Estimating the number of drug injectors in Indonesia

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Abstract

Background: Drug injection, little known in Indonesia just a decade ago, is apparently a growing practice, especially among young men. In some cities, HIV prevalence has been recorded at close to 50% among injectors. Yet authorities in the world's fourth most populous nation had no information on the magnitude of the problem.

Objectives: To estimate the number and distribution of drug injectors in Indonesia, and to use the estimates to draw the attention of policy makers to the need for services for this population.

Methods: The Ministry of Health asked a wide variety of partners to collect all data relevant to drug injection in the country. Data were made available by treatment centres, health authorities, social welfare workers, law enforcement authorities and non-government groups providing services for drug users. Data sources were compared and it was decided that data would support estimates at the provincial level using multiplier methods. Three estimates were made based on different data sources.

Results: The results of the three methods were in a very close range, between 145,000 and 170,000. Methods and data sources were published in detail, and weaknesses clearly acknowledged. The estimates were accepted by all groups, and formed the basis for subsequent modelling and advocacy work which greatly increased attention to the need to provide services to drug injectors in the country, and contributed to the adoption of harm reduction approaches in the national HIV strategy.

Conclusion: An inclusive and transparent estimation process based on existing data sources can provide an important starting point for advocacy and rational planning of drug-related services. It has proven feasible, affordable and useful in the context of a large and diverse developing country with an IDU-driven epidemic of HIV.

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Introduction

Indonesia is the world's fourth most populous nation, with around 210 million people spread over more than 10,000 islands. From the mid-1960s until the late 1990s, the country was governed by a centralised military-dominated administration. Social controls were tight, and widespread drug injection was not reported in any part of the country.

As has been the case in many countries, it was the HIV epidemic that first drew attention to changes in drug-taking practices in Indonesia. Until 1998, every indication was that HIV prevalence in Indonesia was still low, even in groups believed to have higher than normal risk behaviour. The major drug treatment centre in the capital, Jakarta, found no HIV positive specimens among those tested from 1996 to 1998, but num-

bers tested were low (between 50 and 60 a year), because there were few injectors among those in treatment. Then in 2000, 39 out of 247 specimens from injectors in treatment tested positive for HIV. Two years later, HIV prevalence among injectors at this sentinel site was recorded at 48%—by far the highest prevalence rate among any risk population in Indonesia.

Behavioural surveillance among IDUs was conducted in three cities in late 2002. In surveillance, almost all IDUs reported risky injecting practices; they also reported very high levels of unprotected sex, often with multiple partners, including commercial partners (Pisani, Dadun et al., 2003). Very high rates of HIV infection among drug injectors together with high rates of unprotected sex with non-injectors clearly had implications for the development of a larger HIV epidemic in Indonesia.

These data quickly prompted questions about the overall size of the injecting population, because the number of injectors will determine the overall impact of drug injection on the national epidemic at any given level of injection risk and sexual mixing. Some non-government organisations claimed that there were

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over a million injectors in the country, while public security officials tended to stick to estimates in the low tens of thousands. The basis for these estimates was never clearly stated.

In late 2002, the Directorate of Communicable Disease Control and Environmental Health in the Indonesian Ministry of Health launched a process to make systematic estimates of the number of people at risk for HIV because of various behavioural exposures, and the numbers living with HIV. These exposures included drug injection, and sex between drug injectors and non-injectors.

This paper describes the process and methods by which these estimates were made, and how they have been used. The estimates themselves do not represent any substantial methodological advances. However, this is to our knowledge that the first time a government in a populous developing country has attempted to make systematic, data-based estimates of the number of drug injectors at the provincial level, and has begun to use those estimates for advocacy and in HIV prevention and care programme planning.

Objectives

The impetus for systematic estimates of the number of people injecting drugs in Indonesia came from public health authorities faced with a rapidly escalating HIV epidemic. A more accurate idea of the overall size of the drug injecting population was considered necessary for a number of reasons. These are discussed at greater length elsewhere and summarised here (Family Health International, 2002).

- Better HIV programme planning
  Without any accurate information on the absolute and relative size of populations whose behaviour exposes them to HIV, it is not possible to understand the relative contribution of various behaviours to the national epidemic. And without such an understanding, it is not possible to make informed decisions about the distribution of effort and resources in HIV prevention and care programmes.
- Better monitoring of responses
  Besides improving programme planning, solid estimates of population size contribute to programme monitoring. In particular, they allow us to estimate coverage of existing programmes and to predict the potential impact of different interventions. This is true of all services for drug users, although in the Indonesian case the estimates have only been used in the context of monitoring HIV-related services.
- Advocating for more appropriate responses
  The more controversial an area of HIV programming, the more important the role of advocacy. Well-documented estimates from an official source such as the Ministry of Health are critical in establishing a credible platform from which to lobby for appropriate responses to injecting-related harms.

Process

Implicit in all of the listed objectives is the need for consensus between different groups involved with drug users. The need for

such consensus was taken into account in the process adopted in making estimates in Indonesia.

The estimation process was led by the Ministry of Health, but representatives from a number of sectors were involved. Drug treatment centres, drug user support groups, research institutions, prison authorities, police and narcotics board officials sat down together to develop the estimates, with the help of the Ministry of Health and technical assistance from Family Health International, a group which works on HIV programming internationally.

The group reviewed available data sources, and decided that they were adequate to make preliminary estimates without any extra data collection. It was decided that estimates would be made for each province by a group working at the national level. Provincial-level estimates were communicated to provincial authorities before the national estimates were finalised. It should be noted that Indonesia is undergoing a rapid process of administrative decentralisation. A breakdown in communication between district, provincial and national levels may affect both the quality of the data available for making estimates at the central level, as well as the utility of the data. In the first round of national estimates, neither the experience nor the resources were available to make estimates at the provincial level.

Recognising that any estimates were likely to be highly political, particularly given the diverse interests of group members, everyone decided to abide by certain ground rules, suggested by the Ministry of Health. The group would agree first on the methods to be used to make the estimates, and then on the data sources and data points. These would be fed into spreadsheets by an independent facilitator, and the result would be accepted by all parties.

The estimation process was completed over a series of three two-day meetings, with time for data compilation in between meetings. Parallel estimation processes produced simultaneous estimates of the size of populations at risk for and infected with HIV through other risky behaviours including commercial sex and sex between men (Republic of Indonesia Directorate General of Communicable Disease Control and Environmental Health, 2003; UNAIDS/WHO Working Group on Global HIV/AIDS/STI Surveillance, 2004).

Estimation methods

Two separate estimates were made of the number of drug users in each province, and a third estimate was made at the national level only, to confirm the order of magnitude of the provincial methods. All three estimates used a similar method, known as the multiplier method, but all used different data sources. The estimates are described briefly here. Detailed descriptions of the calculations and copies of the spreadsheets used can be obtained from the Indonesian Ministry of Health, and English translations are available from the author.

Multiplier method using a registry of drug users

Indonesia's Department of Social Affairs (Depsos) maintains registries of drug users at the district level. These are reported

to the provincial level, and the aggregate data are reported to the national level, but they are widely accepted as being incomplete, and do not distinguish between injectors and non-injectors. However, as injection spreads ever more widely throughout Indonesia, the Depsos registry does give an overall picture of the likely order of magnitude of drug use and injection in various provinces.

It was decided that if an accurate estimate of drug users could be developed for a single province, this could be used to develop a "multiplier", which could then be applied to Depsos data for the other provinces to get a more accurate estimate of the number of injectors.

The province with the greatest amount of data available is Jakarta. At the time of the first estimates, there were three principle sources of data related to drug users in Jakarta. Rumah Sakit Ketergantungan Obat (RSKO, the largest treatment centre in Jakarta) keeps rigorous patient records and also collects some behavioural data. The city narcotics board keeps a list of all registered treatment centres, and collects patient numbers. And the national surveillance system now includes drug users in Jakarta in regular behavioural sentinel surveillance. These data sources were used to make an estimate of the number of drug injectors in Jakarta in four steps as follows:

Step 1: Estimate the number of drug injectors in treatment in Jakarta

RSKO keeps records of treatment episodes and of individuals treated, while the narcotics board reports treatment episodes from other treatment centres. The number of treatment episodes was adjusted downwards to get an estimate of the individuals in treatment, taking into account the differences in frequency and timing of relapse between outpatient and longer term residential treatment programmes. They were further adjusted to reflect the number of injectors, which RSKO records show to be 57% of clients in the biggest treatment centre.

Step 2: Estimate what proportion of drug injectors in Jakarta have been in treatment, and multiply treatment figures to get an estimate of the total number of injectors in Jakarta

Behavioural surveillance in a community-based sample of 400 drug injectors in Jakarta was first undertaken in 2000. These injectors were asked whether they had been in treatment in the past year. Only 9.1% of them said they had been in treatment. This means that for every one in treatment, there were more than nine who were not in treatment. The estimated number of injectors in treatment was inflated to reflect those injectors who were not in treatment, giving an estimate for the total number of injectors in Jakarta.

Step 3: Derive a multiplier for the Depsos drug user registry

Depsos maintains a registry of drug users which comes from reports from community workers at the sub-district level. The Depsos registry figure for metropolitan Jakarta was compared with the result of the more detailed estimation process, to get a "multiplier" which reflects under-reporting by Depsos.

Step 4: Apply the multiplier to registry data for other provinces

The multiplier was applied to all provinces where Depsos data were available, with the exception of those where more complete data based on population listing or mapping were available. In 2002, only Bali fell into this category.

Overall, this method produced an estimate of 167,000 injecting drug users nationwide.

Estimate based on population distribution

The second method used to estimate the number of injection drug users calculated a prevalence of drug injection for each province. It was based on input from people working in the area of drug addiction (harm reduction workers, treatment centre staff, surveillance mapping staff, academics, police and narcotics forces), and on data on population distribution.

All available sources of data (mapping, rapid assessments, behavioural surveillance, outreach service records, treatment records and police records) point to the same thing: 90% of drug injectors in Indonesia in 2002 are men, and almost all are aged between 15 and 30.

The male population between 15 and 30 was therefore used as the denominator for the prevalence based estimate.

Step 1: Make high, medium and low estimates of drug injection in urban and rural areas

People working in the field of drugs were asked to consider their experience and all records available to them to come up with estimates for high, medium and low prevalence of injecting drug use in urban populations. They were also asked to estimate the relationship between injection prevalence in urban and rural areas for each of those categories. The only data available to inform these estimates were the estimate of drug users in Jakarta (calculated by the method described above), and behavioural surveillance among high school students in Jakarta (2002). The Jakarta estimate is equivalent to a prevalence of 2% of males aged 15–29. Among male high school students in Jakarta, 2.5% said in 2002 that they had ever injected drugs. No information was available for rural areas.

Lengthy discussions between treatment centre workers, NGOs, the police and narcotics control board staff yielded the following estimates:

	High	Medium	Low
Urban	1/50 (2%)	1/200 (0.5%)	1/1000 (0.1%)
Rural	1/150 (0.75%)	1/1000 (0.1%)	1/5000 (0.02%)

The ratio of rural to urban injection was thought to be higher in high prevalence injection areas than in medium and low prevalence areas because the high prevalence areas tend to be in regions with good infrastructure and competitive drug dealing industries, both of which push drugs more easily into rural areas.

Step 2: Assign each province to high, medium or low category

In order to decide which provinces should be assigned to which category, data on imprisonments for drug-related causes by province were used. The number of incarcerations in a province was divided by the number of young males in that province to get a "drug crime index". Provinces were then ranked according to that index. The top third were ranked as high, the next third as medium and the last third as low.

Step 3: Multiply the population of young adult men by the appropriate injecting prevalence

Census data gave the population of men between 15 and 30 for urban and rural areas of each province. The appropriate "prevalence" of injecting drug use shown in the table was then applied to that population, according to whether the province was categorised as a high, medium or low drug-use province. The resulting figure was inflated by 10% to reflect female and older male injectors. This estimation method produced an estimate of 152,500 IDUs nationwide.

IDU estimation method 3: multiplier using drug seizure data

The two independent methods above yielded very similar estimates. However, both estimates were somewhat below the expectations of the very participants who supplied the data that produced them. A third method, yielding only a national estimate, was therefore tried in order to test whether these first two methods were in the right ball-park.

The third estimate used drug seizure data supplied by the Narcotics Board. Heroin seizures were inflated to account for the fact that only a small proportion of heroin is seized—0.5% by Narcotics Board and police estimates. This gave an estimate of the national heroin supply annually. Data from drug injectors in treatment and from behavioural data were used to estimate the average consumption of drugs per injector. The estimated supply was divided by the annual consumption per user to give an estimate of 148,000 IDUs in Indonesia in 1999—very much in the same range as the other two estimates.

Strengths and weaknesses of the estimates

Limitations

Each of the three methods has severe limitations. In the first case, data on treatment in Jakarta is incomplete. The actual number of people in treatment was probably higher than that estimated here, using the best data available at the time of the estimates. A higher number in treatment with the same multiplier would give a higher overall estimate for Jakarta, and that would in turn give a higher multiplier for the Depsos data, which is then applied to the rest of the country. On the other hand, most sources felt the "injection prevalence" of one young man in 50 to be quite robust for Jakarta, and this completely independent method gave an estimate which was within just 500 individuals—or 2%—of the more detailed estimate. This is an impressive degree of agreement. A second major weakness is

that virtually nothing was known about the relative completeness of reporting of drug use by Depsos in different provinces. This method assumes that the undercount is roughly similar nationwide. If this is not the case, then the method will overestimate the number of drug injectors in provinces whose registries are more complete than Jakarta's, and underestimate it in provinces whose registries are less complete.

The greatest weakness of the second method is that the only data available to inform the "injection prevalence" estimate was very sketchy data for the capital, Jakarta. In truth, the estimates of injection prevalence for urban and rural areas in the high, medium and low categories are little more than educated guesses from people working across the drug field, from harm reduction to law enforcement.

In the third method, there is no sound data on which to base the estimate of the proportion of drugs that are seized. If the estimated proportion seized overstates reality, it will produce an underestimate of drug injectors. If it is an understatement, it will result in an overestimate of the number of injectors.

A second round of estimates was undertaken beginning in mid-2004. In a third of the nation's provinces (those thought to be most affected by HIV), these estimates were made at the provincial level, using data contributed by the district level. With more local knowledge involved, it became apparent that Depsos registries were extremely variable in quality and completeness. A significant proportion of provinces elected to use data from arrests and incarcerations as the basis for a multiplier method estimate, together with survey data from IDU on the proportion arrested and incarcerated in the preceding 12 months. Interestingly, in Jakarta, this led to an estimate of 27,550 injectors—almost exactly the same as that given by the treatment centre based estimates the previous year.

Positive outcomes of the estimation process

Overall, the remarkable similarity of the estimates produced by multipliers using three independent data sources should increase confidence that the estimates are in the correct range. At the very least, it is now possible to say with some confidence that the number of drug injectors in Indonesia is likely to be not tens of thousands or over a million, as previously claimed by various interest groups, but rather in the low hundreds of thousands.

Because the methods and the data sources are clearly documented, anyone disputing the estimates is free to improve them by strengthening methodological weaknesses or by filling data gaps. Indeed the Ministry of Health has encouraged such input, and improvements have been included in the second round of estimates, which was underway at the time of writing. This has been possible in part because people involved in the estimation process in the first year became aware of data gaps and were able to improve routine data collection and reporting so that more useful information became available.

One of the key features of the estimation process was that it brought together people from different parts of the drug field, who had not previously worked cooperatively. Arriving at a consensus over the number of drug injectors in Indonesia has been

helpful in encouraging a common vision of the magnitude of the problem in the country.

Uses of the estimates

Perhaps most importantly, the estimates of drug injectors (and the estimates of HIV infection based on them) have been widely used in policy work and advocacy. In Indonesia's increasingly decentralised system, local politicians have been content to allow the media to portray drug injection as an issue for Jakarta and a handful of other big cities. The province-based estimates (and more recently district-based estimates) issued officially in a government publication, proved an invaluable tool for those who wished to draw the attention of local policy-makers to the universality of drug injection throughout Indonesia. The estimates, widely quoted in the press, have allowed local pressure groups and drug treatment centres to lobby successfully for more resources. It is worth noting that the increased attention to the numbers of injectors at local levels has in some cases also resulted in increased pressure to adopt prohibitive and punitive measures against injectors.

Estimates of population size are essential to understanding the relative importance of different behaviours in spreading HIV in a country, and are a key ingredient in models used to improve understanding of the dynamics of the epidemic. In Indonesia, official estimates of the number of drug injectors were combined with information about HIV prevalence and risk behaviour to investigate the source of new infections. Simple projection models found that although fewer than 40% of current infections in Indonesia were among drug injectors, high levels of injecting risk meant that over 80% of new infections in 2003 could be expected to be attributed to injection (Pisani, Garnett et al., 2003). This information, presented to the national cabinet by the Minister of Health, opened discussions on a national harm reduction policy.

In addition, the estimates allowed for the use of the Asian Epidemic Model, a curve-fitting model that looks at the interaction between the sub-populations most commonly at risk for HIV in the Indonesian context (Brown & Peerapatanapokin, 2004). The Asian Epidemic Model can be used to investigate the impact of different policy choices. In the Indonesian context, it has been used to demonstrate the clear catalyst effect that drug injection has had on a wider sexual epidemic. Model results indicate that rapid rises in HIV prevalence among drug injectors have been passed on through high levels of unprotected sex with commercial partners into wider heterosexual networks. Results of these projections have been presented in meetings with the National Narcotics Board to make two important points. Firstly, in areas where HIV prevalence among drug injectors is still low (which may still be the case in some areas of the sprawling nation), early and widespread provision of safe injecting services for IDUs is critical to limiting the ultimate size of the HIV epidemic. Secondly, in areas where HIV prevalence among injectors is already high, the model suggests that promotion of safer sex has the potential to avert at least as many infections as safer injecting, but in different individuals. In other words, as HIV prevalence among injectors rises, sexual health interventions should assume increasing importance in harm reduction efforts (Suharto, 2004).

These efforts have resulted in new thinking about the importance of drug injecting as a social issue in need of policy attention in Indonesia, and have contributed to a growing awareness of the relationship between drug use and HIV in areas where thinking about HIV has long been dominated by commercial sex. Barely mentioned throughout the 1990s, harm reduction for drug injectors has now been designated a core HIV prevention priority in the nation's national strategy on HIV. Although it continues to favour supply and demand reduction approaches to drugs, the National Narcotics Board on December 8, 2003 signed a Memorandum of Understanding with the National AIDS Commission supporting harm reduction efforts among drug injectors. This signing, witnessed by Indonesia's president Megawati Sukarnoputri, was the result of months of active lobbying, much of it using data that relied on the mutually agreed estimates of the number of drug injectors.

A recent government proposal—accepted for funding during the fourth round of the Global Fund for AIDS, TB and Malaria—included a strong harm reduction component. Bilateral donor programmes have also increased the proportion of funding spent on providing prevention and care services for injectors (Dr. Steve Wignall, Aksi Stop AIDS, personal communication). More attention is also being paid to the ways in which drug injection and commercial sex interact. Programmes for injectors have increased their emphasis on safe sex and sexual health services, while programmes for sex workers are beginning to consider messages around injection safety.

Conclusion

Clearly, estimates of the number of drug injectors in Indonesia are very far from perfect. The Indonesian Ministry of Health has been open about the methods and data sources it has used to make the estimates; the gaps in data sources exposed by the attempt to make systematic estimates are now being filled. The estimation process has proved productive in terms of developing consensus and increasing communication between groups who have sometimes been at odds in their approach to drugs. Most importantly, these estimates and the analytic work based on them have led to a rethink of HIV prevention programme priorities in Indonesia, and have encouraged a more appropriate response from authorities at both the national and the local levels.

Acknowledgements

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