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Article type : Commissioned Review

Injecting drug use in low and middle income countries: opportunities to improve care and prevent harm

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Abstract:

Inadequate response to injecting drug use (IDU) is a significant problem the world over. Low levels of funding, political inaction, poor levels of health service coverage, high prevalence and incidence of IDU-related blood-borne viruses (BBVs), and ongoing stigmatisation/marginalisation affect people who inject drugs (PWID) regardless of the income status of the country they reside in. These barriers

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi:

10.1111/jvh.12741

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and system failings are, however, exacerbated in low and middle income countries (LMICs), meaning that the potential consequences of inaction are more pressing.

In this narrative review, we describe the levels of IDU and IDU-specific BBV prevalence in LMICs; levels of harm reduction implementation; the consequences of late or insufficient response, the short-comings of data collection and dissemination; and the barriers to effective LMIC harm reduction implementation. We also exemplify cases where IDU-related harms and BBV epidemics have been successfully curtailed in LMICs, showing that effective response, despite the barriers, is possible.

In conclusion, we suggest four key priorities on the basis of the review: confirming the presence or absence of IDU in LMICs, improving the collection and dissemination of national IDU-specific data, increasing the level of harm reduction program implementation in LMICs, and increasing both national and international advocacy for PWID and attendant public health interventions.

Introduction

Injecting drug use (IDU) is a global public health concern, with an estimated 12 million current people who inject drugs (PWID) worldwide (1). IDU is associated with a range of health and social harms, including blood-borne viral infections (BBVs) (2), injecting-related injuries, stigma (3), involvement with criminal justice systems (4) and premature death from many causes, including those as a direct consequence of IDU (5).

Once considered a public health issue predominantly affecting high-income countries, IDU has now been reported across numerous low and middle-income countries (LMICs), such that the majority of the world's PWID are now estimated to live in LMICs (6). The social and environmental realities of many LMICs – rapid urbanisation, high intra-country migration, high unemployment and poverty, overcrowded and polluted environments, high levels of violence and low social support – create fertile conditions for the presence and expansion of IDU (7). International experience has shown that emergent IDU requires swift, comprehensive and sustained intervention in order to minimise the long-term health and social harms associated with IDU (7). Competing public health priorities, political intransigence, disproportionate burden of disease, insufficient resources and poor health infrastructure mean that few LMICs are equipped to adequately tackle an emergent epidemic amongst a new at-risk population, amplifying the negative outcomes.

This article provides an overview of IDU in LMICs, describing the population prevalence of IDU and the associated epidemiology of BBVs amongst PWID in these countries. We also highlight how harms associated with IDU can be amplified in LMICs, identify interventions aimed at reducing these harms (including the current implementation across LMICs) and provide examples of successful programs in LMICs.

Injecting drug use across LMICs

The World Bank categorises LMICs according to gross national income per capita (low income: ≤US\$1,025; lower-middle income: US\$1,026–US\$4,035; upper-middle income: US\$4,036–\$12,475) (8). According to World Bank categorisation, 31 countries are classified as “low income”, 52 as “lower-middle income” and 56 as “upper-middle income”; a combined 139 countries and territories. Country-by-country data on evidence of IDU and population prevalence of IDU are listed in Table 1.

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IDU has been documented in 158 of the world's countries and territories (9). Evidence of IDU has been reported in 10 (32%) of the 31 countries classified as "low income", compared to 45 (87%) of those classified as "lower-middle income" and 41 (73%) of those classified as "upper-middle income" (9, 10). Estimated population prevalence of IDU amongst 15-64 year olds ranges from 0.01% (Cambodia) to 4.20% (Dominican Republic) (9). Although LMICs account for 64% of all countries and territories, an estimated 80% of the world's PWID live in LMICs, predominately in Eastern Europe (approximately 3.5 million PWID) and East/Southeast Asia (approximately 4 million PWID) (10-12).

Blood-borne viruses

Injecting drug use is a key driver of BBV transmission. Globally it is estimated that three million PWID are HIV positive (10), ten million are hepatitis C virus (HCV) antibody positive¹ and 1.2 million are hepatitis B virus (HBV) surface antigen positive² (13). Much of this IDU-related infection burden is concentrated in Eastern Europe and East/Southeast Asia (13), with half of all HIV and HCV-positive PWID in these two regions (10, 13). It is estimated that nearly half (47%) of all PWID infected with HIV in LMICs live in just five countries - China, Vietnam, Russia, Ukraine and Malaysia (14). Table 1 shows the estimated prevalence of HIV amongst PWID in LMICs ranging from 0% (Kosovo) to 50-73% (Mozambique); of HCV, from 3.4% (Dominican Republic) to 96.5% (Mauritius); and of HBV, from 0% (Montenegro) to 60.5% (Syria) (9). However, the variability in quality of country data demands caution of such estimates.

In recent years, IDU has replaced sexual transmission as the leading cause of HIV infection in a number of LMICs. IDU is now the primary mode of HIV transmission in many North African, Middle Eastern, Asian and South American countries, a development particularly concerning given the higher potential for BBV transmission via parenteral compared to sexual exposure (15). Of additional concern is the identification of PWID as a bridging population for HIV and other BBVs when onward transmission occurs to sexual partners of PWID and from mother to child (15). For example, a study of male PWID and their (non-drug-using) wives in Manipur, India, where HIV prevalence among PWID is 80%, found that 45% of wives were HIV positive (16).

Many PWID in LMICs are not receiving treatment for their BBV infections. Reasons for the denial or delay of antiretroviral therapy (ART) for HIV-positive PWID include clinicians concern about non-adherence and resultant ART resistance and comorbidity-related complications (14). Other factors impacting on treatment uptake include systemic and structural barriers such as user fees, bans on treatment for active injectors and other eligibility requirements that disproportionately affect PWID, police use of drug-user registries (thus discouraging treatment seeking), detention of drug users in compulsory drug rehabilitation centres and ongoing stigmatisation (14). As a consequence, HIV-positive PWID are more likely to be poorly engaged in care and experience increased risk of death, even in countries with well-established ART programs (14).

Whilst strengthening of HIV treatment and prevention is a key target in reducing global burden of disease and supported by many international agencies and strategies, a focus on HIV has often meant the neglect of viral hepatitis (13). Until recently, this neglect has been compounded by a reliance on low efficacy interferon-based treatments with significant side effects that require treatment through relatively high cost specialist care services. In most countries reporting IDU, the prevalence of HCV in PWID is far in excess of HIV, even in countries with comprehensive harm

¹ Denoting current or previous infection

² Denoting current infection

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reduction programs (such as Australia) (17). Therefore, emerging populations of PWID in unprepared and under-resourced LMICs need monitoring, especially those with a high prevalence of HCV (Africa, the Middle East, and Southeast Asia) and HBV (East and Southeast Asia) in the general population (13). BBV co-infection, leading to accelerated disease progression, is a distinct issue (18). However, the new era of HCV treatment via direct-acting antivirals provides new hope for disease elimination (19). The key challenge is reaching individuals in LMICs with these new treatments (20). Improving detection amongst infected individuals and ensuring affordable access to treatments (especially in middle-income countries, many of which are becoming important markets for pharmaceutical companies, which price their products accordingly) is paramount (20). Regarding HBV, the WHO recommends expedited vaccination schedules and incentives to complete vaccination for PWID and must be prioritised amongst susceptible individuals (13, 21), whilst, barriers to the detection and treatment of currently infected individuals (13) need to be identified and reduced across LMICs.

Harm reduction in LMICs

Needle and syringe programs (NSPs) and opioid substitute therapy (OST) are key harm reduction interventions that are effective at reducing unsafe injecting practices (22), opioid overdose (23) and BBV transmission (24, 25). UN organisations include both NSPs and OST amongst their list of “essential” interventions in response to HIV amongst PWID (26).

Re-use of needles and syringes (whether by a single individual or sharing between individuals) is a key driver of IDU-related harms, and the removal of used injecting equipment reduces the circulation of potentially contaminated needles and syringes (27). However, only 90 countries (57% of those countries with reported IDU) worldwide have implemented NSPs (9), 53 of which are classified as LMICs. NSPs are absent in many LMICs where IDU is known to occur – across East, Southeast and South Asia, in the majority of Latin American and Caribbean countries, across the Middle East and North Africa, and in nearly all countries in sub-Saharan Africa (28). In some of these countries needles and syringes are available through pharmacies, at varying cost to PWID (28).

OST has been demonstrated to be effective at reducing injecting frequency, injecting risk behaviours, BBV transmission, death from overdose and criminal activity, and enhancing ART adherence amongst opioid-injecting PWID (29-32). However, only 80 countries (49% of countries with reported IDU) worldwide have OST programs (9), 40 of which are classified as LMICs.

Other harm reduction interventions, such as supervised injecting facilities (SIFs) and medically prescribed heroin are supported by empirical evidence (33-35), but have not been implemented in any LMICs.

The mere presence of harm reduction interventions is a relatively crude indicator of a country’s BBV prevention capacity, with coverage of harm reduction across key populations a key driver of population-level prevention (36). There is considerable variability in harm reduction coverage both within and between countries (27). Even in countries with existing harm reduction programs, most operate well below the levels required to reduce BBV transmission (9). For example, Vietnam, Ukraine and Taiwan have each implemented over 1000 NSP services nationally, whilst Russia services an estimated PWID population of 1.8 million (1.72% population prevalence) with just four NSPs whilst maintaining a blanket ban on OST prescription (9); consequently, over 80% of the region’s new HIV infections occur in Russia (9). Consistently low (<10% of the PWID population) access to NSP is recorded across most LMICs (28), and syringe distribution in Latin America, the Caribbean, the Middle East, North Africa, and sub-Saharan Africa averages less than one syringe per

PWID per year (28). Fifty-five LMICs in Table 1 have implemented some form of harm reduction, meaning 41 countries with evidence of IDU are without a response.

For programmatic coverage to have impact, programs need to dispense sufficient injecting equipment to prevent syringe re-use (ideally, one sterile syringe for every injecting episode), and OST at a therapeutic dose for as long as is necessary (37). The WHO recommends a syringe distribution rate of 200 and 300 sterile needles/syringes per PWID per annum to curb HIV and HCV spread respectively (38, 39), and “high” coverage of OST considered as 40% of people who inject opioids under prescription (38). Although these seem to be modest targets, most countries, regardless of setting, fail to reach these benchmarks. It is estimated that globally, only 20 needles/syringes are distributed per PWID per year, and that only 8% of global PWID access formal NSPs annually (28, 39). It is estimated that only 8 per 100 PWID are in receipt of OST (28).

The consequences of inadequate response

Government endorsement is central to the success of harm reduction programs (40), yet political support in many LMICs is absent, with explicit support for harm reduction in national policy documents evident in only a minority of these countries (9). Public health interventions for PWID are politically and socially unpalatable meaning the climate in which harm reduction usually operates is particularly difficult. Even in high income countries, these interventions are often hard fought for and lacking in public support. More than this, many governments are openly hostile towards harm reduction and the population it seeks to assist with negative consequences for PWID. For example, 43% of Vietnamese out-of-treatment PWID reported experiencing one or more drug overdoses (41). Between a third to a half of all drug-related deaths are as a result of overdose (mainly attributable to opioids) (1), yet access to Naloxone (an opioid antagonist) is often unavailable (42). Without access to harm reduction programs HIV prevalence can rise to 40% within one to two years of virus introduction (37) and HCV, with a greater transmission potential, can spread even more rapidly (43). For example, in Manipur, India, HIV spread quickly through the PWID population, taking estimated population prevalence from 0% in 1989 to over 50% within six months (44). One of the highest-recorded incidence rates of HCV, 37.6 per 100 person-years, (at the time of publication) was recorded amongst young southern Chinese PWID (45). In both examples, the absence of an adequate harm reduction program was cited as a key reason for the epidemics. Despite the the cost effectiveness and low cost of harm reduction programs, many LMICs do not have sufficient resources to implement and maintain them. However, modelling has suggested that modest levels of harm reduction coverage can have significant impacts. Vickerman et al. (2014) showed that with a coordinated and holistic harm reduction programme in Eastern Europe and Central Asia, a coverage target of only 14% for NSP, OST and ART (working in combination) can reduce HIV prevalence by 30%, despite high existing endemicity (46).

Barriers to effective response

Access to health care is dependent upon geographic accessibility, availability, financial accessibility and acceptability (47). Harm reduction services in LMICs often fail to meet these criteria. De Jarlais et al. (2013) listed the four reasons why harm reduction services in LMICs may not be as effective as those in high-income countries: low financial resources; services in often tenuous states of operation due to finite, short-term non-governmental funding options; greater levels of stigmatisation faced by PWID, and greater interference by law enforcement (6).

Barriers to effective response: Funding

Even for governments funding their own HIV prevention expenditure, PWID are rarely prioritised, with only 3.3% of reported funds directed towards PWID (9). Harm reduction programs typically receive much less funding than other drug-related initiatives such as law enforcement. An estimated \$100 billion is spent annually on global drug supply and demand reduction efforts (48), but only an estimated \$160 million on harm reduction (7% of the estimated total required for adequate coverage (48, 49)). Furthermore, global harm reduction funding from both governmental and donor sources (such as the Global Fund) is currently declining, resulting in the closure of services in some countries (9). This funding decrease is felt hardest in LMICs, where harm reduction is traditionally supported by NGOs and international donors. Donor contributions for harm reduction-based HIV prevention initiatives in LMICs dropped 7% between 2014 and 2015 (9).

The majority of harm reduction programs in LMICs are funded by non-governmental sources (50). These programs often operate under “pilot” status, with funding both tenuous and unsustainable, and are restricted in their reach and ability to expand. The imminent de-funding of programs operating in many middle-income countries is a case in point. Between 2017 and 2019 up to 24 countries will become ineligible for Global Fund support, the assumption being that national governments will fill this shortfall (9). This funding withdrawal will particularly affect countries in South and Southeast Asia and Eastern Europe, countries with minimal domestic support for harm reduction, and in some of which, the closure of NSPs has already been reported as a direct consequence (9). Sudden reductions in harm reduction services have previously been shown to increase injecting risk behaviour (51); in order to function appropriately, services need not only comprehensive implementation, but sustained and dependable funding.

Barriers to effective response: Stigma and discrimination

The widespread negative, marginalising and often inaccurate beliefs about PWID that underpin stigmatising attitudes towards this population are pervasive and multi-layered. Stigma effects the standing of PWID, including their ability to participate fully as equal members of society and to advocate on behalf of themselves to receive appropriate health care. Importantly, there are multiple stigmatising facets to the lives of many PWID that compound the discrimination and consequent marginalisation they face. Aside from their status as users of illicit drugs, the prevalence of co-morbid mental illness, the high rates of criminal behaviours, co-occurring participation in other marginalised activities such as sex work, and a generally lower socio-economic status have a cumulative stigmatising impact. Stigma related to IDU is also intertwined with BBV-related stigma (52). Such stigma has been implicated in poor HIV testing uptake amongst PWID in Sub-Saharan Africa (53) and the reluctance to receive health care due to the threat of disclosure by health officials in Vietnam, where PWID reported far greater stigma towards their IDU, compared to their HIV status (50). Whilst programs to reduce stigma from health staff can and should be implemented (54), the entrenched stigma experienced by PWID is generally society-wide and tacitly endorsed by authoritarian drug control policies (55).

Barriers to effective response: Law enforcement

Most drug control policies involve criminalisation of drugs and the people who use them (56). Reflecting this criminalisation, PWID are often exposed to saturation policing including arrest and harassment for possession of injecting equipment, even in countries where such possession is legal

(57). These policies have led to the mass imprisonment of PWID in China and Vietnam (11), the extra-judicial killing of drug users in the Philippines and Thailand (58, 59) and the establishment of compulsory detention centres across Asia, particularly in Cambodia, China, Laos, Malaysia, Myanmar, Thailand, Turkmenistan and Vietnam, where forced labour and violence occur (in the name of ‘treatment’) in violation of human rights norms (50). Some Latin American countries (Peru, Guatemala, Ecuador, Mexico) adopt similar forms of intervention, whilst others (Brazil, Uruguay) are said to be considering these approaches (50, 60). Not only do such approaches lead to human rights violations, recent evidence suggests such approaches fail to reduce relapse amongst opioid dependent individuals (often PWID), compared with evidenced based treatments (61).

Successful responses to IDU

There are many examples of successful harm reduction program implementation and consequent positive health outcomes for PWID in LMICs. Vietnam, Ukraine and Taiwan have demonstrated that high population coverage is possible (9, 28). Nearly half a million Iranian PWID receive some form of OST via nearly 6000 prescribing outlets (62). The effective administration of naloxone by PWID peers has been demonstrated in LMICs such as Kyrgyzstan and Tajikistan (63). Nepal’s harm reduction program delayed its HIV epidemic by several years (40, 64); Bangladesh has maintained an HIV population prevalence comparable to countries with far greater resources, such as Australia and Hong Kong (40); several Brazilian cities have seen HIV prevalence amongst PWID fall due to expanded harm reduction (9, 40); and high-coverage NSPs have been established in Belarus and Thailand (6, 40). Myanmar, with the fourth-highest PWID population in the Asia region, recognised PWID as a priority population for HIV prevention efforts and called for a considerable expansion of its national harm reduction programme in its National HIV Strategic Plan on HIV and AIDS (65). The plan includes increased access to NSPs via a combination of fixed and outreach services, the distribution of 30 million sterile syringes per annum (from a baseline level of 6.9 million) and OST for 12,000 PWID (compared to a baseline level of 1,121) (65) and an emphasis on a peer approach to health education and outreach (66). Recent HIV prevalence amongst Myanmar’s PWID was estimated at 28.5%, a substantial decline from the >70% prevalence reported in the 1990s (66, 67).

A comparison of HIV prevalence in 103 global cities found that those who had introduced NSPs decreased prevalence by an average of 19% annually, whilst the prevalence in cities without NSPs increased by an average of 8% annually (68, 69). Reduction of HIV prevalence following an expansion of national harm reduction programs has been demonstrated in multiple LMICs (6), suggesting that with appropriate funding and motivation, the barriers previously identified can be overcome, producing outcomes just as effective as those in high-income countries (6).

Data quality issues

Accurate data on IDU are scarce (26), and available data are often of poor quality, meaning valid population IDU and BBV prevalence estimation is difficult. Gender, age and drug type information are often missing and data are largely restricted to metropolitan areas (26).

Wodak et al. (2004) claimed that “the orderly division of the planet into developing countries which produce drugs and developed countries which consume these drugs ceased to exist long ago” (70). Indeed, while 80 (largely developed) countries reported IDU in 1992, 121 did so in 1995 and 158 countries and territories as of 2008 (9). Though the substantial increase in national reporting is probably due to the diffusion of IDU to new countries, it is also likely to derive from improved

reporting systems detecting pre-existing IDU (9, 71). Many LMICs that do not report IDU have neighbours with well-established PWID populations (e.g., Somalia and Ethiopia border Kenya; Niger and Chad border Libya); others, including some that acknowledge IDU among their populations but who have limited data, are situated along key global drug supply routes where heroin and cocaine is transported from the major production hubs of Afghanistan, Myanmar, Mexico and Colombia (1). It is unlikely that IDU has not diffused to countries along these routes where it currently goes unreported.

The absence of quality data and routine data collection, limited by poor capacity and the “hidden” nature of IDU, mean that the aggregation, reporting and evaluation of public health outcomes and indicators linked to IDU across LMICs is limited. For example, half of all countries listed in Table 1 with evidence of IDU are without prevalence estimates (9, 10).

Conclusion

From this review, we suggest four key priorities in looking ahead: confirming the presence or absence of IDU in LMICs, improving the collection and dissemination of national IDU-specific data, increasing the level of harm reduction program implementation in LMICs, and increasing both national and international advocacy for PWID and attendant public health interventions.

IDU goes unreported in many LMICs; and LMICs with the lowest levels of income and therefore the least capacity for comprehensive data collection are also the least likely to have reported IDU. Rapid assessments (72) need to be conducted in these LMICs to assess the existence and potential extent of the problem.

Quality IDU-specific data are needed – the lack of these data has been described as the main obstacle to the implementation of relevant interventions (73). Detailed data on population characteristics, risk behaviours, BBV prevalence and sub-populations at highest risk of harm are essential for appropriately tailoring and targeting interventions (71). Moreover, little public health intervention research has been conducted on IDU in LMICs: in a recent review of the effectiveness of harm reduction services, 144 of 152 included studies focused on high-income countries (6, 74). This lack of research means potentially novel and innovative LMIC interventions and strategies go unreported.

The significant scale-up of existing harm reduction programs and their introduction into LMICs without current harm reduction implementation should be considered a priority. The consequences of delayed or insufficient response have been detailed above. Such scale-up will not occur without an increase in global funding for harm reduction, and such support is unlikely without an increase in advocacy for PWID. The recent adoption of the Sustainability Development Goals (SDGs) may provide the impetus for much of this target setting. The SDGs, for the first time, acknowledge the prevention and treatment of harmful drug use under a global framework (1). Reaching the targets set in the SDGs requires the expansion of coverage and quality of “a range of evidence-based and gender-responsive interventions for the prevention of drug use, as well as the care, treatment and rehabilitation of drug use disorders” (1). Further SDG targets (such as reductions in BBVs or reducing inequality) cannot be met without directly considering the lives of PWIDs (1).

Inadequate IDU response is a significant problem the world over. Low levels of funding, political inaction, poor levels of health service coverage, high prevalence and incidence of IDU-related BBVs, and ongoing stigmatisation/marginalisation affect PWID regardless of the income status of the country they reside in. These barriers and system failings are exacerbated in LMICs, meaning that

the potential consequences of inaction are more pressing. However, services and systems in many of these countries show effective response is possible and should be prioritised in other LMICs.

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Table 1: Evidence of IDU, PWID prevalence (among 15-64 year olds), BBV prevalence (among PWID and harm reduction implementation in LMICs.

	Evidence of IDU	PWID prev. among 15-64 year olds (%)	HIV prev. among PWID (%)	HCV (Ab+) prev. among PWID (%)	HBV (Sag+) prev. among PWID (%)	NSP	OST
<i>Low income</i>							
Benin	NA						
Burkina Faso	NA						
Burundi	NA						
Central African Republic	NA						
Chad	NA						
Comoros	NA						
Democratic Republic of the Congo	NA						
Eritrea	NA						
Ethiopia	NA						
Gambia, The	NA						
Guinea	NA						
Guinea-Bissau	NA						
Madagascar	NA						
Mali	NA						
Niger	NA						
Rwanda	NA						
Sierra Leone	NA						
Somalia	NA						
South Sudan	NA						
Togo	NA						
Zimbabwe	NA						
Afghanistan	Yes	0.25	4.4	31.2	6.6	Y	Y
Mozambique	Yes	0.02	50-73	62-77	32-36		
Nepal	Yes	0.30	6.3	87.3	5.8	Y	Y
Senegal	Yes	0.02	9.1	38.9	NA	Y	Y
Tanzania	Yes	0.12	35	28	3.8	Y	Y
Haiti	Yes	NA					
Korea, Democratic People's Republic	Yes	NA					
Liberia	Yes	NA					
Malawi	Yes	NA					
Uganda	Yes	NA					
<i>Lower-middle income</i>							
Cameroon	NA						
Cape Verde	NA						
Congo, Republic	NA						
Lesotho	NA						
Mauritania	NA						
Sao Tome and Principe	NA						
Swaziland	NA						
Armenia	Yes	0.60	6.3	NA	NA	Y	Y
Bangladesh	Yes	0.02	1.1	39.6	9.4	Y	Y
Cambodia	Yes	0.01	24.8	NA	NA	Y	Y
Egypt, Arab Republic	Yes	0.06	6.5-6.8	49.4	13.5	Y	
Ghana	Yes	0.04	NA	40.1	NA		
India	Yes	0.21	9.9	41	10.2	Y	Y
Indonesia	Yes	0.04	36.4	63.5	2.9	Y	Y
Kenya	Yes	0.08	18.3	51.4	6.4	Y	Y
Kosovo	Yes	1.01	0	26.6	4.1	Y	Y
Kyrgyz Republic	Yes	0.70	12-15	50	NA	Y	Y
Lao PDR	Yes	0.03	0.1	NA	NA	Y	
Moldova	Yes	1.15	7.9	70-73	3.4-14.2	Y	Y
Mongolia	Yes	0.03	NA	NA	NA	Y	

Morocco	Yes	0.08	11.4	57	NA	Y	Y
Myanmar	Yes	0.23	28.5	79.2	9.1	Y	Y
Nigeria	Yes	0.02	3.4	NA	NA		
Pakistan	Yes	0.10	37.8	93	6.8	Y	
Philippines	Yes	0.03	41.6	70	NA	Y	
Syria	Yes	0.07	NA	60.5	60.5		
Tajikistan	Yes	0.49	13.5	36.2	NA	Y	Y
Tunisia	Yes	0.12	3	NA	NA	Y	
Ukraine	Yes	0.97	22	27.1	4.5	Y	Y
Uzbekistan	Yes	0.39	7.3	21.8	NA	Y	
Vietnam	Yes	0.43	40	74.1	19.5	Y	Y
Bhutan	Yes	NA					
Bolivia	Yes	NA					
Cote d'Ivoire	Yes	NA					
Djibouti	Yes	NA					
El Salvador	Yes	NA					
Guatemala	Yes	NA					
Honduras	Yes	NA					
Kiribati	Yes	NA					
Micronesia, Federated States	Yes	NA					
Nicaragua	Yes	NA					
Papua New Guinea	Yes	NA					
Samoa	Yes	NA					
Solomon Islands	Yes	NA					
Sri Lanka	Yes	NA					
Sudan	Yes	NA					
Timor-Leste	Yes	NA					
Tonga	Yes	NA					
Vanuatu	Yes	NA					
West Bank and Gaza	Yes	NA				Y	
Yemen, Republic	Yes	NA					
Zambia	Yes	NA					
<i>Upper-middle income</i>							
American Samoa	NA						
Angola	NA						
Belize	NA						
Botswana	NA						
Cuba	NA						
Dominica	NA						
Equatorial Guinea	NA						
Grenada	NA						
Guyana	NA						
Marshall Islands	NA						
Namibia	NA						
Palau	NA						
Saint Lucia	NA						
Saint Vincent and the Grenadines	NA						
Tuvalu	NA						
Albania	Yes	0.26	0.5	28.8	11.5	Y	Y
Argentina	Yes	0.25	3.5	4.8	1.6	Y	
Azerbaijan	Yes	1.05	9.5	57.9	7.4	Y	Y
Belarus	Yes	1.13	25.1	65.4	6.9	Y	Y
Bosnia and Herzegovina	Yes	0.46	0.3	12-43	2.3	Y	Y
Brazil	Yes	0.39	5.9	63.9	2.3	Y	
Bulgaria	Yes	0.40	10.6	67.8	5.7	Y	Y
China	Yes	0.26	6	67	9.6	Y	Y
Dominican Republic	Yes	4.20	11	3.4	3.1	Y	
Georgia	Yes	1.59	2.2	66	7.2	Y	Y
Iran, Islamic Republic	Yes	0.36	13.8	50.2	17.3	Y	Y
Iraq	Yes	0.19	NA	NA	NA		
Kazakhstan	Yes	1.02	7.9	60.3	7.9	Y	Y
Lebanon	Yes	0.10	1	52.8	2.5	Y	Y

Libya	Yes	0.18	87	94	5		
Macedonia, FYR	Yes	1.17	0.12	64.5	NA	Y	Y
Malaysia	Yes	0.83	16.3	67.1	NA	Y	Y
Mauritius	Yes	1.27	44.3	96.5	6.7	Y	Y
Mexico	Yes	0.20	2.5	96	NA	Y	Y
Romania	Yes	0.14	24.9	79	5	Y	Y
Russian Federation	Yes	1.79	18-31	72.5	2.6-7.1	Y	
Serbia	Yes	0.63	<5	61	69	Y	Y
South Africa	Yes	0.21	14	NA	NA	Y	Y
Thailand	Yes	0.15	21	89.8	NA	Y	Y
Algeria	Yes	NA					
Colombia	Yes	NA				Y	Y
Costa Rica	Yes	NA					
Ecuador	Yes	NA					
Fiji	Yes	NA					
Gabon	Yes	NA					
Jamaica	Yes	NA					
Jordan	Yes	NA				Y	
Maldives	Yes	NA					Y
Montenegro	Yes	NA	1.1	53.6	0	Y	Y
Panama	Yes	NA					
Paraguay	Yes	NA	9.3	9.8	NA	Y	
Peru	Yes	NA	1	NA	NA		
Suriname	Yes	NA					
Turkey	Yes	NA	0.2	42.8	4.2		Y
Turkmenistan	Yes	NA				Y	
Venezuela, RB	Yes	NA					

Table 1: Evidence of in-country IDU was primarily derived from previous systematic reviews (10, 13), and the 2016 Global State of Harm Reduction report, prepared by Harm Reduction International (9). PWID population numbers were drawn from the latter and transformed to population prevalence of national 15-64 year olds via population figures derived from the World Bank. Where a range of PWID population numbers were provided, the mid-point of the range was used.

Acknowledgements: Margaret Hellard is supported by a National Health and Medical Research Council (NHMRC) Principal Research Fellowship. Mark Stooze is supported by a NHMRC Career Development Fellowship, Joe Doyle is supported by a NHMRC Post-Doctoral Fellowship. The Burnet Institute receives support from the Victorian Operational Infrastructure Support Program.

Competing interests: Margaret Hellard and Joe Doyle have received investigator initiated research grants from Gilead, BMS and Abbvie. All other authors have nothing to disclose in relation to this work.