.

We urge health professionals in all countries to inform themselves and join debates on drug policy at all levels. True to the goals of the international drug-control regime, it is possible to have drug policy that contributes to the health and wellbeing of humankind, but not without bringing to bear the evidence of the health sciences and the voices of health professionals.

**Contributors**

JCs wrote the first draft of the main text and text boxes not otherwise attributed and oversaw major revisions to comments by Commissioners and reviewers. Some text in the body of the Commission was contributed by PV, NM, JS, TK, MC, JCe, DM, AC, and NV. Text boxes were composed by Commission members TK, MC, CH, MB, and JCs. JCe contributed original analysis of data from Mexico and contributed to the figures and tables. CB led the conceptualisation of the Commission and the report, developed the outline for the paper with JCs and the cochairs (MK, AK), and contributed to the editing and revisions of the main text and appendices. SS contributed to the conceptualisation, outline, and editing. All Commissioners made comments on an early draft.

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We declare no competing interests. MK is the UN's Special Envoy for HIV/AIDS in Eastern Europe and Central Asia and EG is the UN Special Envoy on Tuberculosis

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