

# HIV prevention, treatment, and care services for people who inject drugs: a systematic review of global, regional, and national coverage



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## Summary

**Background** Previous reviews have examined the existence of HIV prevention, treatment, and care services for injecting drug users (IDUs) worldwide, but they did not quantify the scale of coverage. We undertook a systematic review to estimate national, regional, and global coverage of HIV services in IDUs.

**Methods** We did a systematic search of peer-reviewed (Medline, BioMed Central), internet, and grey-literature databases for data published in 2004 or later. A multistage process of data requests and verification was undertaken, involving UN agencies and national experts. National data were obtained for the extent of provision of the following core interventions for IDUs: needle and syringe programmes (NSPs), opioid substitution therapy (OST) and other drug treatment, HIV testing and counselling, antiretroviral therapy (ART), and condom programmes. We calculated national, regional, and global coverage of NSPs, OST, and ART on the basis of available estimates of IDU population sizes.

**Findings** By 2009, NSPs had been implemented in 82 countries and OST in 70 countries; both interventions were available in 66 countries. Regional and national coverage varied substantially. Australasia (202 needle-syringes per IDU per year) had by far the greatest rate of needle-syringe distribution; Latin America and the Caribbean (0.3 needle-syringes per IDU per year), Middle East and north Africa (0.5 needle-syringes per IDU per year), and sub-Saharan Africa (0.1 needle-syringes per IDU per year) had the lowest rates. OST coverage varied from less than or equal to one recipient per 100 IDUs in central Asia, Latin America, and sub-Saharan Africa, to very high levels in western Europe (61 recipients per 100 IDUs). The number of IDUs receiving ART varied from less than one per 100 HIV-positive IDUs (Chile, Kenya, Pakistan, Russia, and Uzbekistan) to more than 100 per 100 HIV-positive IDUs in six European countries. Worldwide, an estimated two needle-syringes (range 1–4) were distributed per IDU per month, there were eight recipients (6–12) of OST per 100 IDUs, and four IDUs (range 2–18) received ART per 100 HIV-positive IDUs.

**Interpretation** Worldwide coverage of HIV prevention, treatment, and care services in IDU populations is very low. There is an urgent need to improve coverage of these services in this at-risk population.

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## Introduction

In 2007, between 11.0 million and 21.2 million people worldwide were estimated to be injecting drug users (IDUs).<sup>1</sup> Injecting drug use is an important cause of HIV transmission around the world; between 0.8 million and 6.6 million IDUs were estimated to be infected with HIV in 2007,<sup>1</sup> accounting for a substantial proportion of the 33 million people (range 30–36 million) living with HIV worldwide.<sup>2</sup>

HIV is an important contributor to the burden of disease attributable to drug use worldwide<sup>3</sup> and has the potential to spread to the wider community by sexual transmission.<sup>4</sup> Effective public health interventions are needed to address HIV in IDUs. A range of core interventions are effective in preventing HIV in this population, including provision of clean needles and syringes (typically through needle and syringe programmes; NSPs) to avoid HIV transmission by

sharing of contaminated injecting equipment;<sup>5,6</sup> treatment of opioid dependence with opioid substitution therapy (OST), particularly methadone and buprenorphine, leading to reductions in drug injection and HIV risk behaviours;<sup>7</sup> and other forms of drug treatment might also reduce injecting risk.<sup>5</sup> Treatment of HIV-positive IDUs with antiretroviral treatment (ART) leads to improved health outcomes, and might reduce HIV infectivity. Sexual transmission of HIV is also a risk for IDUs; drug treatment and condom provision have proved to reduce sexual risk behaviour.<sup>5</sup> Interventions have maximum effect when they are delivered in combination.<sup>8</sup>

These services form part of a comprehensive package of nine interventions endorsed by the Joint UN Programme on HIV/AIDS (UNAIDS), UN Office on Drugs and Crime (UNODC), and WHO for the prevention, treatment, and care of HIV in IDUs, which

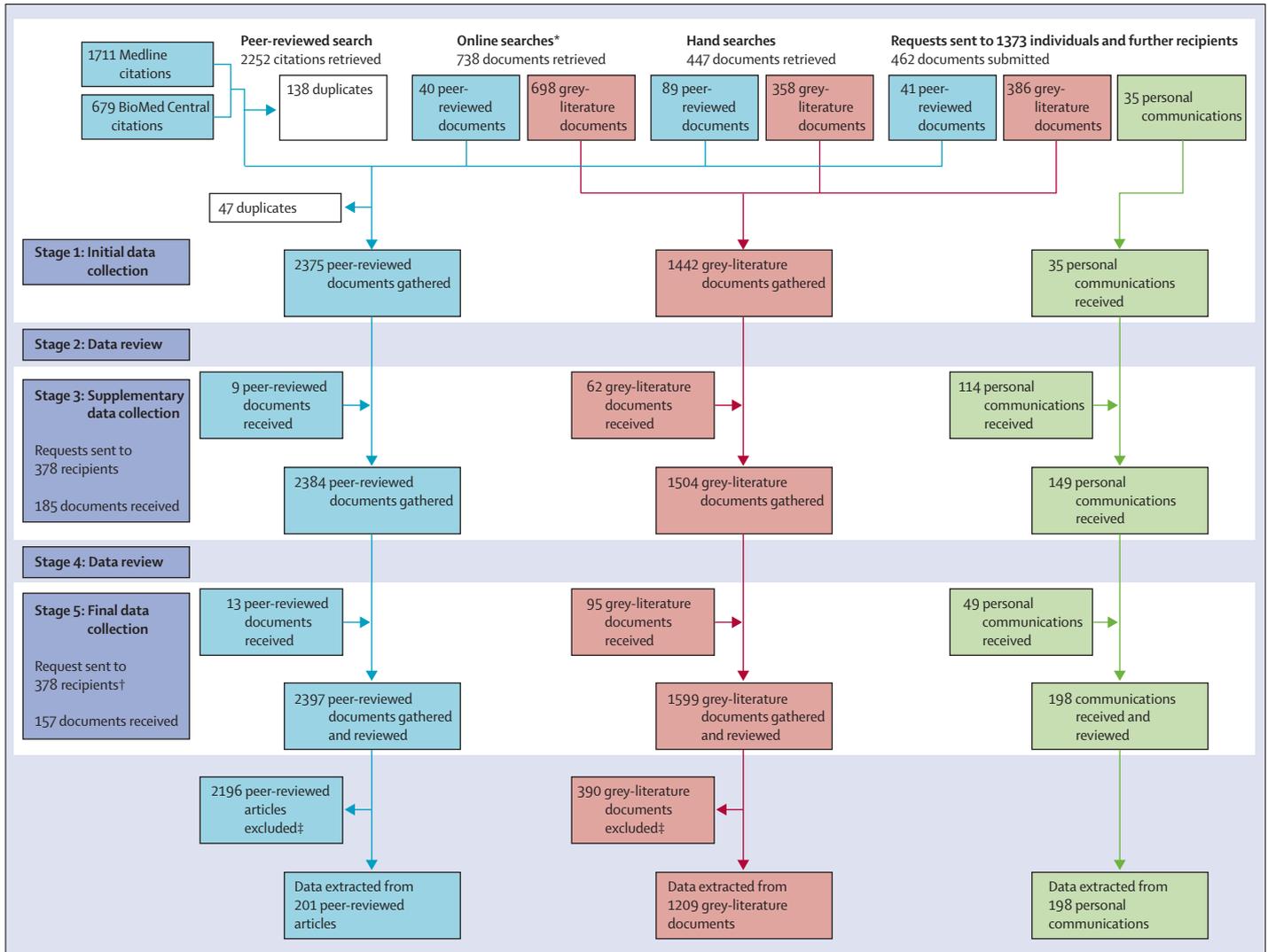
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**Figure 1: Overview of search strategies, data collection, and data review and extraction processes**

\*320 websites were searched, and 738 documents (dated 2004 and later) retained. †80 individuals replied from 42 countries. ‡Documents found to contain no relevant data as defined by the decision rules were excluded.

also includes HIV testing and counselling; targeted information, education, and communication for IDUs and their sexual partners; vaccination, diagnosis, and treatment of viral hepatitis; and prevention, diagnosis, and treatment of tuberculosis.<sup>9</sup>

Earlier global reviews of HIV prevention and care services for IDUs have reported the existence of these services in countries where injecting drug use occurs,<sup>10</sup> but they did not quantify the scale of coverage. A recent report reviewed coverage of OST and NSPs in European and other countries,<sup>11</sup> but no systematic review of worldwide coverage had been undertaken. In view of the scale of the public health issues that injecting drug use and HIV represent, and to understand the global response, we need to know the types of services provided and whether these are in keeping with current HIV prevention guidelines, the extent of service provision relative to the size of IDU

populations, and the degree to which these services meet the needs of the people they serve. We therefore undertook a systematic review of data for provision and coverage of HIV prevention, treatment, and care services in IDUs. Coverage estimates were calculated on the basis of available estimates of IDU population sizes.

**Methods**

**Search strategy and selection criteria**

This systematic review comprised five major stages (figure 1; webappendix pp 2–5). Each stage involved comprehensive searches of particular sources of information, or consultation with national, regional, and global stakeholders for critical review of the information gathered in previous stages and often provision of additional data.

In November, 2008, we searched the peer-reviewed literature databases Medline and BioMed Central for data

See Online for webappendix

describing the provision of HIV prevention and care services for IDUs; this search was updated in January, 2010. Search terms are listed in webappendix p 6. Articles in any language were included. We selected Articles that were published in 2004 or later to ensure the currency of the data; no other restrictions were applied.

Between October, 2008, and February, 2009, we undertook web searches to obtain grey literature. Websites previously identified as sources of information relating to HIV and injecting drug use<sup>12</sup> were searched together with additional websites of national ministries of health, national AIDS committees, UN agencies, and relevant non-governmental and regional organisations (see webappendix pp 7–51 for websites and search strategies). Websites were searched for key words by use of their own search function or with Google advanced search. Websites in languages other than English were searched and read by means of Google translate; non-English language documents were also retrieved.

We undertook hand searches of a recent comprehensive review produced by the International Harm Reduction Association (IHRA),<sup>10</sup> and abstracts from relevant international conferences (including IHRA's conference and the International AIDS Society conference). Additionally, we requested relevant material from key experts and organisations, who were contacted via email between Nov 17, 2008, and Jan 30, 2009 (webappendix p 52 shows an example). Emails were sent to members of the Reference Group to the UN on HIV and Injecting Drug Use (the Reference Group) and to key contacts in regional and country offices of WHO, UNAIDS, and UNODC. A viral email distribution process was initiated by asking recipients to forward the email to relevant contacts. Recipients translated the email into Russian, Spanish, and French before forwarding to non-English speaking recipients.

All documents obtained through the searches were reviewed by a team of five researchers. The data we searched for comprised 46 predefined, standardised indicators consistent with previously developed international guidelines for measuring intervention coverage.<sup>9</sup> Full details of each indicator are shown in webappendix pp 53–59. All grey-literature documents and personal communications were reviewed in full. Peer-reviewed articles were assessed by their titles and abstracts to establish whether or not they were likely to include data for level of service provision for the interventions examined in this systematic review. All peer-reviewed articles identified as potentially relevant were reviewed in full. All non-English language documents were reviewed after translation into English by Google Translate or the Microsoft Word translate function. Data were extracted from reviewed documents guided by defined decision rules (panel; webappendix pp 53–59) and entered into a Microsoft Excel database. Data extraction was done independently with verification. Any discrepancies were resolved by consensus. Data

### Panel: Broad data selection and calculation of estimates

#### Data selection

- Data from more recent years were taken in preference to data from earlier years.
- National data were taken in preference to subnational data.
- If WHO Universal Access<sup>13</sup> and WHO Atlas<sup>14</sup> data were available, they were included; if other data were also available and met inclusion criteria, both estimates were included as a range.

#### Calculation of estimates

- Estimates of prevalence were taken from the review done by the Reference Group to the UN on HIV and Injecting Drug Use,<sup>1</sup> unless individuals or organisations submitted updated and verifiable estimates of IDU occurrence (Sierra Leone, Swaziland, and Togo), IDU population size (Belarus, Brazil, Czech Republic, Greece, Nepal, Philippines, Ukraine), or HIV prevalence in IDUs (Mauritius, Moldova, Pakistan, Philippines, Ukraine). The same criteria as used in the previous review<sup>1</sup> for accepting and grading evidence and estimates were used in these instances.
- If service provision data referred to a period of less than or more than 12 months, a constant rate of access or distribution was assumed, and estimates made for 12 months accordingly.
- If data were available from a subset of sites from a country, ranges were given for national estimates. Lower bounds of these ranges assumed no access or distribution from remaining sites, and upper bounds assumed the same level of access or distribution from the remaining sites.
- Regional and global coverage was estimated with the most recent data for service provision for each country where data were available, and the IDU population size in that country for the year in which those data referred to. The coverage estimates are approximations intended to illustrate broad levels of regional coverage only; they should not be taken as exact levels of services across a region.

IDU=injecting drug user. See webappendix pp 61–64 for details.

selected for inclusion in estimates were checked in source documents at the time of estimate calculation.

Key experts and organisations in each country were sent an email requesting feedback on the accuracy of collected data for NSPs and OST, and for submission of further data if no data had been identified (webappendix p 60 shows an example). Relevant data were extracted and entered into the database. All data were reviewed and selected for each country, to calculate coverage indicators (panel; see webappendix pp 61–64 for detailed decision rules).

Country-specific reports were prepared, containing data selected for inclusion, and adjustments made. These reports were again sent to organisations and individual experts in each country (see webappendix p 65 for email example), who were asked to review for completeness and accuracy.

#### Data analysis and reporting

Data were reported for every country against 46 standardised indicators, on the basis of consensus guidelines developed by UNAIDS, WHO, and UNODC, in collaboration with experts worldwide.<sup>9</sup> In this report, we focus on NSP, OST, other drug treatment, condom provision, and ART for IDUs. Common parameters were necessary for comparison between countries; data were

For details on calculations made for each indicator for each country see [http://www.idurefgroup.com/publications/coverage\\_2010/country\\_reports](http://www.idurefgroup.com/publications/coverage_2010/country_reports)

adjusted to allow for such comparisons (panel; webappendix pp 61–64).

Coverage estimates were calculated by use of IDU population sizes estimated in 2007.<sup>1</sup> The reference population for ART coverage was the estimated number of IDUs living with HIV. Additional or updated epidemiological data for the prevalence of injecting drug use or HIV in IDUs were not actively searched for in this systematic review. However, new data (reported since 2008) were submitted to the Reference Group during this review, and were included for the following countries: Belarus, Brazil, Croatia, Cyprus, Czech Republic, Greece, Mauritius, Moldova, Nepal, Norway, Pakistan, Philippines, Portugal, Sierra Leone, Somalia, Swaziland, Togo, Ukraine, and the UK.

Not all opioid-dependent people (or recipients of OST) inject; and not all IDUs are opioid dependent. Since the number of opioid-dependent IDUs was not available for each country, the number of OST sites per 1000 IDUs and the number of people receiving OST per 100 IDUs were estimated, irrespective of the type of substance injected. Similarly, the number of IDUs receiving ART per 100 HIV-positive IDUs was calculated.

Global and regional estimates were calculated by aggregation of data from available countries in accordance with the decision rules (panel; webappendix pp 61–64). Data were not available from all countries in each region or globally. To give a sense of how complete,

in terms of regional or global coverage, these estimates were, we calculated what proportion of the total estimated regional or global IDU populations were accounted for by the countries whose data are included in each estimate; these estimates are referred to as percentages of estimated global IDU population (EGIP) or estimated regional IDU population (ERIP). When examining the provision of HIV treatment, we calculated similar percentages of estimated regional and global populations of people who inject drugs and are living with HIV. All estimates were calculated with Microsoft Excel.

**Role of the funding source**

Representatives from the HIV prevention division of the UNODC participated in the Steering Committee of the Reference Group to the UN on HIV and Injecting Drug Use. The Secretariat and Reference Group developed and agreed on the methodology; this was endorsed by the Steering Committee. The members of the Reference Group and Secretariat had full access to all the data. The decision on analysis, write up, and interpretation of results were all completed by members of the Reference Group and Secretariat. The decision to submit the report for publication was made by the Secretariat and members of the Reference Group. Neither the Australian National Drug and Alcohol Research Centre nor the Australian National Health and Medical Research Council had any

	Needle and syringe programmes				Opioid substitution treatment			Antiretroviral treatment	
	Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year	Number of needle-syringes distributed per IDU per year (range)	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
<b>Eastern Europe</b>									
Armenia	1178*	59% (47–79)	75 345*	38 (30–50)	None	0†	0	49†	18 (8–48)
Azerbaijan	NK‡	NK	NK‡	NK	M	100–110‡	NK	..	..
Belarus	5279*	7% (6–8)	1 655 971‡	22 (20–24)	M	50–52‡	<1 (<1 to <1)	50§	4 (2¶)
Bosnia and Herzegovina	1114–1805‡	NK	59 869–98 706‡	NK	M	536*	NK	4§	NK
Bulgaria	6137*	NK	735 000*	NK	M, O	2069–2910*†	NK	5	NK
Croatia	3201*	21% (5–38)	149 657*	10 (2–18)	B, M	2016*†	13 (3–24)	23	26 (10¶)
Czech Republic	27 200–34 000*	** (89¶)	4 457 000*	151 (146–156)	B, M	4960*	17 (16–17)	12	81 (39¶)
Estonia	4088‡	30% (12–51)	2 033 375‡	151 (59–254)	B, M	1044*	7 (3–13)	163§	2 (1–4)
Georgia	1456–1500‡	1% (0.6–11)	108 660–428 798‡	2 (<1 to 31)	M	575–1000‡	1 (<1 to 7)	15†–265‡	7 (<1¶)
Hungary	2019*	50% (34¶)	273 751‡	68 (46–137)	B, M	816*	20 (14–41)	..	..
Latvia	1939*	NK	182 019–182 805‡	NK	B, M	133–230*†	NK	181	NK
Lithuania	3399*	68% (52–97)	187 227*	37 (29–54)	B, M	512‡	10 (8–15)	19	16 (6¶)
Moldova	NK‡	NK	1976 144‡	565 (395–790)	M	209‡ ††	6 (4–8)	176‡	24 (8¶)
Poland	3101‡	NK	318 054‡	NK	B, M	1450‡	NK	1372*	NK
Romania	7081‡	NK	1 108 762‡	NK	B, M	1322‡ ††	NK	..	..
Russia	122 997‡	7% (5–9)	6 904 460‡	4 (3–5)	None	0‡	0	1331‡	<1 (<1 to 33)
Slovakia	2850‡	15% (8–20)	453 601–589 092*	27 (13–42)	B, M, O	470–510‡	3 (1–4)	4§	** (§§)
Ukraine	94 583–132 361‡	39% (26–57)	8 356 842–10 015 312‡	32 (23–43)	B, M	4634†	2 (1–2)	1860	2 (1–100)

(Continues on next page)

Needle and syringe programmes		Opioid substitution treatment			Antiretroviral treatment			
Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year	Number of needle-syringes distributed per IDU per year (range)	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
(Continued from previous page)								
<b>Western Europe</b>								
Albania	NK‡	NK	NK‡	NK	M	100–110*†	NK	..
Andorra	..	..	..	..	..	..	..	1¶¶¶
Austria	NK*	NK	3 159 918–3 191 836*	176 (134–255)	B, M, O	10 452*	58 (44–84)	511
Belgium	NK*	NK	918 438–1 024 096*	36 (31–43)	B, H, M	16 275*	60 (55–68)	..
Denmark	NK§	NK	910 000§	59 (49–73)	B, H, M	6 300*	41 (34–50)	..
Finland	13 000*	81% (65¶)	2 648 000*	166 (132–212)	B, M	1160–1200*†	7 (6–10)	100
France	4000–5714*	4% (2–6)	4 800 000–6 994 286*	46 (29–74)	B, M, O	101 781–129 000*†	90 (61–137)	..
Germany	NK*	NK	128 000–160 000	2 (1–2)	B, H, M	68 800*	74 (63–89)	3000
Greece	497–1988*	12% (4–23)	34 809	3 (3–4)	B, M	3650–3950†	38 (30–46)	110
Iceland	0†	0%	0†	0	B, M	15†	NK	..
Ireland	7069–9301*	** (71¶)	1 097 204–1 523 894*	164 (110–254)	B, M	8029–9326*†	108 (76–155)	..
Italy	NK*	NK	NK*	NK	B, M	112 896*	35 (27–47)	..
Luxembourg	NK*	NK	287 347*	144 (115–192)	B, M, O	1092*	55 (44–73)	39
Macedonia	1615–2180*	NK	97 400–174 081*	NK	M	1108‡	NK	..
Malta	NK	NK	225 716	NK	B, M	762–1061†§	NK	..
Monaco	..	..	..	..	..	..	..	..
Montenegro	70–90*	NK	7510*	NK	M	48‡	NK	..
Netherlands	NK*	NK	>380 000	127 (84–152)	B, H, M	12 715	424 (283–509)	296
Norway	NK*	NK	3 274 500–8 867 857*	434 (168–1043)	B, M	5058*	36 (26–60)	140
Portugal	NK*	NK	3 282 356*	199 (149–298)	B, M	17 780*	108 (81–162)	262¶¶¶
San Marino	0†	0%	0†	0	NK	NK†	NK	..
Serbia	NK‡	NK	280 000‡	NK	M	1000†	NK	200
Slovenia	3000*	40% (32–55)	882 116*	118 (93–160)	B, M, O	2988†	40 (31–54)	8
Spain	NK*	NK	2 802 230–3 370 000*	33 (23–49)	B, H, M	78 527	85 (65–115)	39 524
Sweden	1230*	NK	116 648*	NK	B, M	3115*	NK	..
Switzerland	NK§	NK	NK§	NK	B, H, M, O	NK†	NK	..
UK	NK*	NK	26 763 146*	188 (183–192)	B, H, M	126 666§	90 (88–92)	623***

No reports of injecting drug use were identified for Liechtenstein (western Europe). IDUs=injecting drug users. NSPs=needle and syringe programmes. OST=opioid substitution treatment. ART=antiretroviral treatment. NK=not known. M=methadone maintenance treatment. O=any other form (such as morphine, codeine). B=buprenorphine maintenance treatment. H=heroin (diamorphine)-assisted treatment. \*Year of data collection 2007. †Year of data collection 2009. ‡Year of data collection 2008. §Year of data collection 2005. ¶Upper estimate greater than parity and not reported individually. ||Year of data collection 2006. \*\*Estimate greater than parity and not reported individually. ††Subnational data only. ‡‡Data reported for 12-month period. §§Upper and lower estimates greater than parity and not reported individually. ¶¶Year of data collection 2004. ||||Year of data collection 2002. \*\*\*Year of data collection 2003.

**Table 1: Provision of needle and syringe programmes, opioid substitution treatment, and antiretroviral treatment for injecting drug users in Europe**

role in the planning, conduct, analysis, or interpretation of this study or its findings.

## Results

Figure 1 shows the flow diagram of data selection for the analysis. Availability of data varied greatly across the 200 countries and territories examined in this systematic review, with data for existence of services more commonly available than data for extent of services (tables 1–5). Nonetheless, for all the indicators presented in this report, data for the extent of services were available for countries that accounted for at least 60% of the EGIP, and at least 60% of the worldwide HIV-positive IDU population for estimates of ART coverage. Details of

references reviewed and national data included in the analysis are available on the website of the Reference Group. Table 6 presents regional and global estimates of intervention coverage. It also reports the number of countries contributing data to these estimates, and the proportion of global and regional IDU populations that these countries were estimated to contain.

Reports were identified of NSPs operating in 82 countries that collectively held 80% EGIP (tables 1–5). NSPs were provided in a range of settings (referred to here as sites) such as fixed sites, mobile NSPs operating from a vehicle or through outreach workers, and vending machines. NSPs were confirmed to be absent in 55 countries (18% EGIP); no information about the presence or absence

	Needle and syringe programmes				Opioid substitution treatment			Antiretroviral treatment	
	Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year	Number of needle-syringes distributed per IDU per year (range)	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
<b>East and southeast Asia</b>									
Brunei	0*	0%	0*	0	None	0*	0	..	..
Burma	29 411†	39% (33–49)	3 511 232‡	47 (39–58)	M	500§	1 (1–1)	..	..
Cambodia	NK‡	NK	110 982–117 631‡	57 (14–118)	None	0§	0	..	..
China	>38 000‡	2% (1–2)	117 3764–152 715 768‡	32 (<1 to 84)	B, M	103 595–104 068‡	3 (4–6)	9300§	3 (2–6)
Indonesia	49 000†	23% (20–26)	511 670–797 455‡	3 (2–4)	B, M	2200§	1 (1–1)	5406†	6 (4–9)
Japan	0§	0%	0§	0	None	0§	0	..	..
Laos	0*	0%	0§	0	None	0§	0	..	..
Malaysia	5571‡	2% (2–3)	1 903 174–2 560 400‡	9 (7–13)	B, M	4135†–6538‡	2 (2–3)	..	..
Mongolia	54‡	NK	2000–7500‡	NK	None	0*	0	..	..
Philippines	800‡	5% (4–8)	50 000‡	3 (2–5)	None	0§	0	..	..
Singapore	0§	0%	0§	0	None	0§	0	..	..
South Korea	0§	0%	0§	0	None	0§	0	..	..
Taiwan	9000‡	NK	4 066 114‡	NK	B, M	12 598‡	NK	826‡	NK
Thailand	413‡	<1% (<1 to <1)	47 513‡	<1 (<1 to <1)	B, M	4150–4696‡#	3 (2–4)	1435†	2 (1–4)
Timor-Leste	0§	0%	0§	0	None	0§	0	..	..
Vietnam	140 254§	95% (73¶)	205 888 305–34 845 528‡	189 (107–323)	M	1484§	1 (1–1)	1760§	4 (1–86)
<b>South Asia</b>									
Afghanistan	NK§	NK	117 454–250 832‡	25 (16–33)	None	0§	0	..	..
Bangladesh	23 684–32 766‡	93% (54¶)	3 696 224–4 072 729‡	118 (85–185)	None	0§	0	5‡	1 (1–3)
Bhutan	0§	0%	0§	0	None	0†	0	..	..
India	137 000§	78% (58¶)	5 342 069–6 565 447§	34 (22–58)	B, O	6050§	3 (3–5)	..	..
Iran	55 000*	28% (21–38)	8 504 651‡	41 (31–56)	B, M	108 000‡	52 (40–71)	580†	2 (1–8)
Maldives	0†	0%	0†	0	M	14‡	NK	..	..
Nepal	13 708§	46% (35–62)	692 466‡–7 507 766§	24 (18–34)	B, M	125–389§	1 (<1 to 2)	..	..
Pakistan	15 000‡	11% (9–11)	2 776 287‡	20 (17–21)	None	0§	0	113§	<1 (<1 to <1)
Sri Lanka	0†	0	0†	0	M	NK†	NK	..	..
<b>Central Asia</b>									
Kazakhstan	37 310†	37% (28–50)	15 302 962‡	149 (114–203)	M	50§	<1 (<1 to <1)	215*	2 (2–4)
Kyrgyzstan	NK§	NK	NK§	NK	M	730§–735‡	3 (2–4)	38*	2 (1–9)
Tajikistan	8419‡	47% (36–65)	1 851 050‡	103 (79–142)	None	0§	0	127§	5 (3–8)
Turkmenistan	846–2000**	NK	484 271**	NK	None	0§	0	..	..
Uzbekistan	33 684‡	40% (31–55)	3 002 283‡	36 (27–49)	None	0§	0	46*	<1 (<1 to 1)

No reports of injecting drug use were identified for North Korea (east and southeast Asia). IDUs=injecting drug users. NSPs=needle and syringe programmes. OST=opioid substitution treatment. ART=antiretroviral treatment. M=methadone maintenance treatment. NK=not known. B=buprenorphine maintenance treatment. O=any other form (such as morphine, codeine). \*Year of data collection 2006. †Year of data collection 2007. ‡Year of data collection 2008. §Year of data collection 2009. ¶Upper estimate greater than parity and not reported individually. ||Data reported for 12-month period. \*\*Year of data collection 2005.

**Table 2: Provision of needle and syringe programmes, opioid substitution treatment, and antiretroviral treatment for injecting drug users in Asia**

of NSPs was available for 14 countries (2% EGIP) in which injecting drug use has been reported to occur.

NSPs were present in nearly all countries in western and eastern Europe, central Asia, Australasia, and North America. NSPs were not present in nine of 25 countries in east, southeast, and south Asia where injecting drug use occurs. NSPs were absent or unreported in 18 of the 24 countries in Latin America and the Caribbean, 13 of the 21 countries in the Middle East and north Africa, and 14 of the 16 countries in sub-Saharan Africa where injecting drug use occurs. In 14 of 55 countries where NSPs were absent, and three of 14 countries with no

information about NSPs, community pharmacies were reported to be a source of injecting equipment.

Data for the number of NSP sites were available for 78 of 82 countries with NSPs (see webappendix pp 66–71 for national data). The number of sites per country varied substantially, from only one (Mongolia, Cyprus, the occupied Palestinian Territory, and Oman) to estimates of more than 1000 sites in seven countries (Ukraine, France, Spain, UK, Taiwan, Vietnam, and Australia). There was more than one NSP site per 1000 IDUs in Australasia (8.9 sites per 1000 IDUs), western Europe (7.3 sites per 1000 IDUs), central Asia (1.9 sites per

For all national data used, adjustments made, and references reviewed see [http://www.idurefgroup.com/publications/coverage\\_2010/country\\_reports](http://www.idurefgroup.com/publications/coverage_2010/country_reports)

	Needle and syringe programmes				Opioid substitution treatment			Antiretroviral treatment	
	Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year	Number of needle-syringes distributed per IDU per year (range)	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
<b>Caribbean</b>									
Bahamas	..	..	..	..	..	..	..	..	..
Bermuda	..	..	..	..	..	..	..	..	..
Dominican Republic	0*	0%	0*	0	None	0*	0	..	..
Haiti	..	..	..	..	..	..	..	..	..
Jamaica	..	..	..	..	..	..	..	..	..
Puerto Rico	NK*	NK	NK*	NK	M	5570†	19 (14–25)	..	..
<b>Latin America</b>									
Argentina	NK‡	NK	NK‡	NK	None	0‡	0	..	..
Bolivia	0*	0%	0*	0	None	0*	0	..	..
Brazil	NK‡	NK	126 452–76 546§	<1 (<1 to 1)	None	0*‡	0	2974*¶	1 (1–4)
Chile	0*	0%	0*	0	None	0*	0	0*	0
Colombia	0*	0%	0*	0	NK	NK	..	..	..
Costa Rica	..	..	..	..	..	..	..	..	..
Ecuador	0*	0%	0*	0	None	0*	0	..	..
El Salvador	0*	0%	0*	0	None	0*	0	..	..
Guatemala	0*	0%	0*	0	..	..	..	..	..
Honduras	..	..	..	..	..	..	..	..	..
Mexico	12 819‡	NK	134 963–152 387‡	NK	M	3644†	NK	..	..
Nicaragua	0*	0%	0*	0	None	0*	0	..	..
Panama	..	..	..	..	..	..	..	..	..
Paraguay	NK‡	NK	NK*	NK	None	0‡	0	..	..
Peru	0*	0%	0*	0	None	0*	0	..	..
Suriname	0*	0%	0*	0	None	0*	0	..	..
Uruguay	NK*	NK	NK*	NK	None	0‡	0	..	..
Venezuela	..	..	..	..	..	..	..	..	..
<b>North America</b>									
Canada	NK*	NK	7264256‡	46 (35–60)	B, M	NK§	NK	..	..
USA	NK†	NK	42 200 000†	22 (15–31)	B, M	253 475†	13 (9–19)	..	..

No reports of injecting drug use were identified for Antigua and Barbuda, Barbados, Cuba, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago (Caribbean), Belize, and Guyana (Latin America). IDUs=injecting drug users. NSPs=needle and syringe programmes. OST=opioid substitution treatment. ART=antiretroviral treatment. NK=not known. M=methadone maintenance treatment. B=buprenorphine maintenance treatment. \*Year of data collection 2009. †Year of data collection 2007. ‡Year of data collection 2008. §Year of data collection 2004. ¶Data refer to cumulative entrants over a 5-year period. ||Year of data collection 2006.

**Table 3: Provision of needle and syringe programmes, opioid substitution treatment, and antiretroviral treatment for injecting drug users in the Americas**

1000 IDUs), south Asia (1.6 sites per 1000 IDUs), and east and southeast Asia (1.0 sites per 1000 IDUs); coverage was substantially lower in other regions.

Data for the number of individuals who accessed an NSP during a given time period were available for 47 countries; the number of times NSPs provided equipment to IDUs was reported for 33 countries. Both types of data were available for 28 countries. For countries with data available, the proportion of the IDU population estimated to have accessed an NSP within a 12-month period varied: from nearly 100% in three countries (Czech Republic, Ireland, and Bangladesh) to 40% or less in 20 countries and less than 1% in Thailand.

Available national data were aggregated to derive regional and global coverage estimates (table 6); these

estimates included countries where NSPs are not present (ie, no IDUs accessed such services). Only in central Asia (36%) and south Asia (43%) were more than a third of IDUs in contact with an NSP at some point during a 12-month period. Data for the number of needle-syringes distributed from NSPs were available for 67 of the 82 countries known to have NSPs. There was substantial variation between countries (figure 2). In 12 countries with NSPs, less than one needle-syringe was distributed per IDU per month. In 21 countries, more than one needle-syringe was distributed per IDU every week, but these accounted for few IDUs globally (only 5% EGIP); of these, six were low-income or middle-income countries. Regionally, Australasia (202 needle-syringes per IDU per year) had the greatest rate of needle-syringe distribution,

	Needle and syringe programmes				Opioid substitution treatment			Antiretroviral treatment	
	Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year (range)	Number of needle-syringes distributed per IDU per year	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
<b>Australasia</b>									
Australia	NK*	NK	29 346 601†	213 (156–358)	B, M	35 848‡	23 (17–40)	518‡	22 (10–89)
New Zealand	NK†	NK	2 508 837*	122 (91–179)	B, M	NK*	NK	..	..
<b>Pacific island states and territories</b>									
Federated States of Micronesia	0†	0%	0†	0	None	0§	0	0†	0
Fiji	0§	0%	0§	0	None	0§	0	..	..
French Polynesia	..	..	..	..	..	..	..	..	..
Guam	0†	0%	0†	0	..	..	..	0†	0
Kiribati	..	..	..	..	..	..	..	..	..
New Caledonia	0†	0%	0†	0	..	..	..	..	..
Papua New Guinea	0*	0%	0*	0	None	0†	0	..	..
Samoa	0§	0%	0§	0	None	0§	0	..	..
Solomon Islands	0§	0%	0§	0	None	0§	0	..	..
Tonga	0§	0%	0§	0	None	0§	0	..	..
Vanuatu	0§	0%	0§	0	None	0§	0	..	..

No reports of injecting drug use were identified for American Samoa, Marshall Islands, Nauru, Palau, and Tuvalu (Pacific region). IDUs=injecting drug users. NSPs=needle and syringe programmes. OST=opioid substitution treatment. ART=antiretroviral treatment. NK=not known. B=buprenorphine maintenance treatment. M=methadone maintenance treatment. \*Year of data collection 2008. †Year of data collection 2009. ‡Year of data collection 2007. §Year of data collection 2006.

**Table 4: Provision of needle and syringe programmes, opioid substitution treatment, and antiretroviral treatment for injecting drug users in Oceania**

followed by central Asia (92 needle-syringes per IDU per year) and western Europe (59 needle-syringes per IDU per year). Latin America and the Caribbean (0.3 needle-syringes per IDU per year), Middle East and north Africa (0.5 needle-syringes per IDU per year), and sub-Saharan Africa (0.1 needle-syringes per IDU per year) had the lowest rates of distribution.

After aggregation of data from the 67 countries with NSPs and the 55 without NSPs (together accounting for 91% EGIP), an estimated 22 needle-syringes (range 12–42) were distributed per IDU per year worldwide. This quantity is the equivalent of one new needle-syringe per IDU every 17 days (range 9–30).

OST had been implemented in 70 countries (65% EGIP; figure 3). It was unavailable in 66 countries (34% EGIP); no information about the availability of OST could be obtained for 15 countries (2% EGIP) in which injecting drug use is known to occur. Methadone maintenance treatment (MMT) was the most frequent form of OST available, having been implemented in 61 countries; buprenorphine maintenance treatment had been implemented in 47 countries. Both forms of treatment were available in 41 countries. Other forms of OST (prescribed pharmaceutical heroin [diamorphine], slow-release morphine preparations, and codeine phosphate) were available in 16 countries; in all of these countries, buprenorphine maintenance or methadone maintenance treatment were also available.

Both NSPs and OST programmes had been introduced in 66 countries (61% EGIP). In nine countries, OST was

provided without NSPs; in 19 countries (19% EGIP) NSPs were present without OST programmes, and in 56 countries (16% EGIP) neither NSPs nor OST were reported to be available.

Some form of OST had been introduced in all countries in western Europe (apart from Andorra and Monaco), North America, and Australasia. In eastern Europe and central Asia, only five countries did not have OST programmes (Russia, Armenia, Tajikistan, Turkmenistan, and also Uzbekistan where OST had been previously introduced but was made unavailable in 2009).<sup>15</sup> In the Middle East and throughout Africa, OST had been introduced in eight countries, but was absent in 29 countries where injecting drug use occurs, although governmental approval has recently been gained for implementation in Morocco (Toufiq J, Ar-razi University Psychiatric Hospital and National Center on Drug Abuse Prevention and Research, Rabat, Morocco, personal communication). Opioid dependence is uncommon in Latin America and the Caribbean, where only Mexico (with one publicly funded methadone maintenance treatment clinic), Colombia, and Puerto Rico have introduced OST.<sup>16</sup>

Data for the number of OST sites were available for 48 of the 70 countries with OST programmes (see webappendix pp 66–71 for national data). The nature of sites varied, from publicly and privately funded clinics, to pharmacy dispensing programmes. In five countries, only one site had been established. In 11 of the 15 countries in which both methadone maintenance and buprenorphine maintenance treatment were available and the

	Needle and syringe programmes				Opioid substitution treatment			Antiretroviral treatment	
	Number of IDUs accessing NSPs in a year	Proportion of IDUs accessing NSPs in a year, % (range)	Number of needle-syringes distributed by NSPs per year	Number of needle-syringes distributed per IDU per year (range)	Forms of OST available	Number of individuals receiving OST (including both IDUs and non-IDUs)	Number of OST recipients per 100 IDUs (range)	Number of IDUs receiving ART	Ratio of IDUs receiving ART: 100 IDUs living with HIV (range)
<b>Middle East and north Africa</b>									
Algeria	0*	0%	0*	0	None	0*	0	..	..
Bahrain	0*	0%	0*	0	None	0*	0	..	..
Cyprus	NK†	NK	5†	<1 (<1 to <1)	B, O	19*-71‡	9 (2-14)	..	..
Egypt	NK*	NK	NK†	NK	None	0†	0	..	..
Iraq	0*	0%	0*	0	None	0*	0	..	..
Israel	NK*	NK	NK*	NK	B, M	530*-570*	NK	..	..
Jordan	0*	0%	0*	0	None	0*	0	..	..
Kuwait	0*	0%	0*	0	None	0	0	..	..
Lebanon	600-800†	NK	>2000†	NK	B	112*	NK	..	..
Libya	0*	0%	0*	0	None	0*	0	..	..
Morocco	611†	NK	44 696*	NK	M§	0*	0	..	..
Occupied Palestinian Territory	NK*	NK	NK*	NK	None	0*	0	..	..
Oman	NK*	NK	2400†	NK	None	0*	0	..	..
Qatar	0*	0%	0*	0	None	0*	0	..	..
Saudi Arabia	0*	0%	0*	0	None	0*	0	..	..
Sudan	0*	0%	0*	0	None	0*	0	..	..
Syria	0*	0%	0*	0	None	0*	0	..	..
Tunisia	680*	NK	5924*	NK	None	0*	0	..	..
Turkey	0¶	0%	0¶	0	None	0†	0	..	..
United Arab Emirates	0*	0%	0*	0	NK	NK†	NK	..	..
Yemen	0*	0%	0*	0	None	0*	0	..	..
<b>Sub-Saharan Africa</b>									
Cote d'Ivoire	..	..	..	..	None	0*	0	..	..
Djibouti	..	..	..	..	None	0*	0	..	..
Gabon	0*	0%	0*	0	None	0*	0	..	..
Ghana	0*	0%	0*	0	None	0*	0	..	..
Kenya	0*	0%	0*	0	M	NK*	NK	38†	<1 (<1 to <1)
Malawi	0*	0%	0*	0	None	0*	0	..	..
Mauritius	4900	26% (26-27)	118 866*	6 (6-7)	M, O	757†	4 (4-4)	198†	11 (4-92)
Nigeria	0	0%	0	0	None	0	0	..	..
Senegal	0*	0%	0*	0	B, O	NK*	NK	..	..
Sierra Leone	NK*	NK	NK*	NK	None	0*	0	..	..
South Africa	0*	0%	0*	0	B	NK*	NK	..	..
Swaziland	0‡	0%	0‡	0	None	0‡	0	..	..
Tanzania	0†	0%	0†	0	None	0†	0	..	..
Togo	0*	0%	0*	0	None	0*	0	..	..
Uganda	0*	0%	0*	0	None	0*	0	..	..
Zambia	0*	0%	0*	0	None	0*	0	..	..

No reports of injecting drug use were identified for Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Mali, Mauritania, Mozambique, Namibia, Niger, Republic of the Congo, Rwanda, Sao Tome and Principe, Seychelles, Somalia, and Zimbabwe (sub-Saharan Africa). IDUs=injecting drug users. NSPs=needle and syringe programmes. OST=opioid substitution treatment. ART=antiretroviral treatment. NK=not known. B=buprenorphine maintenance treatment. O=any other form (such as morphine, codeine). M=methadone maintenance treatment. \*Year of data collection 2009. †Year of data collection 2008. ‡Year of data collection 2007. §Methadone was approved for use in Morocco in 2009 (Toufiq J, Ar-razi University Psychiatric Hospital), and National Center on Drug Abuse Prevention and Research, Rabat, Morocco, personal communication). ¶Year of data collection 2006. ||Year of data collection 2005.

**Table 5: Provision of needle and syringe programmes, opioid substitution treatment, and antiretroviral treatment for injecting drug users in Africa and the Middle East**

number of sites was reported, methadone maintenance treatment was available from more locations than was buprenorphine maintenance treatment.

For the 114 countries (91% EGIP) where the numbers of OST sites were available (including those where OST is not provided) there were, overall, 2.3 OST sites per

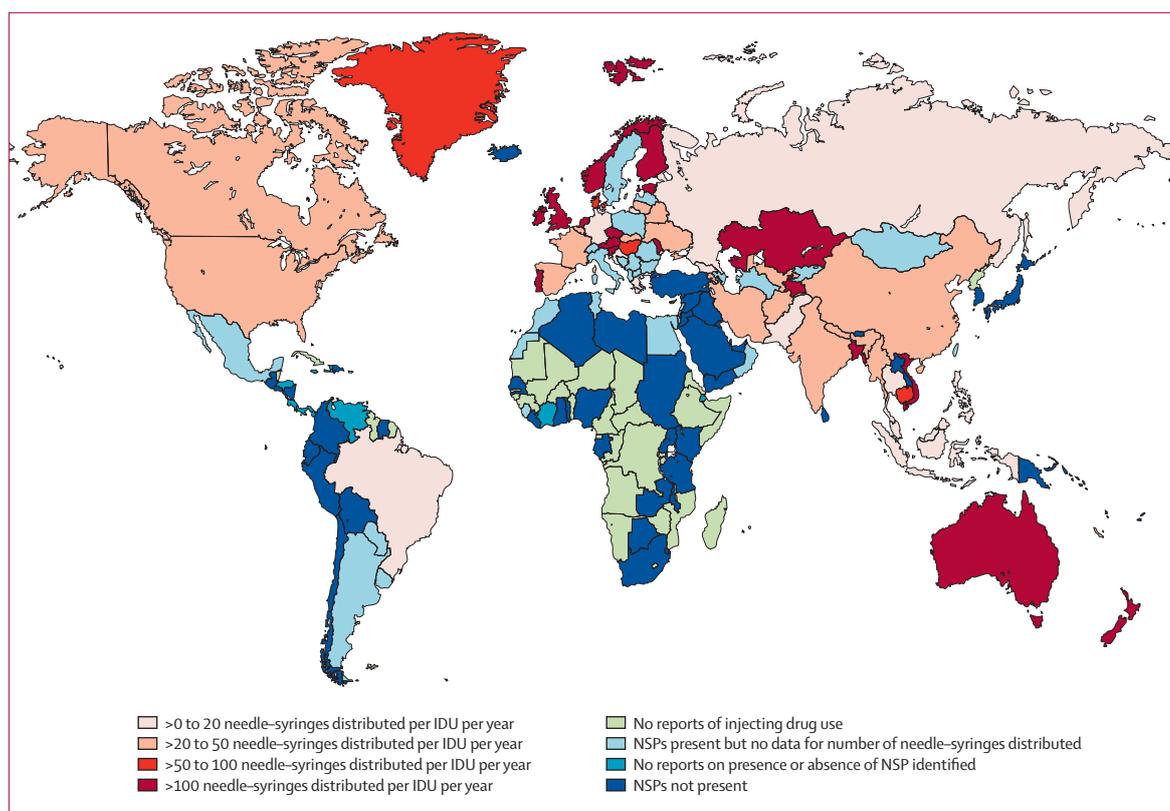
	Number of countries	Number of countries with injecting drug use identified	Needle and syringe programmes			Opioid substitution treatment		Antiretroviral therapy
			Countries implementing NSPs (proportion of ERIP)	Percentage of IDUs accessing NSPs per year (range); number of countries contributing data (proportion of ERIP)	Needles-syringes distributed per IDU per year (range); number of countries contributing data (proportion of ERIP)	Countries implementing OST (proportion of ERIP)	Number of OST recipients per 100 IDUs (range); number of countries contributing data (proportion of ERIP)	Ratio of IDUs receiving ART:100 IDUs living with HIV (range); number of countries contributing data (proportion of HIV-positive ERIP*)
Eastern Europe	18	18	18 (100%)	10% (7-15); 16 countries (91% ERIP)	9 (7-14); 17 countries (91% ERIP)	16 (48%)	1 (<1 to 1); 18 countries (100% ERIP)	1 (<1 to 44); 15 countries (95% HIV-positive ERIP)
Western Europe	28	27	23 (100%)	17% (12-25); ten countries (20% ERIP)	59 (39-89); 21 countries (50% ERIP)	25 (100%)	61 (48-79); 23 countries (97% ERIP)	89 (52†); 13 countries (46% HIV-positive ERIP)
East and southeast Asia	17	16	10 (87%)	7% (6-9); 15 countries (100% ERIP)	30 (7-68); 16 countries (100% ERIP)	7 (86%)	4 (3-5); 16 countries (100% ERIP)	4 (2-8); five countries (78% HIV-positive ERIP)
South Asia	9	9	6 (99%)	43% (32-57); eight countries (99% ERIP)	37 (27-50); nine countries (100% ERIP)	5 (70%)	19 (15-25); eight countries (99% ERIP)	1 (1-2); three countries (65% HIV-infected ERIP)
Central Asia	5	5	5 (100%)	36% (28-50); four countries (90% ERIP)	92 (71-125); four countries (90% ERIP)	2 (51%)	<1 (<1 to <1); five countries (100% ERIP)	2 (1-3); four countries (92% HIV-positive ERIP)
Caribbean	15	6	1 (16%)	·‡	·‡	1 (16%)	5 (4-7); two countries (53% ERIP)	·§
Latin America	20	18	5 (67%)	2% (17-3); ten countries (46% ERIP)	<1 (<1 to 1); 11 countries (85% ERIP)	2 (29%)	<1 (<1 to <1); 12 countries (81% ERIP)	1 (1-4); two countries (69% HIV-positive ERIP)
Canada and USA	2	2	2 (100%)	·§	23 (17-33); two countries (100% ERIP)	2 (100%)	13 (9-19); USA only (87% ERIP)	·§
Pacific island states and territories	16	11	0 (0%)	0%; nine countries (96% ERIP)	<1 (<1 to <1); nine countries (96% ERIP)	0	0; seven countries (91% ERIP)	0; two countries (4% HIV-positive ERIP)
Australasia	2	2	2 (100%)	·§	202 (148-334); two countries (100% ERIP)	2 (100%)	23 (17-39); Australia only (69% ERIP)	22 (10-89); Australia only (88% HIV-infected ERIP)
Middle East and north Africa	21	21	8 (35%)	2% (1-3); 16 countries (77% ERIP)	<1 (<1 to 1); 18 countries (78% ERIP)	4 (13%)	1 (<1 to 1); 20 countries (69% ERIP)	·§
Sub-Saharan Africa	47	16	2 (2%)	<1% (<1 to <1); 13 countries (93% ERIP)	<1 (<1 to <1); 13 countries (93% ERIP)	4 (27%)	<1 (<1 to <1); 13 countries (74% ERIP)	<1 (<1 to 2); two countries (29% HIV-positive ERIP)
Global estimate¶	200	151	82 (80%)	8% (5-11); 102 countries (70% EGIP)	22 (12-42); 124 countries (91% EGIP)	70 (65%)	8 (6-12); 126 countries (92% EGIP)	4 (2-18); 47 countries (66% HIV-positive EGIP)

Regional estimates were only approximated where there were data for at least two countries (apart from for the USA and Australia, who each made up more than 50% of the population in their two-country regions). These estimates are intended to serve as a guide for comparable measures of coverage across regions. They are not intended to be taken as accurate counts. The number of countries upon which data for regional and global estimates were made is presented in each cell: this gives some guide of how many countries information on this indicator is available for (and therefore level of confidence in the estimates produced). Note that coverage estimates include countries where no interventions are delivered, so the total number of countries for which data are available could exceed the number of countries where the interventions are implemented. See tables 1-5 for details of countries in each region and for each indicator. IDUs=injecting drug users. NSPs=needle and syringe programmes. ERIP=estimated IDU population. OST=opioid substitution treatment. ART=antiretroviral treatment. EGIP=estimated global IDU population. \*Estimated regional population of HIV-infected IDUs. †Upper estimate greater than parity and not reported individually. ‡Insufficient data to make regional estimate. §No data. ¶Although some regional estimates have not been reported because of insufficient data from countries to produce a regional estimate, countries with data from these regions were included in the global estimates. ||EGIP.

Table 6: Regional and global estimates of coverage of three core interventions in injecting drug users

1000 IDUs. In the 48 countries (57% EGIP) that did provide OST and data were available, there were 3·7 sites per 1000 IDUs. Data for the number of people receiving OST at a single point in time were available for 56 of the 70 countries where it was present; approximately 1050000 people received OST in these countries.

Data for the number of people receiving buprenorphine maintenance treatment were available for 31 countries, and for methadone maintenance treatment for 51 countries, with 327000 people (range 320000-334000) and 582000 people (572000-592000) receiving treatment, respectively. In countries for which data for



**Figure 2: Number of needle-syringes distributed in a 12-month period per injecting drug user**  
NSPs=needle and syringe programmes.

both forms of maintenance treatment were available, the number of people receiving methadone was 1.4 times greater than the number receiving buprenorphine. We estimated that there were eight recipients (range 6–12) of OST per 100 IDUs in the 126 countries (92% EGIP) for which data were available.

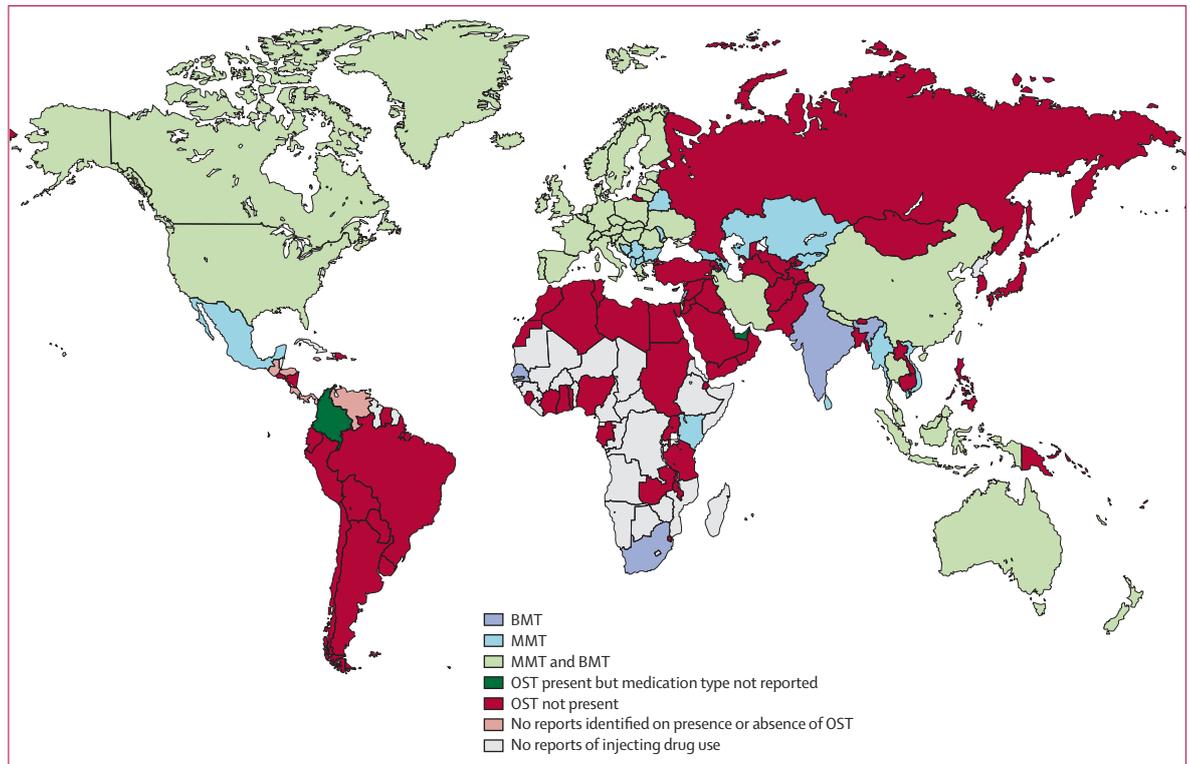
There was substantial regional variation in the extent to which ART was provided to IDUs. Data for the number of ART sites were available for 98 countries where injecting drug use has been reported; data for the number of IDUs receiving ART were available for 47 countries.

The number of IDUs receiving ART relative to the estimated number of IDUs living with HIV varied greatly, from less than one recipient per 100 HIV-positive IDUs (Chile, Kenya, Pakistan, Russia, and Uzbekistan), to greater than 100 recipients per 100 HIV-positive IDUs (Finland, Germany, Greece, Slovakia, Spain, and the Netherlands). At a regional level, the ratio was highest in western Europe (89 IDUs receiving ART per 100 HIV-positive IDUs) and Australasia (22 IDUs receiving ART per 100 HIV-positive IDUs). In all other regions where estimates could be made, less than five IDUs received ART per 100 HIV-positive IDUs (table 6). Worldwide, the ratio was estimated at four IDUs receiving ART per 100 HIV-positive IDUs (range 2–18).

Data for forms of drug treatment other than OST were much less commonly available, and we were only able to gather a limited amount of basic data for this systematic review. We identified that 102 countries provided detoxification services; in nine countries, detoxification was unavailable. 42 countries provided inpatient rehabilitation (including therapeutic communities) and three reportedly did not. Outpatient psychosocial support or counselling was available in 93 countries, and unavailable in ten. 124 countries had peer-based support services, most often Narcotics Anonymous or an equivalent programme. For 64 countries, data were obtained that described unspecified or aggregated forms of drug treatment. Data for the number of sites where services were available, and on the number of IDUs receiving these interventions, were rarely recorded.

In 11 countries in Asia, extrajudicial systems are present in which drug users are detained in closed settings as an intervention for drug use; the largest numbers of drug users detained were in China (300 000 drug users), Vietnam (>60 000), and Thailand (>40 000) (see webappendix pp 72–73 for more data on compulsory detention).

Data for the number of HIV testing and counselling sites accessible to the general population, and presumably also to IDUs, were identified for 43 countries. In 26 countries there were sites known to provide HIV



**Figure 3: Availability of opioid substitution treatment**

BMT=buprenorphine maintenance treatment. MMT=metadone maintenance treatment. OST=opioid substitution therapy.

testing specifically for IDUs. In 20 countries the number of IDUs tested for HIV in the past 12 months was reported, but it was unclear how complete these data were. Surveys reporting the proportion of IDUs who had been tested for HIV in the past 12 months, and who knew the result, were identified for 46 countries; all of these data had been reported through routine UN agency reporting processes (UNAIDS and WHO).

61 countries (75% EGIP) were reported to have programmes that distributed condoms specifically to IDUs; in many cases condoms were distributed by NSPs. In 34 of these countries (48% EGIP), data for the number of sites distributing condoms were identified and there were 1.5 sites with condom distribution programmes per 1000 IDUs. Only 23 countries (14% EGIP) had estimates of the number of condoms distributed by these programmes; across these countries, 12 condoms were distributed per IDU per year.

## Discussion

This systematic review shows that although the number of countries with core HIV prevention services is growing, the level of coverage in IDUs is poor in many countries. For example, in 2009, 82 countries had implemented NSPs and 70 countries had implemented OST, an increase of five and eight countries, respectively, since the last global audit published in early 2008.<sup>10</sup> Worldwide, however, the midpoint estimate of coverage

of NSP, OST, and ART services in IDUs was low. Our findings suggest that, worldwide, there are few countries in which the level of intervention coverage is sufficient to prevent HIV transmission.

In western Europe where, compared with other regions, there is relative homogeneity in prevalence of IDUs and a stable HIV epidemic, coverage of HIV services in IDU populations seemed to be high, particularly ART access for HIV-positive IDUs. There seems to be a similar situation in Australasia. By contrast, less certainty exists for North America: we were unable to measure the national response in Canada, despite known HIV epidemics of substantial scale in some cities, because of the absence of national data collection (data collection is undertaken by provinces, and not gathered systematically at a federal level). Coverage of NSPs and OST in IDUs in the USA was much lower than that in Australasia and most western European countries. Data for provision of ART for IDUs could not be found nationally for the USA or Canada.

Coverage of NSPs was variable across eastern Europe; levels of coverage for the region overall were low, largely because of low levels of needle-syringe provision by NSPs in Russia, although here and in other countries IDUs can purchase needles in pharmacies.<sup>17</sup> Most countries had implemented OST programmes (with Russia a notable exception); however, overall, the scale of programmes was very limited in the region with one

person receiving OST for every 100 IDUs. Despite many countries in this region having large populations of HIV-positive IDUs,<sup>1</sup> few IDUs were receiving this treatment.

In central Asia, coverage of NSPs was higher than it was in eastern Europe in terms of proportion of IDU populations accessed and the number of needle-syringes distributed. OST and ART were available to IDUs in the region, but coverage of IDU populations was very low. In south Asia, coverage of NSPs was similar to that seen in central Asia, with similarly low levels of ART and OST provision. Countries in east and southeast Asia have substantial epidemics of injecting drug use and HIV in IDUs, but in most of these countries, coverage of NSPs was low or such programmes had not been introduced. OST is being implemented in countries with large populations of IDUs, but data for ART for this region were largely absent.

In addition to human rights issues, compulsory detention as a drug-use intervention has not been shown to have a positive effect on drug use, HIV risk, or incidence.<sup>18</sup> The large-scale use of compulsory detention in some Asian countries with low coverage of evidence-based interventions is therefore of concern (see webappendix pp 72–73 for further discussion on compulsory detention).

Latin American countries were characterised by paucity of data: the few data available, however, showed that almost no services had been implemented, and that the level of coverage in IDU populations was unknown, particularly for NSPs and ART. OST programmes have been introduced in only two countries in this region and few people have been enrolled so far; however, opioid injection is fairly uncommon in this region, apart from in Mexico.

In the Middle East and north Africa, provision of NSPs was inconsistent and coverage was low. In many African countries, laws prohibiting opioids for treatment of pain have created a barrier to prescription of OST, although some promising changes have recently occurred in some parts—eg, in Morocco, use of methadone maintenance treatment has recently been approved. Despite having been reported as an emerging issue in sub-Saharan Africa, few countries have implemented HIV prevention and care programmes specifically for IDUs. Coverage of NSPs was essentially non-existent and few countries provided OST, apart from South Africa. Data for provision of ART for IDUs were rarely recorded (however, because many countries in sub-Saharan Africa have established HIV epidemics in the general population, ART is available to IDUs).

China, Russia, and the USA are estimated to account for around 40% of the global IDU population. Compared with the global average (22 needle-syringes per IDU per year), levels of syringe distribution were greater in China, similar in the USA, and substantially lower in Russia (as previously mentioned, however, some IDUs in Russia obtain needles and syringes from pharmacies;<sup>17</sup> the USA also has high levels of syringe purchase from community

pharmacies<sup>19</sup>). OST is well established in the USA and has been introduced extensively in China in the past few years, but it remains unavailable in Russia. The USA and Russia have the largest number of IDUs living with HIV worldwide, but we were unable to estimate how many HIV-positive IDUs receive ART in these two countries.

In countries such as Australia and the UK where HIV prevention interventions were swiftly and widely introduced, HIV outbreaks might have, so far, been averted.<sup>1</sup> By contrast, there are many countries in eastern Europe and southeast Asia with evidence of substantial HIV epidemics<sup>1</sup> yet there is poor coverage of effective HIV prevention, treatment, and care services. The absence of these interventions can only increase the risk of HIV transmission and make the task of HIV prevention harder. This is a serious missed opportunity and will have long-term effects on overall public health in these countries.

OST and the distribution of sterile needle-syringes are fundamental and core components of HIV prevention efforts. We identified a wide range of service delivery models in this systematic review; coverage could be increased by delivering these interventions through several models rather than relying on one delivery model for situations that are different across IDU populations and countries (eg, expanding both pharmacy and NSP distribution of needle-syringes; specialist clinic and office-based delivery of OST). This approach includes consideration of the most cost-effective interventions (eg, methadone maintenance treatment is likely to be less expensive than buprenorphine maintenance treatment in most countries). Different levels of coverage are also probably needed in countries with varying IDU and HIV prevalence.<sup>20</sup> Successful models of scale-up exist: Taiwan has rapidly scaled up NSPs since 2005, with over 1000 sites established, and scale-up of OST has been rapid and widespread throughout China.

Modification of HIV risk behaviours requires IDUs to understand the mechanism of HIV transmission. Without this understanding, HIV prevention attempts (especially provision of clean needle-syringes) could be ineffective.<sup>21</sup> Furthermore, provision of ART might also have a role in primary HIV prevention within IDU populations, as suggested for men who have sex with men.<sup>22</sup>

Our findings have clear policy implications. Future work should review national policies and programmes related to injecting drug use and HIV, to identify countries in which the policy environment is not conducive to scaling up coverage to adequate levels, and therefore where advocacy is most urgently required. At country level, governments that have not made NSPs and OST available need to be convinced that these interventions are the most effective ways to stop HIV spreading among IDUs, and to the wider community. This move could be supported at the global level by the Commission on Narcotic Drugs (governing international-level drug policy) and the International Narcotics Control Board (overseeing scheduled drugs and their availability, including

pharmaceutical opioids such as methadone and buprenorphine). Finally, similar reviews are needed with regard to other infectious diseases and health problems that affect IDUs, such as viral hepatitis, tuberculosis, sexually transmitted infections, and bacterial infections.

A better understanding of the HIV epidemic (including estimates of IDU population size, HIV prevalence, and drugs typically injected) and more complete service provision data are needed to improve the response. Concerted efforts must be launched to gather accurate information about the epidemic in IDUs in each region. This action will require dedicated resource allocation to improve national data collection in those countries in which limited capacity currently exists, in addition to development of current data collection processes that are already in place regionally (eg, European Monitoring Centre for Drugs and Drug Addiction, Inter-American Drug Abuse Control Commission) and globally. Worldwide data collection systems exist, but reporting against endorsed indicators is patchy and often poor,<sup>2,16</sup> and not well suited to detailed monitoring of IDU population coverage sufficient to inform the development of an effective response to HIV.

Although in most instances, reports of the same indicator were consistent for a country across reports or data sources, there were instances of conflicting data. Because many sources were from the grey literature, we were unable to verify which source was the most accurate. This problem was addressed by consulting with key experts, non-governmental organisations, and government officials.

Estimates of coverage are dependent upon the estimates of the population being covered. There is substantial uncertainty about estimates of IDU prevalence because of the absence of estimates in many countries and poor quality of available estimates in others. There is a further possibility that estimates of HIV prevalence are not representative of the broader IDU population. These issues have been discussed in greater detail elsewhere;<sup>1</sup> such limitations will obviously affect the accuracy of any estimates of coverage presented in this report. In a very few instances, programmatic data suggested that the number of IDUs accessing services was greater than the estimated population of IDUs in that country. These findings could reflect errors in either data source and highlight the uncertainty that remains in estimating coverage for this population.

Difficulties in estimating levels of coverage were particularly notable for ART and OST. Understanding coverage of OST was not straightforward because of varying definitions of OST provision site, absence of data on IDU status of recipients of OST, and absence of estimates of opioid-dependent IDUs. Without such estimates, we were unable to establish how well the provision of OST is meeting the needs of people who inject opioids.

To estimate ART coverage, we require estimates of the cumulative surviving number of people who have injected

drugs and become infected with HIV, and who are in need of ART. Apart from the uncertainty in the estimates of HIV and IDU population size, it is difficult to estimate what proportion of IDUs living with HIV need treatment. Recent guidance from WHO recommends initiating ART in all patients with HIV who have CD4-cell count less than or equal to 350 cells per  $\mu\text{L}$  or with symptoms of WHO clinical stage 3 or 4 disease.<sup>23</sup> Such data are rarely reported in studies reporting on HIV status of IDUs.

This systematic review was subject to limitations. First, although the methods used were endorsed by all members of the Reference Group and we used several data collection strategies, we might not have had access to all sources of relevant information. The process of broad internal and external review of estimates allowed for a more comprehensive collection and review of identified data, and strengthened the data-gathering process substantially. Second, much of the information pertinent to this analysis was not located in peer-reviewed literature, but rather, was obtained from the grey literature, or came directly from non-governmental organisations or ministries of health. Such data and reports are difficult to access; many are not available in English. Our access to these sources was inconsistent; we were more likely to obtain grey literature for countries for which we could make contact with UN agency staff, government workers, researchers, or other experts. Greater availability of this type of information is important. Third, errors of interpretation of data are possible but were kept to a minimum by review by Reference Group members and other experts, and by extensive country-level consultations undertaken with relevant personnel on several occasions. Fourth, this review did not include estimates of service provision for the treatment of viral hepatitis and tuberculosis. These comorbidities need to be addressed to ensure a comprehensive response to HIV in IDUs and to reduce the harms associated with injecting drug use more generally. Inclusion of these interventions was beyond the scope of this report. Finally, although global and regional coverage estimates have some use in showing the extent (and shortcomings) of the response, it is essential to understand coverage at a national level.

HIV prevention, treatment, and care services for IDUs are clinically effective, but to exert a population-level effect, they need to be delivered to scale. We still do not know enough about the nature and size of the populations we need to target. Even with this uncertainty, the data for service provision gathered in this systematic review suggest that, with some notable exceptions, coverage of services in IDU populations, including HIV-positive IDUs, is very low, and unlikely to be sufficient to prevent, halt, or turn around HIV epidemics in this population. In many countries and continents where the risk of an HIV epidemic in IDUs is emerging and the IDU populations are large, the scale of the response has so far been poor. Urgent action is needed to improve coverage of HIV services in IDUs.

## Contributors

BMM, LD, and HA developed the methodology for this systematic review with assistance from LW and MH. The methodology was approved by all members of the 2009 Reference Group to the UN on HIV and Injecting Drug Use and Secretariat. The collected literature was reviewed by BMM and HA. BMM and LD decided upon indicators to be used and approach to estimating coverage estimates; BMM calculated the coverage estimates. LW assisted with the provision of data and the calculation of estimates for the European region. BMM and LD drafted the manuscript. LW, MH, AA, BMM, HA, RPM, and SAS reviewed and commented on the estimates and the draft manuscript. All authors gave approval for the manuscript to be submitted.

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## Conflicts of interest

We declare that we have no conflicts of interest.

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